



To: Building Owner

Re: Letter of Compliance – Photovoltaic Installation on Carlisle Warranted Roof

This letter outlines Carlisle's recommendations concerning the installation of Photovoltaic (PV) systems over a Carlisle warranted roofing system in order to facilitate the installation of the PV system with limited disturbance to the Carlisle roofing system. The determination of the most suitable PV technology, racking and installation method is the responsibility of the Building Owner or its designated representative. Listed below are the recommendations along with conditions that may impact the Carlisle roofing system and warranty.

1. Determine the building's structural ability to withstand the PV system.
2. The roofing system must be protected during installation of the PV system to prevent damage. This includes the staging and assembly areas and other areas heavily traveled.
3. To avoid PV system removal costs to the building owner, the PV system should provide adequate clearance for access to the roof membrane should maintenance or repair be required.
4. Field seams that may be concealed by the PV system, and therefore difficult to access, should be overlaid by a Carlisle authorized roofing applicator using approved products and installation procedures.
5. For non-penetrating PV racking systems, a protection course consisting of Carlisle's Pressure-Sensitive Molded Walkway Pads is recommended between the PV support system and the roofing membrane. Walkway pads of thickness and density equal or greater to those which can be provided by Carlisle may be used to prevent damage to the roofing membrane.
6. Non-penetrating attachment methods that rely solely on a heat welded seam for anchoring to a thermoplastic membrane shall not be allowed. Any anchoring system, whether used as a primary or ancillary securement method, should tie directly to a structural component of the building. Failure to comply will result in negating the issuance of a membrane system warranty or termination of all existing warranties.
7. PV laminates must not be adhered directly to the Carlisle primary membrane. A compatible Carlisle membrane shall be used as a slip sheet and spliced to existing membrane.
8. Walkway pads, protection pads, slip sheets and sacrificial sheets shall be of the same color as the roofing membrane.
9. Racking systems that require penetration of the roofing membrane must be flashed in accordance with the appropriate Carlisle published detail. All flashing details must be performed by a Carlisle authorized roofing applicator.

It is recommended that areas frequently accessed for the purpose of operation or maintenance of the PV system be protected by walkways installed in accordance with the Carlisle published specifications and approved installation procedures. Should Carlisle be contacted to investigate a warranty claim, or to make warranty related repairs, providing access to the membrane (removal and replacement of the PV System) is the responsibility of the Building Owner. Only Carlisle brand products are covered by the Carlisle Warranty. Carlisle specifically disclaims liability, under any theory of law, for damages sustained by or caused by non-Carlisle brand products.

The following table lists the roofing inspections during the PV system installation to ensure continuation of the Carlisle Warranty. Upon completion of the roof alteration, an inspection must be scheduled and performed by a Carlisle Field Service Representative.



Field Assessment & Inspection Fees

A roof inspection after PV system installation is required (Post Inspection). Please be advised that if the Post Inspection is not approved, warranty service will be suspended until repairs are made and a re-inspection completed and approved by a Carlisle Field Service Representative.

Inspection fee is \$.05 per square foot of the entire roofing system as listed on the original warranty application (minimum fee of \$500). Inspection fees must be pre-paid via credit card or check prior to being scheduled.

Warranty #:

Building Name & Address:

Building Owner Contact Name (printed):

Phone:

Email:

Onsite Inspection Contact Name:

Phone:

Solar Company Name & Address:

Solar Company Contact:

Phone:

Email:

PV System Square Footage:

Mounting System Type:

Name/Address of Carlisle Approved Applicator assisting:

Warranty Document

Upon inspection and acceptance, and payment of all fees, a warranty continuance letter will be issued by Carlisle to the Building Owner. The continuance letter will outline additional warranty terms and should be retained along with the original warranty for future reference.

Please feel free to contact us 877-797-8370 option 2 with questions.

Return this form via email to: PVLOC-WarrantyServices@CarlisleCCM.com



Preparing for Roof-Mounted Photovoltaic Installations

A. General

Information included in this document is to be used as a guideline for consideration when a Photovoltaic (PV) system is to be installed on top of a new or an existing Carlisle roofing system.

A PV installation will subject the roofing assembly to extensive alteration work and an increase in rooftop traffic for the purpose of monitoring and maintaining the PV array(s). When assessing a roof assembly for a possible PV installation, consideration must be given to not only operation of the PV system, but also to the accessibility of the roofing assembly including all detail work, as well as the drainage system, in order to perform adequate inspections, maintenance and repair.

Whenever additional loads are placed on a building or modifications are made to existing roofing systems, prudent best practices mandate a comprehensive review by a licensed design professional. Prior to committing to or proceeding beyond a preliminary design of a PV system, a structural analysis by a registered Professional Engineer should be performed to ensure structural load limitations will not be exceeded.

Climatic and geological conditions, structural load limitations, module tilt, roof height, the racking/mounting method, frequency of membrane penetration, and roof slope should all be taken into consideration.

B. Design Considerations

In addition to the design considerations outlined in each of the Carlisle published roofing system specifications, listed below are additional design recommendations which should be considered prior to a PV system being installed on a new or an existing Carlisle roof.

The proposed design may be presented to Carlisle for assessment and specific recommendations, but at no time will Carlisle approve or warrant any PV system design. It is the building owner's, by its retained design professional, responsibility to ensure the roofing membrane is adequately protected during construction of the PV array and throughout the serviceable lives of both the PV and roofing systems.

1. It is Carlisle's recommendation that roofs expecting an immediate PV system installation and roofs being installed as 'PV ready', should specify the use of an adhered rigid insulation board, e.g. DensDeck, SECUROCK or SecurShield HD, and an adhered membrane of sufficient thickness as to match the expected warranted life of a PV system.
2. On projects with an existing Carlisle roofing membrane, membrane condition and installation details should be assessed to determine possible splice overlayment or the removal and replacement of certain membrane sections. A Roof assessment should be performed by a Carlisle Authorized Applicator prior to finalizing any or all upgrades/repairs to the existing roofing system.
3. Rack-supported PV arrays should provide proper clearance to access the roof membrane for the purpose of maintenance or repairs if necessary to prevent costly removal and re-installation of PV modules.



4. When penetration of the membrane is required to secure a racking system to the roof deck or building structure beneath the roofing membrane, the use of circular steel tubing will provide the best possible flashing option and facilitate the use of pre-molded accessories. In such instances, Carlisle specifications and details must be followed and the flashing performed by a Carlisle Authorized Applicator to ensure suspension of warranty service does not occur.
5. Areas, of the roofing membrane, which are heavily traveled during array installation and subsequent periodic maintenance, should be protected with walkway pads and/or concrete pavers. If pavers are selected, they should be used in conjunction with pedestals or sections of walkway pads, used to elevate the pavers.
6. Ballasted PV systems should utilize protection pads between the ballast trays and the roofing membrane to provide protection and facilitate drainage. A protection course shall be of sufficient construction so as to prevent contact between any component of the PV racking system and the roofing membrane for the life of the roofing system. Examples of protection courses are Carlisle's Sure-Weld TPO Walkway Roll, Sure-White Molded Walkway Pad or a component supplied by the racking system manufacturer. Any component supplied by the racking system manufacturer and its interaction with Carlisle's roofing system will not be covered under the Carlisle warranty.
7. Non-penetrating attachment methods that rely solely on a heat welded seam for anchoring to a thermoplastic membrane shall not be allowed. Any anchoring system, whether used as a primary or ancillary securement method, should tie directly to a structural component of the building. The anchoring system should possess adequate holding power to resist any loads to which the PV system may be exposed. Any anchoring system supplied by a manufacturer other than Carlisle will not be covered under the Carlisle warranty.
8. PV laminates should not be adhered directly to a Carlisle roofing membrane. Regardless of age or condition, roofing membranes should be overlaid with similar material prior to adhering the PV laminates. This practice of using sacrificial sheets will facilitate the removal and re-installation of the laminates should access to the roofing membrane be required.
9. In order to minimize interruptions to a PV system's production, it is strongly recommended to position the array(s) so that field seams and penetrations are accessible for roofing inspections, maintenance and repair. When not feasible, all existing seams should be overlaid (stripped in) with pressure-sensitive flashing or other acceptable flashing details approved by Carlisle.

C. Warranty Inspections

1. All work shall be completed by a Carlisle Authorized Applicator and must be performed in accordance with Carlisle specifications or previously issued roof assessment reports written by a Carlisle FSR.
2. Upon completion of the work, and notification by a Carlisle Authorized Applicator, an inspection will be performed by Carlisle to assess the work performed. Upon inspection and acceptance, and payment of all fees, a warranty continuance letter will be issued by Carlisle to the Building Owner. The continuance letter will outline additional warranty terms and should be retained along with the original warranty for future reference.
3. All field inspections are conducted by Carlisle for a fee. Should multiple inspections be required, a fee will be charged for each occurrence.



D. Warranties

Installation of a PV system will subject the roofing membrane to excessive traffic during installation, operation, and maintenance of the PV array(s). Access for membrane repairs may require the dismantling of panels and/or the removal of modules; therefore, it is important to enhance the membrane system durability to minimize the potential for damage or the probability of leaks.

For new or existing projects, the Carlisle roof system warranty will only cover deficiencies in Carlisle-supplied material or labor performed by the Carlisle Authorized Applicator associated with the installation of those materials.

1. Damages to the roofing system resulting from PV operation or maintenance are beyond the coverage of any new or existing Carlisle warranty.
2. Should the dismantling of panels and/or the removal of modules be required to complete repairs covered by the membrane system warranty, costs associated with removal and replacement and any increase in repair costs due to limited access shall be the owner's responsibility and are not covered by the warranty. Owner shall be responsible for all costs associated with any loss of power generation in the event that removal of a solar array is required to repair the roofing system.

E. Quality Assurance

The building owner, by its designated design professional should coordinate through the Authority Having Jurisdiction (AHJ) to ensure compliance with all applicable codes.

When selecting a PV system, the PV module manufacturer should be consulted to verify that the use of their product will not adversely impact the fire code classification of the roof assembly.

F. Cautions & Warnings

Please note that this list is not an exhaustive one:

1. Areas designated for staging of roofing or restoration materials and PV array components prior to construction must be protected to prevent damage to the membrane or the insulation below.
2. Maximum distributed, lateral and point loads should be determined by the building owner or his/her design professional to avoid exceeding the maximum compressive strength of the roofing assembly or the maximum loads for which the structure is designed.
3. Coordination between various trades (Carlisle Authorized Applicator and PV system installer/electrician) is essential to minimize delays, avoid unnecessary rooftop traffic over/through completed sections, prevent excessive soiling of highly reflective membranes and avert possible physical damage to the roofing membrane.
4. On new or existing membrane installations, attachment of slip-sheets, walkway pads, sacrificial sheets and all necessary flashings/terminations or modification to the roofing assembly must be performed by a Carlisle Authorized Applicator. Failure to comply will result in negating the issuance of a membrane system warranty or suspension of all warranty service to existing warranties.



5. Non-penetrating attachment methods that rely solely on a heat welded seam for anchoring to a thermoplastic membrane shall not be allowed. Any anchoring system, whether used as a primary or ancillary securement method, should tie directly to a structural component of the building. Failure to comply will result in negating the issuance of a membrane system warranty or suspension of all warranty service to existing warranties.
6. Walkway pads, protection pads, slip sheets and sacrificial sheets shall be of the same color as the roofing membrane.
7. Carlisle will not warrant or approve the integrity, installation or performance of any PV system or PV system component.