

Schools and Metal Roofing

The Metal Roof Over Our Children's Heads, Is it Safe?

By Robert Stanford

Introduction:

This article discusses a need for Third Party Metal Roofing Consultants working directly with School Districts.

There are millions of square feet of improperly installed metal roofing systems currently in place on schools all across America. School districts need qualified third-party metal roofing consultants to act in their interests and provide quality control.

It is estimated that roofing costs in commercial construction represent 5% to 10% of the total project costs. Conversely, lawsuits related to roof failures represent 75% to 80% of all construction litigation.

The construction of American schools has likely provided the single greatest source of growth in the metal roofing industry over the past ten years. The advantages of using metal roofing for schools have proved to be numerous. Quality metal roofing systems, properly installed, are considered life-time roofing systems that may well last the life of the building. The fire resistance of steel is also an asset and protection for building occupants. When problems occur, however, they can be troublesome, costly and, sometimes, catastrophic.

In the acquisition and installation as well as the repair of metal roofing school districts need to ask the question, "*Who is looking out for our interests and providing quality control?*"

School districts all across America are under the assumption and expectation that their architect and general contractor are providing quality control in regard to the overall project and, by extension, the metal roofing system and installation. The architect and general contractor are the primary, and often the only, entities that are signatory by contract to the school district.

Faced with a failed metal roof, however, school board members, directors, superintendents and staff experience an epiphany when they realize that neither the general contractor nor the architect accepts the responsibility or liability for improper installation of the metal roofing system because they are not the installers of the system. The courts may identify the general contractor as “the construction expert” and the architect as “the design expert.” Neither accepts the responsibility of certifying, validating, or verifying the installation of the metal roofing system as being in compliance with industry standards, manufacturers’ installation instructions, wind uplift or code requirements, or proper, long-term waterproofing.

In defense of the architect and general contractor, neither generally professes to have the skills or experience to qualify as metal roofing experts. Quality control issues are often left to the sub-contractor/installer or the manufacturer, neither of which is directly signatory to the school district. Assigning quality control responsibility to either the sub-contractor or manufacturer, therefore, may be tantamount to putting the fox in charge of the hen house.

Five common causes of metal roofing failures:

- 1) Improper selection of product or profile and/or improper building design.
- 2) Improper waterproofing and installation details.
- 3) Lack of skill, training, and experience by persons installing the roof.
- 4) Installation that is noncompliant with wind uplift requirements, contract documents, and proper waterproofing methods and procedures.
- 5) Failure to provide quality control inspections, direction, and oversight.

All of these problems can lead to leaks, damages, and lawsuits. Water penetration through an improperly installed roof system may also contribute to the dreaded microbial growth and mold spore proliferation. There are currently hundreds of civil lawsuits related to mold spore and microbial growth problems in school buildings.

Installation that is noncompliant with wind uplift requirements has the potential for overwhelming liability to the school district. As an example, suppose there is a “blow-off” of a metal roof. If the insurance carrier is sagacious enough to ascertain that the roof was installed in a manner that does not comply with code or wind uplift standards and requirements, they may have a basis for rejection of any and all claims related to damages or replacement of the roof, leaving the school district in a potentially serious financial position. An infinitely worse possibility is that during the “blow-off” there is an injury or even death to one or more of the school children. A roof, installed in a non-compliant manner as outlined above, then becomes a source of potential civil lawsuits for wrongful death against the school district.

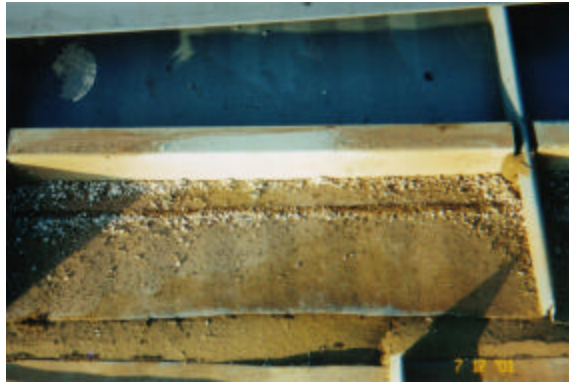
General contractors, architects, sub-contractors, suppliers, and school districts themselves may be forced into financial collapse and bankruptcy by “blow-offs” or other metal roofing failures.

Many of the installation details in use today were drawn by persons who have never installed any metal roofing. These ambiguous, incomplete, “failure” details (those which will not provide long-term water proofing) are routinely reviewed and approved by architects and general contractors who are often unfamiliar with metal roofing and therefore pass the contaminated details on through the approval process without realizing the intrinsic nature of their failure.

The following photographs depict graphic examples of “failure” details on installations of metal roofing systems currently in place. As of the writing of this article, some of the projects depicted are not even completed, yet all work and installation methods, procedures, and details were approved by the architect, general contractor, and manufacturer of the metal roofing systems shown.



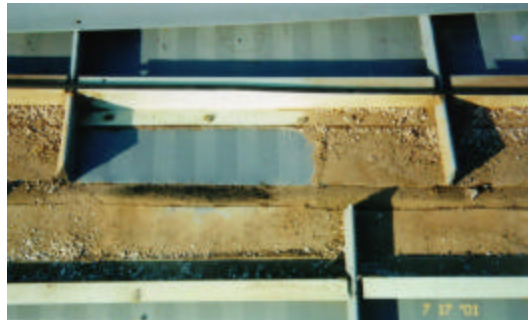
Removal of ridge cap metal flashing. Metal roofing closures are not properly waterproofed, as evidenced by the severe amount of wind driven dirt and debris visible in the photograph. This is a source of water penetration into the building for more than a 1,000 linear feet along the ridge line of this project. This school project is newly completed and less than one year old.



Close up view of the metal roofing panel and closure and ridge cap flashing. Water and debris stains clearly visible. Areas showing debris are supposed to be watertight.



Open gap at standing seam rib at metal roofing panel and metal closure. Wind driven water and debris easily penetrate the hundreds of open closures on this project.



A portion of the metal roofing panel has been cleaned to illustrate the severe intrusion of waterborne debris above the ridge cap and closure.



View along eave/gutter line of metal roof. Roof panels are open to water intrusion under the panels and into the building. Building design is zero overhang at eave/gutter and brick wall.



Close up of open, unsealed metal roofing panel edges at eave/gutter and wall connections. This is a waterproofing failure.

Third Party Metal Roofing Consultants Provide Review of Weathertightness Warranties:

The proliferation and issuance of so-called *Weathertightness Warranties* provided by manufacturers' is now in vogue in the metal roofing industry. Names such as "*standard, silver, gold, platinum, single source, level I, II, or III*" are all used in describing warranties offered by manufacturers'. While providing a profit center and revenue source to the manufacturers', many of the warranties provide little or no benefit to the owner. There are threads of commonality in almost all of the manufacturers' *Weathertightness Warranties*:

- They require the participation of the installer/contractor for the first two years after completion, and extend the installer/contractors responsibility and liability for additional two year incremental periods if any roof leaks occur within any of the two year periods. (In essence, the *20-Year Weathertightness Warranty* is the responsibility of the installer, not the manufacturer.)

- They are limited to leak repair only and do not contain provisions for consequential damages caused by roof leaks or failures.
- The warranties are prepared and drawn by the legal departments of the manufacturers, not the building owner or representative.
- They limit warranty coverage to repairs for roof leaks or failures that relate to improper installation, and they make the installer/contractor liable and responsible to fix his own mistakes. (A logical extension is: *“Is the school paying warranty fees to the manufacturer so that the manufacturer can tell the installer/contractor to repair what they improperly installed during the original construction process”?*)
- Many of the warranties are filled with caveats and restrictions imposed upon the school district or building owner. Such warranty language may include a substantial list of reasons or causations for the invalidation of the warranty, making compliance by the school virtually impossible.
- The classic “Catch 22” is the automatic invalidation of warranties if the roof or components are improperly installed. The school district finds that they have a warranty that is invalid because the installer did not properly install the roof.

The solution to these disastrous situations is to prevent them from occurring. When a school district engages an architect or general contractor, he should contact the school district in writing, advising his client to engage the services of a qualified metal roofing consultant to provide Quality Control for the project. Architects and general contractors should advise school districts that they are not metal roofing experts and that they do not provide Quality Control services related to the inspection and oversight of the installation of the metal roofing system. Such letters and recommendations provide multiple benefits--the GC or architect is on record to the school district as to his recommendation, which, if accepted, can only benefit the quality of the project, and may serve as powerful testimony to his concern for Quality Control.

Since ninety percent of improper installation procedures are covered and closed to view upon completion, identifying problems can be accomplished only by a qualified metal roofing consultant or by intrusive and destructive inspections to the installed system. The cost of remedial repairs or replacement of metal roofing systems on occupied buildings can be several times the cost of the original construction. Structural or interior damage due to leaking roofs may result in substantial added costs as well.

It is certainly in the best interest of all parties that the original installation is the right product, the right profile, properly installed and waterproofed, and in compliance with wind uplift and code requirements. Quality Control creates a “win-win” situation for everyone associated with the project.

The advice that your grandfather gave you still stands...

“Do it right the first time.”

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