

The High Cost of Remedial Repairs on Metal Roofing . . . Why?

By ROBERT STANFORD, RRO

AS A METAL ROOFING CONSULTANT, I AM often asked why remedial repairs are so costly. Architects, owners, contractors, surety and construction bonding companies, attorneys, and even metal roofing manufacturers all get that "deer in the headlight look" when they realize that repairs are often more costly than the original construction. How can that be?

- ▼ One project had an original metal roof construction cost of \$700,000. The cost of remedial repairs was over \$1,600,000.
- ▼ A similar project cost \$350,000 for a metal roof system. The owner expects to spend approximately \$1,000,000 for remedial repairs.
- ▼ A school district paid \$400,000 for a metal roof system. They now expect to spend \$700,000 to \$900,000 for its replacement.

To say that these situations can generate frustration, disbelief, and even anger is an understatement.

There are at least six separate and distinct factors that impact and contribute to the cost of remedial repairs for metal roofing. These factors are as follows:

1. The "Botched Surgery" Analogy

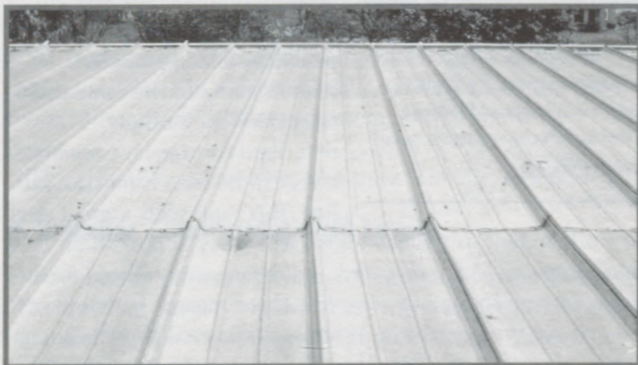
Imagine that you are an experienced, respected, and competent surgeon. A patient who has recently had major abdominal surgery and is not doing well comes to you for consultation and examination. Upon examination you discover that there are ruptured sutures inside the patient, resulting in internal bleeding. He also has a fever and a seri-

ous infection. X-rays reveal medical instruments that were left inside the abdominal cavity during the original surgery (clamps, sponges, etc.). These are serious, life-threatening concerns. You are charged with the responsibility to make necessary surgical corrections (remedial repairs) and restore the patient to good health. Realize that, from most outward appearances, this patient will look the same after the completion of your corrections (remedial repairs) as he does before. There are several key factors at work in this example:

The repairs (removing clamps, sponges, etc.) may take only a few minutes to complete, but you are going to have to perform intrusive surgical procedures on the patient to get to this work. In other words, fixing the problem may be quick; getting to the problem may take hours. This is a primary factor in remedial repairs on metal roofing. The actual repair or material replacement may take just a few minutes to perform, but it may take a full day or more to remove materials to get to the damaged area, and a full day or more to replace and re-install those same materials. This requirement and concept is often very difficult for persons to see or appreciate.

At the time of his original surgery, the patient was healthy and in good condition. Now he is sick. Care and concern for his state of health are more of an issue now than at the time of the original surgery. This may require additional medical staff members, specialists, time, etc.

We can look at necessary remedial repairs on a metal roof in the same context as the illustration above. Standing seam metal roofing has a fairly high level of complexity. Building

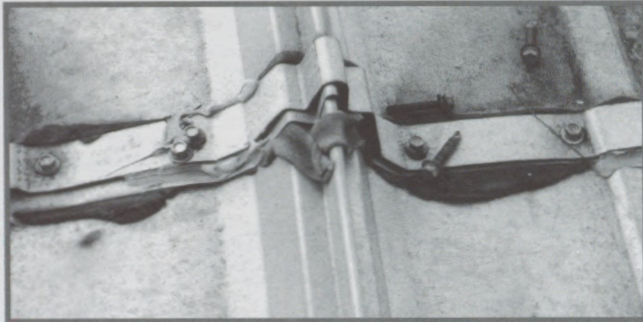


These are standing seam metal roof panels "out of module." As a result, it is difficult to make and hold watertight seals and structural back-up plates do not align.



Shown here is a failure to provide required structural support at the eaves. As a result, "cupped" panels hold water, there is damage to the Galvalume coating on the panels, and water is forced back into the building at the wall and eave lines.

design factors often make metal roof systems "accessory intensive." Metal roofing is sequential in its installation methods and procedures. Many systems are also directional in their method of installation. (Start at one side and end up at the other.) So while the scope of work for certain remedial repairs may be simply defined, such as: "Remove the one



punctured panel and replace with a new panel," it may require disengaging and removing substantial portions of the roof, flashings, and accessories just to get to that damaged panel.

All of this takes time, skill, care, and attention to accomplish. Those items cost money.

2. Redundancy

This is sometimes a by-product of the "botched surgery" analogy as outlined above. It is often necessary to make repeated or redundant efforts to achieve repairs. An actual case history of one recently repaired project illustrates this point. Consider the sequence:

The Problem: Water infiltration into the building at three places:

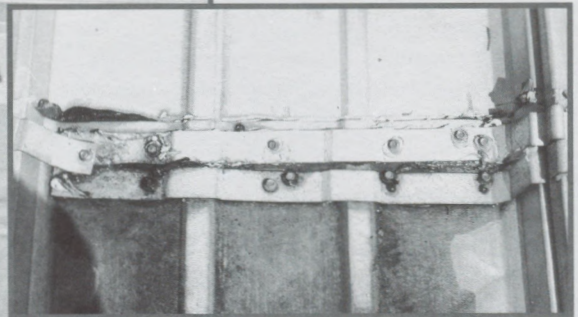
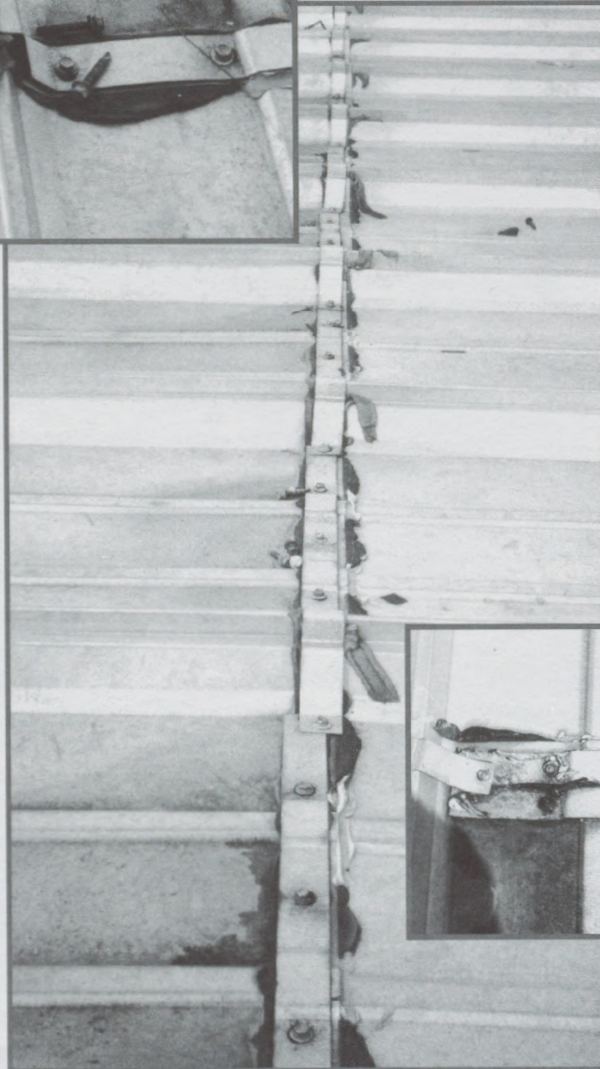
- (1) The eave.
- (2) Mid-point at the roof panel lap joints.
- (3) The ridge closure and cap flashing.

The repair method dictated the following requirements:

- ▼ Disengage the metal panels from the eave line.
- ▼ Disengage at least 20 l.f. of the standing seam from the eave back up the roof.
- ▼ Remove structural clips and fasteners for the entire 20' line of panel disengagement.

- ▼ Raise the panels up high enough to work under them at the the eave line (about 6") .
- ▼ Place a support member (2x4, 2x6, etc.), under the raised panels to hold them in place during the repair procedure.
- ▼ Remove eave cleats, damaged flashings, fasteners, old sealants, etc.
- ▼ Clean all remaining surfaces.

- ▼ Install new sealants, flashings, etc., as required by the Scope of Work / Outline of Remedial Repairs as provided by the metal roofing consultant.
- ▼ Follow manufacturer's installation instructions and re-install the panels, clips, fasteners, etc.
- ▼ Mechanically seam (if required) the panels, clean all exposed surfaces, prepare work for inspection and water testing by metal roofing consultant.
- ▼ Move on to the next areas of repair at the panel lap joints, closures and ridge cap.



The vertical photo shows a row of improperly installed "cinch straps." Top left, improperly installed cinch straps at the panel lap joints. Right inset: ponded water where the contractor used double cinch straps and improper fasteners. All of these actions can result in roof leaks, interior damage, ponding water, and damage to the Galvalume coating/finishing.

With minor alterations to the descriptions and Scope of Work, the additional repairs at panel lap joints, etc. will require many of the same treatments and methods as described for the eave repairs.

As can be seen from this outline, this represents a great deal

of work and effort to accomplish what may appear to be minor repairs. Many repeated, redundant, and tedious procedures come into play to complete these repairs. It should be easy to see that the repair process, as outlined above, can take more time and effort than the original installation of these materials. More time and effort equal more cost.

3. The "Do It Right The Second Time" Factor

This one is easy and short. Simply stated, "It usually takes longer to do something right than it does to do it wrong." Taking longer equals more time and effort. More time and effort equal more cost.

4. New Construction vs. Occupied Building

New construction scheduling places the roofing contractor and roofing material on the jobsite after the erection of structural members and installation of roofing substrates. Usually the plumbing, electrical, and mechanical rough outs are being built and installed during this same sequence. The building is "on slab," and there are no finishes in place.

Such circumstances allow the roofing contractor the opportunity for "production labor" in the installation and completion of his work. Translation: If a rain storm comes, the roofing crew simply gathers their tools and goes home. After all, any rain that may come into the building is simply going to be on the slab. There is nothing to damage from water infiltration. The concrete slab won't wash away.

Obviously, this is not the case with a completed and occupied building. Now water infiltration goes onto floors, carpet, walls, ceilings, furniture, phone lines, electrical conduit, equipment, HVAC controls, computers, materials, and people.

It follows that remedial repairs become a matter of "weather watching," and rob the contractor of the opportunity for production. Concerns for making sure that no leaks occur in the occupied building far outweigh the desire for speedy installation. The contractor cannot open more roof than he can protect, cover, or complete in the event of inclement weather. It is not uncommon to open a specific area for repairs, then be forced to cover, close, and protect that same area when bad weather approaches, then re-open the area to continue the repairs after the weather has passed, only to be forced to repeat the protection process a few hours later when more inclement weather comes calling.

The contractor may schedule repairs for a certain portion of the job, engage in the repair work and process, then be informed by the building occupants that he needs to stop work in this area for a period of time. The reason may be that noise from the repairs is being translated into the classroom, store, office, conference room, exam room, etc., below.

These items and concerns take time. Time equals money.

5. Installer / Contractor Skill Levels

If a building project is in need of remedial repairs (See # 1: "The Botched Surgery" Factor) then it follows that the original installation was improper. Improper design and metal roofing profile selection are factors that often result in leaks and failures. Quality-minded manufacturers are now requiring

that they participate in the design process and geometry of metal roofing system applications before they will agree to issue Weathertightness Warranties. While poor design and product selection can lead to problems, it is improper installation that takes the dubious award for being the greatest single problem in the metal roofing industry. Most likely this holds true for all roofing systems and materials. Logic leads to the conclusion that the original contractor either did not possess or did not apply the skills required to accomplish a quality, weathertight installation. A higher level of experience and skills is required to remedy the situation. Higher levels of skill equal higher cost.

6. The "Fish Bowl" Factor

There is a predictable time cycle leading up to remedial repairs. A common "gestation period" is from 2 to 4 years after original construction completion. Within this time frame the building owners or occupants have most likely endured repeated leaks that produce interior damage and maximum frustration. Probably they have made the phone calls, conducted the tours, attended the meetings, reviewed the warranties, witnessed attempted repairs (usually the caulking gun warriors), and called their attorneys. At this stage, these persons are not amused, nor do they tend to be light-hearted or casual about the problems they have endured. They are skeptical, wary, and mistrustful of any

promises made by people who are now going to "solve the problem." In a sense, the contractor charged with the responsibility of remedial repairs may be sailing into hostile waters.

These conditions and attitudes lead to the "Fish Bowl Factor" listed above. This means that the building owners are going to inspect, challenge, observe, ques-

tion, and pay close attention to everything that is done. They may be demanding, abrupt, and even uncooperative with the persons performing the remedial repairs. "We are watching you" may be their bywords.

The building owners are going to expect accountability and documentation for all actions and repairs. Building maintenance persons or other staff members may be assigned to oversee the repairs. They are probably going to hire or engage the services of their architect or consultants, and expect daily involvement and reports from these persons.

Kindness, patience, and outstanding "people skills" are required to meet these challenges. Persons performing the repairs are going to be asked to explain what they are doing and why they are doing it that way. Resolution and customer satisfaction are not going to be achieved if the contractor is harsh, abrupt, or irritated with the owner or their representatives.

It takes time to gain the owner's confidence and provide the comfort level that is needed. Time is part of the definition of patience. Time equals cost.

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Conclusion:

The real key, of course, is to eliminate the need for remedial repairs. There is simply no substitute for good design, quality product selection, and proper installation. Building owners can achieve this goal by engaging the services of a qualified metal roofing consultant and using those services to achieve the results listed:

- ▼ Building design and roof geometry that is compatible with the desired metal roofing system. Selection of a metal roofing manufacturer who provides engineering assistance, along with well tested and well designed metal roofing profiles and systems.
- ▼ Plans, specifications, details, contract documents, shop drawings, and design/installation manuals that assist qualified contractors to perform proper installation of the metal roofing system.
- ▼ The issuance of meaningful, well defined warranties from quality metal roofing manufacturers.

Everyone benefits from quality. Building owners are the final customer in the construction business. Whether they pay one dollar or fifty million dollars, if they do not get the materials and installation set forth in the contract documents, then they paid too much. RCI members have an obligation and duty to assist, educate, and help all persons interested in quality.

About The Author



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Robert Stanford is owner of Robert Stanford & Associates, Inc., specializing in metal roof construction and consulting out of Missouri City, TX. He is a licensed contractor, a Registered Roof Observer and is approved as a Metal Roof Consultant by MBCI. Stanford has also served as an expert witness. Visit his web-site at www.rstanford.com.

Study Refutes Coated Metal Roofing Allegations

A new study commissioned by the British Department of the Environment, Transport and the Regions into allegations that widespread problems exist with coated metal roofing and cladding systems has determined that such accusations are unmerited.

The study, based on investigations across Europe and North America, was carried out by the British Board of Agrément (BBA).

The most widely used materials for producing organically-coated metals used for cladding and roofing are coil-coated

and roll-formed into trapezoidal profiles. The incidence of reported failure is low, according to the report, and indicates a "failure to achieve the potential properties of current products rather than any fundamental deficiency in their performance."

The study stressed cooperation between parties to the contract, the need for qualified inspection to assure proper installation, and maintenance afterwards as primary concerns.

Environmental concerns against PVC manufacturing conditions are unconvincing, according to the report. At the same

time, the technical benefits of the use of chromium in primers and pretreatments is high, while risks to health, safety and environment are considered low in properly controlled automated plants. The emission of volatile organic compounds from the powder coatings process or coil-coating line (where vapors are incinerated) is also considered zero or low, according to the report.

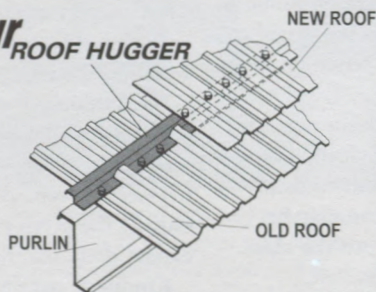
Many companies in the field of coated metals are international.

For the report, *Coated Metal Roofing and Cladding*, write the publisher, Thomas Telford Publishing, 1 Heron Quay, London, E14 4JD, or phone 0171 665 2464 or fax 0171 537 3631.

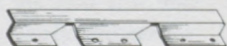
—Roofing, Cladding & Insulation Magazine

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