

CHRISTOPHER S. BLECHSCHMIDT, P.E.

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May 2, 2018

Mr. James Bush
ATAS International, Inc.
6612 Snowdrift Road
Allentown, PA 18106

**RE: MRD/Dutch Seam HVHZ Florida Product Approval
Report No: MRD-2017-HVHZ**

Dear Jim:

At your request I have evaluated the wind resistance performance of the ATAS MRD/Dutch Seam roof panels for use in high-velocity hurricane zones (HVHZ) in conjunction with the 2017 Florida Building Code and Florida product approval system. The substantiating calculations and design assumptions are attached to this letter.

A summary of the results is given below:

Product: MRD
Material: 0.032" aluminum
Structural Substrate: 5/8" thick (minimum) plywood
1/2" thick (minimum) plywood for reroofing
Fastener: #10-13 screws
Clip Spacing and Screw: see tables below

0.032" MRD 150 HVHZ			
Zone	Allowable Pressure (psf)	Clip Spacing (in)	#10-13 Screws per Clip
Field	71	12	2
Perimeter	113	8	2

0.032" MRD 194 HVHZ			
Zone	Allowable Pressure (psf)	Clip Spacing (in)	#10-13 Screws per Clip
All	158	4	2

Please note that my investigation has been limited to the conditions discussed, and is based in part on information provided to me. The work was performed using the standard of care exercised by structural engineers in this area at the time of the work. No expressed or implied warranties are made.

If you have any questions regarding these findings or conclusions, feel free to contact me. Thanks again for allowing me to assist you with this work.

Sincerely,

Christopher S. Blechschmidt
P.E. 61272



5-2-18

Design Assumptions

0.032" MRD 150 and 194 aluminum panel (0.030" minimum delivered thickness)

Sloped roof from 2.33:12 to 12:12 slope

5/8" plywood roof sheathing for new construction, 1/2" sheathing for reroofing

#10 screws per clip into plywood

8" clip spacing at perimeter, 12" fastener spacing in field for HVHZ

3003-H14 aluminum sheet ($F_y = 17$ ksi, $F_u = 20$ ksi), ASTM A 653 SQ Gr. 50 steel sheet ($F_y = 50$ ksi, $F_u = 65$ ksi).

Tested in accordance with:

TAS 100-1995 (ATI report 66446.02-109-18)

TAS 110-2000 (ASTM G23 -- Accelerated Weathering, ASTM B117 -- Salt Spray)

TAS 125-2003 (ATI report 66446.01-109-18)

Installation in accordance with RAS 111 (TAS 111 testing not required) and RAS 133 for HVHZ.

Panels tested to failure according TAS 125 protocols

F. S. = 2.0 on panel test pressures

Test Report References

Standard	Report Number	Laboratory	Laboratory Location
TAS 125-03	66445.01-109-18	Architectural Testing	McKeepsport, PA
UL 580 (revised 7-9-09)	C2451.01-109-44	Architectural Testing, Inc.	York, PA

0.032" MRD150 HVHZ Allowable Pressure Evaluation

TAS 125/UL580 Test Summary				
Specimen	Clip Spacing (ft)	Failure Pressure (psf)	Clip Load (lbs)	Screw Load (lbs)
1	1	150	187.5	93.75
2	0.667	225	187.5	93.75
3	2	135	337.5	168.75

Failure in all specimens occurred when panels pulled apart at the seam.

HVHZ Allowable Field Pressure

Use Specimens 1 and 3 to determine allowable field pressure. Use Specimen 1 as basis of design.

$$P_{ult, avg} = 142.5 \text{ psf}$$

$$P_{allow} = 71.25 \text{ psf}$$

$$\text{Clip Spacing} = 12 \text{ in}$$

HVHZ Allowable Perimeter (Corner) Pressure

Use Specimen 2 to determine allowable field pressure

$$P_{ult} = 225 \text{ psf}$$

$$P_{allow} = 112.5 \text{ psf}$$

$$\text{Clip Spacing} = 8 \text{ in}$$

0.032" MRD194 Allowable Pressure Evaluation

TAS 125/UL580 Test Summary				
Specimen	Clip Spacing (ft)	Failure Pressure (psf)	Clip Load (lbs)	Screw Load (lbs)
1	0.333	315	168	84

Failure occurred when panels pulled apart at the seam.

HVHZ Allowable Pressure (all zones)

$$P_{ult} = 315 \text{ psf}$$

$$F.S. = 2.0$$

$$P_{allow} = 158 \text{ psf}$$

$$\text{Clip Spacing} = 4 \text{ in}$$

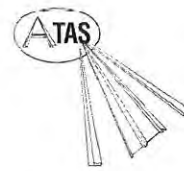
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Project No: 2012.026 Page:
Project: MRD Florida Product Approval
Client: ATAS International, Inc
Cal. By: CSB Date: 5/2/18

0.032" MRD 150 HVHZ			
Zone	Allowable Pressure (psf)	Clip Spacing (in)	#10-13 Screws per Clip
Field	71	12	2
Perimeter	113	8	2

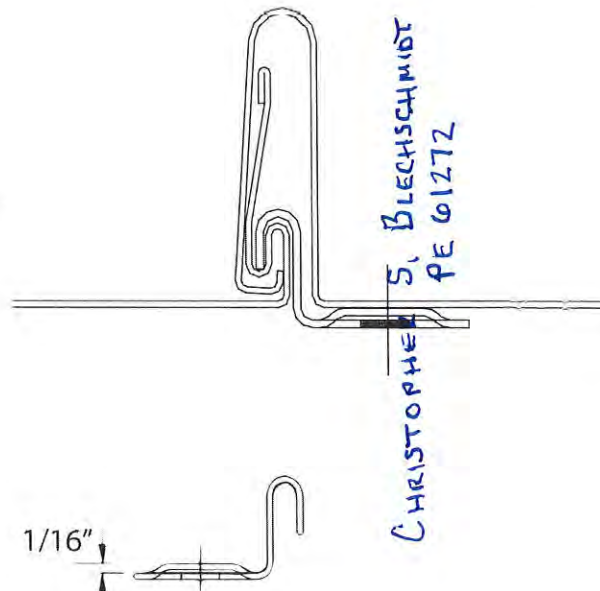
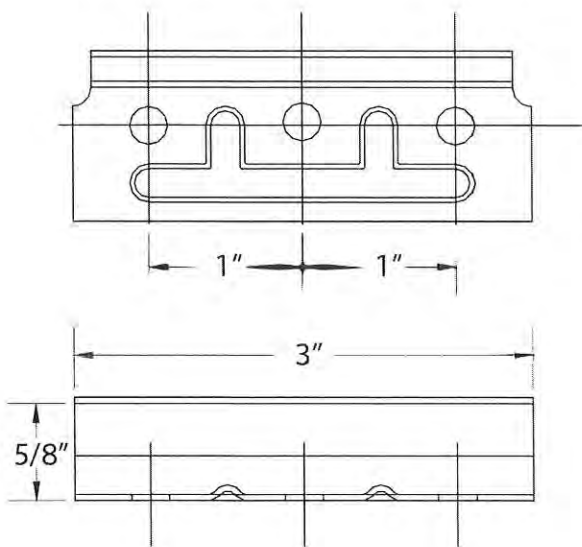
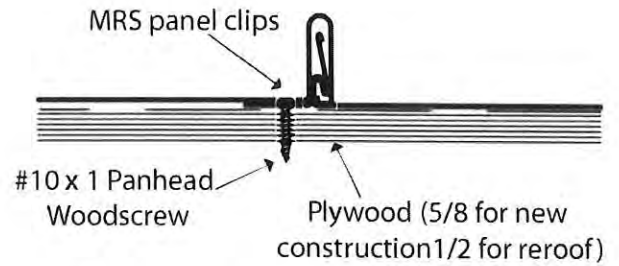
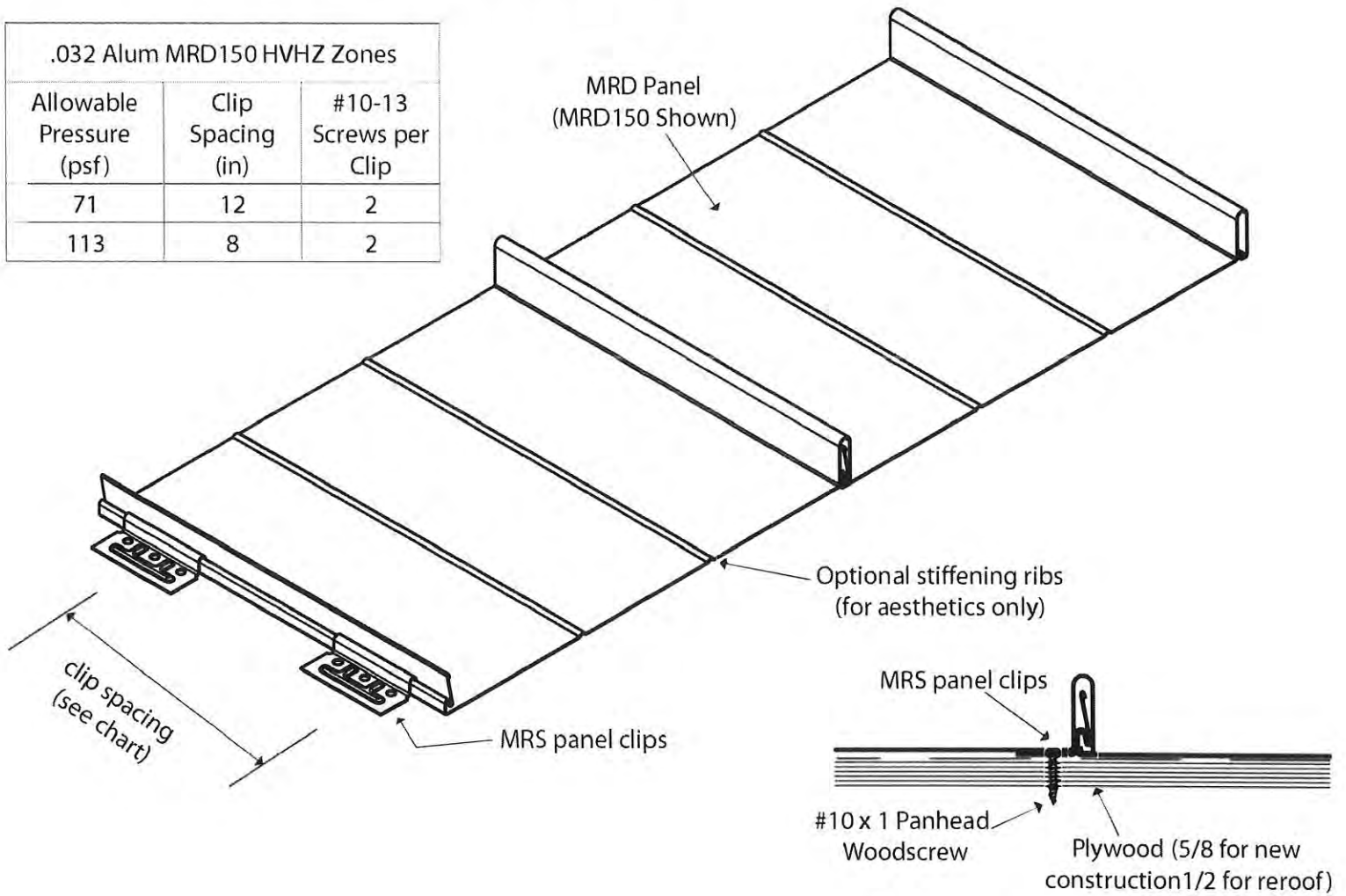
0.032" MRD 194 HVHZ			
Zone	Allowable Pressure (psf)	Clip Spacing (in)	#10-13 Screws per Clip
All	158	4	2

DUTCH SEAM



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.032 Alum MRD150 HVHZ Zones		
Allowable Pressure (psf)	Clip Spacing (in)	#10-13 Screws per Clip
71	12	2
113	8	2



Christopher S. Blechschmidt
5-2-18

Published panel width dimensions are to be considered as nominal dimensions. Variations in overall coverage may occur at installation due to typical manipulating of panels during attachment to the roof assembly.

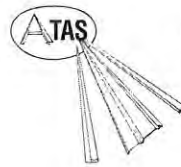
"FLAT" ANCHOR CLIPS

MRS903 - 22 ga. stainless steel

MRS904 - 24 ga. galvanized steel

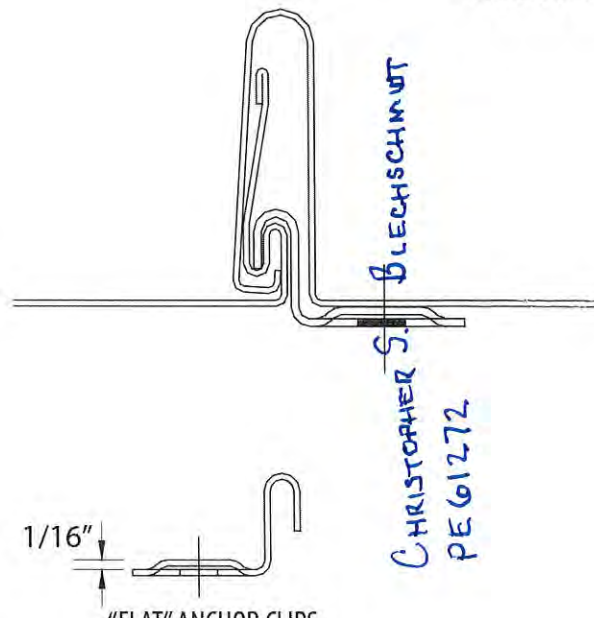
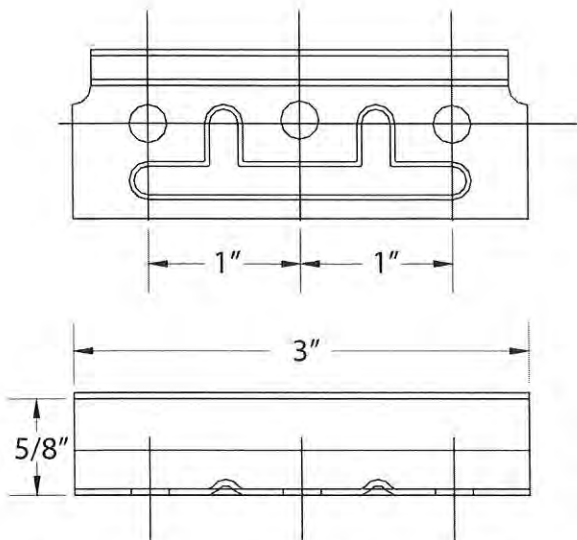
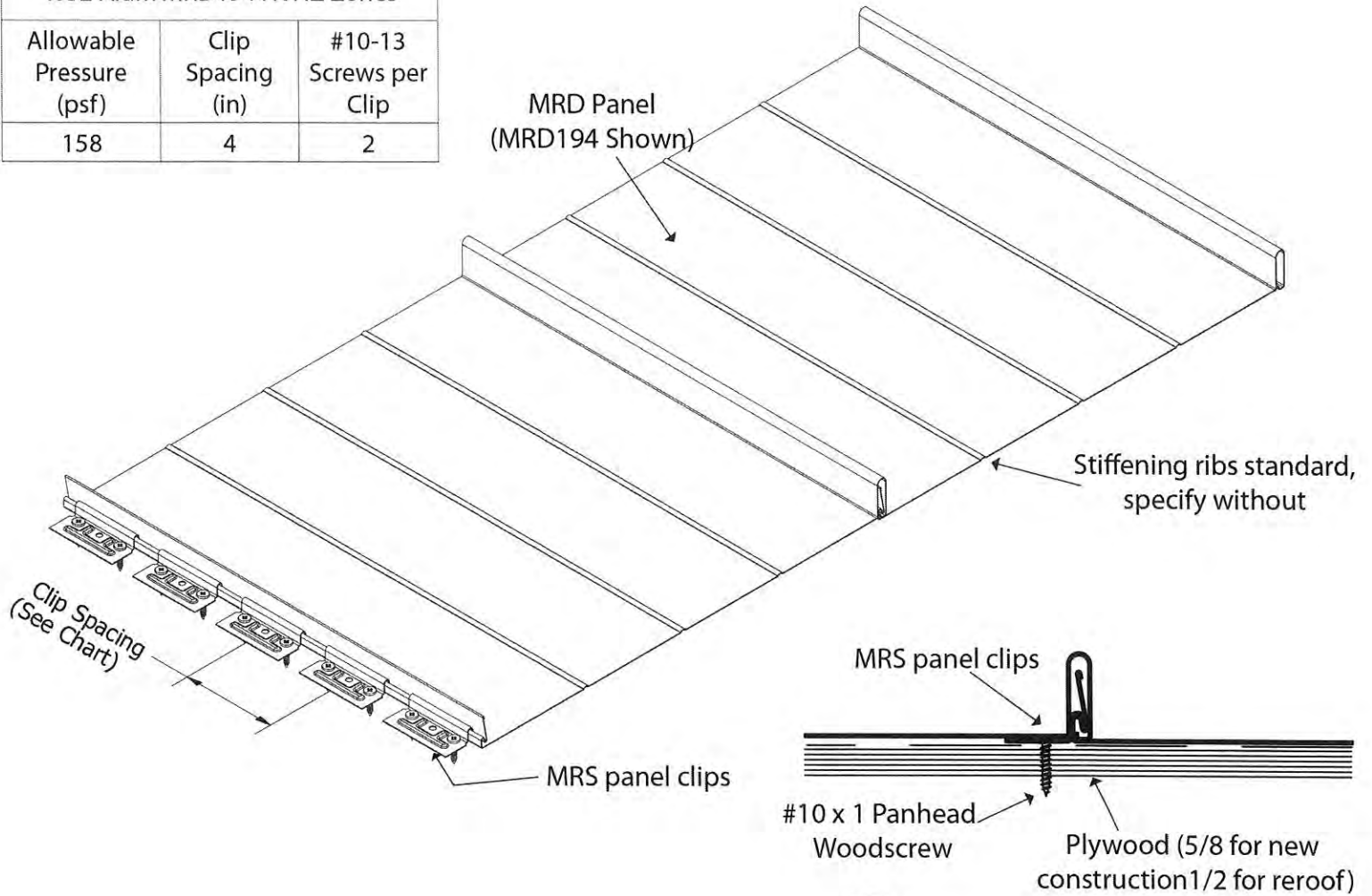
Clips designed for use with wafer (pancake) headed screws.

DUTCH SEAM



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