

# Metal Roof Manufacturers: Key Members of the Architect's Project Team

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In today's hectic world, the construction industry offers some serious challenges for everyone involved, especially for the architect. As budgets become tighter, the clients' expectations greater, construction schedules condensed, the workforce less trained and society more litigious, architects are not only expected to be experts in every field, they must also be part lawyer, arbitrator and magician. Because of this, architects need to make use of every asset available. A key asset that many architects overlook, or at least often fail to take maximum advantage of, is the roof manufacturer. It is often said that "a roof is 10% of a project's cost and 90% of its problems". If this is even partially correct, then it certainly makes sense for the architect to get the roof manufacturer involved in the project from "start to finish". This is especially true when the roof is a metal standing seam roof.

Architects should insist that the metal roof manufacturers they specify work closely with them toward a common goal. That goal is to ensure that the roof is properly designed and then installed in an efficient manner while eliminating surprises at the project closeout. Those manufacturers that are unwilling to be good "teammates" should not be specified.

There are a number of things a roof manufacturer can do to help the architect ensure that the finished roof is

properly designed, installed and provides for long term performance. These include the following.

- Review the roof geometry, during the design development or construction document phase, to ensure that there are no areas that would pose insurmountable installation problems and to identify areas that require special details to be watertight.



Most roof manufacturers would advise not to design a roof with an architectural detail that involves intersecting valleys. It is practically impossible to install a detail such as this in a manner that would provide expectations of long term performance.

In many cases, the roofing contractor will not bid a project utilizing the proper details if they are not clearly identified in the contract documents. If the drawings and specifications are not clear, this can

result in a conflict between the roofing contractor, roof manufacturer and the architect. A manufacturer's experience can be invaluable in identifying roof details that historically result in poor performance. This experience may allow them to suggest an alternative that has proven itself in previous applications.

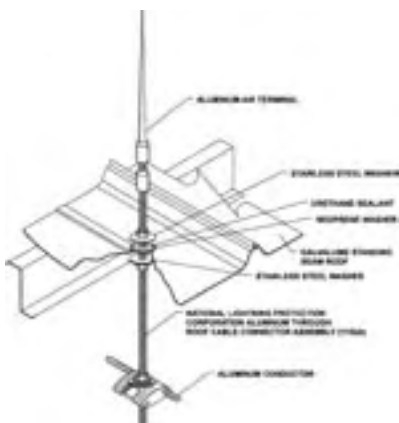


This pipe was installed in a manner that blocks the water from draining off of the roof. If the specifications do not address this, the contractor may not install it properly.



This pipe was installed in a two-piece pipe curb that allows water to drain around the pipe. By recommending a welded aluminum pipe curb, the roof manufacturer helped ensure proper installation.

- Provide/review shop drawings to ensure that each detail is properly designed to provide long term (minimum twenty years) performance. Any discrepancies or issues should be resolved before the roof materials are ordered. This also includes penetrations made by other contractors. Too often, these penetrations are responsible for leaky roofs.



By providing a detail such as the one shown here, the manufacturer can help ensure proper installation as shown in the picture above right.

- Provide training to the roofing contractor for the installation of the standing seam roof system to be used on the project. With today's work force, this is a critical detail. Many things learned from the thousands of

roofs sold, can be provided to the roofing contractor. Knowledge that makes the roof installation easier, quicker and better will certainly be advantageous to the roofing contractor, architect and end user.

- Provide inspections during roof installation. Accountability is a key element when it comes to ensuring that the roof is properly constructed. Inspections during the installation of the roof provide that accountability. The manufacturer has the ability to not only identify deficiencies, but to also recommend appropriate repair methods.



Hands on training for the people that will actually install the roof provides valuable knowledge that otherwise may take years to acquire.

- Provide a weathertightness warranty with some "teeth". One in which the manufacturer inspects the roof to ensure compliance with approved shop drawings and stands behind the roof from the date of substantial completion – not after it has gone 24 months without leaking. This type of warranty differs from the "manufacturer's standard weathertightness warranty", often specified. Manufacturer's "standard" warranties are typically based on a review of the shop drawings and provide for no inspections. When this type of warranty is specified, it is up to the architect or general contractor to ensure that the details are followed because the warranties have a clause which invalidates them if the roofing contractor did not follow all approved details. The roofing contractor is also responsible for the roof for 24 consecutive months of "leak free" service before the manufacturer becomes responsible. If the roof leaks 23 months after

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completion, the roofing contractor's 24 month period starts over. If the contractor fails to stop the leaks, the manufacturer will never have any responsibility under a "standard" warranty.

All of the above sounds great. But, how does an architect ensure that he or she gets these things on every project. Three things are required: (1) When possible, and certainly with very complex roofs, ask the manufacturer to review the roof geometry before the project is put out for bid, (2) good specifications and details (3) enforcement of those specifications and details.

1. Allowing the roof manufacturer to review the roof geometry before the project is put out for bid has several benefits. The manufacturer knows the limits of its roof systems. You may have a roof system specified that will not perform properly in the environment to which it will be subjected. For example, you do not want to use a roof system that has a minimum slope requirement of 3:12 on a roof with a 1:12 slope, or a roof with snap on battens in an area that experiences severe icing. This review will also allow the manufacturer to alert you to areas of the roof that cannot be included in a weathertightness warranty. Knowing about this before the project bids will allow you to find a solution before bids are taken. In this way the roofing contractor will have additional information and be able to bid the project properly.

2. The following should be included in your specifications.

- "Submit specimen copy of manufacturer's Weathertightness Warranty, including evidence of application for warranty and manufacturer's acceptance of roofing contractor, as well as, the project's roof geometry and details."
- "Submit complete shop drawings and erection details, drawn or approved by roof system manufacturer, to ensure compliance with Weathertightness Warranty requirements."
- "Methods, materials and accessories used in the installation of roof penetrations and roof top equipment must be reviewed and approved by manufacturer for inclusion in weathertightness warranty."

- "Roofing contractor shall be an approved installer, certified by the manufacturer. Project foreman is the person having received training in the proper installation of the specified system and must be present whenever material is being installed."
- "Roof curbs and roof jacks for all roof penetrations must be supplied by the roofing contractor to ensure compatibility with roof system and inclusion in the Weathertightness Warranty."
- "Prior to installation of roof system, conduct a pre-roofing conference at the project site. In addition to the architect, project superintendent and roofing contractor, all other trades whose work is integrated into the roof system must attend. Roof top equipment and roof penetrations must be coordinated with the roofing contractor to ensure compliance with weathertightness warranty requirements."



By having other contractors coordinate their work with the roofing contractor and manufacturer, penetrations such as the ones above can be avoided.

- "Manufacturer's qualified representative must inspect the roof a minimum of three times during installation (start-up, mid-point and final) and copy architect on inspection reports."
- "The roofing manufacturer shall have the sole and exclusive obligation for all warranty work commencing on the date of substantial completion. During the warranty period, the roofing manufacturer shall take appropriate actions to cause any non-performing portions of the roof system to perform their proper functions."

3. Enforcement of the specifications is critical. It does no good to have well written specifications if you do not ensure that both the manufacturer and the roofing contractor follow them. Important issues include:

- Carefully check the submittal documents for strict adherence to the specifications.

- i. Review the sample Weathertightness Warranty to ensure that it provides manufacturer responsibility for roof performance beginning on the date of substantial completion. Warranties without this language typically provide far less protection for the owner.
  - ii. Review documents indicating the roofing contractor has applied for and received warranty review and acceptance from the manufacturer for the project. Roofing contractors don't always tell manufacturers a weathertightness warranty will be required when they are purchasing the roofing materials. This can lead to manufacturers refusing to issue a warranty at project closeout.
  - iii. Review documents indicating that the roofing contractor's foreman has been certified by the manufacturer of the roof system to be used on the project. This is the best way to ensure that the roofing crew understands the proper installation techniques for the roof system being used.
- Make sure that the pre-roofing conference is attended by all required persons, including any trades whose work will interface into the roof system. This work must be coordinated with the roofing contractor to ensure compliance with provisions of the weathertightness warranty.
  - Make sure that you know when the roof is to be inspected and review the inspection report before approving progress payments involving roof installation.

Remember, if you don't enforce your specifications, you create an unlevel playing field and invite suppliers and contractors to cut corners. Deviations from

the specifications not discovered until the project is completed and the contractor paid, may result in finger pointing and involve the architect in a lawsuit that could easily have been prevented.

Roof manufacturers want their products to be properly installed and the end user to be satisfied. The manufacturer has the roof expertise and can provide valuable information to the architect. However, they have little actual control over the installation process and often the type and amount of material ordered. Architects have ultimate authority and control of the roofing process, but must rely on others to ensure that the roof is properly installed. Therefore it makes sense to include the manufacturer in this process to ensure that the end result is a roof that is aesthetically pleasing and provides long term performance.



Roofs with many architectural elements can be designed with confidence if the manufacturer and architect work together to ensure use of proper details and installation techniques.



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