Force Engineering & Testing
19530 Ramblewood Drive
Humble, Texas 77338
Phone: (281) 540-6603 FAX: (281) 540-9966
Website: www.forceengineeringtesting.com

# Product Evaluation Report

## *Whirlwind Steel Buildings, Inc.*

## *Weather Lok 16" Steel Roof Panel Over Open Framing*

## Florida Product Approval # 17700.7 R4

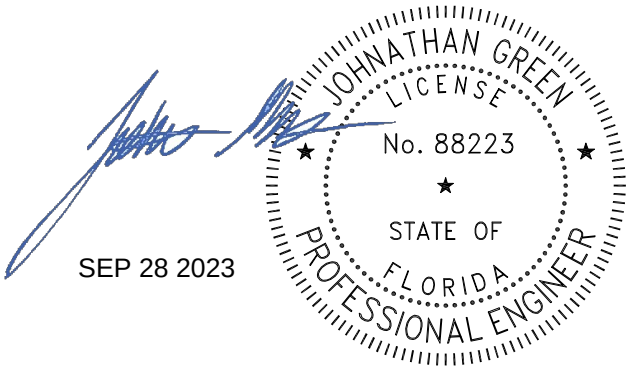
**Florida Building Code 2023**
**Per Rule 61G20-3**
**Method: 1 –D**

**Category: Structural Components**
**Subcategory: Roof Deck**
**Compliance Method: 61G20-3.005(1)(d)**
**HVHZ**

**Product Manufacturer:**
**Whirlwind Steel Buildings, Inc.**
**8234 Hansen Road**
**Houston, Texas 77075**

**Engineer Evaluator:**
**Johnathan Green, P.E. #88223**
**Florida Evaluation ANE ID: 12901**

**Contents:**


SEP 28 2023

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY JOHNATHAN GREEN ON THE DATE ADJACENT TO THE SEAL.

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**Compliance Statement:** The product as described in this report has demonstrated compliance with the Florida Building Code 2023, Sections 1504.3.2, 1504.7, 1518.9, 1523.6.5.2.4.

**Product Description:** Weather Lok 24 ga steel roof panel, 16" coverage, standing seam structural roof panel. Structural Application.

**Panel Material/Standards:** Material: 24ga steel, ASTM A792 or ASTM A653 G90 Grade 50 steel, conforming to Florida Building Code 2023 Section 1507.4.3. Paint finish is optional.
Yield Strength: Minimum 50.0 ksi
Corrosion Resistance: Panel Material shall comply with Florida Building Code 2023, Section 1507.4.3

**Panel Dimension(s):**

| | |
|---|---|
| Thickness: | 0.024" min. |
| Coverage width: | 16" nominal coverage |
| Rib: | 2" tall Rib |
| Panel Seam: | Triple Lock with Mechanical Seamer |

**Panel Clip:**

| | |
|---|---|
| Product Name: | Weather Lok-16 Low Movable Clip<br>Weather Lok-16 High Movable Clip |
| Type: | 20ga tab 4-1/4" long; bas 16ga 3-3/8" long |
| Corrosion Resistance: | Per Florida Building Code 2023 Section 1506.7 |

**Panel Fastener:** (2) ¼-14 x 1 1/4 DP2 HWH SDS per clip or approved equal.
Corrosion Resistance: Per Florida Building Code 2023, Section 1517.6

**Substrate Description:** Min. 16 Ga. Steel Framing. Must be designed in accordance w/ Florida Building Code.

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**Allowable Design Uplift Pressures:**

**Maximum Allowable Uplift Pressure for Weather Lok-16 Roof Panel with WL-16 Low/High Movable Clip:**

| Clip Spacing | Uplift Pressure |
|---|---|
| 5’-0” | -42.80 psf |
| 4’-0” | -68.19 psf |
| 3’-0” | -89.92 psf |
| 2’-6” | -100.79 psf |
| 2’-0” | -111.66 psf |
| 1’-0” | -133.40 psf |

**Code Compliance:**

The product described herein has demonstrated compliance with
The Florida Building Code 2023, Sections 1504.3.2, 1504.7, 1518.9, 1523.6.5.2.4.

**Evaluation Report Scope:**

The product evaluation is limited to compliance with the structural wind load requirements of the Florida Building Code 2023, as relates to Rule 61G20-3.

**Performance Standards:**

The product described herein has demonstrated compliance with:

- TAS 125-03 – Test method for structural performance of sheet metal roof and siding systems by uniform static air pressure difference.
- ASTM E 1592-05 Test method for structural performance of sheet metal roof and siding systems by uniform static air pressure difference.
- TAS 201-94 - Impact Testing
- FM 4471 Appendix G for roof slopes less than 2:12.
- TAS 100-95 Test Procedure for Wind and Wind Driven Rain Resistance of Discontinuous Roof Systems.
- TAS 110-00 - Accel. Weathering ASTM G155 / Salt Spray ASTM B 117
- FM 4471-92 Foot Traffic Resistance Test.

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**Reference Data:**

1. PA-125-95; ASTM E 1592-98
   Farabaugh Engineering and Testing, Inc.
   Report No. T191-01 dated 11/17/01
   PA-125-95; ASTM E 1592-98
   Farabaugh Engineering and Testing, Inc.
   Report No. T190-01 dated 11/17/01
2. Large Missile Impact Test SFBC PA 201-94
   Farabaugh Engineering and Testing, Inc.
   Report No. T209-01 dated 11/17/01
3. P100-95 Wind Driven Rain Resistance of Discontinuous Roof Systems
   Asphalt Technologies, Inc.
   Report No. DDI-001-02-01 dated 12/11/01
4. TAS 114 Appendix G
   Farabaugh Engineering and Testing, Inc.
   Report No. T178-04 dated 05/03/05
5. TAS 110-00 Akzo Nobel Coatings, Inc. coating on metal panel testing
   (A) ASTM G 26 by Asphalt Coating Technologies, Akzo Nobel Coatings, Inc.
   Dated 10/08/02
   (B) ASTM B 117 by Asphalt Coating Technologies, Akzo Nobel Coatings, Inc.
   Dated 10/08/02
6. FM 4471-10, Section 4.4 Foot Traffic Resistance Test
   Force Engineering and Testing, Inc (FBC Organization #TST-5328)
7. Miami-Dade County NOA No. 21-0419.12
8. Certificate of Independence
   By Johnathan Green, P.E. (No. 88223) @ Force Engineering & Testing
   (FBC Organization # ANE ID: 12901)

**Quality Assurance Entity:**

The manufacturer has established compliance of roof panel products in accordance with the Florida Building Code and Rule 61G20-3.005 (3) for manufacturing under a quality assurance program audited by an approved quality assurance entity.

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**Test Standard Equivalency:**

1. The ASTM E 1592-98 test standard is equivalent to the ASTM E 1592-05 (2017) test standard.
2. PA-125-95 test standard is equivalent to the TAS 125-03 test standard.
3. SFBC PA 201-94 test standard is equivalent to the TAS 201-94 test standard.
4. P 100-95 test standard is equivalent to TAS 100-95 test standard.
5. TAS 114 Appendix G test standard is equivalent to FM 4471 Appendix G test Standard.
6. The ASTM G 36 test standard was superseded by ASTM G 155 and is an Equivalent test standard.
7. The FM 4471-10, foot traffic Resistance test standard is equivalent to the FM 4471-92, Foot Traffic Resistance test standard.

**Minimum Slope Range:** 1/2: 12 Minimum Slope shall comply with Florida Building Code 2023, including Section 1515.2.2 and in accordance with Manufacturers recommendations. For slopes less than 3:12, lap sealant must be used in the panel side laps.

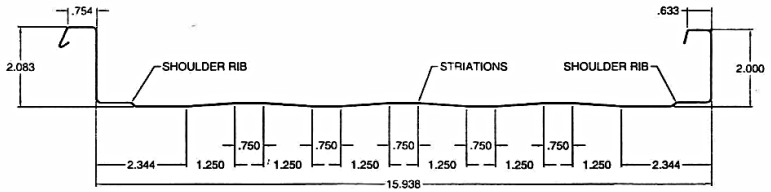
**Installation:** Install per manufacturer's recommended details and RAS 133.

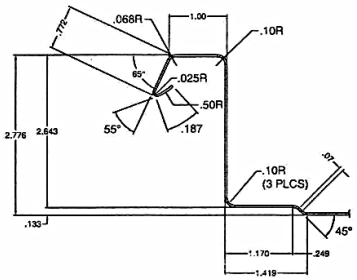
**Insulation:** Manufacturer's approved product (Optional).

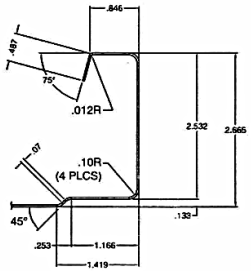
**Fire Barrier:** Fire classification is not part of this acceptance.

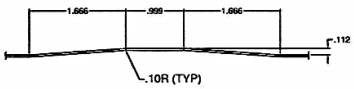
**Shear Diaphragm:** Shear diaphragm values are outside the scope of this report.

**Design Procedure**: Based on the dimensions of the structure, appropriate wind loads are determined using Chapter 16 of the Florida Building Code 2023 for roof cladding wind loads. These component wind loads for roof cladding are compared to the allowable pressure listed above. The design professional shall select the appropriate erection details to reference in his drawings for proper fastener attachment to his structure and analyze the panel fasteners for pullout and pullover. Support framing must be in compliance with Florida Building Code 2023 Chapter 22 for steel, Chapter 23 for wood and Chapter 16 for structural loading.




## PANEL PROPERTIES

| Panel Gage | Painted Panel Thickness | Yield Strength* | Tensile Strength* | Elongation* | Steel Coating* | Paint Coatings |
|---|---|---|---|---|---|---|
| 24 | 0.0240" | 50 KSI | 65 KSI | 26.5 | AZ 55 | Kynar 500 |
| | | Conform to ASTM A792 Structural Quality Grade 50 | | | | |

12-14 x 1¼" Zinc Hex Head "Ultimate" #3 Pt. with Integral Washer by Atlas Fasteners

¼-14 x ⅞" Zinc Hex Head "Ultimate" with Integral Washer by Atlas Fasteners

¼-14 x 1¼" Tek-2 Self-Driller by Atlas Fasteners

10-14 x 1" Zinc Hex Head Woodtite "Ultimate" with Integral Washer by Atlas Fasteners

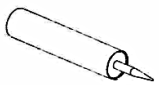


1" x 3/32" Butyl Tape

⅞" x 3/16" Butyl Tape

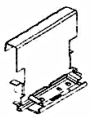


2½" x 3/16" Tri-Bead Butyl Tape



Advanced Polymer Gutter Sealant

Weather Lok-16 Low Movable Clip



Weather Lok-16 High Movable Clip

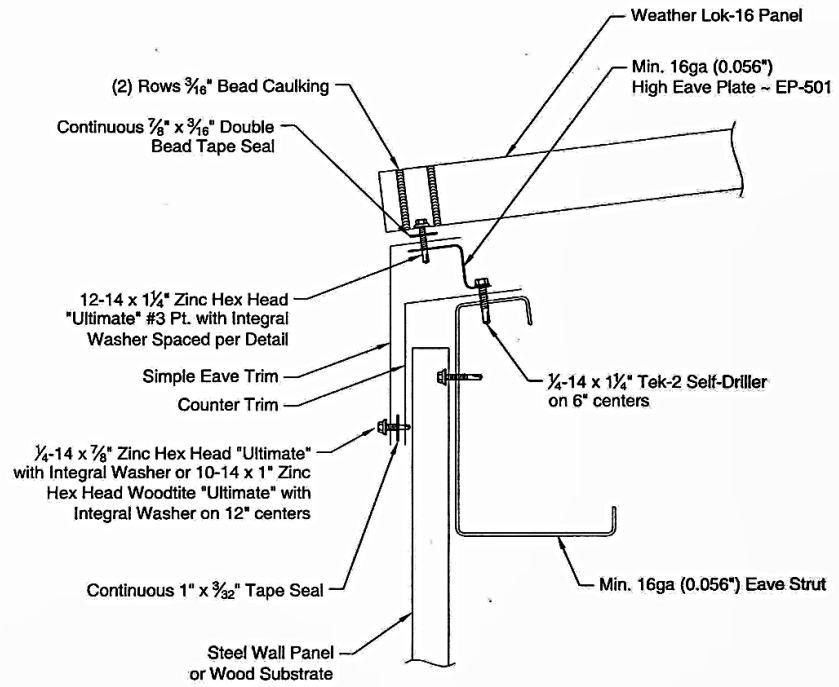
NOTES:

1. The 24 gage Weather Lok-16 roof panels shall be used for roof construction only. The actual roof project shall be constructed using the same details shown on these drawings including:
   - 1.1. Details, all panel material characteristics and section with dimension and thickness.
   - 1.2. Erection details including all connection fasteners with size and location.
   - 1.3. Panel maximum span and pressure for the field, perimeters and corners based on panel allowables shown below.
2. The maximum allowable spans and uplift pressures for the Weather Lok-16 24ga are as follows:

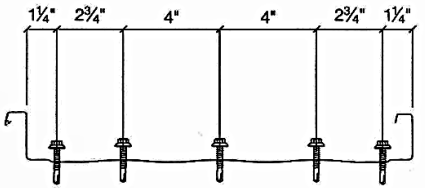
| Maximum Panel Span | Maximum Uplift Pressure (psf) |
|---|---|
| 1'-0" | 133.40 |
| 1'-6" | 122.53 |
| 2'-0" | 111.66 |
| 2'-6" | 100.79 |
| 3'-0" | 89.92 |
| 3'-6" | 79.06 |
| 4'-0" | 68.19 |
| 4'-6" | 57.32 |
| 5'-0" | 42.80 |

3. All panel submembers shall be minimum 16 gage (.056"). They are not part of this approval and they shall be reviewed structurally by the structural plans examiner of the corresponding building department for each job.

| | | | | |
|---|---|---|---|---|
| MANUFACTURING ENGINEER: RONALD H MAYS, P.E. | | | | |
| FLORIDA REGISTRATION NO: 54340 | | | | |
| WHIRLWIND STEEL BUILDINGS WEATHER LOK-16 24GA | | | | |
| WHIRLWIND STEEL BUILDINGS, INC. P.O. BOX 75280 - 6234 HANSEN ROAD HOUSTON, TX 77234 - (713) 946-7140 | REL | BY | DESCRIPTION | DATE |
| PROJECT: PRODUCT APPROVAL | | | | |
| SHEET TITLE: WEATHER lOK-16 24GA DETAILS | DWN BY: | | DATE: 3-26-02 | |
| | CHKD BY: | | SCALE: N.T.S. | |
| LOCATION: FLORIDA | PROJECT NUMBER: | | DWG NO: 14003502 | SHEET NO: 1 of 8 |




LOW EAVE




PANEL - EAVE FASTENERS

| | | | | | |
|---|---|---|---|---|---|
| MANUFACTURING ENGINEER: RONALD H MAYS, P.E. | | | | | |
| FLORIDA REGISTRATION NO: 54340 | | | | | |
| WHIRLWIND STEEL BUILDINGS WEATHER LOK-16 24GA | | | | | |
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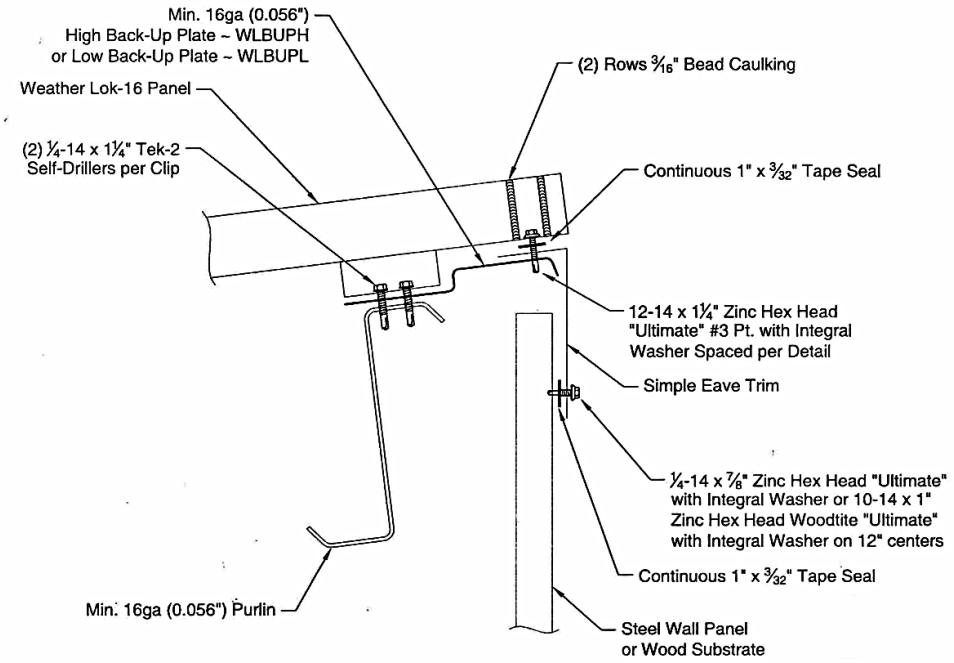
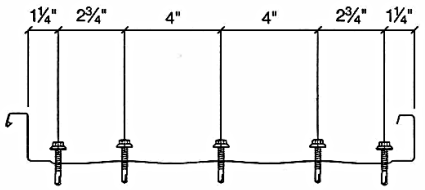



HIGH EAVE




PANEL - EAVE FASTENERS

| | | | | | |
|---|---|---|---|---|---|
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| FLORIDA REGISTRATION NO: 54340 | | | | | |
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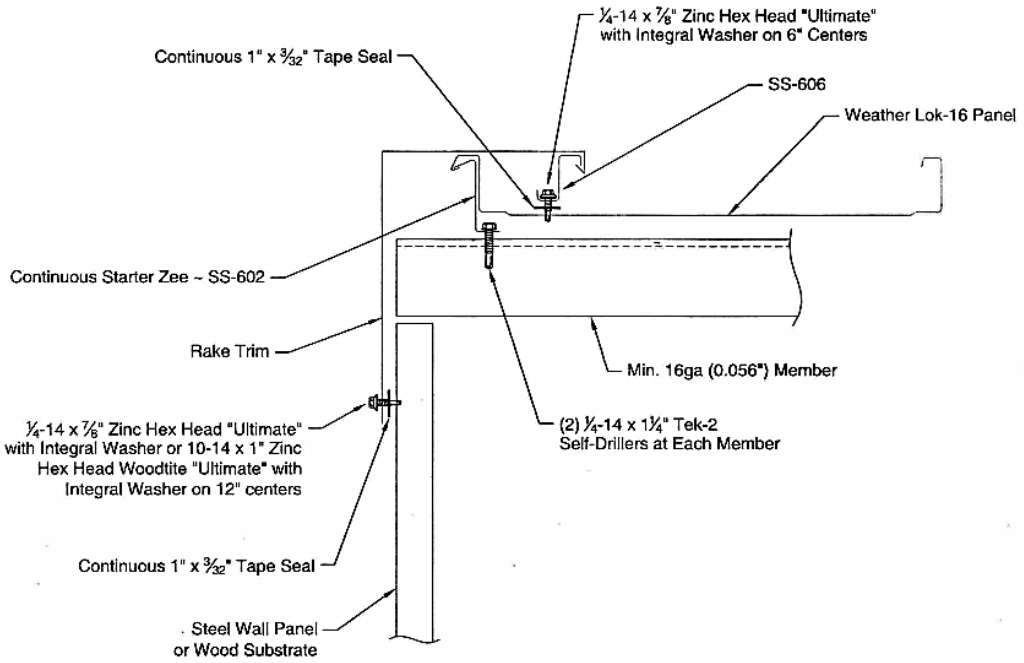


## RAKE 1

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| MANUFACTURING ENGINEER: RONALD H MAYS, P.E. | | | | | |
| FLORIDA REGISTRATION NO: 54340 | | | | | |
| WHIRLWIND STEEL BUILDINGS WEATHER LOK-16 24GA | | | | | |
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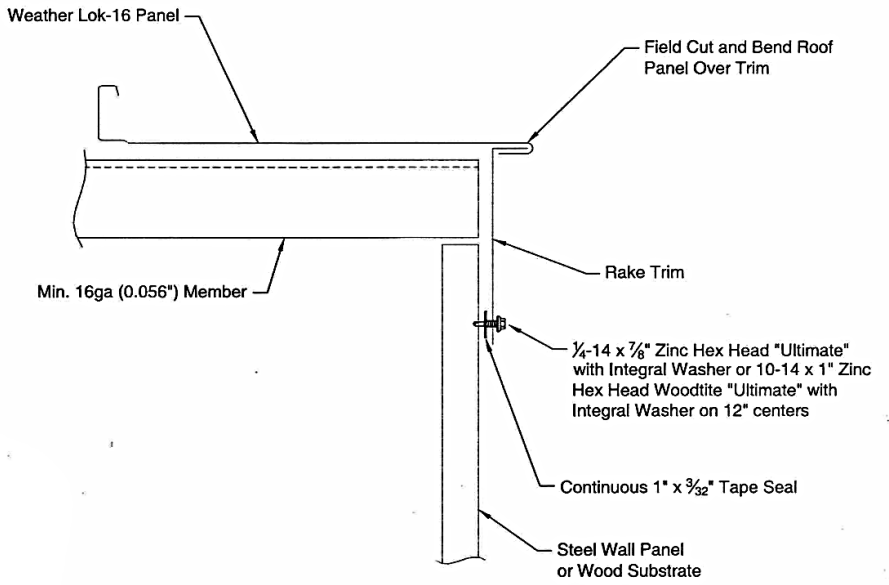


## RAKE 2

| | | | | | |
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| MANUFACTURING ENGINEER: RONALD H MAYS, P.E. | | | | | |
| FLORIDA REGISTRATION NO: 54340 | | | | | |
| WHIRLWIND STEEL BUILDINGS WEATHER LOK-16 24GA | | | | | |
| WHIRLWIND STEEL BUILDINGS, INC. P.O. BOX 75280 - 8234 HANSEN ROAD HOUSTON, TX 77234 - (713) 946-7140 | REL | BY | DESCRIPTION | | DATE |
| | | | | | |
| PROJECT: PRODUCT APPROVAL | | | | | |
| SHEET TITLE: WEATHER IOK-16 24GA DETAILS | DWN BY: | | DATE: 3-27-02 | | |
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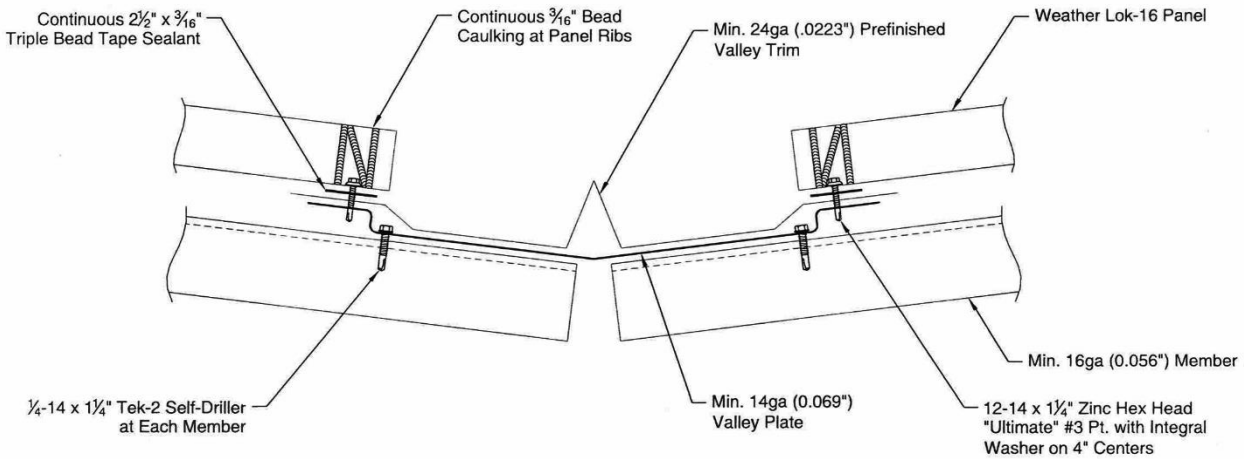


## VALLEY

| | | | | | |
|---|---|---|---|---|---|
| MANUFACTURING ENGINEER: RONALD H MAYS, P.E. | | | | | |
| FLORIDA REGISTRATION NO: 54340 | | | | | |
| 4 WHIRLWIND STEEL BUILDINGS WEATHER LOK-16 24GA | | | | | |
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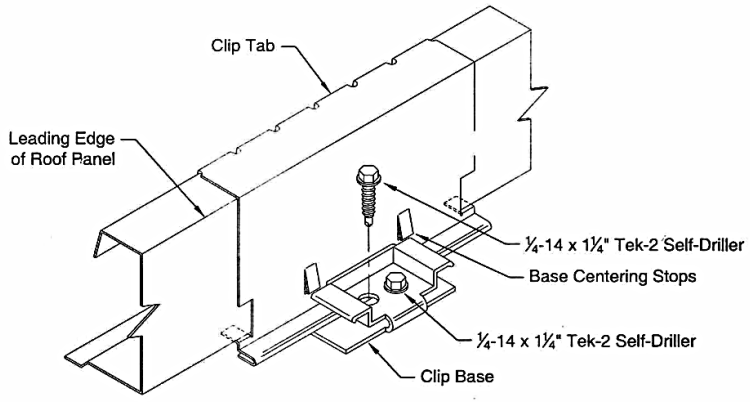
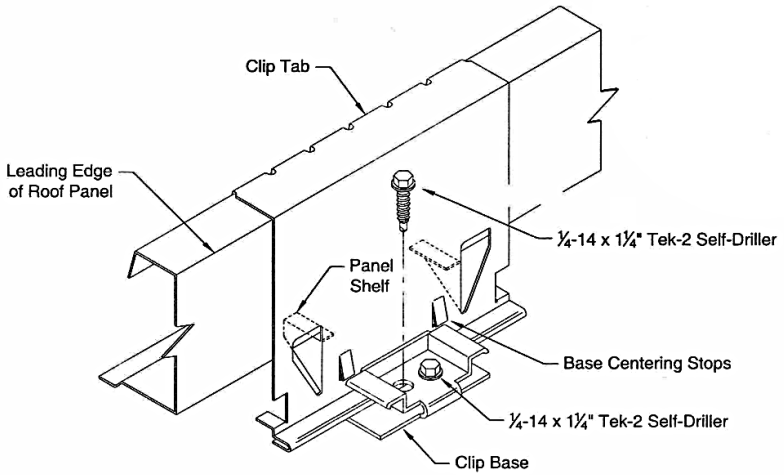


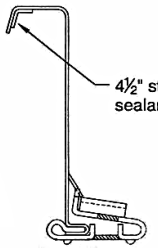

3/8" Stand-Off Clip
WL-16 Low Clip
(MC 120310)




1 3/8" Stand-Off Clip
WL-16 High Clip
(MC 121310)

NOTES:

1. There are two types of clips that can be furnished with this roof system, the 3/8" stand-off and the 1-3/8" stand-off. Both of these are floating clips.
2. Thermal spacers are required with the 1 3/8" stand-off clip.
3. Apply a 4½" strip of 3/8" x 3/32" tape sealant to the underside of the clip before installation per Detail "A".
4. Install panel clips along the male edge of the panel at each purlin location.
5. Attach clip to purlin with (2) ¼-14 x 1¼" Tek-2 self-drilling screws per clip.




Detail "A"

| | | | | | |
|---|---|---|---|---|---|
| MANUFACTURING ENGINEER: RONALD H MAYS, P.E. | | | | | |
| FLORIDA REGISTRATION NO: 54340 | | | | | |
| WHIRLWIND STEEL BUILDINGS WEATHER LOK-16 24GA | | | | | |
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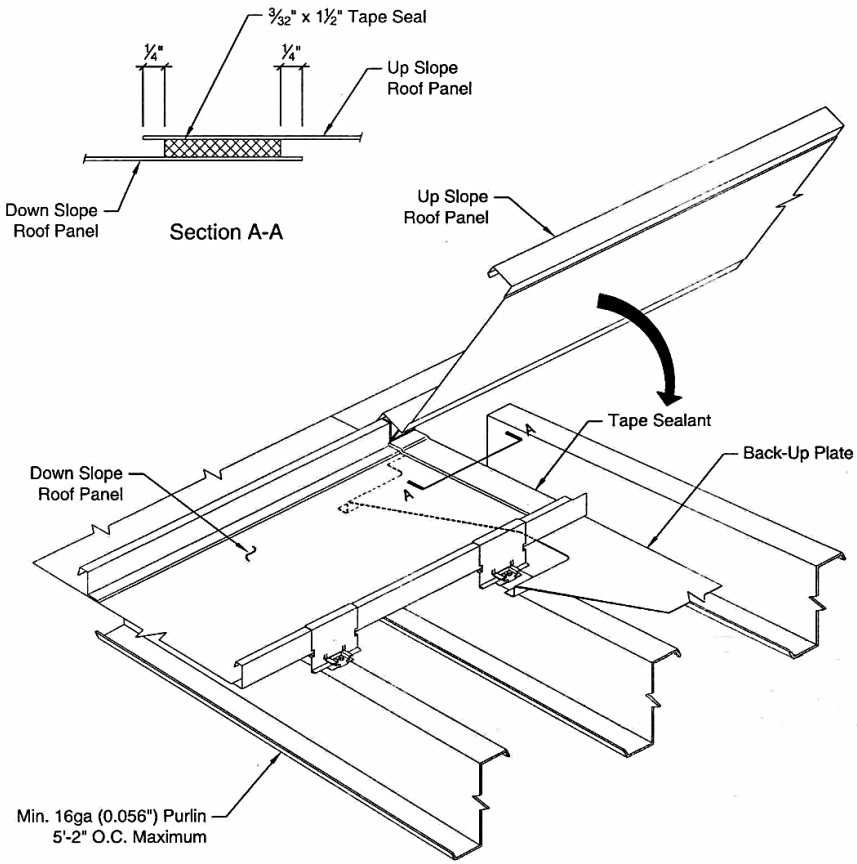
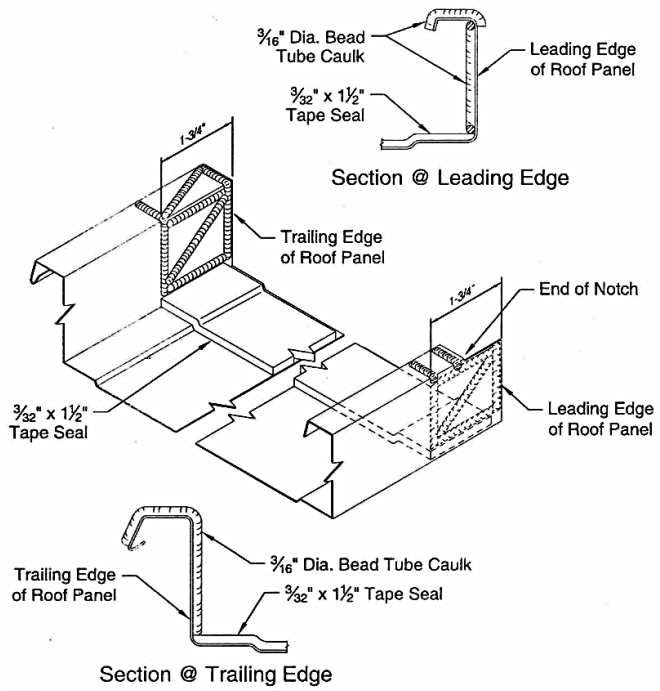


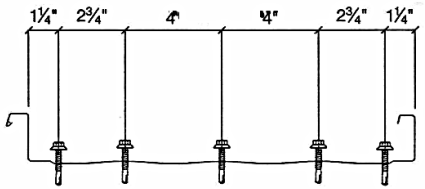




NOTES:

1. Place the 3/32" x 1½" endlap tape seal as shown in the above illustrations. Make sure the tape seal is pressed tightly into the panel bends and corners.
2. Use 3/16" diameter beads for all caulking shown. Caulking cannot have any gaps.

NOTES:

1. Position the up slope panel so the total panel lap is 2".
2. The endlap tape seal and the up slope panel are positioned so their edges are ¼" apart. (See section above)
3. When placing the up slope panel care must be taken to prevent moving or wiping the tape seal and caulking from the down slope panel.




PANEL - LAP FASTENERS

| | | | | | |
|---|---|---|---|---|---|
| MANUFACTURING ENGINEER: RONALD H MAYS, P.E. | | | | | |
| FLORIDA REGISTRATION NO: 54340 | | | | | |
| WHIRLWIND STEEL BUILDINGS WEATHER LOK-16 24GA | | | | | |
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| | CHKD BY: | | SCALE: N.T.S. | | |
| LOCATION: FLORIDA | PROJECT NUMBER: | | DWG NO: 14003502 | SHEET NO: 8 of 8 | |