

Fall Protection for Metal Roofing Systems

Taylor Metal Products frequently fields questions about using fall restraint or fall arrest systems on metal roofs. Standing seam roofing, in particular, can appear to offer convenient points for attaching these devices. However, the significant forces that fall protection equipment must resist far exceed the design strength of metal roof panels, their clips, and the associated fasteners. As a result, Taylor Metal roof systems are not engineered to support the extreme loads generated by OSHA-compliant fall arrest or restraint systems.

ANSI Standards

- **ANSI Z359.18** This consensus standard defines safety requirements for anchorage connectors used in active fall protection systems. It generally imposes more rigorous criteria than the minimums required by OSHA and is available through ANSI.org.
- **ANSI Z359.1** (now obsolete) This was a previous consensus standard for fall protection systems.

Federal OSHA Requirements

OSHA establishes clear performance criteria for fall protection systems. Two key regulations are especially relevant:

- **29 CFR 1926.760(d)(2)** Fall arrest system components used in fall restraint applications must meet the requirements outlined in §1926.502 (see Appendix G). Workers must use either body belts or full-body harnesses.
- **29 CFR 1926.502(d)(15)** Anchorages for personal fall arrest equipment must be independent of any support used for platforms or suspended work. Each anchorage must be capable of supporting a minimum of 5,000 pounds (22.2 kN) per attached employee. Alternatively, the anchorage may be designed as part of a complete personal fall arrest system that maintains a safety factor of at least two, provided the system is installed under the supervision of a qualified person.

Although certain fall protection products are designed to clamp directly onto standing seam roofs, Taylor Metal Products is not aware of any system that fully evaluates the entire load path. A complete analysis must include not only the connection between the device and the seam, but also the effects on the roof panel, the panel-to-clip connection, the clip-to-fastener connection, and the fastener-to-building structure connection.

Most available systems primarily test for loads acting in the downslope direction (a fall toward the eave). However, forces applied perpendicular to the seams (a fall toward the gable) must also be considered. These lateral loads can create complex prying actions within the roof assembly that are often overlooked.

Recommendation

Because Taylor Metal roof systems are not designed to withstand the high loads required for compliant fall protection, fall restraint and fall arrest anchorages should be attached directly to the building's primary structural members—independent of the metal roofing. Proper flashing details should be incorporated at any roof penetrations to maintain a watertight seal.

Additional guidance on suitable anchorage types and recommended flashing methods is available upon request from Taylor Metal Products.