

# STANDING SEAM SPOTLIGHT

## An Educational Bulletin for Metal Roofing Professionals

### Structural or Architectural Standing Seam Roofing Systems Defined

by Amy Stokes

*Standing seam metal roofing systems can be divided into two basic categories: structural and architectural. Structural and architectural systems are designed, engineered and installed to satisfy completely different roofing requirements. To ensure proper system performance, designers must first understand and clearly identify which type of system is needed.*

#### Structural Panels

- **Low and Steep Slope**

Structural panels, unlike architectural, can be installed on slopes as moderate as 1/4:12. The higher seams, factory-applied sealants, and mechanical seaming of structural panels all contribute to the system's ability to remain water-tight even at near dead-level slopes.

Structural systems can also be applied on steeper slopes, and can even be applied vertically as a wall panel.

- **Spanning Capability**

Structural roofing panels are designed to span across open purlins, and can carry snow and wind loads without a solid deck. Structural panels can also be installed over a solid deck, though the full structural advantage of the system would not be realized.

- **Seams**

Structural panels have higher seams, typically between 1½- and 3-inches tall, in a variety of symmetrical and asymmetrical profiles. Structural panels are either mechanically seamed or “snapped-together,” depending on the design. In either case, a factory-applied sealant in the seam is essential to total weather-tight performance.

- **Hydrostatic Performance**

While structural and hydrostatic may not be synonymous, when specifying a structural panel designers should select a system that offers hydrostatic - or water-tight - performance. An appropriately designed structural panel will offer complete water-tight performance without requiring additional underlayment or substrate.

To ensure selection of a hydrostatic structural panel, make sure the system has been tested per the ASTM E-2140 standard for product submersion (standing water). Do not accept air and water infiltration tests alone as evidence of a water-tight system.

- **Wind Resistance**

Structural panels offer significantly greater resistance to wind uplift than architectural systems. To ensure proper performance for any given project, designers should have wind uplift calculations performed by the panel manufacturer to determine the proper panel profile and width, material gauge, and clip spacing needed to withstand the negative uplift pressures anticipated for an individual structure.



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- **Longer Panel Lengths**

Structural panel lengths are virtually unlimited. Some manufacturers can factory-form and ship panels of more than 80-feet in length. In cases where even longer panels are needed, structural panels can be field formed.

- **Thermal Movement**

Structural systems are designed to allow unlimited thermal movement as the panels expand and contract with temperature variations. This is crucial, especially when longer panels are used. Clip design and system details make this possible.

## Architectural Panels

- **Higher Slopes**

Architectural panel systems are intended for use on steep slope applications (generally 3:12 or greater).

- **Solid Substrate**

Architectural systems require a solid substrate to support the panels. An underlayment should also be installed to protect against moisture penetration. Many contractors have found that a self-adhering modified bitumen underlayment is an excellent alternative to standard roofing felt.

- **Shorter Seams**

Architectural panels have lower seams (½- to 1½-inches) than structural systems. Like structural systems, panels can either be mechanically seamed or “snapped together,” depending on the panel’s design. A factory applied sealant is recommended, although some systems require the use of field-applied sealant tape.

- **Hydrokinetic Performance**

Architectural systems are hydrokinetic (water shedding), not hydrostatic (water-tight). These systems should shed water quickly, and should not endure static water pressure.

- **Shorter Panel Lengths**

Architectural panels are available in a wide variety of profiles, each having its own capabilities and restrictions. Typically, these systems are formed in lengths up to 60 feet.

Hybrid systems also exist, with performance characteristics that fall between those of a structural or architectural system. Hybrids tend to have moderate seam heights, varying slope requirements, and can be installed over a solid deck or open purlins. Because hybrids may be either water tight or water shedding, an underlayment is recommended.

With the demand for metal roofing growing each year, manufacturers are bringing a variety of options to the table. The road to the correct design is littered with these options, and selecting the right system can be confusing. The decision to choose architectural or structural panels should be made with several thoughts in mind:

### What performance do you expect from the panels?

If heavy winds or standing water (snow and ice) are factors, then hydrostatic structural systems should be considered.

### What does your customer want to see when they look at your design?

If the system does not need to be over-engineered for performance, and your customer likes the look of a shorter seam, an architectural system may be the best fit.

### How do your options fit into your budget?

Although structural systems tend to be more expensive, they also eliminate the need for a solid deck. Accessories can also affect the overall cost, so be sure to look at the cost of the entire roofing package rather than a straight panel cost.

Once you determine what you need from a performance, aesthetic and budgetary perspective, your manufacturer’s rep can work with you to find the right system and the right configuration to suit your unique needs.



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