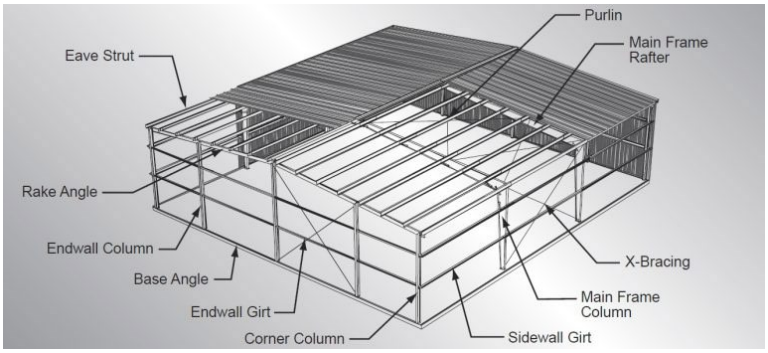
COHOTA Guide to Hangar Repairs & Maintenance

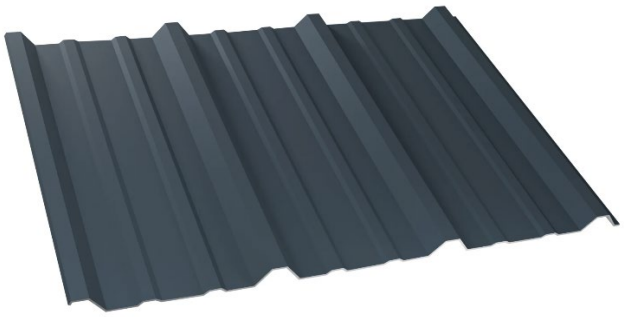
Part 1: Hangar Roofing – Overview

I. Roof Construction

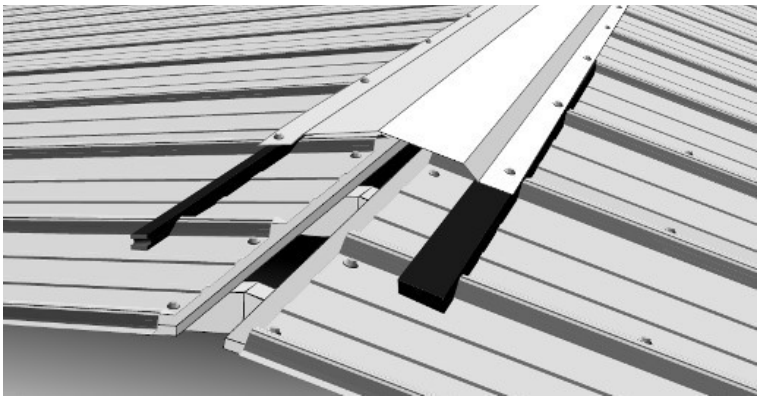
Metal roof corrosion is one of the most significant problems that can affect hangar owners, and one of the biggest potential areas of expense. Understanding how the roofs of our hangars are constructed and how water affects them is very important to ensuring a long life for your hangar.



Most metal hangars are built from sheet metal panels attached to a structural metal frame (see above.) The hangar sides and roof are made from sheet metal formed into what are called "R-Panels," which have overlapping sections that fit together at the attachment points. Roof panels are usually made from "PBR-Panels," which have additional overlapping metal that adds strength and weather resistance. A typical PBR-Panel is pictured below:



Metal hangars are typically sloped, and the place at the top where the two sloped sides meet is called the “ridge”. To protect the ridge area, a “Ridge Cap” is used, which is attached on top of the sloped sides, as in the illustration below:



The panels and ridge caps are attached with special roofing screw that have a one-piece washer and a gasket for sealing. The panel joints and attachment points must be sealed with Butyl Rubber sealant, which is usually in the form of a tape or tube caulk.

II. Roof Corrosion

The major cause of metal roof corrosion is contact of the metal with water over long periods of time, which leads the metal to rust. This is usually caused by inadequate drainage of water from the hangar after it rains. Many of the hangars have gutter systems (including shared gutters between hangars) which have been damaged or compromised by water, wind, nesting birds and other factors, and may be inadequately sloped.

Other conditions include poor or degraded sealing between panels, degraded rubber washers around screws, and previously damaged roof panels, which results in poor water flow away from the roof. This can lead to leaks in the roof that allow water to enter under the support purlins by

capillary action and can also lead to water pooling on the hangar floors, which can cause corrosion in the structural steel joints where they meet the floor.

Another significant cause of roof failures appears to be wind-blown rain and dirt getting stuck between the ridge caps and the roof panels causing rust in the structural steel.

III. Roof Repairs or Replacement

If panels are still intact, and all you are dealing with are some leaks, you can seal all the joints with Butyl Rubber sealant and replace all the screws with new screws with new rubber gaskets. This is the most cost-effective option and can significantly extend the life of the hangar.

Gutters that are degraded may be cleaned and repaired or sealed, which will usually be the easiest and best option. Gutters may have been originally installed with a *slight* slope for drainage. If there is any way to increase the pitch, it would allow for better drainage and likely longer longevity. Replacement of gutters is possible, but the gutters must be custom formed. If the gutters are not fully deteriorated, repair of the metal would be a much simpler approach.

If panels are degraded to a point where they are no longer intact, panel replacement is likely the only option. Finding matching panels to the old roofing may be difficult, and if too many of the panels are damaged, then complete replacement of the roof may be the best option.

IV. DIY or Contractor

This can be a do-it-yourself job if you are handy and willing to read and follow manufacturer directions. Lifting the panels into place is one of the most difficult parts of the project. Depending on the choice of material, gutter replacement, and other factors, including how much work you do yourself, you should anticipate a project cost in the range of $12k-$20k.

If you contract for a roof replacement, be sure to work with dedicated metal roofing specialists. This will ensure a correct, weatherproof, and long-lasting installation, with proper sealing, screw placement and torque, and handling of materials. Ensure that the installation guide for whatever material you decide to use is followed. Some contractors may not follow the guidelines, which may void the material warranty, and provide a less-than-ideal roof covering.

V. Working with the Department of Airports

A Hangar Modification Request form must be submitted to the DOA. A project that replaces less than 25% of the roof surface appears to be considered a minor repair and does not require a Ventura County building permit. A replacement of over 25% of the roof surface will require a Ventura County building permit in addition to DOA permission. An immediate walk-up permit may be issued by visiting the Department of Building and Safety in Ventura.