

by Ryan J. Dexter, P.E.

When to seek extra protection for truss plates used in corrosive circumstances.

Metal plate connected wood trusses will perform adequately in most construction environments provided that they are protected with traditional materials and correct roofing practices after permanent installation.

However, special protection measures may be required when metal plate connected wood trusses are used in adverse conditions. These conditions include exposure to high humidity, as in truss installations over swimming pools. Certain agricultural environments also pose problems, as do highly caustic chemical atmospheres above salt storage buildings, fertilizer storage sheds, brooder chicken houses, livestock confinement buildings or near salt-water environments. We recently received the following question regarding this very subject.



Question

I am a Building Designer on a salt storage building project. I would like to use metal plate connected wood trusses in the design. What should I specify for the metal connector plates?

Answer

Metal connector plates are galvanized for standard use conditions where moisture content of the lumber is 19 percent or less and there is no exposure to corrosive substances. If the salt storage facility you are designing has free flowing air throughout the building, it should be fine with no additional steps. If this is not the case, additional steps should be taken in order to resist plate corrosion.

For several years, truss plate manufacturers supplied stainless steel truss plates when special protection was required. Stainless steel connector plates were supplied as a substitute when specifications for projects near the ocean called for metal plates that were "double dip" galvanized. For specific information regarding connector plates, contact the component manufacturers or their plate suppliers. They can guide you on the best structural and economic solutions for your project.

Where special protection is necessary, protective coatings such as Epoxy Polyamide, Coal Tar Epoxy and Asphaltic Mastic may be applied to the connector plates after the trusses are installed, and may afford a better long-term solution. The coating seals the plate to the wood, fills in between the slots, coats the edges of the exposed steel, and provides a tight membrane protection for the plate. Its use has been tested on steel structures subjected to direct salt contact at oceanfront locations on rolled steel members, or exposed metal connector plate joints.

Highly acidic or alkaline environments also require special considerations. In such circumstances, where the environmental effect on the trusses is unknown, refer to an experienced wood truss consultant.

You can find more information about the plate coatings in the National Design Standard for Metal Plate Connected Wood Truss Construction ANSI/TPI 1-2007 Section 6.5.

at a glance

- Standard metal connector plates are suitable for use in lumber with moisture content of 19 percent or less and in building applications with no exposure to corrosive substances.
- Connector plates used in trusses exposed to high humidity or caustic chemicals may need to be treated to prevent corrosion.
- A variety of protective coatings can be applied to truss plates in situations where special protection is necessary.

Hot Dip Galvanization:

This process adds an extra layer of galvanization to the metal connector plate after it is manufactured but before it is assembled into the truss. The truss manufacturer may have this done at any galvanizing shop they choose, but it should follow the guidelines outlined in ASTM A153.

Plated Joint Coatings:

Once the truss is assembled, joints can be protected by painted on coatings. Keep in mind that these may require periodic touch-ups. Refer to Section 6.5 of ANSI/TPI 1-2007 The National Design Standard for Metal Plate Connected Wood Trusses Construction and its Commentary for some acceptable coatings and how they should be applied. **SBC**

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