



Project Number: U5263.014.231
January 3, 2024

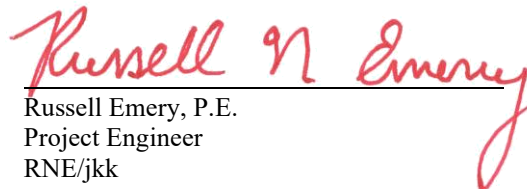
Product Approval Administrator
Building Codes & Standards Section
Department of Business & Professional Regulations
1940 North Monroe Street, Suite 90
Tallahassee, FL 32399-2100

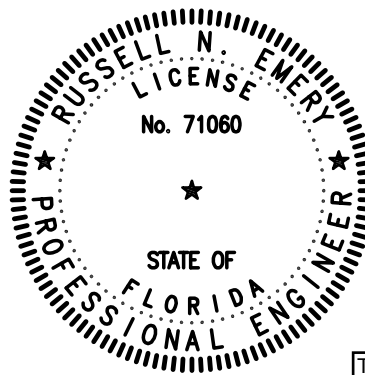
REFERENCE: **Florida Product Approval of ATAS Roof Panel: CastleTop [FL 2905]**
Product Approval Evaluation

Manufacturer: ATAS International, Inc.
Manufacturer Address: 6612 Snowdrift Rd., Allentown, PA 18106
Model Name: ATAS Roof Panel: CastleTop [FL 2905]
Maximum Design Load: See Attached Calculations per Configuration

Testing Summary					
TEST	DESCRIPTION	TEST LOCATION	TEST REPORT DATE	TEST REPORT #	TEST SEALED BY
ANSI 1897	Uplift Resistance for Roof Covering Systems	Architectural Testing Inc.	06/14/2002	01-41396.03	Craig H. Wagner, P.E.
For maximum sizes, spans, loads and anchor types, refer to the installation drawings.					
This product is UL listed in accordance with UL1897 per Architectural Testing Inc. report 01-41396.03					
Referenced test reports were reviewed against the most recent version and have been found to be compliant and having no impact on the performance report.					
To the best of my knowledge, the above product conforms to the requirements of the 2023 Florida Building Code when installed in accordance with the instructions and limitations outlined in the attached installation drawings.					

Sincerely,
VECTOR STRUCTURAL ENGINEERING, LLC


Russell Emery, P.E.
Project Engineer
RNE/jkk



01/03/2024
Russell N. Emery
No. 71060

Russell N Emery
2024.01.04
10:11:49-07'00'

This item has been digitally signed and sealed by Russell N. Emery on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.



JOB NO.: U5263.014.231

PROJECT: ATAS FBC PRODUCT APPROVAL

PRODUCT: CastleTop

Design Assumptions

0.032" aluminum, 0.028" zinc, 16-ounce (0.0216") copper CastleTop shingle

Exposed area = 1.266 ft² < 3.0 ft², therefore CastleTop is a "shingle"

For use in non-HVHZ (HVHZ excluded)

Sloped roof from 3:12 to 12:12

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

Tested in accordance with UL 1897 procedures (01-41396.03)

5005-H34 aluminum sheet ($F_y = 15$ ksi, $F_u = 20$ ksi), EN 988 zinc sheet ($F_y = 14.5$ ksi, $F_u = 21.8$ ksi), ASTM B370 - H02 copper sheet ($F_y = 30$ ksi, $F_u = 32$ ksi)

0.150" x 1.5" ring shank nails, 3 per shingle

Allowable fastener loads from NDS for Wood Construction 2015, Aluminum Design Manual 2015, and APA The Engineered Wood Association Form TT-039. Fastener pull-over values for zinc and copper determined from aluminum design equation.

Factor of Safety on panel = 2.0 (FBC 1504.9)

Factor of Safety on fastener = 3.0

Fastener Strengths

Pull-out

0.150" x 1 1/2" ring shank nail, 5/8" plywood

D (in) =

0.150

t (in) =

0.625

G =

0.7 (per APA Form No. TT-039)

C_D =

1.6 (wind)

C_M =

1 (dry conditions)

C_t =

1 (temperature during event no greater than 100° F)

W' = C_DC_MC_t1380G^{5/2}D =

135.8 lb/in (2015 NDS)

P'_{not} =

84.9 lbs

0.150" x 1 1/2" ring shank nail, 1/2" plywood

D (in) =

0.150

t (in) =

0.500

G =

0.7 (per APA Form No. TT-039)

C_D =

1.6 (wind)

C_M =

1 (dry conditions)

C_t =

1 (temperature during event no greater than 100° F)

W' = C_DC_MC_t1380G^{5/2}D =

135.8 lb/in (2015 NDS)

P'_{not} =

67.9 lbs

Pull-Over -- 0.032 aluminum

0.150" ring shank nail, 3/8" diameter head/washer

C =	1
t_1 (in) =	0.0135
F_{tu1} (ksi) =	20
F.S. =	3
D_{ws} (in) =	0.375
D_h (in) =	0.150
P_{nov}/Ω =	48 lbs

Pull-Over -- 0.028" zinc

0.150" ring shank nail, 3/8" diameter head/washer

C =	1.0
t_1 (in) =	0.028
F_{tu1} (ksi) =	21.8
F.S. =	3
D_{ws} (in) =	0.375
D_h (in) =	0.150
P_{nov}/Ω =	45.8 lbs

Pull-Over -- 0.0216" (16 oz) copper

0.150" ring shank nail, 3/8" diameter head/washer

C =	1.0
t_1 (in) =	0.0216
F_{tu1} (ksi) =	37
F.S. =	3
D_{ws} (in) =	0.375
D_h (in) =	0.150
P_{nov}/Ω =	59.9 lbs

Allowable Pressures Based on Panel Failure							
Panel	Thickness (in)	Test	Report No.	Maximum Pressure (psf)*	Exposed Dimensions (in)	(F.S.) _{panel}	Allowable Pressure (psf)
Aluminum	0.032	UL 1897	01-41396.03	85	13.5 x 13.5	2	43
Zinc	0.028	interpolation	n/a	72	13.5 x 13.5	2	36
Copper	0.0216	interpolation	n/a	115	13.5 x 13.5	2	58

*Notes:

Zinc deformation load = Aluminum deformation load x $F_{y,Zn} / F_{y,Al} * t_{Zn} / t_{Al}$
= 85 psf x 14,500 ksi / 15,000 ksi * 0.028" / 0.032" = 72 psf

Copper deformation load = Aluminum deformation load x $F_{y,Cu} / F_{y,Al} * t_{Cu} / t_{Al}$
= 85 psf x 30 ksi / 15 ksi * 0.0216" / 0.032" = 115 psf

Allowable Wind Pressure Based on Fastener Failure						
Panel	Controlling Fastener Strength (lbs)	Number Nails per Shingle	Exposed Dimensions (in)	Exposed Area (ft ²)	Tributary Area per Nail (ft ²)	Allowable Pressure (psf)
Aluminum	48	3	13.5 x 13.5	1.266	0.422	114
Zinc	45.8	3	13.5 x 13.5	1.266	0.422	109
Copper	59.9	3	13.5 x 13.5	1.266	0.422	142

For all materials pull-over controls

Maximum Allowable Wind Pressures (psf)			
Material	Pressure Based on Panel	Pressure based on Nail	Allowable Pressure
Aluminum	43	114	43
Zinc	36	109	36
Copper	58	142	58

Failure mode is shingle failure (disengagement) for all materials

Test Report References

Standard	Report Number	Laboratory	Laboratory Location
UL 1897-98	01-41396.03	Architectural Testing	York, PA