SCHULTE BUILDING SYSTEMS, INC.

SERIOUS PERFORMANCE THROUGH SUPERIOR DESIGN

INTRODUCING A NEW AGE
OF STANDING SEAM METAL ROOFING

ABOVE AND BEYOND THE REST

TS-324™ TECHNOLOGY

IT ALL BEGINS WITH

A REVOLUTIONARY SEAM

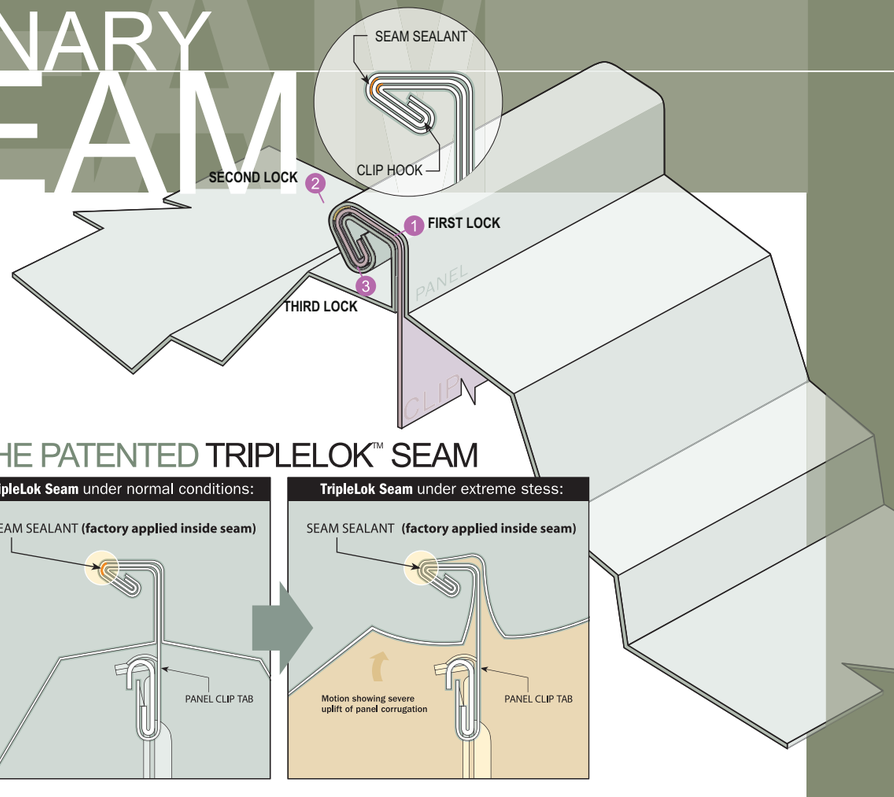
A METAL ROOF IS ONLY AS GOOD AS THE SEAMS THAT HOLD IT TOGETHER.

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

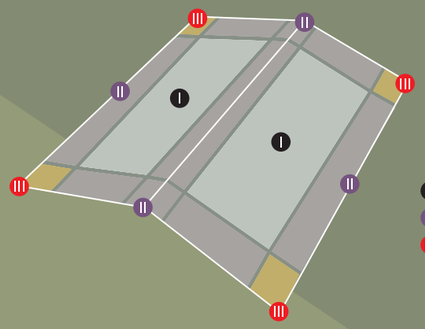
And while other manufacturers continue to react to these changes by refitting their existing roof systems with "band-aid" solutions, we have invested in a totally new patented method and technology that is specifically designed to meet and exceed these new requirements.

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 – utilizing the TS-324™ panel system technology – provides superior wind and weather protection under all roof loading conditions, the seam geometry and seaming methods to virtually assure that your installed roof will perform as it was designed at minimum cost.



THE PATENTED TRIPLELOK™ SEAM



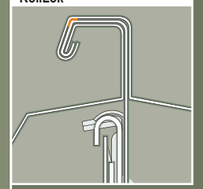
Standard industry wind tunnel tests on various roof configurations have shown that the wind loading on a roof is divided into three zones:

- **Zone I:** LOWEST LOAD – main field of the roof (about 80% of total roof surface)
- **Zone II:** NEXT HIGHER LOAD – area around the perimeter of the roof (about 15% of total roof surface)
- **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.

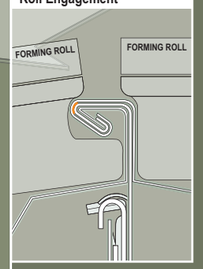
Our patented roof system accommodates all three roof zones – simply and efficiently – by executing one of three seaming shapes. Each shape is formed in the field after the roofing panels have been installed, meeting precise roof wind loading requirements for each roof zone without added roofing materials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

RollLok



TripleLok

Roll Engagement



QuadLok

During installation, the first of the seam hooks engages automatically, locking the panels and the roof structure together.

The RollLok™ seam is accomplished by easily and quickly hand seaming the seam at each clip. This will provide an allowable wind uplift loading of 32 psf.*

1. Provides superior water resistance than conventional "double lock" seams by isolating seam sealant from dislodgment or separation during severe wind loading.
2. Fool-proof installation: all that is required is one simple rotation of the hand seamer at each clip to lock the panel to the roof structurals.
3. It can be installed faster than snap-together seams.

The TripleLok™ seam is accomplished by seaming the entire seam with an electrical seamer. This seam will provide an allowable wind uplift loading of 56 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 clip hook and the stresses of panel deflection.
   - isolates the seam sealant from dislodgment or separation during severe wind loading, thereby assuring a water resistant seam throughout the life of the roof.
2. Fool-proof installation: all that is required is the placement of the 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 64 psf*, (or 120 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 in accordance with AISI, using ASTM E 1592 tests.

BOTTOM-LINE RESULT:

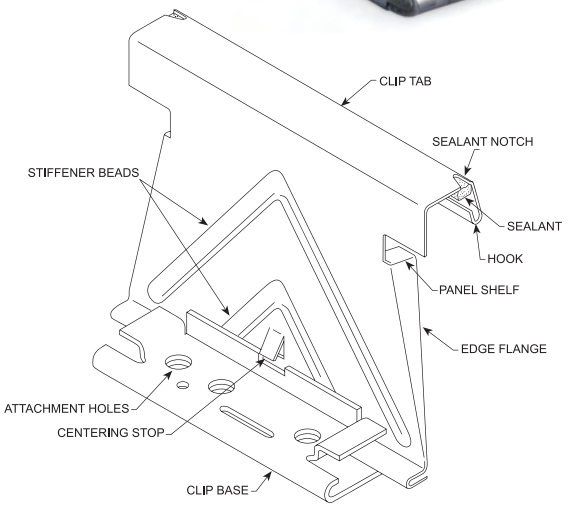
In almost every case, your entire roofing system is accomplished with one consistent purlin spacing, one panel size, and one clip throughout...

EASY, RELIABLE & COST-EFFICIENT.

THE MPS™ CLIP

CLIP TYPE

- **602 - Low Floating 3/8”**
- **603 - High Floating 1 3/8”**



- **Provides lateral stability to purlins** by restricting purlin roll while allowing complete panel expansion and contraction movement
- **Allows a nominal 4” of roof movement** ($1^{7/8}$" contraction & $1^{7/8}$" expansion)
- **Positive acting centering tab** assures the clip tab is centered until the fastener is installed
- **Clip hook engages** the end of the male lip to prevent the tab from sliding out of the seam under severe uplift
- **Factory-applied sealant** is placed under the tab so it will merge with the factory sealant in the panel seam upon installation to assure a superior sidelap seal at each clip location
- **All clips are fashioned from G-90 galvanized steel** to assure a long, corrosion-free life
- **Patented base** provides bearing edges that compress blanket insulation in small areas (to minimize clip roll when attached to purlin over blanket insulation)

The MPS (Movable Purlin Stabilizing) Clip is a patented clip designed to provide a high degree of flexibility while maintaining excellent lateral purlin support.

Steel roof panels expand and contract with changes in temperature. The design of the patented MPS clip accommodates these thermal movements by sliding back and forth with the metal (nominal 4” overall expansion and contraction). The result is a roof connection that maintains the highest degree of system performance while allowing for movement of the roof panels.

This patented clip has been tested and these tests show it will provide the Zee purlin with 74% of a fully stabilized shape under live load and 78% of the fully stabilized shape under uplift load. This means the TS-324 roof systems using the MPS clip will not require purlin bridging on interior bays of most buildings.

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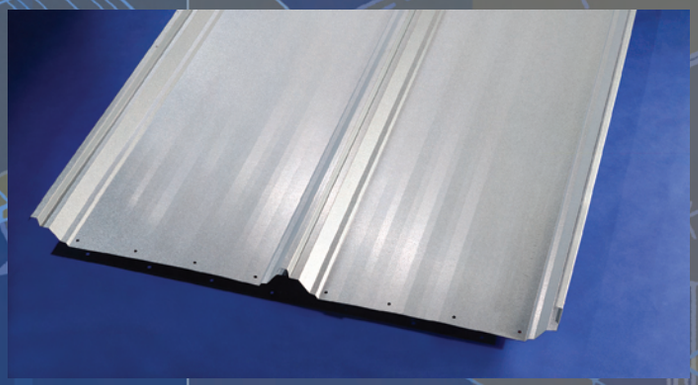


DEPENDABLE ROOF PERFORMANCE

The patented TS-324™ panel system technology offers considerable benefits to the roof installer, contractor and building owner. All three parties will benefit from TS-324's dependability and cost efficiency.

Highest roof value through "zoneability"

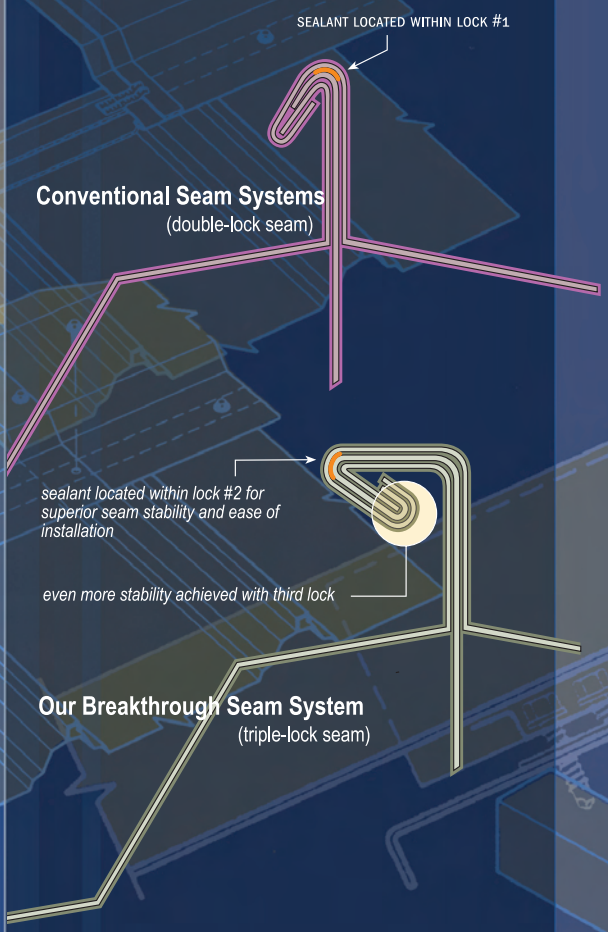
The TS-324 roof system has the ability to resist three separate roof zone loads at three areas of the roof simply by selecting the appropriate seaming method to meet the uplift load for that zone. No changing purlin spacing, no changing panel thickness and no installation of external clips over the seam. This results in a lower overall cost for both materials and installation man-hours.

Assured performance & on-schedule completion with TS-324 technology

The TS-324 roof system with TS-324 panel system technology eliminates the need to run an electric seaming machine as the roof is installed. No more delays waiting for the seamer to be sent to the job, and no delays due to bad weather – as the seaming can be accomplished at any time after the roof panels have been laid.

Assured code approval and the lowest insurance rates with TS-324's outstanding credentials

The TS-324 roof system has the highest uplift resistance and insurance ratings and listings of any 24" wide 24 gauge standing seam roof in the industry – making it among the most tested roofs in the industry – in addition to the extensive design performance tests that were conducted during its development.



BELIEVE IT OR NOT.

When you look at most metal roofs on the market today, you're looking at systems that rely on technology that's over 30 years old.

It's a fact that the design of existing standing seam roof systems has not been fundamentally upgraded since 1969 – when assumptions about wind resistance and expected roof performance were severely undercalculated compared to what we know today.

OUR SYSTEM IS DIFFERENT.

We've used the latest technology available to develop a metal roof system that's designed for tomorrow – with components and techniques that outperform others by specifically addressing current and anticipated building codes and roofing requirements.

With steel panels that are designed to last, innovative clips that add stability while allowing for thermal expansion and contraction, and a patented seaming system that's designed to handle even the most stringent uplift requirements – our system truly is above and beyond the rest.

Proof of this superior performance can be found by reviewing our FM Class 1-90 listing, UL 580 Class 90 listing and ASTM test results (shown on the back of this brochure).

NO OTHER ROOF COMES CLOSE

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

Schulte Building Systems, a leading Manufacturer of pre-engineered metal buildings, is proud to offer the TS-324 roof system to its customers. This product will meet or exceed your expectations.

SBS believes exceptional fabrication along with the new technological breakthroughs in developing our Standing Seam System will make you an industry leader.

We urge you take advantage of the latest technologies with a roof system that's designed for tomorrow.

The ease of erectibility, dependable performance and cost efficiency make this system superior to its competition.

For more information about the TS-324 roof system and how you can provide your builders and erectors with the most technologically advanced roof system available, contact Schulte Building Systems today.

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SCHULTE BUILDING SYSTEMS

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The following recognized certifications and listings have been earned:

Underwriters Laboratories UL-90 Classification Construction No. 552
Factory Mutual Class 1-90 Listing
Corps of Engineers CEGS 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 TS-324™ panel system technology has been tested and certified by independent testing agencies and laboratories and achieved the loads and listings shown below.

Underwriters Laboratories Inc. Construction No. 552, 552A, 552B

TS-324 roof with RollLok™, TripleLok™ and QuadLok™ Seam

UL Listing	Panel Width	Panel Gauge	Seam Type	Purlin Gauge	Purlin Spacing
UL-60	24"	24 ga.	All Seam Types	16 ga.	5'0"
UL-90	24"	24 ga.	All Seam Types	16 ga.	5'0"

Factory Mutual 4477 Uplift Test Results

TS-324 roof with TripleLok or QuadLok Seam

UL Listing	Panel Width	Panel Gauge	Seam Type	Purlin Gauge	Purlin Spacing
1-60	24"	24 ga.	8"	16 ga.	5'0"
1-90	24"	24 ga.	8"	16 ga.	4'0"

ASTM E 1592 Uplift Test Results

TS-324 roof with RollLok Seam

UL Listing	Panel Width	Panel Gauge	Design Load AISI CF00-1 (sf=1.724*)
2'6"	24"	24 ga.	56.2
5'0"	24"	24 ga.	32.1

ASTM E 1592 Uplift Test Results

TS-324 roof with TripleLok Seam

UL Listing	Panel Width	Panel Gauge	Design Load AISI CF00-1 (sf=1.72*)
2'6"	24"	24 ga.	83.0
5'0"	24"	24 ga.	56.2

ASTM E 1592 Uplift Test Results

TS-324 roof with QuadLok Seam

UL Listing	Panel Width	Panel Gauge	Design Load AISI CF00-1 (sf=1.72*)
2'6"	24"	24 ga.	120.3
5'0"	24"	24 ga.	64.2

ASTM E 1680 Air Infiltration all seams 24" wide panels = .0005 CFM/sq.ft
ASTM E 1646 Water Leakage all seams 24" wide panels = None at 12 psf

* Design Load = (Mean Ultimate Load/sf) x 1.33 when allowed by building code

TS-324 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.