

Old or Damaged Metal Roofing Need Replacing?

By

Chuck Howard, PE

Metal Roof Consultants

It's hard to believe but the fledgling metal building industry I remember from the late 60's thru the mid 80's is now pushing 40 years old! The industry built a lot of buildings during that period, in excess of 18 billion Square feet by most accounts. Due to industrial demands at the time, the buildings grew larger and larger. We did not have the option to use a concealed, moveable clip until the mid 70's, and expansion/contraction forces have played havoc with these large roofs. The large warehouse and industrial metal building roofs of this circa are starting to fail as you might expect. What are our options when we get to this point with a property?

If the building owner is fortunate, the building should have ongoing operations inside, critical storage materials, or tenants that we do not want to be disturbed while we make this required repair. Taking off the old roof and replacing it with a new metal roof, a typical solution, presents us with numerous costly risks we would rather not face.

A structurally sound, long term solution for metal roof replacement is required. This solution must allow for upgrades to higher wind zone requirements, newer panel systems with energy efficient reflective finishes, greater insulation, elimination of exposed fasteners, and added capacity to properly accommodate expansion and contraction. All this work needs to be performed without shutting down the ongoing operations and exposing building interiors to the elements.

In 1991, a product was developed and patented that satisfied this growing demand of re-roofing existing metal roof with new metal roofs, without removing the original roof. This product uses a “Notched Zee” product, as manufactured by Roof Hugger, Inc. (www.roofhugger.com), and provides the best solution for these conditions. This modified purlin spans over the existing panel ribs and rests firmly on the flat portion of the existing roof panel, allowing the fasteners to go directly through the base flange of the zee and old panel, and into the existing structure. It can be designed and manufactured to a definite height for job specific ventilation or insulation requirements.

As we all know, what can be devised in plan does not always work in the “real world”. This method of reroofing an existing metal roof with a new metal roof, without having to remove the existing roof, however, is one of those plans that actually does work. The obvious benefits are as follows:

- 1. No need to remove the existing roof panels, exposing the interior to the outside elements.**
- 2. No interior space contamination from air borne particles such as dust, dirt, rust, etc. caused by the roof removal.**
- 3. No need to remove existing roof insulation. Additional insulation can be added between the old and new roof, improving existing energy performance.**
- 4. Edge and corner conditions, per ASCE 7, require higher wind uplift resistance than was originally designed. The Roof Hugger system can be designed to meet these new code requirements. This design work must be performed by a licensed professional engineer in the state where the system is to be installed. The professional will identify the loads per the applicable code, review the panel system capacities and check the framing system to insure each element will adequately perform its’ structural task.**
- 5. The new roof section, consisting of the original building purlin or metal deck, the original roof system, the new structural Hugger attached to the**

structural elements of the original materials, and the new metal roof panel, is structurally stronger than the original metal components alone.

A Recent example of how this system works can be demonstrated by a project I designed and consulted on at a printing press facility in Mobile, Alabama. The following is an account of the project:

A hurricane had exposed the fact that there were some possible deficiencies in the design and/or installation of the metal roof system. Further investigation revealed that the panel clip spacing for a metal roof, installed about 2000, was extremely random and did not meet code at the time of its installation. After serious consideration of options how to correct this problem, including the possibility of removing the existing roof and replacing it with another metal roof, it was determined to use a Roof Hugger system and install a new metal roof system. The owner's architect was concerned about the cavity between the roofs being conducive to condensation formation, which was solved by filling this cavity completely with un-faced fiberglass insulation. In addition, because the existing clip spacing's were so random, many of the edge and corner conditions had insufficient attachment points and/or incorrect attachment spacings. With the use of this "Notched Purlin System", these conditions were corrected by locating the new sub-structural members where needed to yield the proper spacings. All work was done without adversely affecting the continual 24 hour per day operation inside the building.

The contractor for this project was Keith Moseley Construction, Saraland, Alabama.

The Roof Hugger System has proven to be an extremely effective solution to reroofing the millions of SF of older warehouse and industrial metal building roofs, as well as allowing for a method to rectify faulty installations of current metal roofs. This method has a proven track record, with over 50 million SF of product in place, and should be considered whenever an existing metal roof requires retrofitting. This is a structurally sound way to re-roof that metal roof, without having to go to the time and expense of removing it. Use this method

to rejuvenate your metal building or metal roof and give your building and its occupant's new life.

Author's note:

The author of this article, Chuck Howard, PE, was privileged to be involved with this and numerous other case studies. He can be contacted at chuck@metalroofconsultants.net with any questions.