

When Is Coating a Metal Roof Not the Best Choice?

By Dale Nelson, President, Roof Hugger, LLC Retrofit Systems

From time to time, roofing contractors will encounter an existing metal roof rehab project only to be challenged as to whether the roof is suitable for a coating or not. Millions of square feet of existing metal roofs are coated each year, but before assuming all metal roofs are suitable for coating you should look a little deeper.

Common Issues

What is it about a metal roof that would make it unsuitable for coating? Metal roofs are unlike most other roofing types. You need to be able to identify how to tell if a roof can't or shouldn't be coated before offering that as a solution to the facility owner. Here are some cases when an alternative solution may be the best choice:

- **Corrosion:** Metal roofing is not a covering, it is a structural component of the building and its design. It is common to see some corrosion on older metal roofs, but when it is severe, you need to look more closely, particularly if the roof has been known to be leaking for an extended period of time. The panel end laps, curbs, equipment penetrations, ridge, and eave areas should



Photo courtesy of Roof Hugger, LLC

be looked at carefully from inside the building as well as from outside on the roof. Long-term roof leaks can cause the structural purlins and/or eave struts to be reduced to something resembling Swiss cheese. If you see this, the building is structurally compromised, and a structural engineer with knowledge of metal roof/building systems needs to be involved. If the corrosion is severe and perforating of the roof

panel itself is noticed, coating may also not be viable, as it can present a life safety walking hazard on the roof.

- **Fastener Problems:** Leaky or badly corroded fasteners can also result in corroded weak areas in the roof panels immediately around the fasteners. The fasteners not only hold the roof down, but they transfer critical diaphragm strength to the entire structure. A fastener cap will cover a structural defect but not correct it. The cap will not keep the roof on the building in a storm or transfer diaphragm loads to the structure. Improperly coating a compromised building will likely hide the problems, but it may also put you in the liability chain should a structural failure occur. Legally, you are a roofing professional and should be able to recognize when you need to seek additional expert advice.

It is common to see some corrosion on older metal roofs, but when it is severe, you need to look more closely, particularly if the roof has been known to be leaking for an extended period of time.

Leaky or badly corroded fasteners can also result in corroded weak areas in the roof panels immediately around the fasteners.

- **Thermal Movement:** Metal roofs are subject to significant thermal expansion and contraction during everyday temperature changes (+/- 1" per 100', or 2.5 cm per 30.5 m). Aluminum roof movement is even greater. Especially vulnerable are those roofs that have exposed structural fasteners (through-fastened roofs). Roofs where the panel runs (from eave to ridge) exceed 80 lineal feet (24.4 m) are especially at risk. Standing seam roofs that have thermally active clips are designed to allow movement and typically do not suffer from this same problem. If you observe bending or cracking, long run panels, slotting of fastener holes, torn-apart end laps, or other indicators of excessive movement, coating, despite its flexibility, will only hide the problem, and it will reoccur.
- **Penetrations:** Roof-mounted equipment and pipe penetrations can

be a constant source of problems in metal roofs, not only because they may have been installed incorrectly but because of differential movement between the roof and the curb-mounted equipment. Coating may help leaking for a while, but the forces are huge and frequently need further attention. In general, eliminating or reducing roof-mounted items whenever possible is a good practice; complex flashing can be eliminated and foot traffic significantly reduced. It's also wise to never block the flow of water upslope from any curb; filling the area between the major panel ribs will cause water to pond on the roof, and metal roofs are never designed to have ponding water.

- **Additional Weight:** Metal roofs are sensitive to additional weight. Look for indications of sagging of the purlins between frames or significant dimpling around fastener heads.



DID YOU KNOW?
FISCHER'S FMP SERIES ARE BEING USED ON THE NEW DRY FILM THICKNESS (DFT) MEASUREMENT DRONES FROM APELLIX.

Measure coating thickness gauges on ships, bridges, offshore installations, wind turbines and more

- Precise readings in accordance with IMO-PSPC and SSPC-PA2
- Continuous scan mode
- Wear resistant probes
- Same probe for aluminum or steel
- Thick protective layers



Contact Fischer

860.683.0781
www.fischer-technology.com
info@fischer-technology.com

Fischer

Reader Inquiry at coatingspromag.com/inq118

Notes From the Field

It is common to find that existing buildings have had suspended or mounted service equipment added since their initial construction. This equipment could include fire sprinkler systems; heating, ventilation, and air conditioning (HVAC) equipment; plumbing; lighting; ceilings; and insulation. The weight of suspended materials and equipment can be significant, and the original 20 PSF (97.6 kg/m²) live load could easily be reduced to 10 PSF (48.8 kg/m²). The result is simply that the building is no longer compliant with the building code governing the life safety of its inhabitants.

- **Miscellaneous:** Additional items that can be cause for a more thorough review include change of occupancy, need for higher thermal resistance to reduce energy costs, and need to




“harden” the building to protect the contents by increasing the wind or snow load capacity of the roof.

Other Options

When a roof coating contractor is presented with one or more of these cases, and it looks as if coating may not be the best solution (despite price), what should he or she do? There are several other retrofit options that may be right for the roof, such as a new metal roof recover (removal and replacement), a thermoplastic polyolefin (TPO) overlay, or a metal-over-metal retrofit system. All of these have benefits and drawbacks, but if a coating cannot be used on a roof — whether because of corrosion, thermal movement, penetrations, additional weight, or another challenge — one of these options may be the best solution for your client. As the roofing professional, it's up to you to do additional research, call other professionals, and find the best solution. **CP**


DALE NELSON is a co-founder of Roof Hugger, Inc. He is also a past chairman of the Metal Construction Association (MCA) and currently serves on the Technical Committee of the Metal Building Manufacturers Association (MBMA). He is a licensed contractor in the state of Florida. Nelson has been in the metal construction industry for more than 40 years and involved in millions of square feet of new building construction and retrofitting of existing metal roofs. For more information, contact: Roof Hugger, LLC, (800) 771-1711, www.roofhugger.com



SINCE 1976
thermal·chem[®]
HIGH PERFORMANCE COATINGS

DecoEssence

Decorative three-coat system that combines a specifically formulated metallic pigment blend with a two-component clear polymer matrix to produce a durable and seamless surface with incredible depth and vibrancy. By incorporating various application techniques, the floor can be finished with many one-of-a-kind finishes and textures where a unique appearance is desired. This floor system is impervious to most common chemicals and provides a durable surface that requires minimum maintenance.



Advantages:

- Can be applied over old or new concrete
- Durable surface that is easy to clean and maintain
- Seamless and sanitary with good chemical and stain resistance
- Each floor is unique and can be finished with a matte, satin or gloss urethane topcoat

www.thermalchem.com • 800-635-3773

Reader Inquiry at coatingspromag.com/Inq1118