



SCOTT D. BONK ASSOCIATES, INC.
A ROOF AND WATERPROOFING CONSULTING FIRM

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METAL ROOFING SYSTEMS

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METAL ROOFING SYSTEMS

Metal roofing systems are specified and installed on numerous projects, including both commercial and residential buildings. Steep roof slope designs are very attractive coupled with the aesthetic value of a metal roofing system. Metal roofing panels have been in the marketplace for scores of years and the popularity of value and aesthetics have been proven. The standing seam and batten profile are the most common panel types in use.

METAL TYPES

There are a number of choices of metal types, such as copper, terne, aluminum, steel and zinc. All have pros and cons.

Copper has a life expectancy with proven performance over centuries, is costly, has few structural characteristics, and calls for a high degree of installation ability. Terne also has a high life expectancy and requires maintenance. Terne-coated stainless requires no maintenance but bears a very high price tag.

Aluminum is more affordable, has some structural capabilities, and has a high coefficient of expansion, which causes a great deal of movement. Steel is least costly, has excellent structural characteristics, but rusts so a protective coating must be selected. Coated steel is the most common choice for metal roofing.

ALLOY COATINGS

Galvalume[®], an aluminum/zinc formulation, is the most popular formulation used worldwide. This concept has superior weathering properties and field studies indicate that when properly formulated, the coating will outlive its warranted life in friendly environments.

APPLIED FINISHES (PRE-PAINTED METAL)

There are many applied paint films and laminates available within the marketplace, but a few paint types dominate most applications. Factory painting of aluminum and steel panels is accomplished through the “coil coating” process. This process produces a high quality finish that is typically warranted against chipping, cracking, checking, peeling, fading and chalking for various time periods.

All pigments will fade over a period of time, some more than others. One of the most common formulations is known by the trade name Kynar®. The trade name for 70 percent PVDF resins is Kynar 500®.

INSTALLATION

Metal panels are installed in a various lengths and widths. One continuous length is common, resulting in no lap seams. Panel widths vary and typically the wider panels will result in “oil canning.” Oil canning is a rippling effect in the panel surface caused by stress. Oil canning can be resolved by reducing the panel width, using a panel profile with stiffening flutes, and ensuring that thermal movement is adequately provided for within the systems design.

Installation methods are critical for performance to include underlayment, exposed or concealed fasteners or clips, flashings and design details at all penetrations.

Design, details and installation methods to include thermal movement and weather integrity should never be sacrificed for economy or convenience. For example, the installer must comply with wind uplift measures to eliminate a “blow off” of the system and folded and cleated details must be implemented to achieve the intended results

Canned construction details and specifications can be outright unconscionable, whereas specifications and design details will pertain to the individuality of each project.

SPECIFICATIONS AND DETAILS

The purpose of specifications is to clearly outline all products required for the project and direct the installer at all areas relevant to the installation.

Detailed drawings depict the finished product and clearly show fasteners, sealant and all intended configurations of flashings and panel design. Details label areas of penetrations, sections through all intersecting changes in the roof plane: vertical walls, eaves, gutters, expansion

joints, exhaust vents, etc., are a few areas. These areas are the most vulnerable to water intrusion and must be correctly detailed.

A complete and well documented set of specifications and detail drawings will result in a superior roofing system.

SUMMARY

A metal roofing system can be aesthetically pleasing and perform for the traditional twenty (20) year period and beyond. Metal type, finish and design are the beginning criteria to consider. Properly prepared specifications and detail drawings will direct the installer at every location. DETAILS...DETAILS...DETAILS are the major factor for the success of performance, both short and long term.

A properly specified and designed metal roofing system will not contain generic and/or typical information but specific installation methods and procedures, including specific detail drawings for each project specific.

A qualified design professional should be engaged to specify and design your project.

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