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SOLARCITY INSTALLER NETWORK

Background

It has come to solarcity's attention that there is wide spread use of flexible conduit through EPDM boot flashing roof penetrations, which does not achieve a satisfactory weathertight seal due to the corrugated surface of the conduit.

Installing flexible conduit through EPDM boot flashings is not in accordance with the solarcity installation SOP, manufacturer's instructions, and clause E2 of the building code.

This technote sets out the instructions for correctly installing a roof penetration using rigid conduit.

Details

Type of conduit used

Conduit running through the EPDM boot flashing is to be HD solar rated rigid conduit. Flexible conduit may be used to connect the rigid conduit running through the boot flashing to the rooftop isolator. Where flexible conduit is used this must also be HD solar rated.

Locating the roof penetration

Under normal circumstances the roof penetration can and must be located under the panels. However, if the array is above a cathedral (open plan) ceiling then the cable run may have to travel to a different part of the roof in conduit. This conduit should be HD Solar Conduit fixed using SS saddles and Class 4 or 5 Tek Screws with a rubber seal between saddle and roof surface.

The penetration should be located close to a roof framing member to provide mechanical support for the conduit or cable running through it.

Installing the EPDM boot flashing

1. Using a pair of sharp tin snips, cut off the tip of the EPDM boot flashing to widen the rubber hole just enough to be barely able to push the rigid conduit through. Pushing the rigid conduit through the EPDM boot should take significant effort and is an indication that the boot fits tightly around the conduit to prevent water ingress. Lubricate the rigid conduit with water to allow the boot to slide into position. There should be no need to use any sealant around the conduit to boot flashing junction.



Figure 1 EPDM rubber boot flashing

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2. Place the Rubber Boot (holding the Rigid Conduit) over the roof penetration. Bend down the base metal ring to fit as snugly as possible onto the roof surface. The boot should be fixed diagonally to the roofing profile so water will flow around the flashing.
3. Using a caulking gun, squeeze a generous amount of Neutral Cure sealant underneath the base to seal it all around. Then press down the base metal ring onto the roof surface by hand and fasten by drilling approx. 8 small self-drilling Class 4 of 5 screws with rubber washers (e.g. metal teks) through the base metal ring and into the roof cladding.

Finishing the roof penetration

4. Feed the rigid conduit down through the boot leaving enough exposed above the boot to be able to fit a rigid conduit elbow connector to the top of the rigid conduit.
5. Cut off any excess conduit below the conduit, ensuring that there is enough left to provide sufficient protection of the cable from the cut roof edges and any items in the attic space below. Fix the conduit to a roof framing member to provide mechanical support.
6. Turn the elbow so that the open end of the elbow faces down the roof.
7. Glue the conduit pieces together to ensure the joints are water proof.

Connecting the roof penetration to the rooftop isolator

8. Once the rooftop isolator is installed, the cable should be run in flexible HD solar rated conduit between the isolator and the rooftop penetration.
9. Connect the flexible conduit to the isolator using a 25-20mm Reducer (adapter) attached to the bottom opening of the isolator.
10. Connect the flexible conduit to the roof penetration elbow connector.
11. Secure the flexible conduit to the framing rails using stainless steel cable ties.
12. Glue all parts together to ensure the joints are waterproof.



Figure 2 finished roof penetration