

# ZEUS-SHIELD™

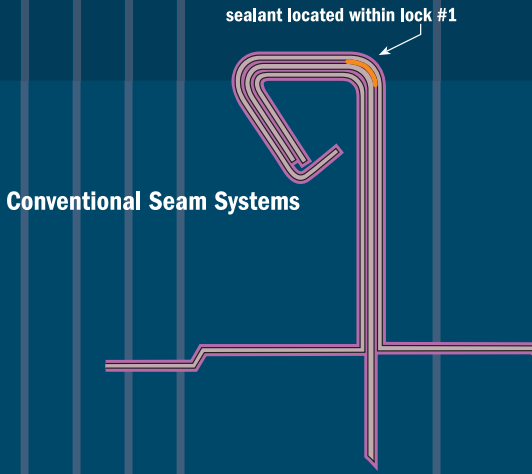
*"The Seam Makes the Roof"*



## SERIOUS PERFORMANCE THROUGH SUPERIOR DESIGN

INTRODUCING A REVOLUTIONARY STANDING SEAM ROOF THAT SUCCESSFULLY COMBINES GREAT LOOKS WITH THE HIGHEST WIND AND WATER RESISTANCE AVAILABLE.

DURABLE - SUSTAINABLE - LIFELONG  
ZEUS-SHIELD STANDING SEAM ROOF SYSTEM



### All Metal Roofs are not the Same

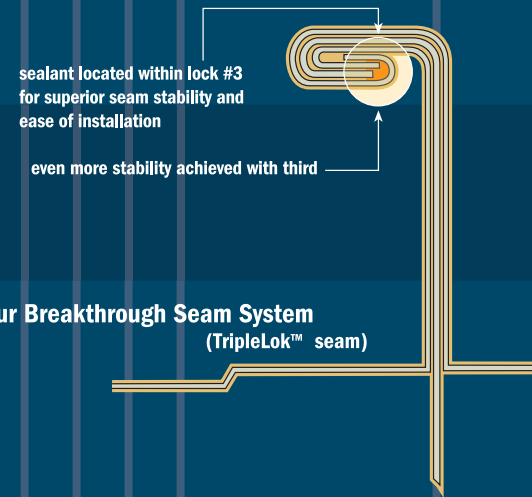
Most standing seam roof systems remain unchanged since 1969, relying on technology that is over 35 years old. New testing methods and wind uplift requirements have challenged the roofing industry to develop a new approach to roof performance. However, to meet those demands, most suppliers have only resorted to a patchwork of modifications on the existing systems.

### Our System is in a "Class of its Own"

To meet the challenge, we researched the latest industry technology to develop a metal roof system with components and techniques that are cutting edge. Our roofing system not only meets today's needs, but fulfills the demands of tomorrow by addressing current and anticipated building codes and roofing requirements.

With durable panel profiles and innovative clips, our roofing system adds structural stability while allowing for thermal expansion and contraction. A patented design tackles the most stringent wind uplift requirements making our general construction and architectural standing seam roof systems truly in a class of their own.

Proof of this superior performance is documented in Factory Mutual (FM) Class 1-90 listing, Underwriters Laboratories (UL) 580 Class 90 listing and ASTM test results (shown on the back of this brochure).



# NO OTHER ROOF COMES CLOSE



Architectural Panel

A NUMBER OF ADVANCED FEATURES COMBINE TO MAKE THIS METAL ROOFING SYSTEM THE BEST IN ITS CATEGORY.



Trapezoidal Panel

# DEPENDABLE ROOF PERFORMANCE

The patented ZEUS-SHIELD™ panel system's technology offers considerable benefits to the roof designer, roof installer, contractor and building owner.

Take a closer look at some of the features and benefits:

## Assured Weather Resistance

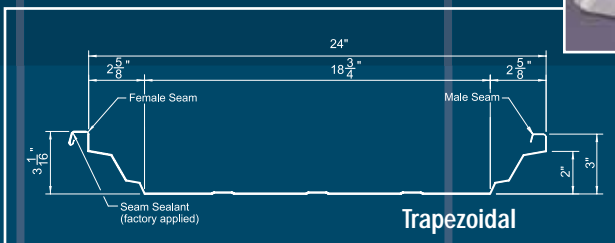
With ZEUS-SHIELD technology, the sealant is protected from severe seam stresses during high wind uplift because of its position within the seam. And the patented panel clip provides even greater air and water resistance, because it doesn't interfere with the sidelap sealant seal.

## Fool-proof Seaming

Say goodbye to damaged panels from seamers that run off-course. With the ZEUS-SHIELD roof system, even inexperienced operators with little or no training can easily accomplish a good seam – because our seam is larger by design, allowing the seamer to lock onto the seam and stay locked until the seam is finished.

## Seam all at Once

Unlike other systems on the market, the ZEUS-SHIELD roof system does not require seaming as each individual panel is installed. This is because the panel seam is partially formed automatically as the panels are placed, allowing seaming to be accomplished after the entire roof has been installed. The result is a roof that is installed quickly, efficiently and without costly wear and tear caused by excess traffic along the unfinished roof.



# Excellent Aesthetic Appearance Backed by Superior Structural Integrity

IT ALL BEGINS WITH A

# SEAM

## The Seam Makes the Roof

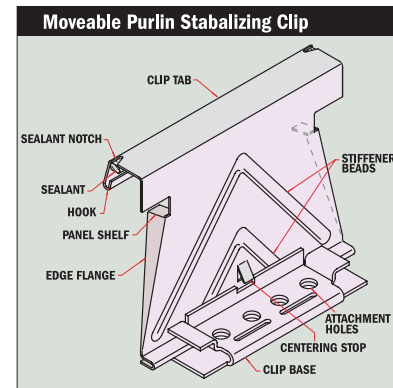
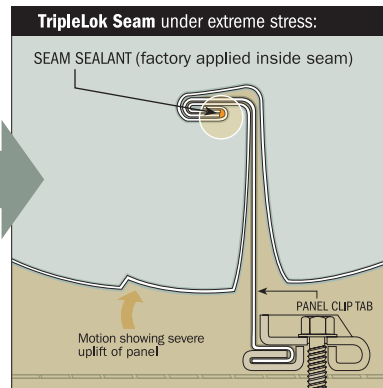
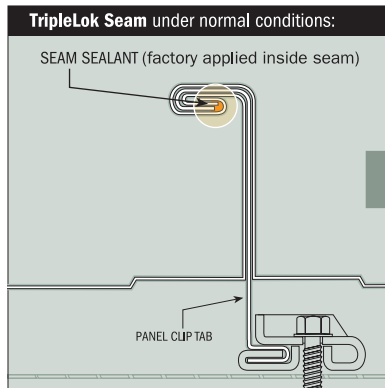
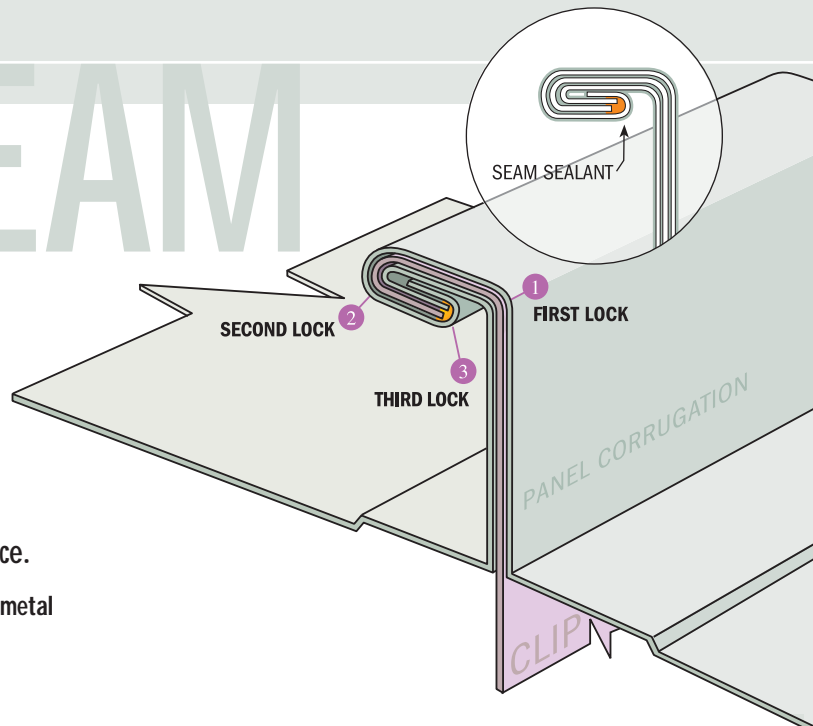
Recent changes in wind uplift resistance requirements and testing methods have called for a new approach to roof performance.

While other manufacturers continue to react to these changes by refitting their existing roof systems with “band-aid” solutions, we have invested in a totally new patented method and technology that is specifically designed to meet and exceed these new requirements.

Now you can have excellent aesthetic appearance in a standing seam roof without compromising superior wind and water resistance.

The breakthrough technology behind our seaming system is the reason why our metal roof is the best in its class for performance, reliability and cost efficiency.

Our proven, patented seam provides superior wind and weather protection under all roof loading conditions. The seam geometry and seaming methods virtually assure that your installed roof will perform as it was designed at minimum cost.



# ZONEABILITY

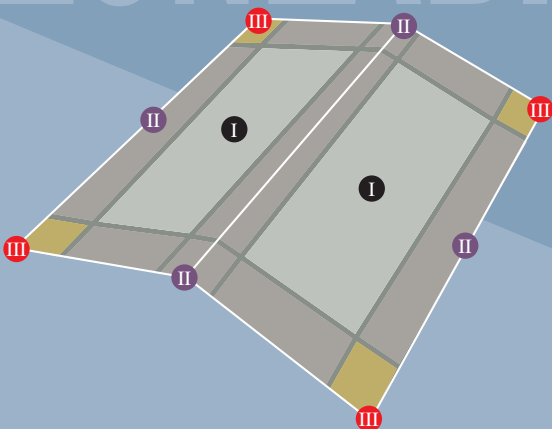
## Highest Roof Value Through Highest Wind Load Applications

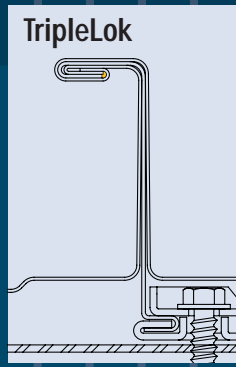
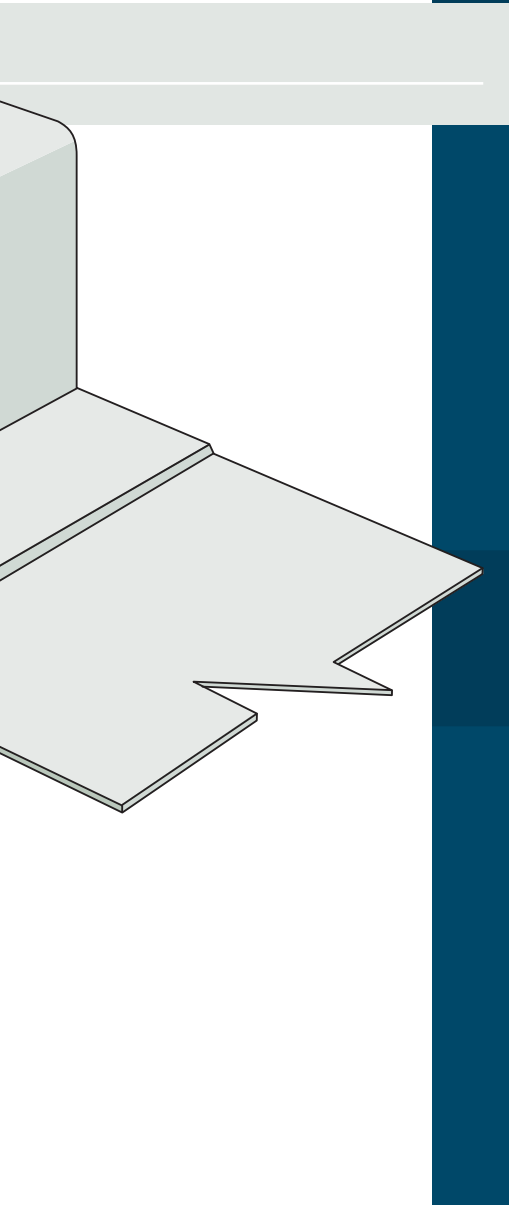
The ZEUS-SHIELD system is specified to ZONE III (highest wind load) seaming requirements for the entire roof area. This preference ensures the total roof area is completed with the same seaming method for maximum uplift performance. There is no need to change purlin spacing, panel thickness or to install external clips over the seam. This results in a lower overall cost of both materials and installation man-hours.

- ❶ Zone I: LOWEST LOAD – main field of the roof (about 80% of total roof surface)
- ❷ Zone II: INTERMEDIATE LOAD – area around the perimeter of the roof (about 15% of total roof surface)
- ❸ Zone III: HIGHEST LOAD – at each corner of the roof (about 5% of total roof surface)

Other roof systems accommodate these various wind load zones by either one or a combination of the following: reduced purlin spacing at higher zone roof areas, thicker panel material in these areas, reduced panel width or exterior clamps over the panel seams. All of these conventional methods call for increased materials, inconsistent structural spacing and added complexity during installation.

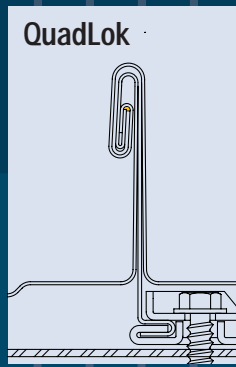
Our patented roof system accommodates all three roof zones – simply and efficiently – by executing one of two seaming shapes. Each shape is formed in the field after the roof panels have been installed, meeting precise roof wind loading requirements for each roof zone without added materials or altering panel/purlin placement.





The TripleLok™ seam is accomplished by seaming the entire seam with an electrical seamer. This seam will provide an allowable wind uplift loading of 48 psf\*.

1. It's the only seam on the market to use the 360°+ 90° seam, which:
  - structurally isolates the seam from the effects of severe wind loading by placing load resisting bends between the seam and the stresses of panel deflection.
  - eliminates the possibility of seam sealant dislodgment or separation during severe wind loading, thereby assuring a water resistant seam throughout the life of the roof.
2. For fool-proof installation all that is required is the placement of an electrical seaming machine on the seam to begin the seaming process. It's virtually impossible for the seamer to run off the seam until it comes to the end of the panel or is removed by the operator.



The QuadLok™ seam is only required in extremely high wind areas such as coastal regions. This seam is accomplished by seaming special roof zones with an electrical seamer, when required. This seam will provide an allowable uplift load of 63 psf\* (or 97 psf over 2'6" purlin spacing).

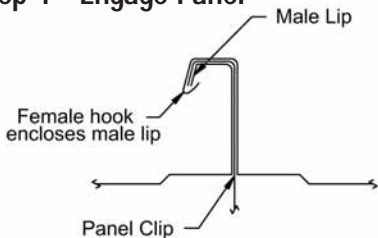
By using the QuadLok seam, the perimeter conditions of roofs in high wind coastal locations can resist wind loads without exterior clamps and brackets that most other roof systems require to meet the Zone III uplift loads.

The QuadLok seam is the only seam on the market that provides higher uplift resistance with 24 gauge panel than all other roof systems using 22 gauge panels.

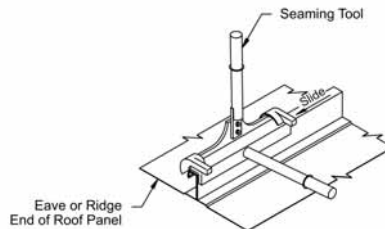
\* when seamed with a 24 gauge panel over 5'0" purlin spacing

All of the above seams and load tolerances are calculated using ASTM E 1592 tests.

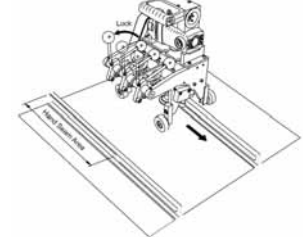
### Step 1 - Engage Panel



### Step 2 - Manual Seaming Tool



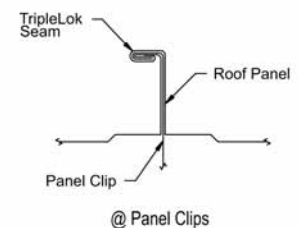
### Step 3 - Mechanical Seaming Tool



# END RESULT

In almost every case, your entire roofing system is accomplished with one consistent purlin spacing, one panel size and one clip throughout making the ZEUS-SHIELD system...

### Step 4 - Finished Seam



RELIABLE, ATTRACTIVE & COST-EFFICIENT.

# UltraRidge™

## Revolutionary UltraRidge Stops LEAKS and Eliminates CALLBACKS

It's a fact that the ridge details on some small standing seam roofs and all large standing seam roofs are open to danger due to thermal conditions. Over time many begin to fail or leak. This breakdown creates numerous call backs to repair and patch leaks that solve the problem.

## We Now Have a Solution

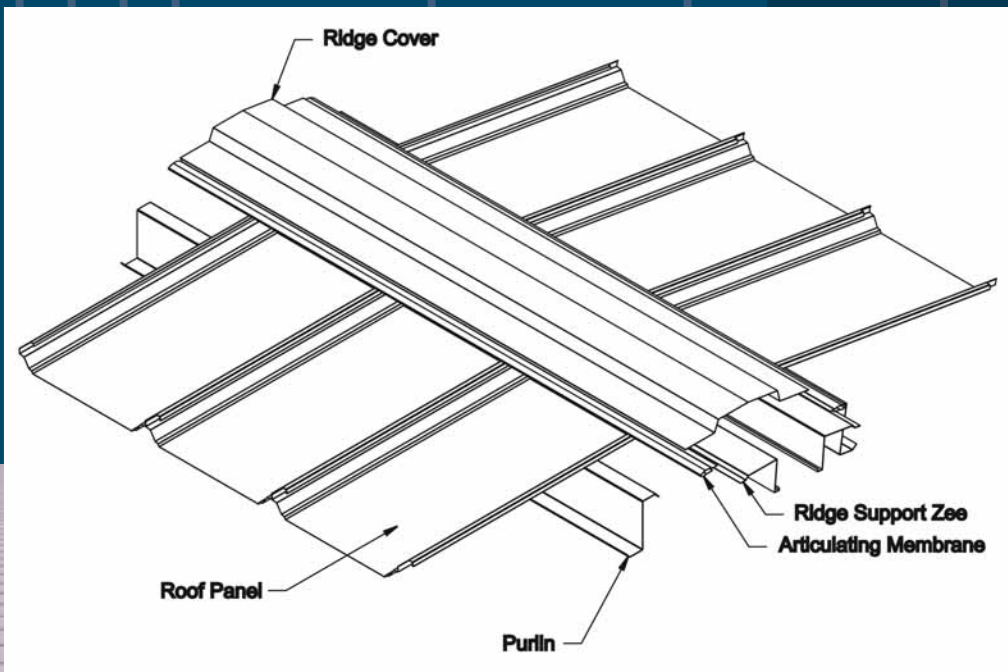
UltraRidge provides a stationary ridge cap that allows a fixed eave roof system to float underneath the ridge flashing. Utilizing a flexible silicone membrane the ridge is watertight and impervious to adverse weather conditions, specifically exposure to ultra violet rays.

## Designed to Allow for 6" Thermal Movement - 3" Uphill and 3" Downhill

Movement is restricted only by the roof panels' clip allowance. The ZEUS-SHIELD roof system offers clips with 3" movement. Without affecting the basic package, UltraRidge can easily adapt to a longer slide clip travel, such as ZEUS-SHIELD's wind uplift clips.

## Designed to Easily Repair and Resolve Existing Ridge Problems

In addition, UltraRidge can replace existing ridge material. Simply remove the existing ridge cover and old sealant, install the adjustable cross supports upon which the system rests and install the UltraRidge in the standard manner.

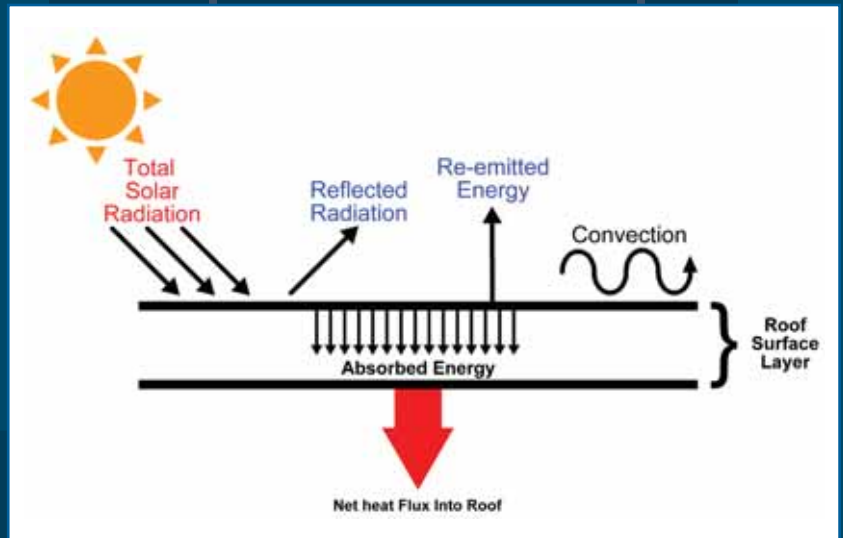


# Cool Metal Roofing - Energy Efficient and Sustainable

The roof can have the greatest impact on the energy use of a building. Cool Metal Roofing is a family of sustainable, energy efficient roofing products comprised of unpainted and pre-painted metal finishes. It is available in a wide variety of finishes, colors, textures and profiles for steep-slope and low-slope roofing applications.

Generally, metal roofing's relative "coolness" is determined by its reflectivity and emissivity. As the diagram demonstrates, when solar radiation strikes a roof surface, some of that radiation - up to 70 percent - is reflected to the sky. Therefore, a roof surface with high reflectivity, as well as high emittance value, remains cooler and less heat is transferred into the building or convected into ambient air.

Mill-finish metal roof systems have very high solar reflectance but limited emittance. Metal roofs with oven-cured, pre-painted organic coatings that incorporate new "cool pigment" technology offer high total solar reflectance and high infrared emittance even with dark colors. Emissivity as high as 90% can be achieved for painted metal roofs.



## Energy Savings up to 40%

The Cool roofs help reduce energy consumption by lowering cooling loads. Reflective roofs directly save up to 40% in heating and cooling energy costs, as reported by Lawrence Berkeley National Laboratory.

ZEUS-SHIELD roof panels are available with TRINAR® COOL CHEMISTRY® Series coatings which contain ceramic infrared reflective pigments. These special pigments are designed to reflect infrared energy while still absorbing visible light energy, thus appearing as the same color yet staying much cooler. Painted metal roofs retain 95% of their initial reflectance and emittance over time.

## End Result

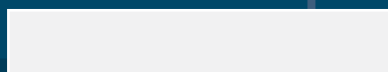
The end result is sustainable building material that can reduce peak energy demand and help to mitigate urban heat island effects.

## TRINAR® (KYNAR 500®/HYLAR 5000®) Limited Warranty

Akzo Nobel warrants that TRINAR (KYNAR 500/HYLAR 5000) covered by this warranty will conform to the performance standards as listed below.

1. For 35 years, TRINAR (KYNAR 500/HYLAR 5000) will not peel, flake or otherwise lose adhesion to an extent that is apparent on ordinary outdoor visual observation.
2. For 35 years, roof panels of TRINAR (KYNAR 500/HYLAR 5000) will not chalk more than a number eight (8) rating when measured per ASTM D 4214, Method A.
3. For 35 years, roof panels of TRINAR (KYNAR 500/HYLAR 5000) will not change color more than five (5) E (delta E) Hunter units when measured per ASTM D 2244 on clean surfaces after removing dirt, other surface deposits and chalk per ASTM 3964.

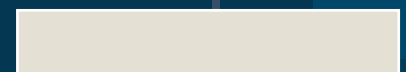
## Cool Roof Colors\*



Snow White



Battleship Gray



Sagebrush



Hunter Green



Flint Gray



Autumn Red



Wedgewood Blue



Medium Bronze



Cardinal Red

\* Printed colors are matched as closely as possible. If you require an exact color match, please ask for our color card.

# Three Panel Profiles to Choose:

The patented ZEUS-SHIELD System consists of three roof panel profiles:

1. ZS-T24 - 24" panel predominately for low pitch roof applications up to 3/12 pitch.
2. ZS-A16 - 16" panel architectural designed series for steeper single or double sloped rectangular areas.
3. ZS-A18 - 18" panel architectural designed series for steeper single or double sloped rectangular areas.

## The Following Recognized Certifications and Listings Have Been Earned:

Underwriters Laboratories UL-90 Classification Construction No. 506 • Factory Mutual Class 1-90 and 1-165 Listing  
 Corps of Engineers CECS 07416 Uplift Test • ASTM E 1592 Uplift Test (three tests each span each gauge)  
 ASTM E 1680 Air Infiltration • ASTM E 1646 Water Leakage

The ZEUS-SHIELD panel system has been tested and certified by independent testing agencies and laboratories and achieved the loads and listings shown below:

**Underwriters Laboratories Inc.** Construction No. 506, 506A, 506B - 16" & 18" panel Construction No. 556, 556A, 556B - 24" panel  
 ZEUS-SHIELD roof with TripleLok™ and QuadLok™ Seam

UL Listing	Panel Width	Panel Profile	Panel Gauge	Seam Type	Purlin Gauge	Purlin Spacing
UL-90	16" & 18"	ZS-A16 & ZS-A18	24 ga.	All Seam Types	16 ga.	5'0"
UL-60	24"	ZS-T24	24 ga.	All Seam Types	16 ga.	5'0"
UL-90	24"	ZS-T24	24 ga.	All Seam Types	16 ga.	5'0"

## Factory Mutual 4471 Uplift Test Results

ZEUS-SHIELD roof with TripleLok or QuadLok Seam

FM Listing	Panel Width	Panel Profile	Panel Gauge	Purlin Depth	Purlin Gauge	Purlin Spacing
1-90	16" & 18"	ZS-A16 & ZS-A18	24 ga.	8"	16 ga.	5'0"
1-165	16" & 18"	ZS-A16 & ZS-A18	22 ga.	8"	16 ga.	2'6"
1-60	24"	ZS-T24	24 ga.	8"	16 ga.	5'0"
1-90	24"	ZS-T24	24 ga.	8"	16 ga.	4'0"

## ASTM E 1592 Uplift Test Results

ZEUS-SHIELD roof with TripleLok Seam

Purlin Spacing	Panel Width	Panel Profile	Panel Gauge	AISI Design Load	COE Design Load
2'6"	16"	ZS-A16	24 ga.	113.2	116.9
5'0"	16"	ZS-A16	24 ga.	56.6	58.5
2'6"	18"	ZS-A18	24 ga.	78.0	94.5
5'0"	18"	ZS-A18	24 ga.	36.4	44.1
2'6"	24"	ZS-T24	24 ga.	62.4	66.2
5'0"	24"	ZS-T24	24 ga.	42.1	44.1

## ASTM E 1592 Uplift Test Results

ZEUS-SHIELD roof with QuadLok Seam

Purlin Spacing	Panel Width	Panel Profile	Panel Gauge	AISI Design Load	COE Design Load
2'6"	16"	ZS-A16	24 ga.	157.6	163.0
5'0"	16"	ZS-A16	24 ga.	78.8	81.6
2'6"	18"	ZS-A18	24 ga.	78.0	94.5
5'0"	18"	ZS-A18	24 ga.	46.8	56.7
2'6"	24"	ZS-T24	24 ga.	90.5	94.5
5'0"	24"	ZS-T24	24 ga.	48.3	50.4

ASTM E 1680 Air Infiltration all seams 24" wide panels = .0005 CFM/sq. ft.

ASTM E 1680 Air Infiltration all seams 16" wide panels = .005 CFM/sq. ft.

ASTM E 1646 Water Leakage all seams 16", 18" & 24" wide panels = None at 12 psf

- The above tabulated loads are generated from ASTM E-1592 testing
- Design loads contain a safety factor of calculated per AISI
- COE design load contains a 1.65 safety factor per COE 07416
- Allowable wind uplift loads have not been increased by 33% as allowed by some codes when wind load controls

ZEUS-SHIELD roof system and its components are covered by US Patent numbers 5,692,352 - 5,737,894 - 6,301,853 B1 and other patents pending.