



# PRI Construction Materials Technologies LLC

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## Laboratory Test Report

**Report for:** Pablo Rodriguez  
Cupa Pizarra SA  
La Medua s/s 32330  
Sobradelo de Valdeorras  
Spain

**Product Name:** ReadySlate  
**Project No.:** 2039T0001  
**Date(s) Tested:** March 5, 2021  
**Test Methods:** FBC (HVHZ) TAS 100-95  
**Results Summary:** Compliant with FBC (HVHZ) TAS 100-95

**Purpose:** Determine the wind and wind-driven rain resistance for the specified roof covering in accordance with **Florida Building Code Test Protocols for the High Velocity Hurricane Zone (HVHZ) Testing Application Standard (TAS) No. 100: Test Procedure for Wind and Wind Driven Rain Resistance of Discontinuous Roof Systems.**

**Test Methods:** Testing was conducted as described in Florida Building Code Test Protocols for the High Velocity Hurricane Zone (HVHZ) Testing Application Standard (TAS) No. 100-95: *Test Procedure for Wind and Wind Driven Rain Resistance of Discontinuous Roof Systems.*

**Sampling:** The following materials were received by PRI.

<u>Product</u>	<u>Source</u>	<u>Date</u>	<u>Sampling</u>
Drip Flashing			
1-3/4" Copper nails	Savannah, GA	Jan. 8, 2021	Vermont Slate Company
ReadySlate			

All other roofing components were procured by PRI Construction Materials Technologies LLC through local distribution.

**Conditioning:** The prepared test deck was conditioned for 16h at 135-140°F. After conditioning, test deck was allowed to equilibrate to ambient conditions.

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**Product Descriptions:** ReadySlate

ReadySlate is a manufactured slate panel consisting of real natural slates approx. 3.5mm thick laminated to an SBS modified underlayment with six (6) slates per panel. Each panel covers 3.22 SQFT of roof. Each panel is installed with 2 nails per slate, hand or pneumatic driven. Side and head laps are sealed by the SBS Peel & Stick membrane. The Grade of slate is ASTM S-1 Grade.

**Result:** Testing was performed at ambient conditions at a 2:12 roof slope. Requisite manufacturer's drawings are contained in Appendix A. Requisite photograph(s) are contained in Appendix B. Requisite calibration documentation is provided in Appendix C.

Component:	Description	Attachment	Additional Detail	TAS 100 Result [Pass/Fail]
Deck:	15/32" APA span rated CDX plywood sheathing over nominal No. 2 wood trusses at 24in o.c.	8d x 2-1/2" ring shank nails 6" o.c. at ends, 12" o.c. along intermediates	Deck tested at 2:12	<b>Pass</b>
Underlayment:	ASTM D1970 granule surfaced self adhering underlayment	Direct-to-deck, lapped down fascia, eave and rakes 3 inch	Side laps 4 inch wide Woven at valley, 12 inches beyond centerline.	
Roof Covering:	ReadySlate	Two (2) 10ga x 1-3/4" ring shank copper nails per slate (12 total fastenes per panel)	First course applied to a cant strip and with zero offset. Side laps formed by 1/2 slate (4 inches) overlapping adjacent self adhering backer  Subsequent courses applied with alternating half slate (4inch) offsets and a 10 inch exposure.	
Valley metal:	26ga G90 steel, 16 inches wide	12ga, 1-1/4in galvanized, ring shank nails  Fasteners installed at 4in o.c. and 1in from exterior edge	Sides of valley metal stripped in using 6 inch wide ASTM D1970. ASTM C920 sealant utilized to seal valley metal to eave/rake drip edge.	
Eave Detail:	76mm by 70mm drip Edge with 10mm kick out	12ga, 1-1/4in galvanized, ring shank nails  Fasteners installed at 4in o.c.	Eave metal stripped in with 6 inch wide application of ASTM D1970 membrane	
Rake Detail:	76mm by 70mm drip Edge with 10mm kick out  50mm side edge flashing installed atop the kick out drip edge.	12ga, 1-1/4in galvanized, ring shank nails  Fasteners installed at 4in o.c.	Side edge flashing metal stripped in with 6 inch wide application of ASTM D1970 membrane	
Valley Detail:	Closed Valley	No fasteners within 6" of valley centerline	Valley metal stripped in with 6 inch application of ASTM D1970 membrane	

Notes: None  
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**Observations:**

Interval	Test Condition	Result
1	Wind Speed: 35 mph Water Spray: 8.8in/h Duration: 15 min	Wind Speed: <b>No panel displacement</b> Water Spray: <b>No Water infiltration</b>
2	Wind Speed: 0 mph Water Spray: Off Duration: 10 min	Wind Speed: <b>No panel displacement</b> Water Spray: <b>No Water infiltration</b>
3	Wind Speed: 70 mph Water Spray: 8.8in/h Duration: 15 min	Wind Speed: <b>No panel displacement</b> Water Spray: <b>No Water infiltration</b>
4	Wind Speed: 0 mph Water Spray: Off Duration: 10 min	Wind Speed: <b>No panel displacement</b> Water Spray: <b>No Water infiltration</b>
5	Wind Speed: 90 mph Water Spray: 8.8in/h Duration: 15 min	Wind Speed: <b>No panel displacement</b> Water Spray: <b>No Water infiltration</b>
6	Wind Speed: 0 mph Water Spray: Off Duration: 10 min	Wind Speed: <b>No panel displacement</b> Water Spray: <b>No Water infiltration</b>
7	Wind Speed: 110 mph Water Spray: 8.8in/h Duration: 5min	Wind Speed: <b>No panel displacement</b> Water Spray: <b>No Water infiltration</b>
8	Wind Speed: 0 mph Water Spray: Off Duration: 10 min	Wind Speed: <b>No panel displacement</b> Water Spray: <b>No Water infiltration</b>

**Statement of Compliance:** The test deck constructed complies with all the requirements of **Florida Building Code Test Protocols for the High Velocity Hurricane Zone (HVHZ) Testing Application Standard (TAS) No. 100: Test Procedure for Wind and Wind Driven Rain Resistance of Discontinuous Roof Systems**. The laboratory test results presented in this report are reprehensive of the materials supplied.

Signed:

  
 Jason Simmons  
 Director

Date:

April 8, 2021

**Report Issue History:**

Issue #	Date	Pages	Revision Description (if applicable)
Original	04/08/2021	12	NA

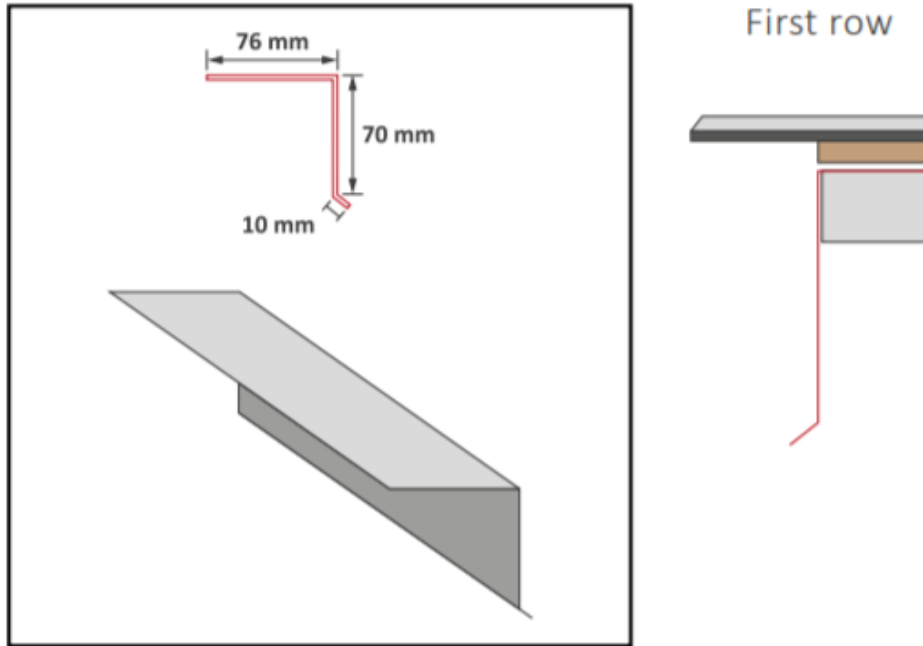
**APPENDIX FOLLOWS**

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**Appendix A: Drawings**

**c. 70mm Kick out Drip Edge- Black Alu/metal**

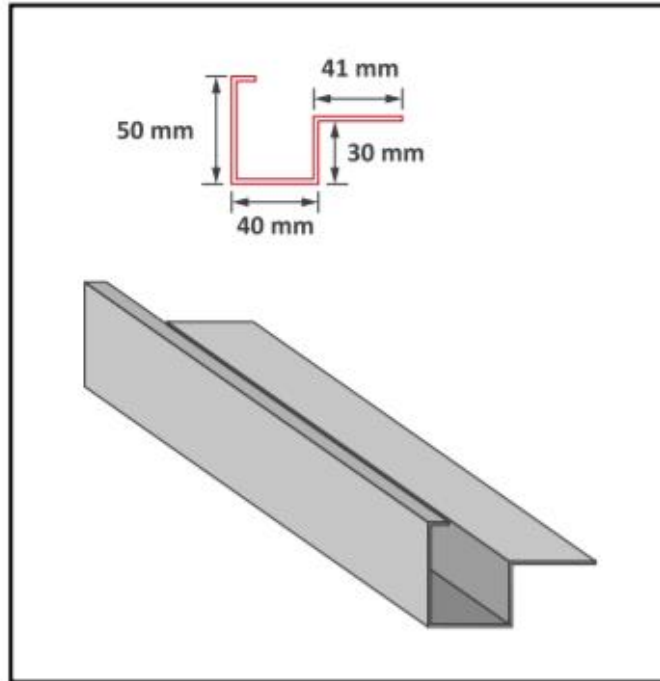


**Eave Detail:**

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### a. 50mm Side Edge flashing Black Alu/

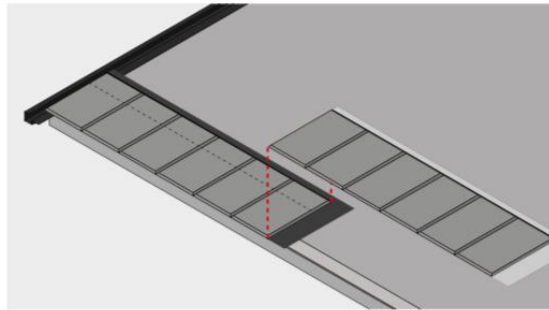
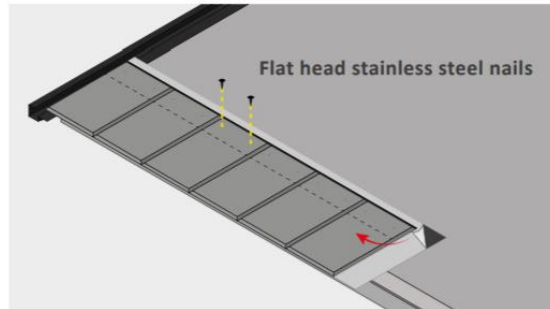


**Rake Detail:**

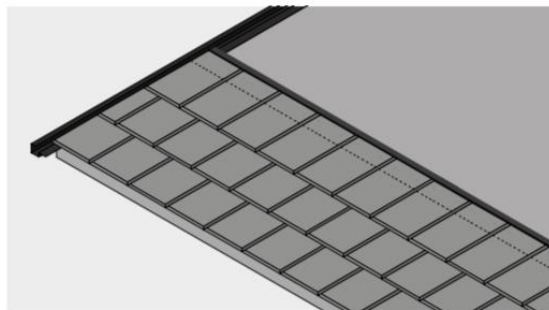
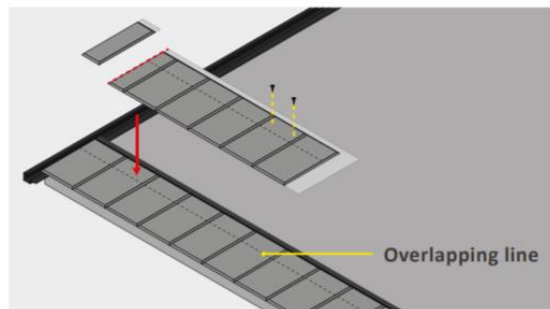
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a. First row: Start from the left to the right.



b. Second and remaining rows.



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**Appendix B: Photographs**



Prior To Testing



Subsequent To Testing

*Continued on Following Page*

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Prior To Completion of Interval 1: 35mph



Prior To Completion of Interval 2: 0mph



Prior To Completion of Interval 3: 70mph



Prior To Completion of Interval 4: 0mph

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Prior To Completion of Interval 5: 90mph



Prior To Completion of Interval 6: 0mph



Prior To Completion of Interval 7: 110mph



Prior To Completion of Interval 8: 0mph

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## Appendix C: Calibration

### Windstream Calibration

*Procedure:* The windstream velocity calibration is conducted on a vertical plane grid measuring 8' wide by 4' high and grid dimensions of 2' by 2'. The plane is located in front of the wind tunnel exit. For each axial velocity setting, windstream pressures are measured using either a Dwyer Model 605-3 or 605-10 Magnehelic Differential Pressure Indicating Transmitter to a Dwyer Model 160-48 Pitot Tube. Velocity pressures for each grid square are observed as inches of water and converted to miles per hour according to the below relationship.

$$MPH = 12.4625 \sqrt{P_v/d}$$

where,  $P_v$  represents the velocity pressure in inH<sub>2</sub>O and  $d$  represents the density of air in lbs/ft<sup>3</sup> adjusted for temperature, barometric pressure, and relative humidity.

The measured windstream velocity within each grid square shall be within ±10% of the required axial velocity for each wind speed.

*Data and Calculations:* Data from the most recent calibration indicate that the wind generator provides a suitably constant wind profile for the TAS 100-95 test procedure. Windstream velocity calibration data is provided in the table that follows on the next page.

Windstream Velocity Calibration													
Date of Calibration Procedure: <b>09/14/20</b>						Next Due: <b>March-21</b>							
Ambient Temperature:		85.0 °F											
Barometric Pressure:		30.06 in Hg											
Relative Humidity:		66 %											
RPM	Grid Position	Velocity Pressure (in H <sub>2</sub> O)	Windstream Velocity (mph)	Grid Position	Velocity Pressure (in H <sub>2</sub> O)	Windstream Velocity (mph)	Grid Position	Velocity Pressure (in H <sub>2</sub> O)	Windstream Velocity (mph)	Grid Position	Velocity Pressure (in H <sub>2</sub> O)	Windstream Velocity (mph)	
1100	1	0.50	32.8	2	0.50	32.8	3	0.50	32.8	4	0.60	35.9	
	5	0.50	32.8	6	0.50	32.8	7	0.50	32.8	8	0.60	35.9	
Target:		35 mph		Calibration: Each Grid Square shall be within ± 10% of 35 mph (31.5 - 38.5 mph)						Pass/Fail:		Pass	
2200	1	2.2	68.7	2	2.3	70.2	3	2.4	71.8	4	2.4	71.8	
	5	2.3	70.2	6	2.3	70.2	7	2.4	71.8	8	2.5	73.2	
Target:		70 mph		Calibration: Each Grid Square shall be within ± 10% of 70 mph (63 - 77 mph)						Pass/Fail:		Pass	
3000	1	3.7	89.1	2	3.8	90.3	3	3.9	91.5	4	4.0	92.6	
	5	3.8	90.3	6	3.8	90.3	7	3.9	91.5	8	4.1	93.8	
Target:		90 mph		Calibration: Each Grid Square shall be within ± 10% of 90 mph (81 - 99 mph)						Pass/Fail:		Pass	
3600	1	5.6	110	2	5.6	110	3	5.7	111	4	5.8	112	
	5	5.6	110	6	5.7	111	7	5.8	112	8	5.8	112	
Target:		110 mph		Calibration: Each Grid Square shall be within ± 10% of 110 mph (99 - 121 mph)						Pass/Fail:		Pass	

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Simulated Rainfall and Flow Meter Calibration

*Procedure:* Water is supplied to the windstream via mounted sprinkle-pipes. Calibration is conducted in essentially two steps. First, the flow meter readings, in gal/min, are recorded, summed, and input into the following equation:

$$\left[ \frac{\left( \frac{\text{gallons}}{\text{minute}} \right) \times \left( \frac{60 \text{ minutes}}{1 \text{ hour}} \right) \times \left( \frac{231 \text{ inches}^3}{1 \text{ gallon}} \right)}{11,520 \text{ inches}^2} \right] = \left( x \frac{\text{inches}}{\text{hour}} \right)$$

The quantity  $x$  determined above shall be within  $\pm 5\%$  of the desired rainfall simulation of 8.8 inches/hour.

Second, the quantity of water captured in one (1) minute is weighed, converted to volume, and input into the below equation:

$$\left[ \frac{\left( \frac{\text{inches}^3}{11,520 \text{ inches}^2} \right) \times \left( \frac{60 \text{ minutes}}{1 \text{ hour}} \right)}{1 \text{ minute}} \right] = \left( y \frac{\text{inches}}{\text{hour}} \right)$$

The flow meter determination  $x$  shall be within  $\pm 5\%$  of the quantity  $y$  determined above.

*Data and Calculations:* Data from the most recent calibration indicate that an appropriate volume of water is applied during the TAS 100-95 test procedure. Simulated rainfall and flow meter calibration data is provided in the below table.

Simulated Rainfall and Flow Meter Calibration						
These settings are for 35mph			Next Due: <b>December-20</b>			
Date of Calibration Procedure: <b>09/14/20</b>						
X	Water Supply (gal/min)	Simulated Rainfall (in/hr)	Y	Weight (lbs)	Volume (in <sup>3</sup> )	Simulated Rainfall (in/hr)
Flow Meter #1	2.4	2.9	Flow Meter #1	19.8	548.1	2.9
Flow Meter #2	4.8	5.8	Flow Meter #2	40.2	1112.7	5.8
Total	7.2	8.7	Total	60.0	1660.8	8.6
<b>Simulated Rainfall</b>		<b>8.7</b>	<b>Simulated Rainfall</b>		<b>8.6</b>	
Target		8.8	Target		8.7	
Within $\pm 5\%$ Tolerance		<b>Pass</b>	Within $\pm 5\%$ Tolerance		<b>Pass</b>	

Simulated Rainfall and Flow Meter Calibration						
These settings are for 70+ mph			Next Due: <b>December-20</b>			
Date of Calibration Procedure: <b>09/14/20</b>						
X	Water Supply (gal/min)	Simulated Rainfall (in/hr)	Y	Weight (lbs)	Volume (in <sup>3</sup> )	Simulated Rainfall (in/hr)
Flow Meter #1	3.6	4.3	Flow Meter #1	30.1	833.2	4.3
Flow Meter #2	3.6	4.3	Flow Meter #2	30.1	833.2	4.3
Total	7.2	8.7	Total	60.2	1666.3	8.7
<b>Simulated Rainfall</b>		<b>8.7</b>	<b>Simulated Rainfall</b>		<b>8.7</b>	
Target		8.8	Target		8.7	
Within $\pm 5\%$ Tolerance		<b>Pass</b>	Within $\pm 5\%$ Tolerance		<b>Pass</b>	

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**Water Distribution Check**

*Procedure:* The water distribution of simulated rain fall over the test frame was determined by placing a thick absorptive material on the deck sheathing, determining the amount of water absorbed during a set time interval, and verifying the water distribution profile within given tolerances. The procedure outlined in TAS 100-95 and was followed. The deck was set to a 2in:12in slope. The thick absorptive material used was 46 gauge organic felt. Wind driven rain was applied for approximately six (6) minutes. Each individual 2' x 2' wetted square was weighed using an Ohaus Model I-10 Scale.

The simulated rainfall calculated for each 2' x 2' wetted square shall be within either ±15% (at 35mph) or ±10% (at 70mph) of every other wetted square.

*Data and Calculations:* Data from the most recent calibration indicate that the wind generator and water supply system provides a suitably constant water distribution profile for the TAS 100-95 test procedure. Water distribution check data is provided in the table below.

<b>Water Distribution Check</b>																	
Date of Calibration Procedure:				<b>09/14/20</b>				Next Due:				<b>March-21</b>					
Ambient Temperature:		84.0 °F		Barometric Pressure:		30.06 in Hg		Relative Humidity:		66 %							
<b>Windstream Velocity:</b>				<b>35 mph</b>				Water Supply:				8.8 gal/min					
								Elapsed Time:				6 min					
Grid Position	Dry Felt (g)	Wetted Felt (g)	Simulated Rainfall (in/hr)	Grid Position	Dry Felt (g)	Wetted Felt (g)	Simulated Rainfall (in/hr)	Grid Position	Dry Felt (g)	Wetted Felt (g)	Simulated Rainfall (in/hr)	Grid Position	Dry Felt (g)	Wetted Felt (g)	Simulated Rainfall (in/hr)		
1	180.0	671.0	8.52	2	185.0	670.0	8.42	3	190.0	703.0	8.91	4	185.0	663.0	8.30		
5	180.0	684.0	8.75	6	180.0	682.0	8.72	7	180.0	691.0	8.87	8	185.0	672.0	8.45		
9	185.0	695.0	8.85	10	180.0	691.0	8.87	11	185.0	683.0	8.65	12	190.0	692.0	8.72		
13	190.0	663.0	8.21	14	180.0	703.0	9.08	15	190.0	664.0	8.23	16	185.0	700.0	8.94		
17	185.0	702.0	8.98	18	185.0	710.0	9.11	19	180.0	712.0	9.24	20	185.0	680.0	8.59		
Target: No one particular square sample shall exhibit a rainfall simulation greater than or less than 15% of any other square sample.																	
High Value:		9.24		Low Tolerance:		7.85		High Value:		8.21		High Tolerance:		9.44			
														Pass/Fail:		<b>Pass</b>	
<b>Windstream Velocity:</b>				<b>70 mph</b>				Water Supply:				8.8 gal/min					
								Elapsed Time:				6 min					
Grid Position	Dry Felt (g)	Wetted Felt (g)	Simulated Rainfall (in/hr)	Grid Position	Dry Felt (g)	Wetted Felt (g)	Simulated Rainfall (in/hr)	Grid Position	Dry Felt (g)	Wetted Felt (g)	Simulated Rainfall (in/hr)	Grid Position	Dry Felt (g)	Wetted Felt (g)	Simulated Rainfall (in/hr)		
1	180.0	662.0	8.4	2	180.0	683.0	8.73	3	180.0	682.0	8.72	4	180.0	694.0	8.92		
5	180.0	691.0	8.9	6	180.0	689.0	8.84	7	180.0	690.0	8.85	8	180.0	681.0	8.70		
9	185.0	700.0	8.9	10	185.0	701.0	8.96	11	185.0	687.0	8.72	12	185.0	683.0	8.65		
13	185.0	694.0	8.8	14	185.0	694.0	8.84	15	185.0	691.0	8.78	16	185.0	698.0	8.91		
17	190.0	699.0	8.8	18	190.0	700.0	8.85	19	190.0	707.0	8.98	20	190.0	712.0	9.06		
Target: No one particular square sample shall exhibit a rainfall simulation greater than or less than 10% of any other square sample.																	
High Value:		9.06		Low Tolerance:		8.16		High Value:		8.37		High Tolerance:		9.20			
														Pass/Fail:		<b>Pass</b>	

**END OF REPORT**

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