BECHTOL ENGINEERING AND TESTING, inc.

METAL ROOF PANEL FASTENER SPECIFICATIONS

PROJECT ID: 3930 SW COUNTY ROAD 18, FORT WHITE, FLORIDA

PARCEL NO.: 36-6S-16-04076-126 (21253) **COUNTY:** COLUMBIA

PREPARED FOR: TRI COUNTY METALS, INC.

PREPARED BY: THOMAS BECHTOL, P.E., FLORIDA LICENSE NO. 38538

DATE PREPARED: 09-17-2021

MATERIAL SPECIFICATIONS:

ROOF PANELS: TRI COUNTY METALS "ULTRA LOK" 26 GA., 36" WIDE PANELS.

SUBSTRATE: 1X4 SPF PURLINS AT 24" ON CENTERS FASTENED THROUGH SHEATHING TO EACH TRUSS WITH TWO (2) 10d RINGSHANK NAILS OR TWO (2) #8 x 2-1/2" DECK SCREWS.

ROOF PANEL FASTENERS: #10 WOOD SCREWS WITH CONTROL SEAL WASHER, LENGTH AS NEEDED FOR FULL PENETRATION THROUGH 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 TO 20 DEGREES

EFFECTIVE WIND AREA: 100 S.F.

COMPONENT AND CLADDING DESIGN WIND PRESSURES:

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

MAXIMUM DESIGN PRESSURE: 43.2 PSF.

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PURLIN FASTENER DESIGN CALCULATIONS:

DESIGN FASTENER: 10d RINGSHANK NAIL THROUGH SHEATHING INTO SYP TRUSS/RAFTER.
ALLOWABLE PULL-OUT CAPACITY = 122 POUNDS / NAIL (INCORPORATES MINIMUM SF = 5).
USE TWO NAILS PER FASTENING POINT (EACH TRUSS / RAFTER).
USE MAXIMUM WIND PRESSURE = 43.2 PSF

MAXIMUM PURLIN SPACING = (122)(2) / (2)(43.2) = 2.82' = 34"

DESIGN: 1X4 SPF PURLIN AT 24" ON CENTERS FASTENED THROUGH SHEATHING TO EACH TRUSS/RAFTER WITH TWO (2) 10d RINGSHANK NAILS.

OR

DESIGN FASTENER: #8 x 2.5" DECK SCREW THROUGH SHEATHING INTO SYP TRUSS/RAFTER.
ALLOWABLE PULL-OUT CAPACITY = 141 POUNDS / SCREW (INCORPORATES MINIMUM SF = 5).
USE 2 SCREWS AT EACH FASTENING POINT (EACH TRUSS / RAFTER).
USE MAXIMUM WIND PRESSURE = 43.2 PSF

MAXIMUM PURLIN SPACING = (141)(2) / (2)(43.2) = 3.26' = 39"

DESIGN: 1X4 SPF PURLIN AT 24" ON CENTERS FASTENED THROUGH SHEATHING TO EACH TRUSS/RAFTER WITH TWO (2) #8 x 2.5" DECK SCREWS.

ROOF PANEL FASTENER DESIGN CALCULATIONS:

DESIGN FASTENER: #10 SCREWS INTO 1X4 SPF PURLIN
ALLOWABLE PULL-OUT CAPACITY = 101 POUNDS / SCREW (INCORPORATES MINIMUM SF = 5)
PURLIN SPACING = 24 INCHES ON CENTERS.
USE 1 SCREW AT EACH FASTENING POINT ALONG EACH PURLIN.
USE MAXIMUM WIND PRESSURE = 43.2 PSF

MAXIMUM FASTENING POINT SPACING = (101) / (2.0)(43.2) =1.17' = 14"

DESIGN: USE ONE (1) SCREW @ 9" O.C.(ADJACENT TO OR ON EACH RIB) 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 SEVENTH EDITION (2020) AND CHAPTER 30 OF ASCE 7-16.

Bechtol Engineering and Testing, Inc.

Thomas Bechtol

Digitally signed by Thomas Bechtol
Date: 2021.09.17 12:26:33 -04'00'

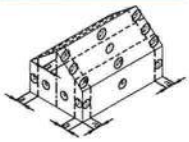
Thomas Bechtol, P.E.
President / Principal Engineer

Thomas Bechtol, P.E., State of Florida, Professional Engineer, License No. 38538
This item has been digitally signed and sealed by Thomas Bechtol, P.E. on the date indicated here. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.

Client:	TRI COUNTY METALS	**Date:**	Apr 9, 2021
Author:	Tom Bechtol	**Job #:**	G21004
Project:	TRI COUNTY	**Subject:**	**130mph expC 7-20degrees 30mrh GABLE** PASS
References:	ASCE 7-16		

Summary

Zones



Corner Zone Width $a =$ 3 ft, 0 in

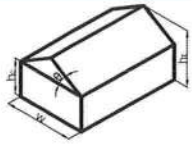
Wind Pressures $p =$

Zone	Positive Wind Pressure p^+ (psf)	Negative Wind Pressure p^- (psf)
1	10.5	-14.8
2e	10.5	-14.8
2n	10.5	-38.1
2r	10.5	-38.1
3e	10.5	-38.1
3r	10.5	-43.2
4	21.9	-24.1
5	21.9	-26.7

Key Properties

Basic Wind Speed	$V =$	101 mi/hr
Exposure Category		C: Open terrain with scattered obstructions
Effective Roof Member Wind Area	$A_{roof} =$	100 ft²
Effective Wall Member Wind Area	$A_{wall} =$	100 ft²

Building Properties



Roof Pitch	$\alpha =$	3 : 12
Roof Eave Height	$h_e =$	28 ft, 1.5 in
Roof Mean Height	$h =$	30 ft, 0 in
Least Horizontal Dimension	$w =$	30 ft
Enclosure Type		Enclosed

Terrain Properties (ASCE 7-16, Cl 26.7-9)

Ground Elevation Above Sea Level	$z_g =$	0 ft

Wind Load Parameters (ASCE 7-16, Cl 26.6-10)

Wind Directionality Factor	$K_d =$	0.85
Topographic Factor	$K_{zt} =$	1
Ground Elevation Factor	$K_e =$	1
Velocity Pressure Exposure Coefficient	$K_h =$	0.982
Velocity Pressure	$q_h =$	21.8 psf

Comments