BECHTOL ENGINEERING AND TESTING, inc.

METAL ROOF PANEL FASTENER SPECIFICATIONS

PROJECT ID:	6288 SW CR 18, FORT WHITE, FLORIDA		
PARCEL NO.:	34-6S-16-04059-502	**COUNTY:**	COLUMBIA
PREPARED FOR:	TRI COUNTY METALS, INC.		
PREPARED BY:	THOMAS BECHTOL, P.E., FLORIDA LICENSE NO. 38538		
DATE PREPARED:	06-18-2024		

MATERIAL SPECIFICATIONS:

ROOF PANELS: TRI COUNTY METALS "5V LOK" 26 GA., 24" WIDE PANELS.

TRUSSES/RAFTERS (EXISTING): ROUGH CUT 2 x 4 SYP AT MAXIMUM 32" ON CENTERS. FIELD VERIFY.

PURLINS (EXISTING): ROUGH CUT 1x4 PLANK AT 12" ON CENTERS (RE-NAILED AS REQUIRED PER SECTION 706.7.1 FBC EXISTING BUILDING EIGHTH EDITION (2023)).

ROOF PANEL FASTENERS: #10 WOOD SCREWS WITH CONTROL SEAL WASHER, LENGTH AS NEEDED FOR FULL PENETRATION INTO PURLINS.

DESIGN CRITERIA:

RISK CATEGORY: II

EXPOSURE CATEGORY: C

ULTIMATE WIND SPEED: 130 MPH

NOMINAL DESIGN WIND SPEED: 101 MPH

BUILDING CLASSIFICATION: ENCLOSED

MEAN ROOF HEIGHT: 30 FEET MAXIMUM

ROOF ANGLE: >7 - 20 DEGREES

EFFECTIVE WIND AREA: 10 S.F.

COMPONENT AND CLADDING DESIGN WIND PRESSURES:

DESIGN UNIT LOADS (q): SEE ATTACHED WIND PRESSURE CALCULATIONS.

MAXIMUM DESIGN PRESSURE: -81.7 PSF.

CONSULTING GEOTECHNICAL, ENVIRONMENTAL, AND MATERIALS TESTING ENGINEERS
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ROOF PANEL FASTENER DESIGN CALCULATIONS:

DESIGN FASTENER: #10 SCREWS INTO 1X4 SPF PURLIN

ALLOWABLE PULL-OUT CAPACITY = 162 POUNDS / SCREW (INCORPORATES MINIMUM SF = 5)

PURLIN SPACING = 12" = 1.0' ON CENTERS.

USE 1 SCREW AT EACH FASTENING POINT ALONG EACH PURLIN.

USE MAXIMUM WIND PRESSURE = 81.7 PSF

MAXIMUM FASTENING POINT SPACING = (162) / (1.0)(81.7) = 1.98' = 23.8"

DESIGN: USE ONE (1) SCREW IN FLAT ADJACENT TO OVERLAP DOUBLE RIB AND ONE (1) SCREW IN FLAT ADJACENT TO CENTER RIB ON EACH PANEL ALONG EACH PURLIN

THIS IS TO CERTIFY THAT THE CALCULATIONS AND SPECIFICATIONS HEREIN HAVE BEEN PREPARED BY THE UNDERSIGNED PROFESSIONAL ENGINEER, AND ARE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 1609 OF THE FLORIDA BUILDING CODE EIGHTH EDITION (2023) AND CHAPTER 30 OF ASCE 7-22.

Bechtol Engineering and Testing, Inc.

Thomas Bechtol

Digitally signed by Thomas Bechtol
Date: 2024.06.18 17:39:47 -04'00'

Thomas Bechtol, P.E.
President / Principal Engineer

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DESIGN WIND PRESSURES CALCULATION SHEET

PROJECT ID:	6288 SW CR 18, FORT WHITE, FLORIDA				
ENCLOSURE TYPE: ENCLOSED		RISK CATEGORY: II		EXPOSURE CATEGORY: C	
MEAN ROOF HEIGHT (FT): 30 MAX		ROOF SLOPE (θ°): $7 < \theta \leq 20$		ROOF TYPE:	GABLE
ULTIMATE WIND SPEED (FROM FIGURE 1609.3, FLORIDA BUILDING CODE EIGHTH EDITION (2023))				V_{ult} =	130
WIND DIRECTIONALITY FACTOR (FROM TABLE 26.6-1, ASCE 7-22)				K_d =	0.85
TOPOGRAPHIC FACTOR (FROM SECTION 26.8.2, ASCE 7-22)				K_{zt} =	1.00
GROUND ELEVATION FACTOR (FROM TABLE 26.9-1, ASCE 7-22)				K_e =	1.00
INTERNAL PRESSURE COEFFICIENT (FROM TABLE 26.13-1, ASCE 7-22)				GC_{pi} =	0.18
VELOCITY PRESSURE EXPOSURE COEFFICIENT (FROM TABLE 26.10-1, ASCE 7-22)				K_z =	0.98
VELOCITY PRESSURE (q_h) $q_h = 0.00256(K_z)(K_{zt})(K_e)(V_{ult})^2(0.6) = 0.001536(K_z)(V_{ult})^2$				q_h =	25.44
EXTERNAL PRESSURE COEFFICIENTS (FROM FIGURE 30.3, ASCE 7-22)	ROOF	ZONE 1	GC_p =	-2.0	
		ZONE 2	GC_p =	-2.7	
		ZONE 3	GC_p =	-3.6	
	WALL	ZONE 4	GC_p =	N/A	
		ZONE 5	GC_p =	N/A	
DESIGN WIND PRESSURES (P) $P = q_h K_d(GC_p - GC_{pi})$	ROOF	ZONE 1	P =	-47.1	
		ZONE 2	P =	-62.3	
		ZONE 3	P =	-81.7	
	WALL	ZONE 4	P =	N/A	
		ZONE 5	P =	N/A	

Bechtol Engineering and Testing, Inc.

Thomas Bechtol

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THOMAS R H BECHTOL
LICENSE
No. 38538
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Thomas Bechtol, P.E.
President / Principal Engineer
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