

Before approval and issuance of permit(s) for solar thermal/photovoltaic energy installations, applicant shall submit the following minimum information. Required drawings shall be scaled and dimensioned, readable, and legible. Additional information may be requested for the building permit.

In addition to the building permit, an electrical permit will be required. Electrical permits are issued by the State of Minnesota, Department of Labor and Industry's Electrical Division. For more information, call (651) 284-5026 or go to [http://www.dli.mn.gov/CCLD/etrakit\\_electrical.asp](http://www.dli.mn.gov/CCLD/etrakit_electrical.asp). Further permitting may be required.

Building integrated solar installations, where the solar collector replaces or substitutes for an architectural or structural component of a building, such as a roof, shingle, or awning, do not require completion of this checklist separately from the permit application for the building, structure, or building modification.

Please provide the following information:

### GENERAL INFORMATION

1. A fully completed building permit application, providing the following information:
  - Project address
  - Owner's name, address, phone number
  - Plan preparer's name, address, phone number
  - Description of proposed work, including both solar equipment installation and all associated construction
2. Contractor's name and license: \_\_\_\_\_
3. Name of installation company: \_\_\_\_\_
4. System information
  - a. For electric (photovoltaic) systems:
    - System's kW rating (DC): \_\_\_\_\_
    - System designation    inter-tie    stand alone
    - Does the system include battery backup or an uninterrupted power supply (UPS)?  
Yes    No
    - If Yes, give the number, size and location of the batteries:*  
\_\_\_\_\_

**ROOFTOP SOLAR INSTALLATIONS**

1. Roof type: Flat roof (nominal pitch) Sloped; identify pitch: \_\_\_\_\_
2. Existing roofing type (shingles, tile, metal, ballasted, membrane, etc.): \_\_\_\_\_
3. Number of roofing layers that will be under panels (no more than 2 layers of roof shingles are allowed): \_\_\_\_\_
4. Age and condition of roofing material: \_\_\_\_\_

Has the homeowner been made aware of the lifespans of the existing roof and a new solar installation?

Yes No

5. Is the equipment to be **flush-mounted** to the roof (such that the collector surface is parallel to the roof)?  
Yes No

*If Yes,*

- a. Does the roof structure use 2x4 or larger rafters, spaced no wider than 24 inches on center?  
Yes No

*If No, (i.e. if **non-flush-mounted**)*

- a. Is the finished pitch of the collector at or less than a 12/12 pitch?  
Yes No
- b. Is the collector or racking system fastened to the roof within one foot of the roof peak?  
Yes No
- c. Is the collector or racking system fastened to each rafter passing under the collector?  
Yes No
- d. And, is the horizontal span (roof span dimension) of the rafter less than 7.75 feet for 2X4 rafters or 11.5 feet for 2X6 rafters?  
Yes No

Roof decking and structural supports should all be in good condition without visible roof sag/deflection.

Is the roof structure in good condition, having no visible sag, cracking or splintering of rafters, or other potential structural defects? Yes No

- Provide photos showing the condition of the roof structure (rafters in the attic space), if accessible.

- or -

- Provide exterior photos, showing a side view of the roof, if accessible.

6. If the answer is "No" for any parts to questions 5 through 6 above, provide a study or statement regarding the proposed solar installation and all proposed structural modifications as required and approved (stamped) by a Minnesota licensed/certified structural engineer.

- Provide construction plans denoting the roof structure and any modifications to the structure if required, as well as the method of installation of solar collector on the subject property.

- or -

- Provide a letter from the engineer, specifically addressing the subject property, explaining its roof structure, any required modifications, as well as method of installation of the solar collector on subject property.

**Required Drawings and Plans: (See next three pages for examples.)**

7. Building cross section detail (see example) with complete notation of method of fastening equipment to the roof of the subject property, including the following details:
  - Identification of rafter size, spacing, and span dimension
  - Approximation of roof slope
  - Identification of style, diameter, length of embedment of bolts (i.e. 5/16<sup>th</sup> lags with minimum 3" embedment into framing, blocking, or bracing.)
8. Is the system to be mounted according to panel and rack manufacturer's instructions?  
Yes    No  
*If No*, explain and attach explanation if more space is needed.

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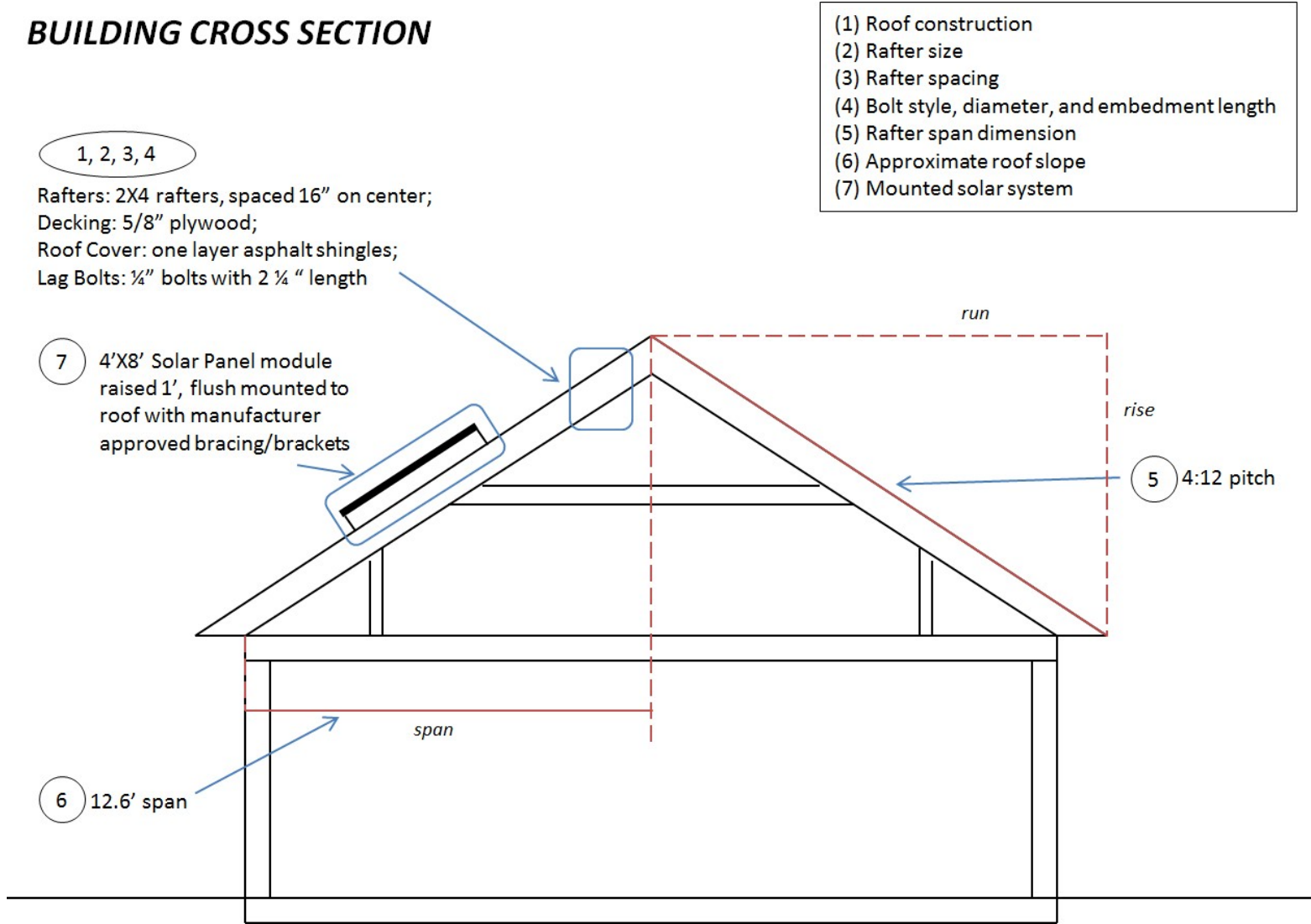
9. Elevation of structure illustrating the appearance of the proposed solar installation (see example) indicating the finished height of the system above roof surface.
10. Site plan indicating the buildings and features of the property (see example). The site plan shall show the following:
  - Property line locations
  - Location of all structures
  - Setback from property lines
  - Location of solar panel installations
  - Solar panel setback dimension from the peak and all edges of the roof. (To avoid turbulence and uplift, the suggested set back from edges/ridges is 2" per 1" lift from roof surface. E.g., for an array which is mounted 4" off the roof surface, there would be an 8" setback.)
  - Main service location
  - Solar easement across adjoining properties (if applicable)

## BUILDING CROSS SECTION

1, 2, 3, 4

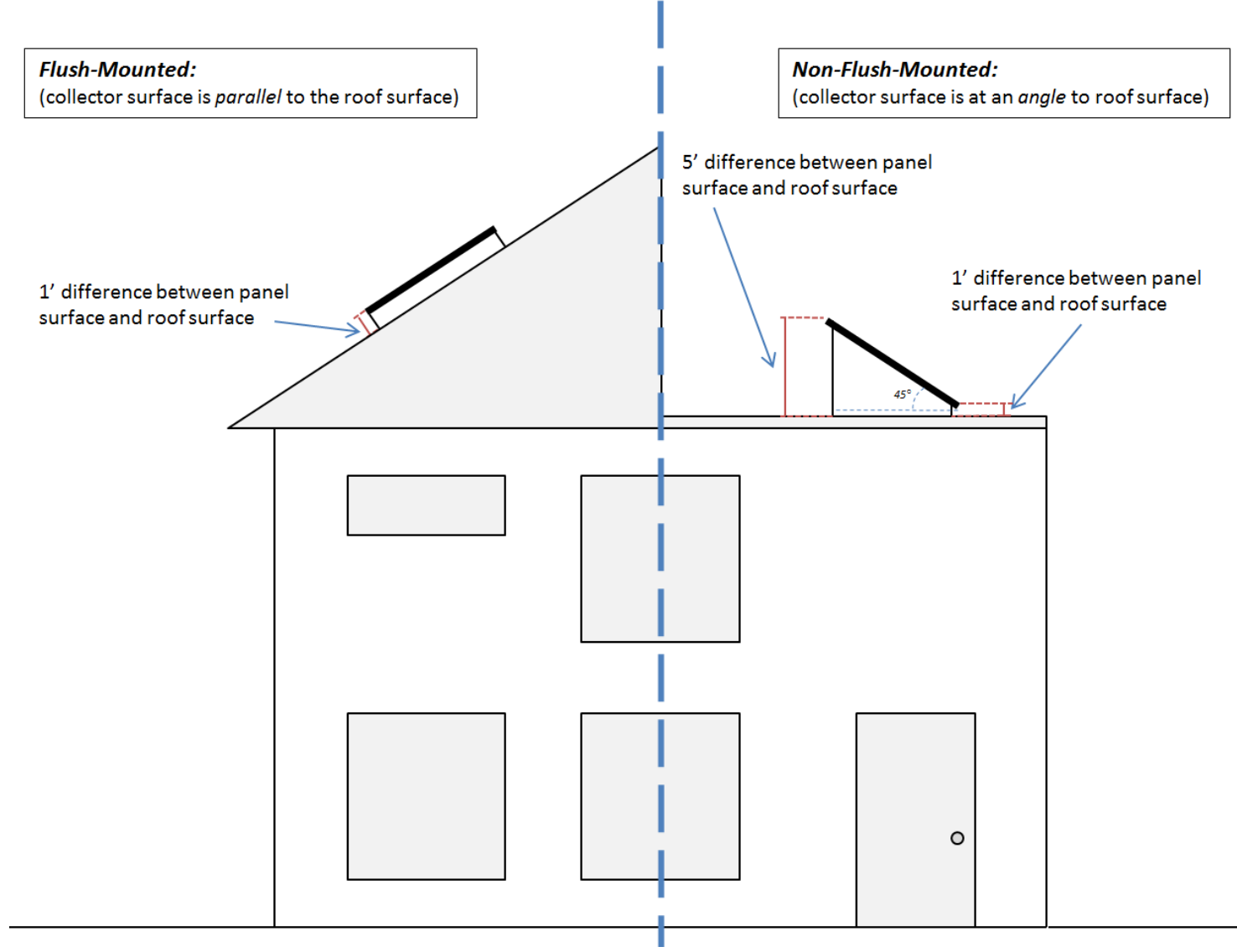
Rafters: 2X4 rafters, spaced 16" on center;  
 Decking: 5/8" plywood;  
 Roof Cover: one layer asphalt shingles;  
 Lag Bolts: 1/4" bolts with 2 1/4" length

7 4'X8' Solar Panel module  
 raised 1', flush mounted to  
 roof with manufacturer  
 approved bracing/brackets



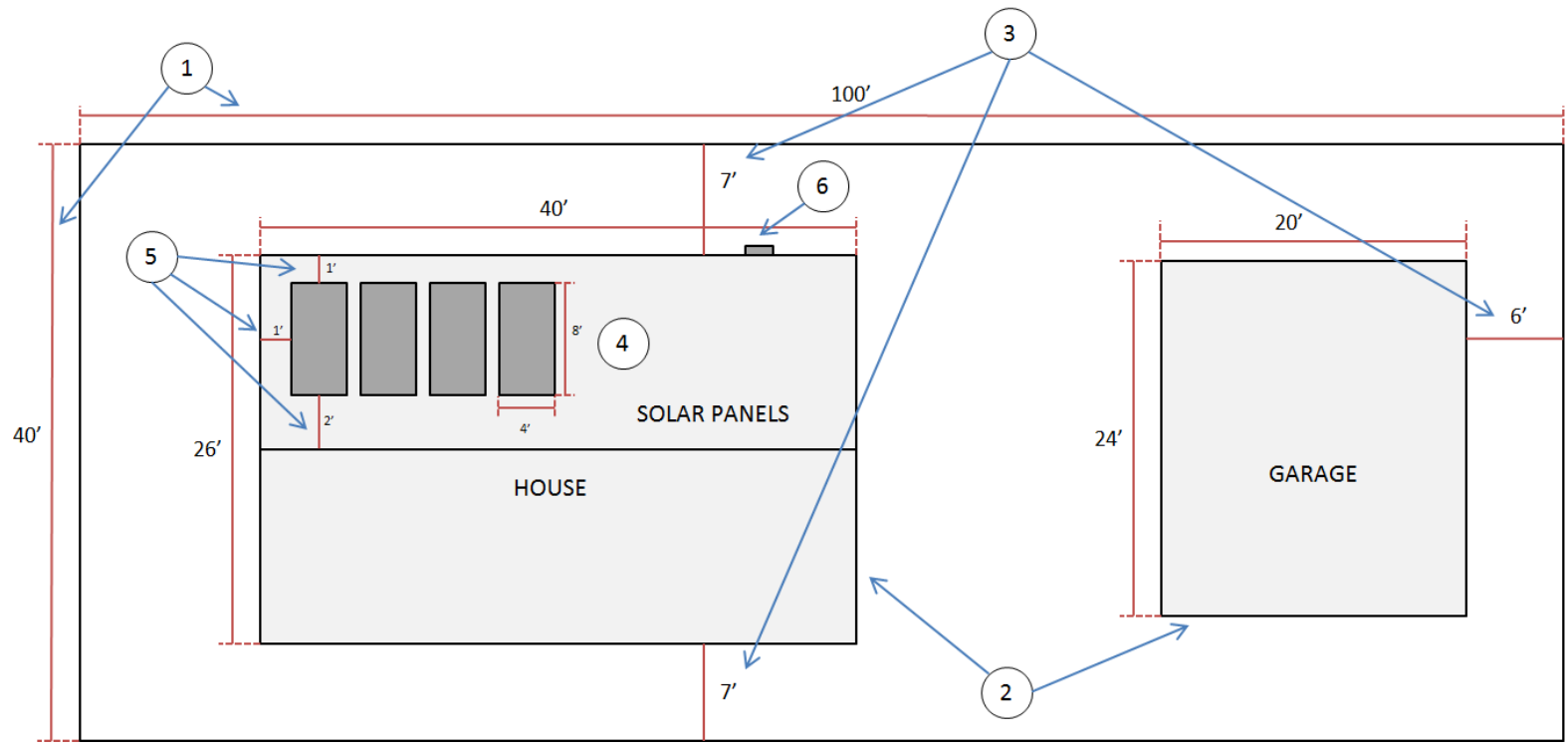
- (1) Roof construction
- (2) Rafter size
- (3) Rafter spacing
- (4) Bolt style, diameter, and embedment length
- (5) Rafter span dimension
- (6) Approximate roof slope
- (7) Mounted solar system

## ELEVATION



**SITE PLAN**

- (1) Property line locations
- (2) Location of all structures
- (3) Setback from property lines
- (4) Location of solar panel installations
- (5) Solar panel setback dimension from roof peak and edges
- (6) Main service location



### GROUND SOLAR INSTALLATIONS

For **ground-mounted solar energy systems**, the installation must meet property line setback standards for solar accessory structures, as identified in the Minneapolis Zoning Code: Title 20, Chapter 535 – Regulations of General Applicability, Article XII – Solar Energy Systems, 535.820-870 ([www.municode.com/library/mn/minneapolis/codes/code\\_of\\_ordinances](http://www.municode.com/library/mn/minneapolis/codes/code_of_ordinances)).

#### Required Drawings and Plans: (See previous examples.)

1. Elevation of structure illustrating the appearance of the proposed solar installation (see example) indicating the finished height of the system above ground.
2. Site plan indicating the buildings and features of the property (see example). The site plan shall show the following:
  - Property line locations
  - Location of all structures
  - Setback from property lines
  - Location of panel installations
  - Main service location
3. Property lines and setbacks are required to be verified.
  - Provide a completed survey.
  - or -
  - Denote *property pins* on site plan, as located by homeowner or contractor.

### HERITAGE PRESERVATION

Exterior work, including installation of solar systems, within city designation heritage preservation sites and districts is subject to additional review and approval by administrative staff or the Heritage Preservation Commission prior to the issuance of city permits. For a city map showing individual sites and district boundaries go to the city website ([www.ci.minneapolis.mn.us/hpc/landmarks/](http://www.ci.minneapolis.mn.us/hpc/landmarks/)). You may also search a specific address by using “property look-up” at [www.ci.minneapolis.mn.us/propertyinfo/](http://www.ci.minneapolis.mn.us/propertyinfo/).

1. Is the installation address within a heritage preservation district, or on a landmark property or building?  
Yes      No