# EVALUATION REPORT OF
# UNION CORRUGATING COMPANY
# 'TS-324 PANEL'

## FLORIDA BUILDING CODE 7TH EDITION (2020)
## FLORIDA PRODUCT APPROVAL
## FL 9555.9-R5
## STRUCTURAL COMPONENTS
## ROOF DECK

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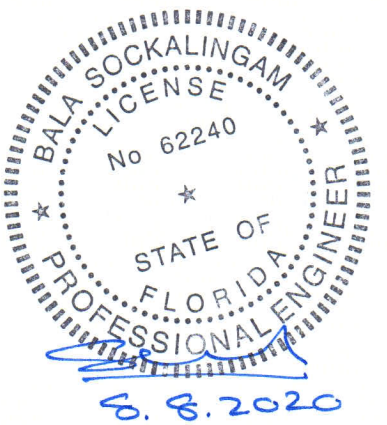
**This report consists of**
**Evaluation Report (3 Pages including cover)**
**Installation Details (2 Pages)**
**Load Span Tables (2 Pages)**



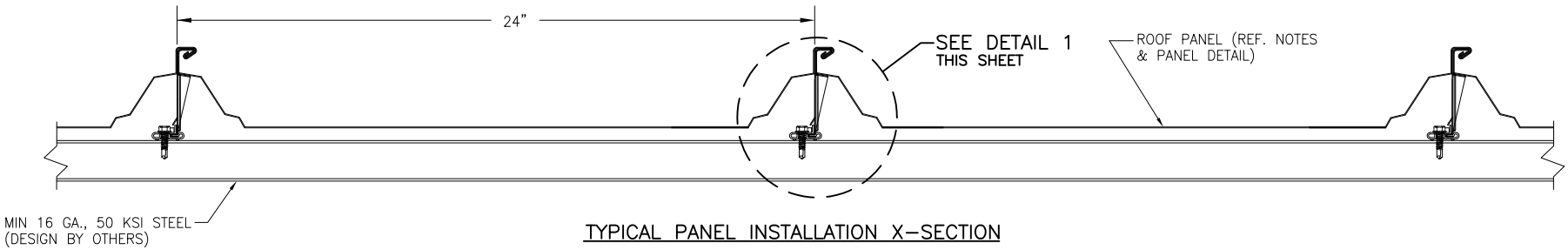

**Report No. C2373-9**
**Date: 8.8.2020**

| | |
|---|---|
| Manufacturer: | Union Corrugating Company |
| Product Name: | TS-324 |
| Panel Description: | Standing seam panel with 24" wide coverage and 3" high ribs |
| Materials: | Min 24 or 22 ga. with galvalume coated steel (ASTM A792) or painted steel (ASTM A755) ($F_y$ = 50 ksi). Corrosion resistant as per FBC 2020 Section 1507.4.3. |
| Support Description: | Min 16 ga., 50 ksi steel section (Must be designed by others) |
| Slope: | 1/4:12 or greater in accordance with FBC 2020 Section 1507.4.2 |
| Design Uplift Pressure: | Allowable uplift loads are shown in the load span tables for 24 and 22 ga. panels with RollLok, TripleLok and Quadlok Seams fastened with MPS 600 or BA Series clips. Maximum panel span is 5'.<br><br>The allowable uplift loads were determined from ASTM E1592 testing and are applicable for the panel and panel to clip connection. Clip fastener, purlin, frames and support connections must be designed to resist all loads. The factors of safety were determined in accordance with FBC 2020 Section 1504.9, ASTM E1592 test standard and the procedures of Section I6.3.1, K2.1.1 and K2.1.2 of the AISI S100-16. |
| Panel Attachment: | MPS 600 or BA clips with minimum (2) 1/4"-14 x 1-1/2" SDS per clip at each support. Clips and fasteners are corrosion resistant as per FBC 2020 Section 1506.7 and 1507.4.4, respectively. |
| Test Standards: | Roof assembly tested in accordance with ASTM E1592-98 or E1592-01 ‘Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference’ and FM 4470 Section 5.5 ‘Resistance to Foot Traffic’. |
| Test Equivalency: | The test procedures in ASTM E1592-98 or E1592-01 comply with test procedures prescribed in ASTM E1592-05(2012).<br>The test procedure in FM 4470 (1992) comply with test procedure prescribed in FM 4470 (2016) Section 4.6 ‘Resistance to Foot Traffic’. |
| Code Compliance: | The product described herein has demonstrated compliance with FBC 2020 Section 1507.4. |
| Product Limitations: | Design wind loads shall be determined for each project in accordance with FBC 2020 Section 1609 or ASCE 7-16 using allowable stress design. The maximum support spacing listed herein shall not be exceeded. The design uplift pressure for reduced support spacing may |

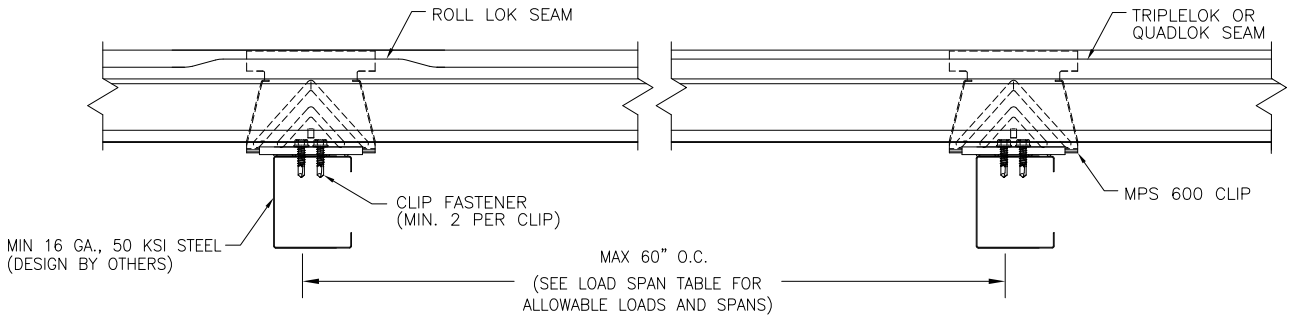
be computed using rational analysis prepared by a Florida Professional Engineer or based on Union Corrugating load span tables. This evaluation report is not applicable in High Velocity Hurricane Zone. Fire classification is not within scope of this Evaluation Report. Refer to FBC 2020 Section 1505 and current approved roofing materials directory or ASTM E108/UL790 report from an accredited laboratory for fire ratings of this product.

Supporting Documents: ASTM E1592 Test Reports
ENCON Technology Inc.
Project No. C596, Reporting Date 10/28/98
Project No. C739, Reporting Date 7/28/99
Project No. C1417-1, Reporting Date 1/20/06
Project No. C1417-2, Reporting Date 1/23/06
Project No. C1417-4, Reporting Date 1/25/06
Project No. C1672-1, -2 & -3, Reporting Date 4/12/02, Revised Date 9/29/09

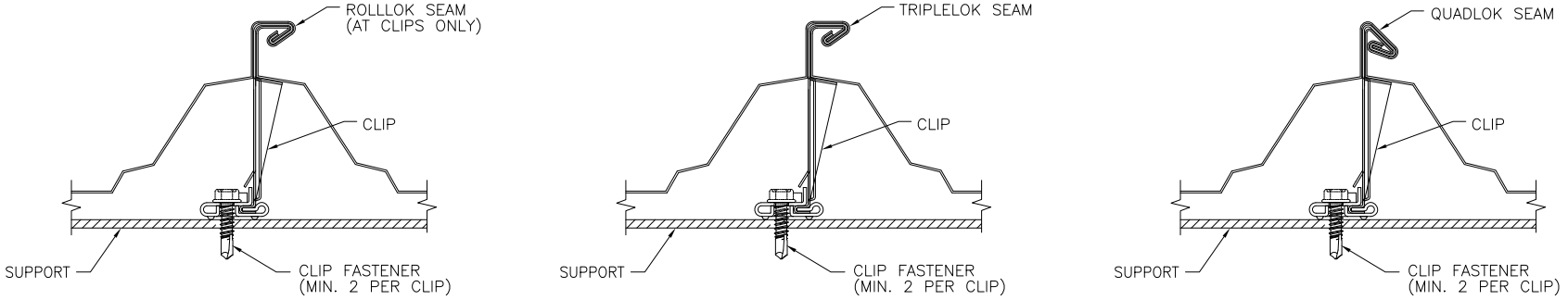
FM 4470 Test Report
ENCON Technology Inc.
C1669-1, Reporting Date 9/30/09
(Union Corrugating Company is authorized to use Building Research System's Test Reports)



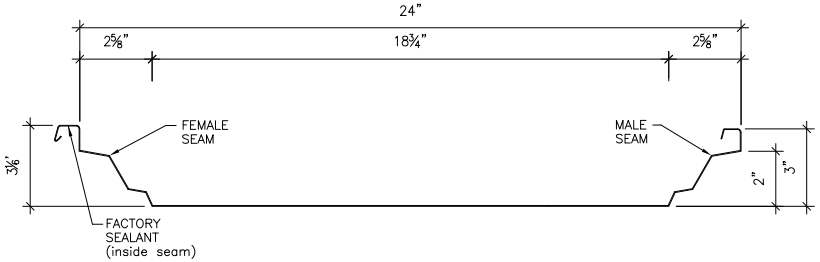

TYPICAL PANEL INSTALLATION X–SECTION




TYPICAL SIDE VIEW




CLIP SECTION VIEW
DETAIL 1




PANEL SECTION
(MIN 24 GA.)

**GENERAL NOTES:**

1. STRUCTURAL ROOF PANEL HAS BEEN DESIGNED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE (FBC).
2. ROOF PANELS SHALL BE 24 GA. (t = 0.022") OR 22 GA. (T= 0.0285"). EFFECTIVE COVERING WIDTH OF PANEL = 24".
3. ROOF PANELS SHALL BE INSTALLED OVER STRUCTURE AS SPECIFIED ON THESE DRAWINGS.
4. REQUIRED DESIGN WIND LOADS SHALL BE DETERMINED FOR EACH PROJECT. THIS PANEL SYSTEM MAY NOT BE INSTALLED WHEN THE REQUIRED DESIGN WIND LOADS ARE GREATER THAN THE ALLOWABLE DESIGN LOADS.
5. CLIPS AND FASTENERS MUST BE IN ACCORDANCE WITH THESE DRAWINGS & FLORIDA BUILDING CODE. IF A DIFFERENCE OCCURS BETWEEN THE MINIMUM REQUIREMENTS OF THESE DRAWINGS & THE CODE, THE CODE SHALL CONTROL.
6. SUPPORTS MUST BE DESIGNED TO WITHSTAND WIND LOADS AS REQUIRED FOR EACH APPLICATION AND ARE THE RESPONSIBILITY OF OTHERS.

DRAWN BY: B.S. | CHECKED BY: R.S.
PLOT: | DATE: 7/29/2019

| NO. | REVISION DESCRIPTION | BY | DATE |
|---|---|---|---|

DRAWING TITLE: TS–324 STANDING SEAM ROOF PANEL

MANUFACTURER
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910–483–0479

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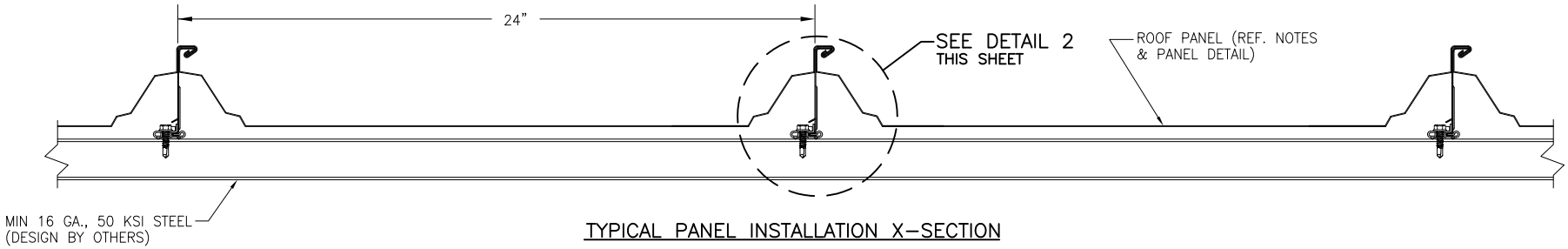
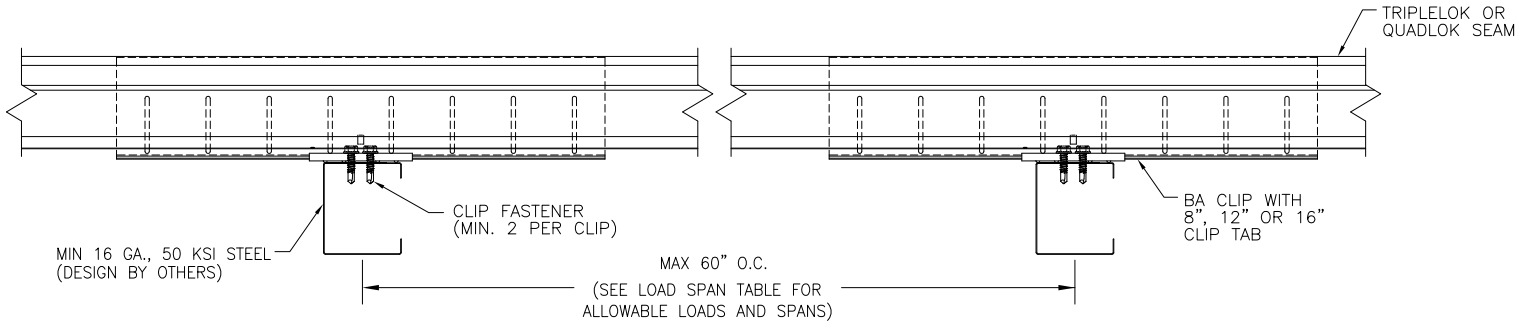
DRAWING NO. 2373–9 | REV.

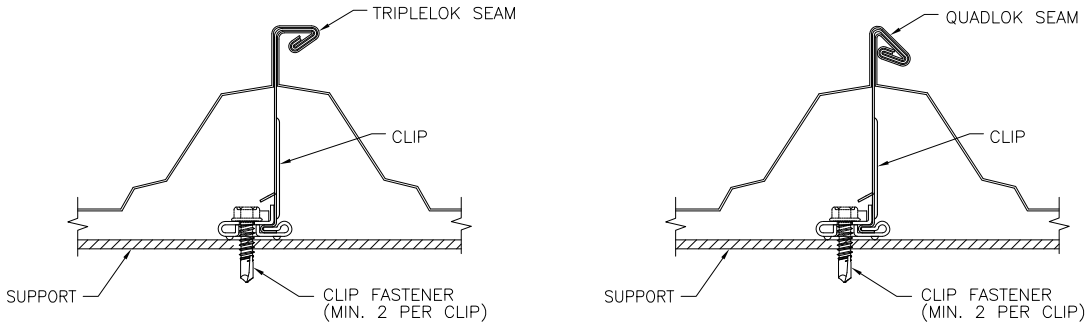
PAGE NO. 1 OF 2




TYPICAL PANEL INSTALLATION X-SECTION




TYPICAL SIDE VIEW




CLIP SECTION VIEW
DETAIL 2

| | |
|---|---|
| DRAWN BY: B.S. | CHECKED BY: R.S. |
| PLOT: | DATE: 7/29/2019 |

| NO. | REVISION DESCRIPTION | BY | DATE |
|---|---|---|---|

DRAWING TITLE
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DRAWING NO. 2373-9
REV.

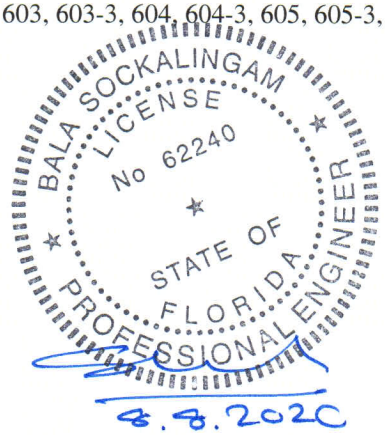
PAGE NO. 2 OF 2

**UNION CORRUGATING COMPANY**
**TS-324 Panel Uplift Loads**
**With MPS 600 Series Clips**

| Seam | Span (ft) | Allowable Uplift Load (psf) | |
|---|---|---|---|
| | | 24 ga. | 22 ga. |
| RollLok | 2 | 61.1 | |
| | 2.5 | 55.6 | 57.2 |
| | 3 | 47.2 | 52.5 |
| | 3.5 | 40.4 | 47.8 |
| | 4 | 35.4 | 42.3 |
| | 4.5 | 31.4 | 37.6 |
| | 5 | 28.3 | 33.8 |
| TripleLok | 2 | 85.5 | |
| | 2.5 | 78.4 | 59.8 |
| | 3 | 71.3 | 55.6 |
| | 3.5 | 61.1 | 51.5 |
| | 4 | 53.5 | 47.3 |
| | 4.5 | 47.6 | 43.2 |
| | 5 | 42.8 | 39.0 |
| QuadLok | 2 | 108.8 | |
| | 2.5 | 99.7 | |
| | 3 | 89.8 | |
| | 3.5 | 77.0 | |
| | 4 | 67.4 | |
| | 4.5 | 59.9 | |
| | 5 | 53.9 | |

**Notes:**

1. The allowable uplift loads were determined from ASTM E1592 testing and are applicable for the panel and panel to clip connection. Clip fastener, purlin, frames and support connections must be designed to resist all loads imposed on the panel.
2. The factor of safety was determined in accordance with the procedures of Section I6.3.1, K2.1.1 and K2.1.2 of the AISI S100-16.
3. The factor of safety for 24 ga. TS-324 panels varied between 1.702 and 1.715.
4. The factor of safety for 22 ga. TS-324 panels was 2.0.
5. Panels must be installed as per Evaluation Report FL 9555.9 and Union's current installation procedure.
6. MPS 600 Series Clip: MPS 602, 602-3, 603, 603-3, 604, 604-3, 605, 605-3, 607, 608, 609.
7. Three or more spans condition.

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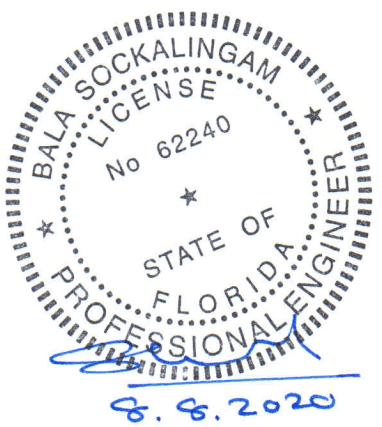
**UNION CORRUGATING COMPANY**
**24 Ga. TS-324 Panel Uplift Loads**
**With BA Series Clips**

| Seam | Span (ft) | Allowable Uplift Load (psf) | | |
|---|---|---|---|---|
| | | BA-602-8 or BA-603-8 | BA-602-12 or BA-603-12 | BA-602-16 or BA-603-16 |
| TripleLok | 2 | 106.0 | 127.8 | 149.7 |
| | 2.5 | 97.0 | 116.8 | 136.6 |
| | 3 | 86.4 | 102.6 | 118.7 |
| | 3.5 | 74.1 | 87.9 | 101.7 |
| | 4 | 64.8 | 76.9 | 89.0 |
| | 4.5 | 57.6 | 68.4 | 79.1 |
| | 5 | 51.9 | 61.5 | 71.2 |
| QuadLok | 2 | 144.8 | 183.3 | |
| | 2.5 | 132.2 | 166.8 | |
| | 3 | 114.4 | 140.7 | |
| | 3.5 | 98.1 | 120.6 | |
| | 4 | 85.8 | 105.5 | |
| | 4.5 | 76.3 | 93.8 | |
| | 5 | 68.7 | 84.4 | |

**Notes:**

1. The allowable uplift loads were determined from ASTM E1592 testing and are applicable for the panel and panel to clip connection. Clip fastener, purlin, frames and support connections must be designed to resist all loads imposed on the panel.
2. The factor of safety was determined in accordance with the procedures of Section I6.3.1, K2.1.1 and K2.1.2 of the AISI S100-16.
3. The factor of safety for 24 ga. TS-324 panels varied between 1.702 and 1.709.
4. Panels must be installed as per Evaluation Report FL 9555.9 and Union's current installation procedure.
5. The clip tab width for the following clips are as follows:
   BA-602-8 or BA-603-8: 8"
   BA-602-12 or BA-603-12: 12"
   BA-602-16 or BA-603-16: 16"
6. Three or more spans condition.

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