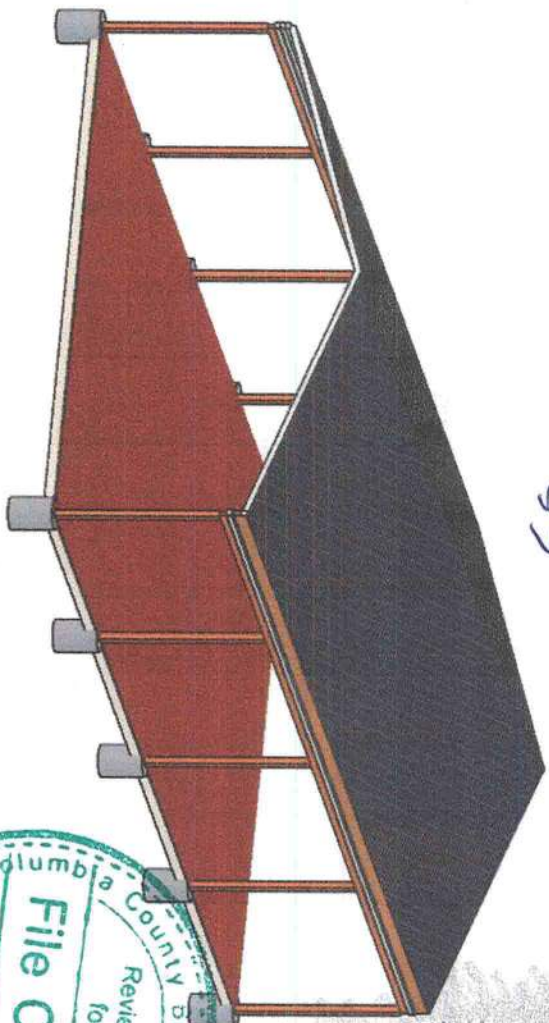OPen Pole Barn
Manufactured by
SURPLUSE & SALVAGE
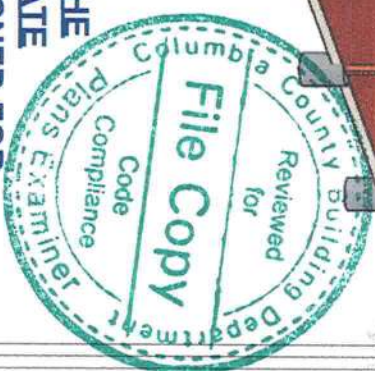1600 Hwy 90, FL 32428
Mrs. PAULA (850) 819-7285

1) COVER PAGE
2) FOUNDATION PLAN, ROOF FRAMING, ELEVATION VIEWS,
   GABLE & LEAN CONNECTION
3) DESIGN TABLES & STRUCTURAL DETAILS
4) SAMPLES of WIND LOAD CALCULATIONS

3D View

SCOPE OF WORK

THIS MASTER PLAN IS FOR ONLY ONE SINGLE STRUCTURE TO BE REVIEWED BY THE
BUILDING DEPARTMENT IN THE AREA FOR PERMITING. THE PLANS ACCOMMODATE
DIFFERENT TRUSS SPANS, BAY WIDTHS, AND LENGTHS. THESE PLANS ARE DESIGNED FOR
ANYWHERE IN FLORIDA WITH THE HERE SPECIFIED WIND LOAD. ONLY PLANS WITH
ELECTRONIC SEAL ARE ALLOWED. ONLY A SINGLE USE FOR A SEALED SET OF PLANS IS
LEGAL.
ALL THE SPECIFIC BUILDING SPECIFICATIONS ALONG WITH THE SITE CHARACTERISTICS HAVE
TO BE IMPLEMENTED AND OBSERVED. ANY DEVIATION THEREOF WILL VOID THE ENTIRE
PLAN.

These plans and specifications are in compliance
with the criteria established by the 8th. Edition of Florida Building Code (2023).
The Open Pole Barn is designed to withstand a wind velocity up to160 MPH (Exposure B & Risk
Category I) and complies with chapter 16 of the 8th. Edition Florida Building Code 2023.

This structure has been designed as an open building which allows the wind to pass through. Any
Enclosure / Wind obstruction thereof will require additional means to secure the structure.

The calculations are carried out for the following Data:
Ultimate design wind speed Vult's (130, 140 & 160 MPH).
Nominal design wind speed, Vasd's (101 , 110 & 126 MPH).

Risk Category: I
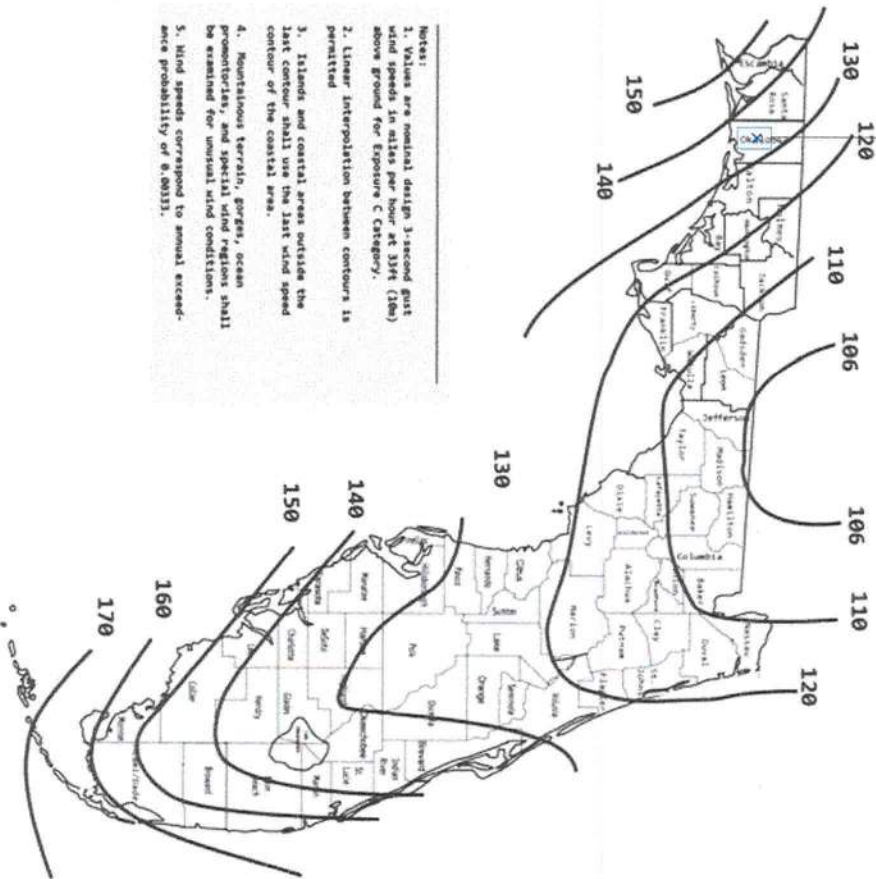Wind Exposure: B or C
Enclosure Classification: Open
Internal Pressure Coefficient GCpI = 0.0
Roof Components and Cladding Uplift Pressure:
-27.5 PSF, -37.5 PSF & - 40 PSF (Values for zones 1,2, and 3)

Note:
Contractor must provide the Florida Approval
Numbers for All Structural Components.
Only Plans with RAISED SEAL & Water Mark Are Allowed
These Plans are PROTECTED BY COPYRIGHT FOR ECDC-Inc.

Notes:
1. Values are nominal design 3-second gust
wind speeds in miles per hour at 33ft (10m)
above ground for Exposure C Category.

2. Linear interpolation between contours is
permitted

3. Islands and coastal areas outside the
last contour shall use the last wind speed
contour of the coastal area.

4. Mountainous terrain, gorges, ocean
promontories, and special wind regions shall
be examined for unusual wind conditions.

5. Wind speeds correspond to annual exceed-
ance probability of 0.00357.

Location

State of Florida
Category I Building and Structures
In Miles Per Hour
Figure C

130
150
120
140
110
100
130
100
110
150
140
120
160
170

33

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ENGINEERING DESIGNED BY:
DR. RAOUF ARAFA, Ph.D., P.E.
Raouf Arafa
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PROJECT: Open Pole Barn
ADDRESS: Master Plan for Florida
CLIENT: SURPLUS & SALVAGE 850-638-9267
COVER PAGE / SCOPE OF WORK

ECDC Energy Conscious Design & Construction
2108 W. 33rd. Street, Panama City, FL.32405
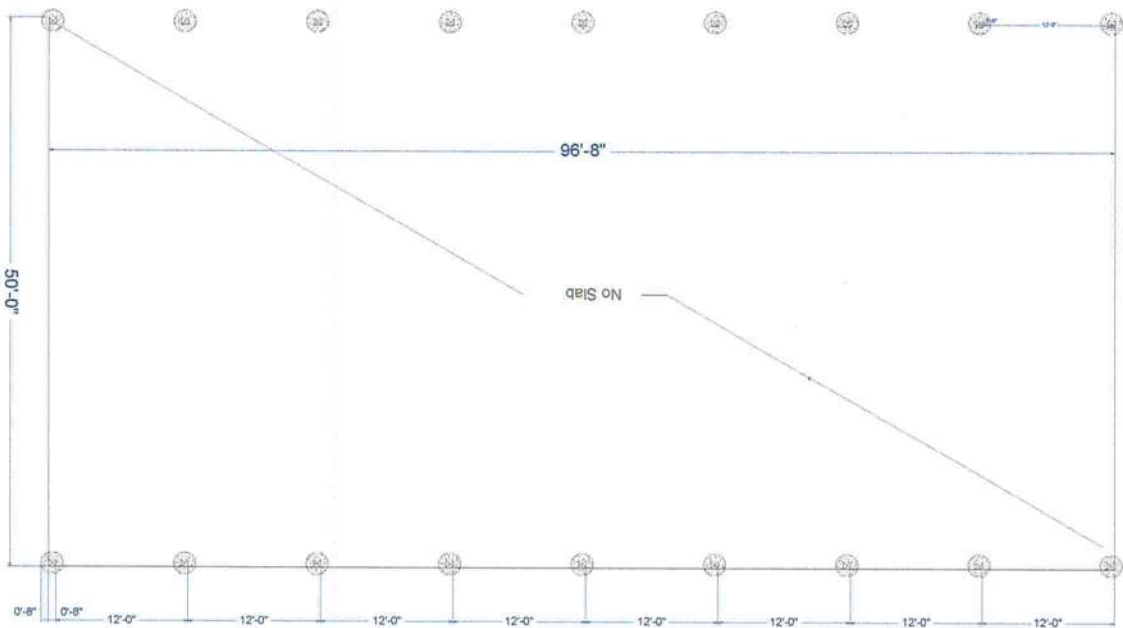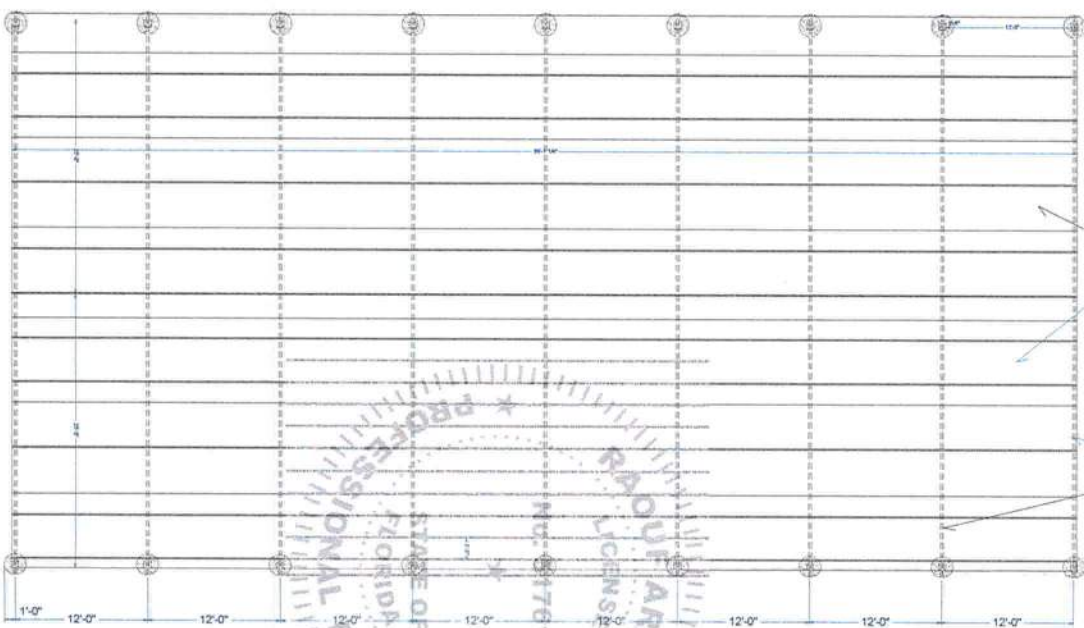(850)914-0050, ecdc.egc@gmail.com

Seal
DATE: 4/8/2024

2x6 Purlins @ 2' O.C.
For Exposure C or High Wind, Place Purlins @16" O.C.
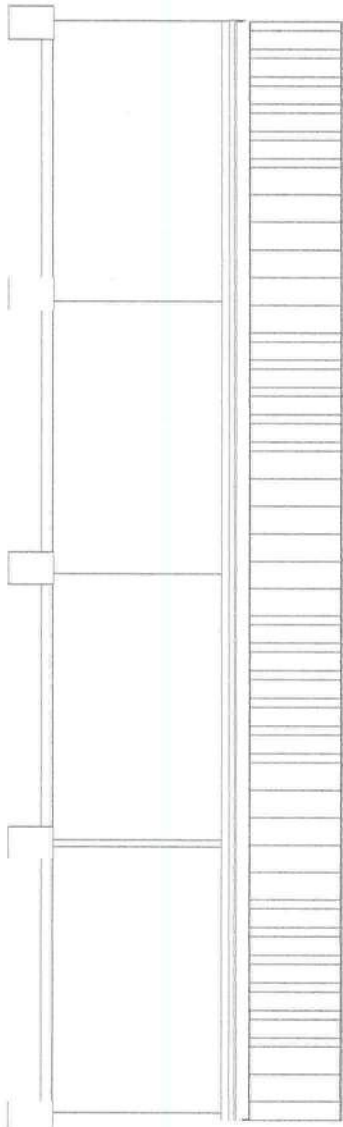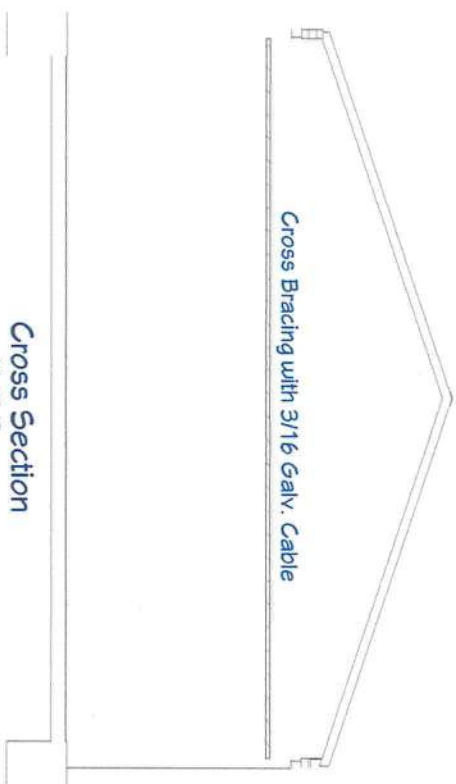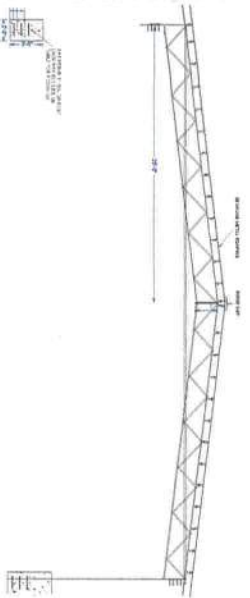For Bay Width 16' Use 2x6 C-Channel Ga.18

Trusses @ 12'
O.C.

Note:
For Areas with wind up to 140 mph install Purlins @ 24" o.c.
For Areas with wind more than 140 mph install Purlins @ 16" o.c.

foundation plan

96'-8"

No Slab

50'-0"

0'-8" 12'-0" 12'-0" 12'-0" 12'-0" 12'-0" 12'-0" 12'-0" 0'-8"

Roof Framing Plan

1'-0" 12'-0" 12'-0" 12'-0" 12'-0" 12'-0" 12'-0" 12'-0"
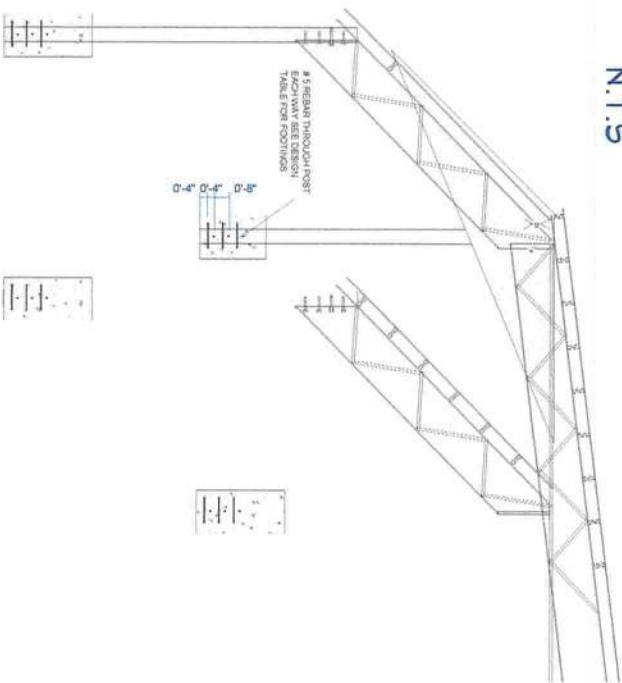
Section View
N.T.S

Side Bracing:
Brace the Middle Bay for Buildings with a Length Longer than Twice the Width
Use 3/16 Cable Crosswise, All Bracing Can Be Installed in the Ceiling

Side Elevation
N.T.S

Cross Bracing with 3/16 Galv. Cable

Cross Section
N.T.S

GABLE TRUSS LEAN CONNECTION (OPTIONAL)
N.T.S.

Note:
For Lean Truss Design and Footing; Use the Design Tables on Page 3

ENGINEERING DESIGNED BY: DR. RAOUF ARAFA, Ph.D., P.E. *Raouf Arafa* Copy Right by EGS-PLAN. LLC.	PROJECT: Open Pole Barn ADDRESS: Master Plan for Florida CLIENT: SURPLUS & SALVAGE 850-638-9267 Foundation Plan, Roof Framing & Elevation Views

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(850)914-0050, ecdc.egc@gmail.com

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TRUSS DESIGN TABLE
50 ' Truss Span
3/8" = 1'

TRUSS / LEAN SPAN	TRUSS DEPTH*	TOP CORD	BOTTOM CORD	WEB MEMBERS
5 - 31'	16"	1 1/4 "x 1 1/4" x 1/8"	1 1/4 "x 1 1/4" x 1/8"	1 1/4 "x 1 1/4" x 1/8"
32' - 35'	16"	1 1/2 "x 1 1/2" x 1/8"	1 1/2 "x 1 1/2" x 1/8"	1 1/2 "x 1 1/2" x 1/8"
36'--40'	16"	1 1/2 "x 1 1/2" x 3/16"	1 1/2 "x 1 1/2" x 3/16"	1 1/2 "x 1 1/2" x 1/8"
41' - 50'	20"	2"X2"X3/8"	2"X2"X3/8"	1 1/2 "x 1 1/2" x 1/8"
51' - 60'	24"	2"X2"X7/16"	2"X2"X7/16"	2X2X 1/8"

(*Use Truss Depth of 16" for all Spans for wind load up to 130 MPH and Exposure B

DESIGN TABLE FOR FOOTINGS

TRUSS / LEAN SPAN	BAY WIDTH	P.T. POST	CONC POST DIAMETER	CONC POST DEPTH	REINFORCE REBAR
24' +/- 5'	10', 12', 16'	6X6	12", 12", 16"	24", 30", 36"	2# 5 x 8" EACH WAY
30' +/- 5'	10', 12', 16'	6X6	16", 16", 18"	32", 34", 36"	3# 5 x 10" EACH WAY
36' +/- 5'	10', 12', 16'	8X8	18", 18", 18"	34", 36", 38"	3# 5 x 12" EACH WAY
42' +/- 5'	10', 12', 16'	8X8	24", 24", 24"	38", 38", 38"	3# 5 x 18" EACH WAY
48'+/- 5'	10', 12', 16'	8X8	24", 24", 24"	38", 40", 48"	3# 5 x 18" EACH WAY
Up to 60'	10', 12'	8X8	24", 24"	48", 60"	3# 5 x 18" EACH WAY

SOIL MUST HAVE BEARING CAPACITY OF 2000 PSF
USE CONCRETE "28 DAY 3000 PSI STRENGTH"
DRY CONCRETE CAN BE USED

Note: Truss Specs Applied for The Leans

EAVE DETAIL

1/2" x 5 1/2" LAG BOLT for EACH TRUSS / 6x6 POST CONNECTION
1/2" x 6 1/2" LAG BOLT for EACH TRUSS / 8x8 POST CONNECTION

Use 1/2 x 6 1/2" Bolts f. 8x8 Posts
Use 1/2 x 5 1/2" Bolts f. 6x6 Posts
Use Two Bolts & One Carriage Bolt for Trusses up to 32'
Use Three Bolts & One Carriage Bolt for larger Spans

FOOTING DETAIL FOR 50' TRUSS SPAN ONLY

2'-0"
3'-0"

3 #5 REBAR THROUGH POST EACH WAY SEE DESIGN TABLE FOR FOOTINGS

For different truss spans see design table

GABLE TRUSS

GABLE DECKING (OPTIONAL)

PURLIN CLIP 8"x5"x1/8" WELDED TO CROSS BAR @ 24" O.C.

PURLIN'S BUCKET 18 ga. (C.S. 1 1/2" x 1 1/2" x 3" & 4" WIDE) WELDED TO TOP CORD @ 24" O.C. or A.N.O.

TWO #12 SCREWS on EACH SIDE

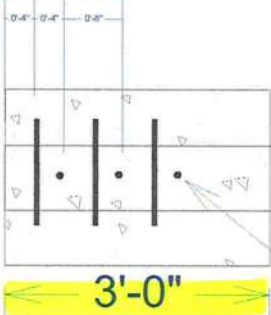29 GAUGE METAL ROOF DECKING

RIDGE CAP

SDS # 14 w. WASHER@ EACH RIB

2x4 @ 24" O.C. FOR GABLE DECKING (TYP.)

Three 5/8" A325 Bolts

15SMALL TRUSS
24' Span
3/8" = 1'

3'-0" 3'-0" 3'-0" 3'-0" 3'-0 1/8"

32'-0"

TRUSS HORIZ. TIE

4'-2 1/8" 4'-2 1/8" 4'-2 1/8" 4'-2 1/8" 4'-2 1/8" 4'-2

25'-2 15/16"

10'-7" 10'-7" 14'-5"

12 4

2'-0"- 1 1/2"

TRUSS HORIZ. TIE

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Design Tables & Structural Details

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°DESIGN LOAD CRITERIA

A. LIVE LOAD PER FLORIDA BUILDING CODE 8th. Edition 2023

ROOF   40 PSF

B. WIND LOAD
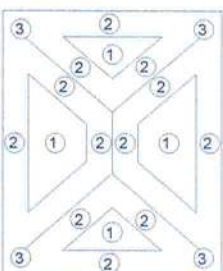
BASIC WIND SPEED =140 MPH
RISK CATEGORY: I
WIND EXPOSURE = B

MEAN ROOF HEIGHT = 20'- (+) ABOVE GRADE
ROOF PITCH = UP TO 4:12

MAIN FRAME RESISTING WIND PRESSURE (PSF) 140 MPH

HEIGHT (FT)	ROOF		
	END ZONE		INTERIOR ZONE
15	-27.4	-11.9	-7.0	-19.1

MAIN FRAME RESISTING WIND PRESSURE (PSF) 140 MPH

HEIGHT (FT)	ROOF		
	END ZONE		INTERIOR ZONE
15	-37.9	-17.1	-11.3	-27.8

Specifications for Wind Analysis for Open Pole Barn 24'x 36' (Three Bays)

130 MPH Wind Speed:
Design Pressure: 27.5 PSF

Shear Stress on # 10 Screws Fastening Roof Purlins To Brackets:
Uplift = 2' x12' x 27.5 = 657.6 Pounds
Shear Value of # 10 Screws (when Using 1" Bolt of 15.4 K) =3.8 K
Resistance of Shear > Uplift Load.

Uplift:
End Posts: Uplift Force = Wind Load - Dead Load
= 12' x 6' x27.4x0.87 - 12'x 6' x10 = 996 Pounds
Middle Posts: Uplift Force
= 12' x 12' x 19.1 x 0.87 - 12' x 12' x 10 = 953 Pounds
For compact soil with soil bearing capacity of 2000 PSF and high coefficient of friction ,
use 300 # of Concrete @ each 6x6 Post @ 3' under exist grade

Note:
These are only sample calculations for specific sizes and wind loads.
The design tables for the other different sizes are produced by two dimensional interpolation for both the sizes and the wind loads due to their linear relationships

Note: The weight of the concrete should also be subtracted from the calculated uplift

---

Specifications For Wind Analysis For Open Pole Barn Building 24'x 36' (Three Bays) 140 MPH

Design Pressure: 37.3 PSF

Shear Stress on # 10 Screws Fastning Roof Purlins To Brackets:
Uplift = 1.33' x 8' x 37.3 = 397.8 Pounds
Shear Value of # 10 Screws (when Using 1" Bolt of 15.4 K) =3.8 K
Resistance of Shear > Uplift Load.

Uplift:
End Posts: Uplift Force = Wind Load - Dead Load.
= 12' x 4' x37.3 x0.87 - 12'x 4' x12 = 982 Pounds
Middle Posts: Uplift Force
= 12' x 8' x 26 x 0.87 - 12' x 8' x 12 = 1020 Pounds
For compact soil with soil bearing capacity of 2000 PSF, and high coefficient of friction:
Use 400 # of Concrete @ each 8x8 Post @ 4' under exist grade

MAIN FRAME RESISTING WIND PRESSURE (PSF) 150 MPH

HEIGHT (FT)	ROOF		
	END ZONE		INTERIOR ZONE
15	-40.0	-23.1	- 18.3	-33.8

Specifications for Wind Analysis for Open Pole Barn 24'x 36' (Three Bays)

150 MPH Wind Speed:
Design Pressure: 40 PSF

Shear Stress on # 10 Screws Fastening Roof Purlins To Brackets:
Uplift = 1.33' x 8' x 40 = 425.6 Pounds
Shear Value of # 10 Screws (when Using 1" Bolt of 15.4 K) =3.8 K
Resistance of Shear > Uplift Load.

Uplift:
End Posts: Uplift Force = Wind Load - Dead Load
= 12' x 4' x40 x0.87 - 12'x 4' x12 = 1094.4 Pounds
Middle Posts: Uplift Force
= 12' x 8' x 23.1 x 0.87 - 12' x 8' x 12 = 777 Pounds
For compact soil with soil bearing capacity of 2000 PSF, and high coefficient of friction:
use 500 # of Concrete @ each 6x6 Post @ 4' under exist grade

Note:
The concrete load should be subtracted from the uplift force

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