

# ARCHITECTURAL INTEGRATED METALS, INC.

## Roll-Lok™ Panel Specifications

### PRODUCT NAME

Roll-Lok Roof System featuring the RollLok™ Seam, TripleLok™ Seam and QuadLok™ Seam.

### MANUFACTURER

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### PRODUCT DESCRIPTION

The Roll-Lok Roof System has been designed by Architectural Integrated Metals, Inc. for use in architectural or functional applications where both appearance and weather resistance of the roof are primary concerns. Many standing seam roof systems have similar appearance but have major differences in their performance. The Roll-Lok Roof System has many advantages over most other roof systems and, when properly installed, will offer excellent weather resistance and be practically maintenance free.

The Roll-Lok Roof System is adaptable for use on new construction and as a replacement roof for existing buildings where weather resistance is the most important design consideration.

### PHYSICAL DESCRIPTION

The Roll-Lok Roof System will consist of metal panels joined together by a unique factory-formed, interlocking seam that is easily assembled and seamed in the field. The Roll-Lok Roof System is secured to the roof structure with clips that are locked into the seam during the field seaming process. Associated components such as perimeter adapters, perimeter trim and flashing have been designed to accommodate most types of structures.

### PANEL

The panel will be fabricated from steel which is coated with Galvalume, and optional factory applied paint. Galvalume coated steel sheet will provide a long-lasting weathering membrane. Galvalume coating has a proven weather resistance in excess of 20 years. The steel sheet is impervious to moisture and will resist falling objects and roof traffic better than other known roof membranes commonly used. The steel panel profiles are designed to resist live load and wind uplift without the complexity and cost of additional substrate as required on most other roofing systems. The ultimate performance of a Galvalume coated steel panel is determined by effectiveness of the design of the steel panel, perimeter seals, and panel attachment methods.

### PANEL AND FLASHING MATERIALS

The roof panels will be of 24 ga. or 22 ga.<sup>1</sup> steel, 50,000 psi minimum yield strength (ASTM A446-76, Grade D), coated with AZ50 (minimum) aluminum/zinc alloy for painted finish or AZ55 aluminum/zinc alloy for unpainted finish.<sup>2</sup>

The flashing and trim will be a 26 ga. steel 50,000 psi minimum yield strength (ASTM A446-76 Grade D), coated with AZ50 (minimum) aluminum/zinc alloy.

### PANEL CLIPS

Panel clips fasten the roof panels to the structure. The clips are designed to allow the panel to float over the secondary structurals. Floating clips will have a tab and a base with a sliding interlock allowing the roof 1-1/2" of expansion and 1-1/2" of contraction movement. The floating clip tab will move in the sliding interlock of the galvanized steel clip base. The clip base will be protected from corrosion by galvanized coating that has similar weather resistance to that of the panel coating.

Panel clips will be attached to 16 gauge, cold-formed, secondary structurals with two #14 x 1-1/4" self-drilling screw. Fasteners required for other types of secondary structurals will be determined by building applications or the substrate used on the building.

### SEAM

The Roll-Lok panels have a sidelap that can be formed into three types of seams:

1) **RollLok™** - The RollLok seam is formed without the use of an electrically powered seaming machine. The panel seam is hand seamed at panel clips only. This seam is useful if the appearance of hand folded seams every 5" along the seam is not objectionable and the seam will not be exposed to water standing over the seam.

2) **TripleLok™** - The TripleLok seam is formed continuously by folding the adjacent panels sides over each other to interlock the two panels so they form a watertight seal that will resist separation even if the panels are severely deformed. The TripleLok seam is partially formed in the factory and completed in the field with a powered seamer. The TripleLok seam will resist greater uplift forces than any known seam.

3) **QuadLok™** - The QuadLok seam is formed by reforming the TripleLok seam such that a 24 gauge roof panel will resist uplift loads greater than a 22 gauge panel. This seam is only used at some roof corners or on extremely high roofs where wind uplift forces are severe.

### SEALANTS

The seam sealant will be a non-drying, non-hardening, non-oxidizing butyl rubber-based sealant specifically formulated for factory sealing standing seam roof panels. Sealant for the eave, end splice, ridge flashing, and rake trim will be non-drying, non-hardening, butyl-based tape sealant specifically formulated for field application at temperatures of 20° F to 120° F. Service temperature of both sealants will be -60° F to 180° F.

### CLOSURES

The end dam to be used at the ridge and high side of a single slope roof is a die-formed steel closure with factory punched holes. The end dam seals the outside of the panel at the ridge or high edge of a single slope roof panel to the ridge or high edge of roof flashing. The seal is developed using gasket techniques similar to those used at the endlap. The tape sealant is sandwiched between the roof panel, which is fully supported by a rigid heavy gauge back-up channel and the flange of the end dam. The fasteners placed in the factory-punched holes clamp the back-up channel and end dam together. The clamping force uniformly compresses the sealant between the panel and the end dam causing the sealant to be extruded with over one ton of force. The extruded sealant provides a seal that will resist wind-blown water.

### FASTENERS

The Roll-Lok Roof System does not have exposed through-fasteners that penetrate the roof membrane over the building envelope except at panel endlaps on roof runs that are longer than the length a panel can be shipped.

Endlap fasteners: Only four (4) endlap fasteners will be required to seal the panel endlaps. Endlap fasteners will be oversized #17 fasteners to minimize potential for fastener strip out.

All exposed fasteners are self-drilling and will not require special tools other than industry standard screw guns. Fasteners will have metal backed neoprene sealing washers.

### TESTING DATA

The Roll-Lok panel out-performs all known existing single skin trapezoidal roof systems in three of the leading tests for wind uplift resistance. These tests are UL 580 Class 90; ASTM E1592 and Factory Mutual 4471. The AIM-Lok panel has also been tested in accordance with ASTM E1680, Rate of Air Leakage Through Exterior Metal Roof Panel Systems; and ASTM E1645, Water Penetration of Metal Roof Panel Systems.

### WARRANTY

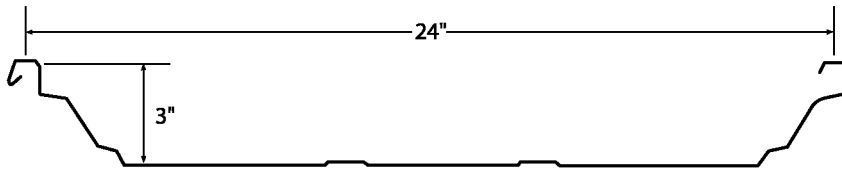
25 year material and weathertightness warranties can be ordered.



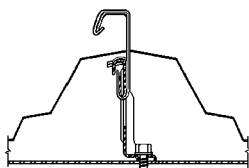
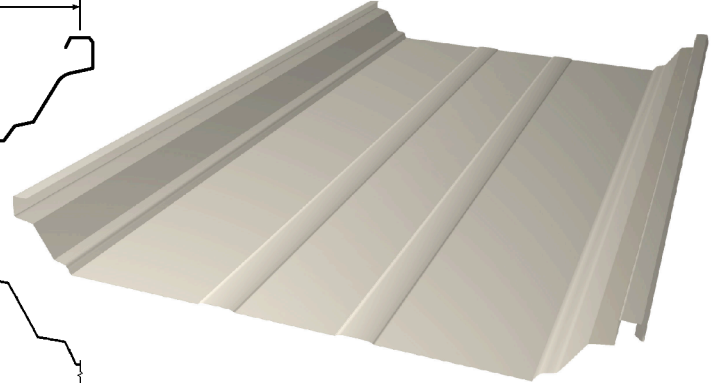
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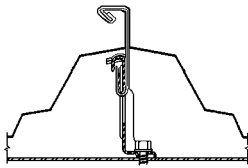
Architectural Integrated Metals, Inc. reserves the right to revise all standard specifications and information.



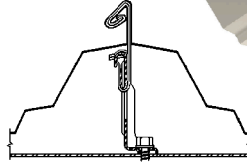
**CROSS SECTION**



**RollLok™ Seam**



**TripleLok™ Seam**



**QuadLok™ Seam**

SECTION PROPERTIES OF THE ROLL-LOK PANEL									
				Panel Top in Compression			Panel Bottom in Compression		
Gauge	Fy (ksi)	Wt. (psf)	Thick. (inch)	I <sub>x</sub> (in <sup>4</sup> )	S <sub>x</sub> (in <sup>3</sup> )	F <sub>b</sub> (ksi)	I <sub>x</sub> (in <sup>4</sup> )	S <sub>x</sub> (in <sup>3</sup> )	F <sub>b</sub> (ksi)
24	50	1.168	0.0228	0.3740	0.1567	29.9	0.1575	0.0965	29.9
22	50	1.441	0.0282	0.4587	0.1925	29.9	0.2025	0.1275	29.9

ALLOWABLE LIVE LOADS - All loads in Pounds per Square Foot										
	Span Type	Load Type	Span (in feet)							
			3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
24 Gauge Steel	Single Span	Stress	347.4	195.4	125.1	86.8	63.8	48.8	38.6	31.3
		Deflection	347.4	195.4	125.1	86.8	63.8	48.8	38.6	31.3
	2 Spans	Stress	213.9	120.3	77.0	53.5	39.3	30.1	23.8	19.3
		Deflection	213.9	120.3	77.0	53.5	39.3	30.1	23.8	19.3
	3 Spans or more	Stress	249.9	140.6	90.0	62.5	45.9	35.1	27.8	22.5
		Deflection	249.9	140.6	90.0	62.5	45.9	35.1	27.8	22.5

ALLOWABLE LIVE LOADS - All loads in Pounds per Square Foot										
	Span Type	Load Type	Span (in feet)							
			3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
22 Gauge Steel	Single Span	Stress	426.7	240.0	153.6	106.7	78.4	60.0	47.4	38.4
		Deflection	426.7	240.0	153.6	106.7	78.4	60.0	47.4	38.4
	2 Spans	Stress	282.8	159.1	101.8	70.7	51.9	39.8	31.4	25.5
		Deflection	282.8	159.1	101.8	70.7	51.9	39.8	31.4	25.5
	3 Spans or more	Stress	330.3	185.8	118.9	82.6	60.7	46.5	36.7	29.7
		Deflection	330.3	185.8	118.9	82.6	60.7	46.5	36.7	29.7

**NOTES:** Section properties are calculated in accordance with 1996 AISI specifications. S<sub>x</sub> and F<sub>b</sub> are for stress determination; I<sub>x</sub> is for deflection determination.

24 gauge: allowable intermediate bearing at 3" = 0.298 kips/ft

allowable end bearing at 2" = 0.117 kips/ft

22 gauge: allowable intermediate bearing at 3" = 0.421 kips/ft

allowable end bearing at 2" = 0.185 kips/ft

1. Tabulated values are total allowable loads calculated in accordance with good engineering practices and maximum bending stresses as shown for physical and section properties.
2. Deflection loads are limited by a maximum deflection ratio of L/180 of span or maximum bending stress, whichever is less.
3. These load capacities are for the panel itself. Frames, purlins, clips, fasteners, and all supports must be designed to resist all loads imposed by the panel.