

WORK INSTRUCTION (WI)



Dept: Engineering

Title: Timberline Solar Stager Installation

Date: 06/2022

Doc. #: US-WI-V1B-016

Rev: 02

Revision & Approval Record

Rev	Date	Notes	Written By	Reviewed By	Approved By
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1.0 PURPOSE

The purpose of this document is to define the steps necessary to safely and successfully install the Timberline Solar Stager(s).

2.0 TERMS & DEFINITIONS

National Electrical Manufacturers Association (NEMA) – An organization that forms the standards for the manufacturing of electrical equipment.

National Electrical Code (NEC) – The benchmark for safe electrical design, installation, and inspection to protect people and property from electrical hazards.

Timberline Solar Stager(s) – A pair (2) steel brackets designed to “stage” Timberline Solar (TLS) Energy Shingles (ES) for use in TLS Solar Array Installations.

3.0 SUPPLIES

Tools	Materials
<ul style="list-style-type: none">■ Hammer	<ul style="list-style-type: none">■ 20-Penny Nails■ Timberline Solar (TLS) Stager (2)■ Timberline Solar (TLS) Energy Shingles (ES)

4.0 SPECIFICATIONS

Capacity: 32 Timberline Solar Energy Shingles per pair of Stagers (brackets).

Box Quantity: 4 Timberline Solar Energy Shingles per box

Max Weight Load: 320 lbs.

Roof Pitch: 2/12 (min) - 18/12 (max)

Distance Between Stagers: 22" OC (min) - 33" OC (max)



NOTICE

Using the Timberline Solar Stager is always preferred. If storing/staging Energy Shingles without the Stagers, always lay bundles horizontally on a flat surface or upright with the handle side facing up. Do not place bundles on peaks or sharp points as this will cause bending and damage to the shingles.

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5.0 DESCRIPTION

The Timberline Solar Stager is a racking (bracket) system used in pairs to stage Timberline Solar (TLS) Energy Shingles (ES). They provide a safe and efficient way to access TLS ES during installation and help prevent the need for multiple trips to the ground. The Timberline Solar Roof Stager is quick and easy to install and remove.

This document covers how to properly install the Timberline Solar Stager onto a roof mounting plane, as well as provide guidance on where the pairs can be placed on a roof mounting plane to benefit Stager installation workflow.



Fig. 1. – TIMBERLINE SOLAR STAGERS (IN USE)



- **DO NOT** use a Stager (bracket) if it shows signs of damage, rust, or deterioration. Remove from service and destroy.
- Do not directly or indirectly stand, sit, or lean on these Stagers.
- Do not anchor fall arrest safety equipment to the Stagers.

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- Do not mount the Stagers where interference with fall protection will occur.

Failure to observe this label will result **in serious injury** or DEATH!



NOTICE

Work should always be done in a workmanlike manner and in accordance with all building codes and standards. Follow all OSHA guidelines and use appropriate PPE while working.

6.0 PROCEDURE

6.1 Determine the Solar Array location before installing Timberline Solar Stagers

- 6.1.1 Measure and mark the Array Footprint on all 4 corners to confirm no obstructions are in the way and fire setbacks are maintained.

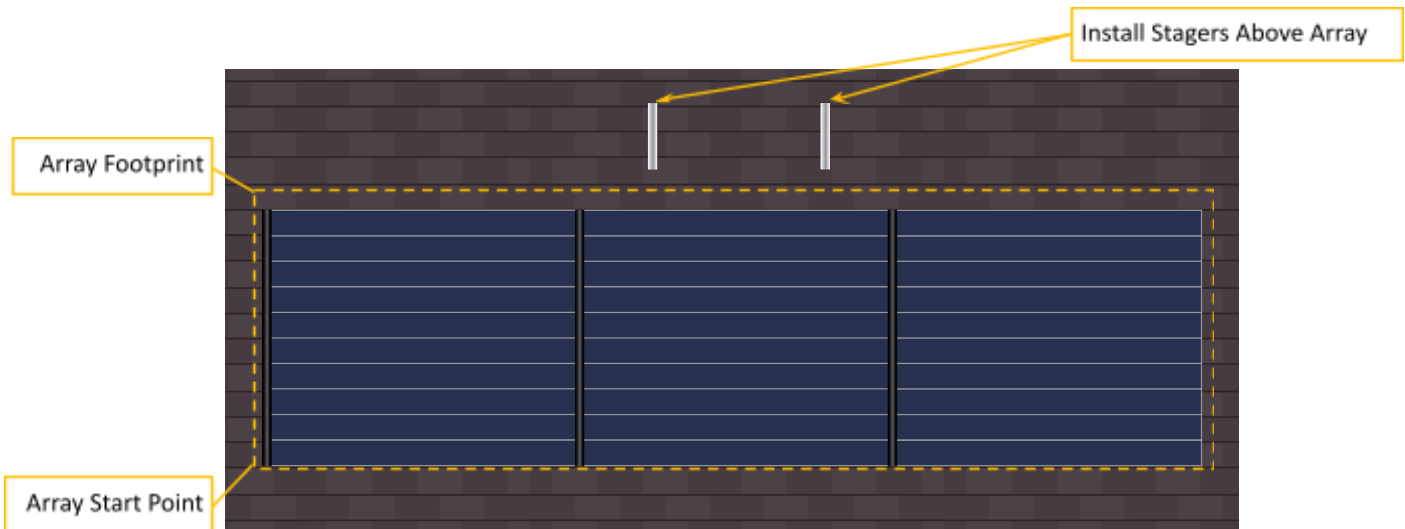


Fig. 2. – ARRAY FOOTPRINT

6.2 Determine where to place the Timberline Solar Stagers

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- 6.2.1 Stagers should be placed just above the Array location for increased efficiency.
- 6.2.2 For taller Arrays, place one set of Stagers per column (Up to 32 TLS Energy Shingles).
- 6.2.3 For smaller Arrays, place one set of Stagers at the top right of the Array.
- 6.2.4 Allow at least 25" above Stagers to allow for material staging.
- 6.2.5 Always use 2 brackets (one pair) and space them horizontally 22"-33" on center to stage TLS Energy Shingles.

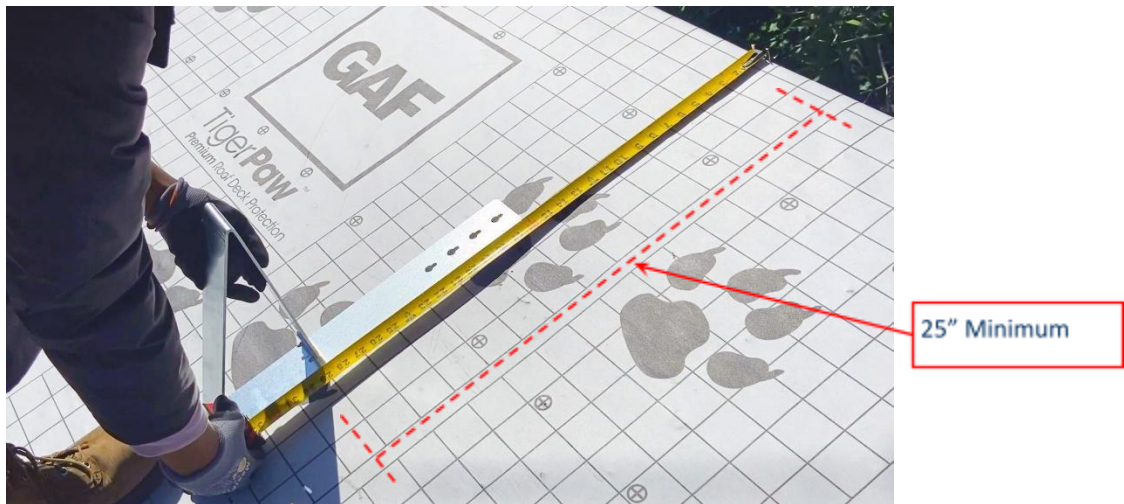


Fig. 3. – 25" MINIMUM

6.3 Installing the Timberline Solar Stagers

- 6.3.1 Position the first Stager on the roof, over the centerline of a Rafter, and fasten it in place using three 20-penny nails.
 - 6.3.1.1 The Stager must be placed over Rafters when installed. This will allow the fasteners to penetrate both the Roof Deck and the Rafter below.

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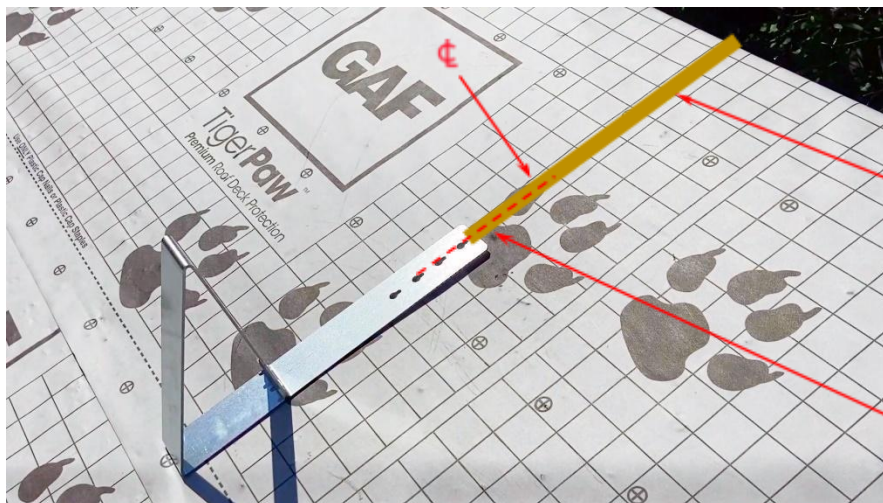
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Fig. 4. – CHECKING FOR RAFTER



Standard 2x6 Rafter
(under sheathing).
For visual reference
only!

Ensure the keyholes
land in the center of
the rafter.

Fig. 5. – POSITION THE STAGER (OVER THE RAFTER'S CENTERLINE)

6.3.1.2 Be sure to drive at least three (3) 20-penny nails into the keyholes and into the Rafter below.

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Fig. 6. – NAILING STAGER 1



NOTICE

Do not overdrive the nail(s). Overdriving will hinder the removal of the Stager, while under driving may damage the Energy Shingles and cause the Stager to become loose.

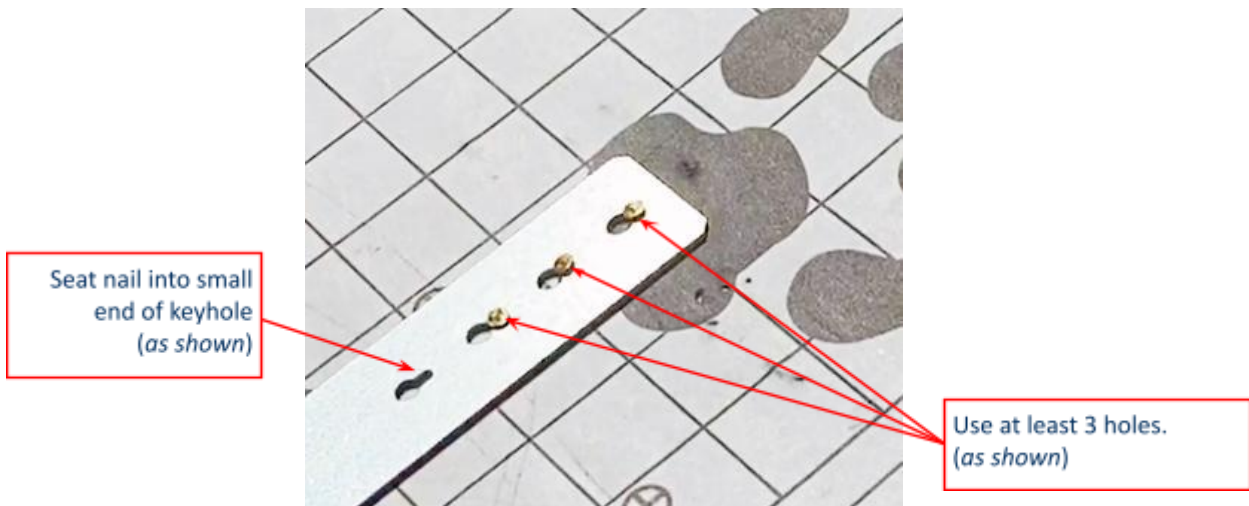


Fig. 7. – COMPLETED NAILING

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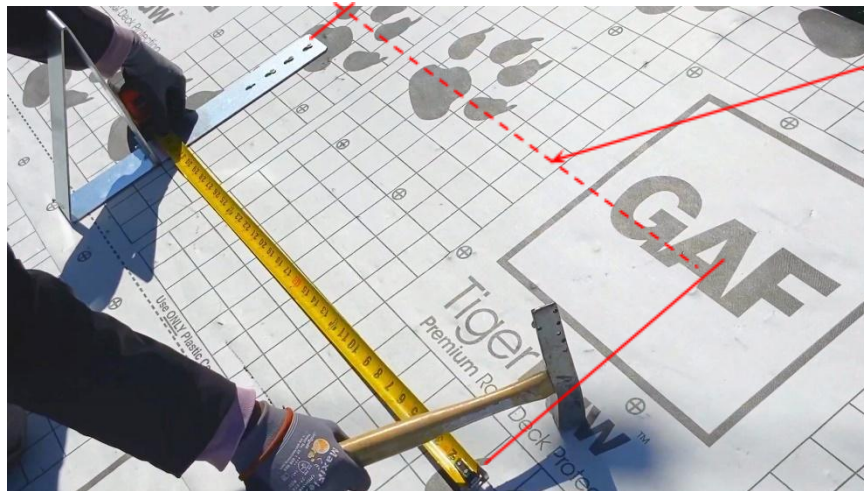
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6.3.2 Position the second Stager over the next Rafter.

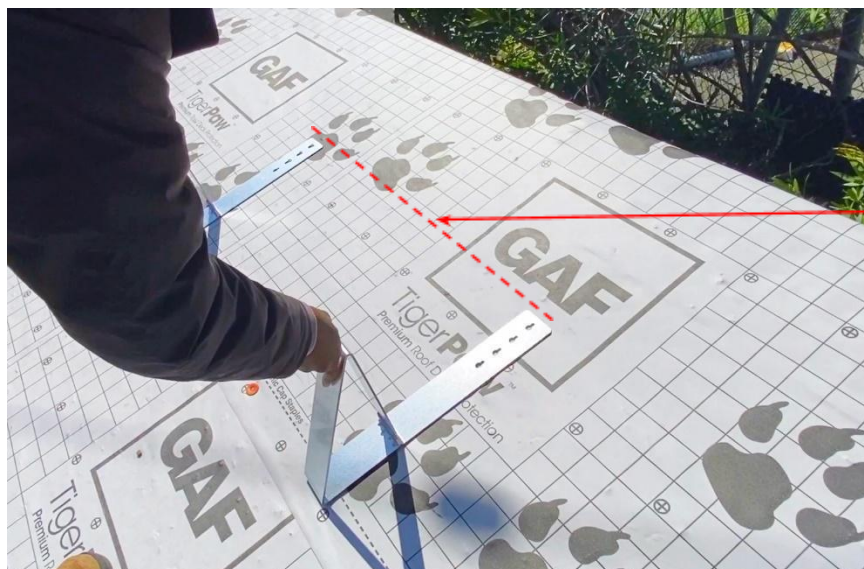
6.3.2.1 Stay within 22" - 33" on center from the first Stager.



22" OC - 33" OC

Fig. 8. - LAYING OUT SECOND STAGER

6.3.2.2 Ensure that the Stagers are parallel with one another.



Parallel (Same Plane)

Fig. 9. - KEEPING STAGERS PARALLEL

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6.3.3 Fasten the second Stager using the same method as the first.

6.3.3.1 Hammer three (3) 20 penny nails through the key shaped holes and into the Rafter below.



Fig. 10. – NAILING STAGER 2

6.3.4 Carefully place Timberline Solar Energy Shingles (ONLY) on these Stagers and ensure that they are oriented handle side up, on their side, and centered on both Stagers.



Fig. 11. – TIMBERLINE SOLAR ENERGY SHINGLES "STAGED"