

 <p><b>Building Division</b> 285 Hamilton Avenue Palo Alto, CA 94301 650.329.2496</p>	<p><b>Solar Water Heating Submittal Package for Domestic Systems</b></p>	Revision Date 08/25/2015
		Requirements for: Residential SDWH Systems 30kWth or less
		Codes Enforced: <ul style="list-style-type: none"> <li>• 2013 California Codes of Regulations Title 24</li> <li>• Palo Alto Municipal Code (PAMC)</li> </ul>

SCOPE: Use this plan ONLY for solar domestic water heating systems not exceeding a thermal output rating of 30 kWth on the roof of a one- or two-family dwelling or accessory structure and used for domestic water heating. Systems must be in compliance with current California Building Standards Code, Title 24. Other articles of the California Plumbing Code (CPC) or California Mechanical Code (CMC) or other California health and safety codes shall apply.

**Required Documents to be submitted in addition to this form:**

- Site Plan showing the location of the SHW array and all associated equipment**
- Roof Layout Plan showing attachment details**
- MANUFACTURER’S SPECIFICATION SHEETS MUST BE PROVIDED for proposed collector, controller, pump, storage tank/heat exchanger/ heat transfer fluid (if applicable) and mounting systems. Equipment intended for use with SDHW system shall be identified and listed for the application.**

Job Address: \_\_\_\_\_ Permit #: \_\_\_\_\_

Contractor/Engineer Name: \_\_\_\_\_ License # and Class: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_ Phone Number: \_\_\_\_\_

Email: \_\_\_\_\_

Total # of Collectors Installed \_\_\_\_\_ Total Area of Collectors \_\_\_\_\_

Collector Certification Number (include certifying agency) \_\_\_\_\_

Max Height Above Roof \_\_\_\_\_ Height Above Ground \_\_\_\_\_

**Major Components (for SDWH systems)**

Solar Tank Make/Model \_\_\_\_\_ Gallons \_\_\_\_\_ Insulation R- \_\_\_\_\_ Pressurized?

Heat Exchanger Make/Model \_\_\_\_\_ Number of Walls \_\_\_\_\_ Heat Exchange Fluid

Solar Control Make/Model \_\_\_\_\_

Solar Pump/Circulator Make/Model \_\_\_\_\_

Expansion Tank Make/Model \_\_\_\_\_ Appropriately Sized for Use? \_\_\_\_\_

Mounting Hardware Make/Model or Type \_\_\_\_\_

Do all the above data match substantially the data used for certification? \_\_\_\_\_

# STRUCTURAL CRITERIA FOR RESIDENTIAL FLUSH-MOUNTED ARRAYS

## 1. ROOF CHECKS

- A. Visual Review/Contractor's Site Audit of Existing Conditions:
- 1) Is the roof a single roof without a reroof overlay?  Y  N
- 2) Does the roof structure appear structurally sound, without signs of alterations or significant structural deterioration or sagging?  Y  N
- B. Roof Structure Data:
- 1) Measured roof slope (e.g. 6:12): \_\_\_\_\_:12
- 2) Measured rafter spacing (center-to-center): \_\_\_\_\_ inch
- 3) Type of roof framing (rafter or manufactured truss):  Rafter  Truss

## 2. SOLAR ARRAY CHECKS

- A. Flush-mounted Solar Array:
- 1) Is the plane of the modules (panels) parallel to the plane of the roof?  Y  N
- 2) Is there a 2" to 10" gap between underside of module and the roof surface?  Y  N
- 3) Modules do not overhang any roof edges (ridges, hips, gable ends, eaves)?  Y  N
- B. Do the modules plus support components weigh no more than: 4 psf for photovoltaic arrays or 5 psf for solar thermal arrays?  Y  N
- C. Does the array cover no more than half of the total roof area (all roof planes)?  Y  N
- D. Is a roof plan of the module and anchor layout attached?  Y  N
- E. Downward Load Check (Anchor Layout Check):
- 1) Proposed anchor horizontal spacing: \_\_\_\_\_' - \_\_\_\_\_"ft-in
- 2) Horizontal anchor spacing per Table 1: \_\_\_\_\_' - \_\_\_\_\_"ft-in
- 3) Is proposed anchor horizontal spacing equal to or less than Table 1 spacing?  Y  N
- F. Wind Uplift Check (Anchor Fastener Check):
- 1) Anchor fastener data:
- a. Diameter of lag screw, hanger bolt or self-drilling screw: \_\_\_\_\_ inch
- b. Embedment depth of rafter: \_\_\_\_\_ inch
- c. Number of screws per anchor (typically one): \_\_\_\_\_
- d. Are 5/16" diameter lag screws with 2.5" embedment into the rafter used, OR does the anchor fastener meet the manufacturer's guidelines?  Y  N

## 3. SUMMARY

- A. All items above are checked YES. No additional calculations are required.
- B. One or more items are checked NO. Attach project-specific drawings and calculations stamped and signed by a California-licensed civil or structural engineer.

Job Address: \_\_\_\_\_ Permit #: \_\_\_\_\_

Contractor/Installer: \_\_\_\_\_ License # & Class: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_ Phone #: \_\_\_\_\_

Table 1. Maximum Horizontal Anchor Spacing				
Roof Slope		Rafter Spacing		
		16" o.c.	24" o.c.	32" o.c.
Solar Thermal Arrays (5 psf max)				
Flat to 6:12	0° to 26°	4'-0"	4'-0"	5'-4"
7:12 to 12:12	27° to 45°	1'-4"	2'-0"	2'-8"
13:12 to 24:12	46° to 63°	Calc. Req'd	Calc. Req'd	Calc. Req'd