

SL175 Panel

Technical Data Guide

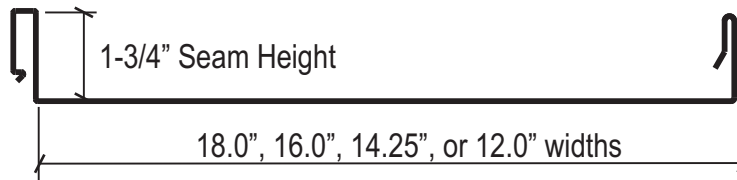
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Description

SL175 is an integral snap-lock standing seam roofing panel used on commercial and residential applications. The panel is factory formed in continuous lengths up to 60'-0" long. Attachment to either open framing or solid substrate with galvanized steel clips at specific intervals. Refer to product test results for clip spacing requirements. Clip design allows for unlimited thermal expansion.

Application

Product can be applied to open framing (up to 4'-0" on center) and various solid substrate applications such as wood



Test Results

ASTM E-1680-95 Air Infiltration

Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel System

Static Pressure Differential	Air Infiltration Rate
1.57 psf	0.0008 cfm/ft ²
6.24 psf	0.0015 cfm/ft ²

ASTM E-1646-95 Water Infiltration

Standard Test Method for Water Penetration of Exterior Metal Roof Panel System by Uniform Static Air Pressure Differential

Static Pressure Differential	Water Infiltration
6.24 psf	No Water Leakage

ASTM E-1592 Structural Performance - for 18" wide, 24 gauge SL175 Panel

Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference

Clip Spacing	Ultimate Load	Design Load
24" on center	46.8 psf	23.4 psf
48" on center	41.2 psf	20.6 psf

Notes:

1. The design load is calculated by dividing the ultimate load by the factor of safety of 2.0

UL 1897 Wind Uplift Resistance - for 16" wide, 24 gauge SL175 Panel over 22 gauge steel deck

Standard test method to provide uplift resistance data for the evaluation of the attachment of roof covering to roof decks

Clip Spacing	Ultimate Load	Design Load
12" on center	172 psf	86 psf
36" on center	127 psf	63.5 psf

Notes:

1. The design load is calculated by dividing the ultimate load by the factor of safety of 2.0



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Test Results (cont.)

UL 1897 Wind Uplift Resistance - for 18" wide, 24 gauge SL175 Panel over 15/32" plywood

Standard test method to provide uplift resistance data for the evaluation of the attachment of roof covering to roof decks

Clip Spacing	Ultimate Load	Design Load
8" on center	157.2 psf	78.6 psf
12" on center*	187 psf*	93.5 psf*
36" on center	79.6 psf	39.8 psf

Notes:

1. The design load is calculated by dividing the ultimate load by the factor of safety of 2.0

* Self-adhered membrane underlayment applied continuous over substrate.

Florida Approval Listings - Florida Bldg. Code 5th Addition (2014)

FL7271.14	SL175 Panel up to 16" wide x 24 gauge over 22 gauge steel decking
FL17643.5	SL175 Panel up to 16" wide x 0.032" aluminum over 5/8" plywood
FL17643.6	SL175 Panel up to 16" wide x 0.032" aluminum over 7/16" OSB nailbase rigid insulation
FL17643.6	SL175 Panel up to 18" wide x 24 gauge over 7/16" OSB nailbase rigid insulation
FL20484.0	SL175 Panel up to 18" wide x 24 gauge over 15/32" plywood



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Approval Listings

UL790 Fire Resistance of Roof Covering Materials & UL2218 Impact Resistance of Roof Covering Materials

TGFU.R20494 Roofing Systems

Class A

Coated steel panels (surfacing) identified as "R Panel", "PBR Panel", "MasterRib", "5V Panel", "Advantage-Lok", "Advantage-Lok II", "Performa Steel Shingle", "Relia-Clad", "CSL Standing Seam" (SL150), "ML150", "ML200" and "SL175"

1. Deck: C-15/32 **Incline:** Unlimited **Impact:** Class 4
Barrier Board: — 1/4 in. (min) G-P Gypsum DensDeck® with all joints staggered a min of 6 in. from the plywood joints.
Ply Sheet (Optional): — Any UL Classified Type G1, G2 or G3 base/ply sheet, Type 15, 20 or 30 felt or UL Classified prepared roofing accessory or WR Grace "Ice and Water Shield".
Surfacing: — Coated Steel roofing panels, mechanically fastened or with steel screws when roof deck fasteners (panel clips) not required.

2. Deck: C-15/32 or spaced sheathing **Incline:** Unlimited **Impact:** Class 4
Underlayment: — One layer Elk Corp. "VersaShield Underlayment", mechanically fastened.
Ply Sheet (Optional): — One layer Type 30 base sheet or Elk Corp. "VersaShield", mechanically fastened.
Surfacing: — Coated Steel roofing panels, mechanically fastened or with steel screws when roof deck fasteners (panel clips) not required.

3. Deck: C-15/32 or spaced sheathing **Incline:** Unlimited **Impact:** Class 4
Underlayment: — One or more layer Elk Corp. "VersaShield Underlayment", mechanically fastened.
Batten: — 2" x 2" wood battens
Surfacing: — Coated Steel roofing panels, mechanically fastened or with steel screws when roof deck fasteners (panel clips) not required.

4. Deck: NC **Incline:** Unlimited **Impact:** Class 4
Barrier Board: — 1/4 in. min. G-P Gypsum DensDeck®.
Ply Sheet (Optional): — Any UL Classified Type G1, G2 or G3 base/ply sheet, Type 15, 20 or 30 felt or UL Classified prepared roofing accessory or WR Grace "Ice and Water Shield".
Surfacing: — Coated Steel roofing panels, mechanically fastened or with steel screws when roof deck fasteners (panel clips) not required.

5. Deck: NC **Incline:** Unlimited **Impact:** Class 4
Barrier Board: — 7/16 OBS or 5/8 in. plywood over polyisocyanurate insulation board or polyisocyanurate composite board, any thickness.
Ply Sheet (Optional): — Any UL Classified Type G1, G2 or G3 base/ply sheet, Type 15, 20 or 30 felt or UL Classified prepared roofing accessory or WR Grace "Ice and Water Shield".
Surfacing: — Coated Steel roofing panels, mechanically fastened or with steel screws when roof deck fasteners (panel clips) not required.

6. Deck: NC **Incline:** Unlimited **Impact:** Class 4
Insulation: — Polyisocyanurate, glass fiber, perlite or wood fiber, any thickness.
Ply Sheet (Optional): — Any UL Classified Type G1, G2 or G3 base/ply sheet, Type 15, 20 or 30 felt or UL Classified prepared roofing accessory or WR Grace "Ice and Water Shield".
Surfacing: — Coated Steel roofing panels, mechanically fastened or with steel screws when roof deck fasteners (panel clips) not required.

7. Deck: NC **Incline:** Unlimited **Impact:** Class 4
Insulation: — None required, however any UL Classified insulations may be used over open purlin spans. Any combination and any total thickness of insulation may be used.
Surfacing: — Coated Steel roofing panels, mechanically fastened or with steel screws when roof deck fasteners (panel clips) not required.

Class C

Coated steel panels (surfacing) identified as "R Panel", "PBR Panel", "MasterRib", "5V Panel", "Advantage-Lok", "Advantage-Lok II", "Performa Steel Shingle", "Relia-Clad", "CSL Standing Seam" (SL150).

1. Deck: C-15/32 **Incline:** Unlimited **Impact:** Class 4
Surfacing: — Coated Steel roofing panels, mechanically fastened or with steel screws when roof deck fasteners (panel clips) not required.

Maintenance and Repair Class A

Coated steel panels (surfacing) identified as "R Panel", "PBR Panel", "MasterRib", "5V Panel", "Advantage-Lok", "Advantage-Lok II", "Performa Steel Shingle", "Relia-Clad", "CSL Standing Seam", "ML150", "ML200" and "SL175".

1. Deck: C-15/32 or spaced sheathing **Incline:** Unlimited **Impact:** Class 4
Existing Roof System: — Any class A, B, or C shingle
Underlayment: — One layer Elk Corp. "VersaShield Underlayment", mechanically fastened.
Surfacing: — Coated Steel roofing panels, mechanically fastened or with steel screws when roof deck fasteners (panel clips) not required.



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Approval Listings

UL580 Class 90 Wind Uplift Resistance

Construction No. 255 - SL175 Panel over Open Framing

1. Metal Panels: No. 24 MSG minimum thickness coated steel. Panel width 18 inches maximum
2. Purlins: No. 16 MSG minimum thickness steel (50,000 psi min. Yield strength) spaced maximum 48 inches on center
3. Panel Clips: 3-1/2" long x 1-7/8" high (SL175UL clip) at each purlin location
4. Fasteners: No. 10-16 x 1" long (min.) Self-drilling pancake head plated steel screw. Two screws per clip.

Construction No. 303 - SL175 Panel over Metal Decking

1. Metal Panels: No. 24 MSG minimum thickness coated steel. Panel width 18 inches maximum
2. Substrate: No. 22 MSG minimum thickness coated steel decking, minimum 1-1/2 inch depth
3. Panel Clips: 3-1/2" long x 1-7/8" high (SL175UL clip) at 48 inches on center
4. Fasteners: No. 14 truss head self-drilling screws. Two screws per clip.
5. Rigid Insulation (optional): Optional layer of rigid insulation up to 10 inches thick
6. Cover Board (optional): Layer of minimum 15/32" plywood, minimum 7/16" OSB, 1/2" gypsum board, 1/4" glass fiber gypsum board, or 1/2" wood fiber board installed over the liner panel (decking) in lieu of the insulation or over the rigid insulation.

Construction No. 343 - SL175 Panel over Wood Sheathing

1. Metal Panels: No. 24 MSG minimum thickness coated steel. Panel width 18 inches maximum
2. Substrate: Minimum 19/32 inch thick plywood decking or 5/8 inch minimum (19/32) OSB
3. Panel Clips: 3-1/2" long x 1-7/8" high (SL175UL clip) at 36 inches on center
4. Bearing Plate (use with optional insulation): Minimum No. 24 MSG thickness steel, 4-1/2 inch wide x 6 inch long
5. Fasteners: No. 10-12 x 1 inch pancake head coated steel screws. Two screws per clip.
6. Rigid Insulation (optional): Minimum thickness 1-1/2 inch foamed plastic insulation board

Construction No. 414 - SL175 Panel over Wood Sheathing

1. Metal Panels: No. 24 MSG minimum thickness coated steel. Panel width 18 inches maximum
2. Substrate: Minimum 19/32 inch thick plywood decking or 5/8 inch minimum (19/32) OSB
3. Panel Clips: 3-1/2" long x 1-7/8" high (SL175UL clip) at 36 inches on center
4. Bearing Plate (use with optional insulation): Minimum No. 24 MSG thickness steel, 4-1/2 inch wide x 6 inch long
5. Fasteners: No. 10-12 x 1 inch pancake head coated steel screws. Two screws per clip.
6. Rigid Insulation (optional): up to 10 inch foamed plastic insulation board

Construction No. 508 - SL175 Panel over Wood Sheathing

1. Metal Panels: 0.032 inch minimum thickness aluminum. Panel width 16 inches maximum
2. Substrate: Minimum 19/32 inch thick plywood decking
3. Panel Clips: 3-1/2" long x 1-7/8" high (SL175UL clip) at 18 inches on center
4. Bearing Plate (use with optional insulation): Minimum No. 24 MSG thickness steel, 4-1/2 inch wide x 6 inch long
5. Fasteners: No. 10-12 x 1 inch pancake head coated steel screws. Two screws per clip.
6. Rigid Insulation (optional): up to 10 inch foamed plastic insulation board

Construction No. 508a - SL175 Panel over Nailboard Insulation

1. Metal Panels: 0.032 inch minimum thickness aluminum. Panel width 16 inches maximum
- 1a. Metal Panels: No. 24 MSG minimum thickness coated steel. Panel width 18 inches maximum
2. Substrate: Nailboard insulation w/ minimum 7/16 inch OSB over minimum 22 MSG steel decking or Structural cement fiber unit (Tectum) with minimum 7/16 inch OSB facer
3. Panel Clips with Aluminum Panel: 3-1/2" long x 1-7/8" high (SL175UL clip) at 18 inches on center
4. Panel Clips with Steel Panels: 3-1/2" long x 1-7/8" high (SL175UL clip) at 36 inches on center
5. Cover board (optional): Maximum 5/8 inch gypsum board
6. Fasteners: No. 10-12 x 1 inch pancake head coated steel screws. Two screws per clip.

Complete UL assembly information for each construction number can be referenced online at Underwriters Laboratories Online Certifications Directory (UL.com).



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Sectional Properties and Load Tables for SL175 Panel - 18" wide

18" Wide SL175 Panel - Sectional Properties

Gauge	Thickness (inches)	Weight (psf)	Yield Stress (ksi)	Allowable Shear (kips/ft)	Top in Compression (Positive Bending)			Bottom in Compression (Negative Bending)		
					I _{xx} in ⁴ /ft	S _{xx} in ³ /ft	M _a in.kips/ft	I _{xx} in ⁴ /ft	S _{xx} in ³ /ft	M _a in.kips/ft
24	0.0225	1.233	50	0.91	0.0813	0.0529	1.5830	0.0360	0.0383	1.1480
22	0.0285	1.558	50	1.45	0.1100	0.7230	2.1670	0.0493	0.0506	1.5160

Notes on Section Properties:

1. Section properties and allowables are calculated in accordance with North American Specification for the Design of Cold-Formed Steel Structural Members (2007 Edition)
2. I +/- is for deflection determination and S +/- is for bending determination.
3. M_a is allowable bending moment and V_a is allowable shear.
4. All values are for one foot of panel width.
5. Minimum deliverable bare steel thickness should not be less than 0.95 of design thickness.

18" Wide SL175 Panel - Allowable Live and Wind Loads (psf)

Gauge	Span	Load	Span (ft)							
			2	2.25	2.5	3	3.5	4	4.5	5
24	Single	LL	263.8	208.4	168.8	117.2	86.1	65.9	52.1	42.2
		WL	191.3	151.2	122.5	85.0	55.0	36.9	25.9	18.9
	2 Span	LL	185.1	147.2	119.8	83.8	61.8	47.4	37.5	30.4
		WL	248.1	198.4	162.2	114.0	84.4	64.9	51.4	41.8
	3 Span	LL	214.1	170.6	139.0	97.4	71.9	55.2	43.7	35.5
		WL	284.9	228.6	187.2	132.0	97.9	69.6	48.9	35.6
22	Single	LL	361.1	285.3	231.1	160.5	117.9	90.3	71.3	57.7
		WL	252.7	199.6	161.7	112.3	75.4	50.5	35.5	25.9
	2 Span	LL	246.9	196.0	159.3	111.1	81.9	62.8	49.7	40.3
		WL	344.7	275.0	224.2	157.1	116.1	89.2	70.7	57.3
	3 Span	LL	286.3	227.6	185.1	129.3	95.3	73.2	57.9	47.0
		WL	397.4	317.7	259.6	181.8	133.6	95.4	67.0	48.8

Notes on Load Table:

1. Allowable live or wind load is the smallest load due to bending, shear, combined bending and shear and deflection limitation of span/240.
2. These loads are for panel strength. Panel sidelaps, clips, fasteners, and all supports must be designed or tested to resist all loads imposed on the panel.
3. Allowable wind loads based on stress have not been increased by 33.33% for wind uplift.
4. For roof panels, self weight of the panel has to be deducted from the allowable inward load to arrive at the actual 'live load' carrying of the panel.
5. LL= Live Load, WL= Wind Load.



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Sectional Properties and Load Tables for SL175 Panel - 16" wide

16" Wide SL175 Panel - Sectional Properties

Gauge	Thickness (inches)	Weight (psf)	Yield Stress (ksi)	Allowable Shear (kips/ft)	Top in Compression (Positive Bending)			Bottom in Compression (Negative Bending)		
					I _{xx} in ⁴ /ft	S _{xx} in ³ /ft	M _a in.kips/ft	I _{xx} in ⁴ /ft	S _{xx} in ³ /ft	M _a in.kips/ft
24	0.0225	1.272	50	1.03	0.0900	0.0593	1.7740	0.0405	0.0431	1.2920
22	0.0285	1.607	50	1.63	0.1208	0.0809	2.4220	0.0555	0.0569	1.7050

Notes on Section Properties:

1. Section properties and allowables are calculated in accordance with North American Specification for the Design of Cold-Formed Steel Structural Members (2007 Edition)
2. I +/- is for deflection determination and S +/- is for bending determination.
3. M_a is allowable bending moment and V_a is allowable shear.
4. All values are for one foot of panel width.
5. Minimum deliverable bare steel thickness should not be less than 0.95 of design thickness.

16" Wide SL175 Panel - Allowable Live and Wind Loads (psf)

Gauge	Span	Load	Span (ft)							
			2	2.25	2.5	3	3.5	4	4.5	5
24	Single	LL	295.6	233.6	189.2	131.4	96.5	73.9	58.4	47.2
		WL	215.3	170.1	137.8	95.7	61.9	41.5	29.1	21.2
	2 Span	LL	208.2	165.6	134.8	94.2	69.5	53.4	42.2	34.3
		WL	278.1	222.5	181.8	127.8	94.5	72.7	57.7	46.8
	3 Span	LL	240.8	191.9	156.4	109.5	80.9	62.1	49.2	39.9
		WL	319.4	256.3	209.9	148.0	109.7	78.3	55.0	40.1
22	Single	LL	403.6	318.9	258.3	179.4	131.8	100.9	79.7	63.3
		WL	284.1	224.5	181.8	126.3	84.9	56.8	39.9	29.1
	2 Span	LL	277.6	220.4	179.1	125.0	92.1	70.6	55.9	45.3
		WL	385.5	307.5	250.7	175.7	129.8	99.7	79.0	64.1
	3 Span	LL	321.9	255.9	208.2	145.4	107.2	82.3	65.1	52.8
		WL	444.5	355.3	290.3	203.9	150.2	107.3	75.3	54.9

Notes on Load Table:

1. Allowable live or wind load is the smallest load due to bending, shear, combined bending and shear and deflection limitation of span/240.
2. These loads are for panel strength. Panel sidelaps, clips, fasteners, and all supports must be designed or tested to resist all loads imposed on the panel.
3. Allowable wind loads based on stress have not been increased by 33.33% for wind uplift.
4. For roof panels, self weight of the panel has to be deducted from the allowable inward load to arrive at the actual 'live load' carrying of the panel.
5. LL= Live Load, WL= Wind Load.



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Sectional Properties and Load Tables for SL175 Panel - 12" wide

12" Wide SL175 Panel - Sectional Properties

Gauge	Thickness (inches)	Weight (psf)	Yield Stress (ksi)	Allowable Shear (kips/ft)	Top in Compression (Positive Bending)			Bottom in Compression (Negative Bending)		
					I _{xx} in ⁴ /ft	S _{xx} in ³ /ft	M _a in.kips/ft	I _{xx} in ⁴ /ft	S _{xx} in ³ /ft	M _a in.kips/ft
24	0.0225	1.39	50	1.37	0.1139	0.0781	2.3390	0.0538	0.0574	1.7200
22	0.0285	1.755	50	2.17	0.1515	0.1057	3.1640	0.0738	0.0758	2.2690

Notes on Section Properties:

1. Section properties and allowables are calculated in accordance with North American Specification for the Design of Cold-Formed Steel Structural Members (2007 Edition)
2. I +/- is for deflection determination and S +/- is for bending determination.
3. M_a is allowable bending moment and V_a is allowable shear.
4. All values are for one foot of panel width.
5. Minimum deliverable bare steel thickness should not be less than 0.95 of design thickness.

12" Wide SL175 Panel - Allowable Live and Wind Loads (psf)

Gauge	Span	Load	Span (ft)							
			2	2.25	2.5	3	3.5	4	4.5	5
24	Single	LL	389.8	308.0	249.5	173.3	127.3	97.5	77.0	59.7
		WL	286.7	226.5	183.5	127.4	82.3	55.1	38.7	28.2
	2 Span	LL	277.3	220.6	179.6	125.5	92.6	71.1	56.2	45.6
		WL	367.2	293.6	239.9	168.6	124.7	95.9	76.1	61.7
	3 Span	LL	320.7	255.6	208.3	145.9	107.7	82.7	65.5	53.2
		WL	421.9	338.4	277.1	195.3	144.8	104.0	73.0	53.2
22	Single	LL	527.3	416.7	337.5	234.4	172.2	131.8	104.2	79.5
		WL	378.2	298.8	242.0	168.1	112.8	75.6	53.1	38.7
	2 Span	LL	369.5	293.4	238.4	166.3	122.5	94.0	74.4	60.3
		WL	504.6	402.3	328.0	229.7	169.7	130.3	103.2	83.8
	3 Span	LL	428.5	340.6	277.1	193.6	142.7	109.5	86.7	70.3
		WL	582.0	465.0	379.8	266.6	197.2	142.7	100.2	73.0

Notes on Load Table:

1. Allowable live or wind load is the smallest load due to bending, shear, combined bending and shear and deflection limitation of span/240.
2. These loads are for panel strength. Panel sidelaps, clips, fasteners, and all supports must be designed or tested to resist all loads imposed on the panel.
3. Allowable wind loads based on stress have not been increased by 33.33% for wind uplift.
4. For roof panels, self weight of the panel has to be deducted from the allowable inward load to arrive at the actual 'live load' carrying of the panel.
5. LL= Live Load, WL= Wind Load.