UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCE CONSERVATION SERVICE
GAINESVILLE, FLORIDA

TECHNICAL NOTE ENG-FL-23- Design of post size, beam size, and post embedment depth for umbrella type structure.

PURPOSE This technical note is to aid in the design of open single span pole barn umbrella type structures. This technical note provides tables with post size, beam size and post embedment depth for umbrella type structures for various wind loads, spans, post spacings, and soil bearing pressure.

LIMITATIONS This technical note is limited to umbrella type structures. Umbrella type structures are structures that have greater than 20% of the windward and leeward wall surface open and have a maximum length of three times the width. The calculations are based upon the procedures described in the National Forest Products Association's *National Design Specification for Wood Construction*, the American Society of Agricultural Engineer's (ASAE) Standards, and the Northeast Regional Agricultural Engineering Service's *Post-Frame Building Handbook.*

The attached tables are not valid for structures placed next to flat, unobstructed areas exposed to wind flowing over open water for at least one mile.

PROCEDURE The computer program RISA 2d was used to complete the two dimensional analysis and to determine the design maximum loads and maximum moment forces. These forces were used to determine the appropriate post or pole size. Post embedment depth was determined using ASAE Standard EP486.

ASSUMPTIONS

The design tables for umbrella type structures in this technical note are based on the following:

(a) Lumber – Southern Pine Grade No. 2
(b) Overhang – 2.5 feet maximum
(c) Roof Slope – 3 to 12 or 4 to 12
(d) Dead load – 3.5 psf
(e) Bearing width – 1.5 feet (for concrete embedment)
(f) Structures are assumed to represent a low hazard to human life in the event of failure.
(g) Structures are assumed to have no snow load, which is true for the entire state of Florida.
(h) Beam design is based upon one truss spaced at the midpoint between post and over each post.
(i) Rectangular post shall have the longer dimension parallel with truss direction.

POLE SIZING The pole classes are based on "Standard Specifications and Dimensions for Wood Poles," ANSI O5.1. Each class indicates a specific top diameter. Class 7 - 4.8 inches, Class 6 – 5.4 inches, Class 5 – 6.0 inches, Class 4 – 6.7 inches. Be careful to use the actual dimensions of the post or poles being used for the design when using the tables.

For example, a 6" X 8" finished post would be shown as having a width of 5.5" and a depth of 7.5" on the table. If round poles are used, the diameter is taken as the diameter at the smaller end. Rectangular post shall have the longer dimension parallel with truss direction.

POST EMBEDMENT Post embedment has two options, with (constrained case) and without (non-constrained case) a concrete slab. The post embedment design is based on procedures in ASAE practice standard ASAE EP486. The lateral soil bearing pressure is taken from ASAE EP486 – 150 and 200 psf are the soil bearing pressures indicated for typical Florida soils. A soil bearing pressure of 200 psf is used for sandy gravel and/or gravel soils (Unified Soil Classification System GW and GP) and sand, silty sand, clayey sand, silty gravel and clayey gravel (SW, SP, and GC) which have firm consistency. A soil bearing pressure of 150 psf is used for sand, silty sand, clayey sand, silty gravel, and clayey gravel (SW, SP, and GC) with loose consistency.

The post embedment depth tables are arranged by structure type, bracing, concrete bearing, post height, and soil bearing pressure, in that order. A table of contents is provided on page 3 for clarification.

BEAM SIZING Beam sizing is based upon a single beam or the double boards together to act as a single beam. Tables are also based upon whether or not lumber is of nominal size or full cut. The calculation for double boards is based on beams being placed together on the same side of the pole or post. If the boards are separated, the load carrying capacity is reduced. The design tables are based upon the assumption of only one truss between each post. More trusses are allowed since the beam size is conservative (i.e. the beam size is largest for a single truss between the post).

In the case of trusses (normally metal) spaced equal to the post spacing, the beams should be sized not according to the truss load as the tables shown here do, but according to the size necessary to transfer a wind load perpendicular to the gable between the posts. This case will be designed by the truss company. All trusses should be designed and certified by a Florida licensed registered professional engineer.

PURLIN SIZING Purlin sizing is based on flatwise or vertical installation and a spacing of two feet. Flatwise purlins are typically used on wooden trusses, while vertical purlins are typically used on metal trusses since they are usually spaced further apart. The table is based on the spacing of trusses. The truss spacing can coincide with the post spacing or can be equal to half of the post spacing. For more frequent truss spacing, the next largest truss spacing in the tables should be used for the selection of the appropriate purlin size. For example, if the truss spacing is equal to three feet, the purlin size selected should be one in the four-foot truss spacing column of Table 69.

SPECIAL DESIGNS The computer program SSPD may be used to size the structural members and determine post embedment for umbrella type structures with configurations not covered by this technical note.

DOCUMENTATION Design parameters used in the design shall be documented, checked, and initialed by a reviewer. The final design shall be approved by a person with appropriate engineering job approval authority. Figure 5 may be used for documentation.

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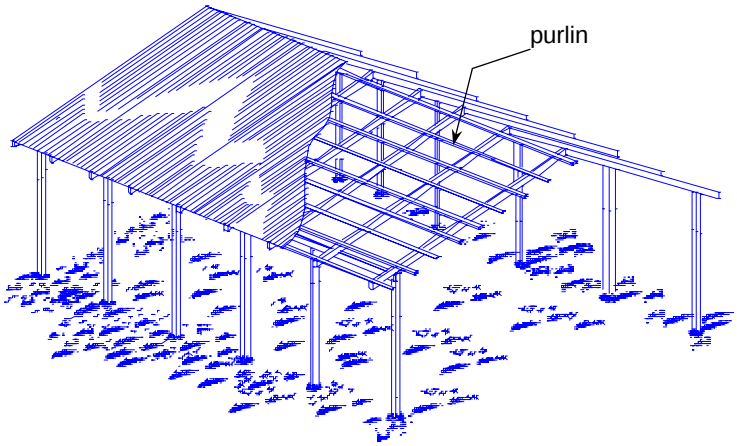
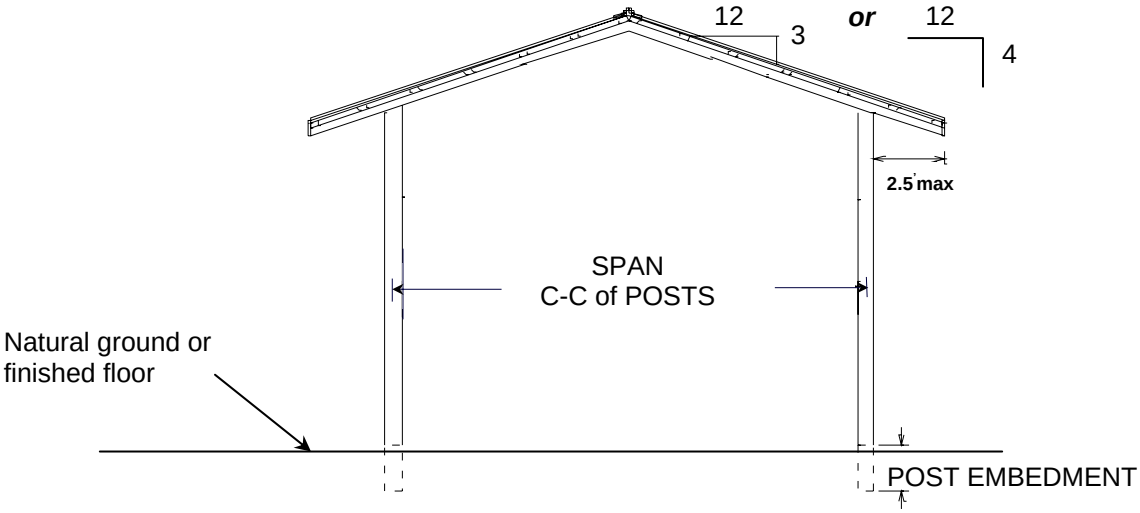
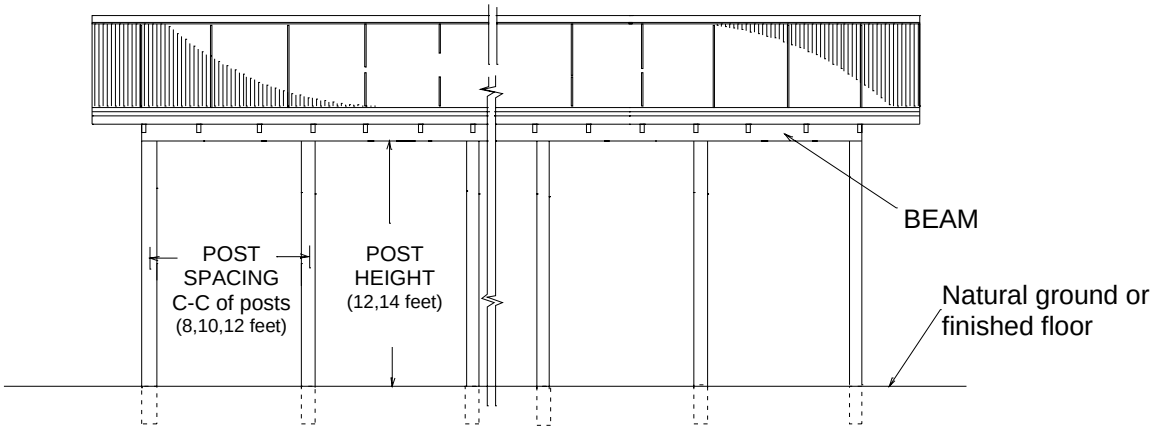
Figure 1. Umbrella type structure without braces.



Isometric View

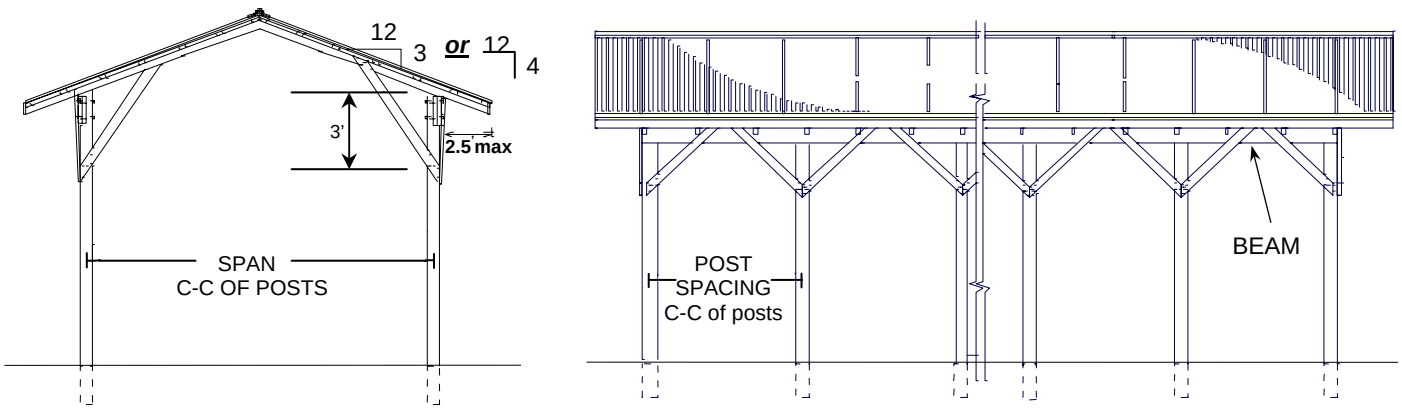


Front View



Side View

Figure 2. Umbrella type structure with braces.

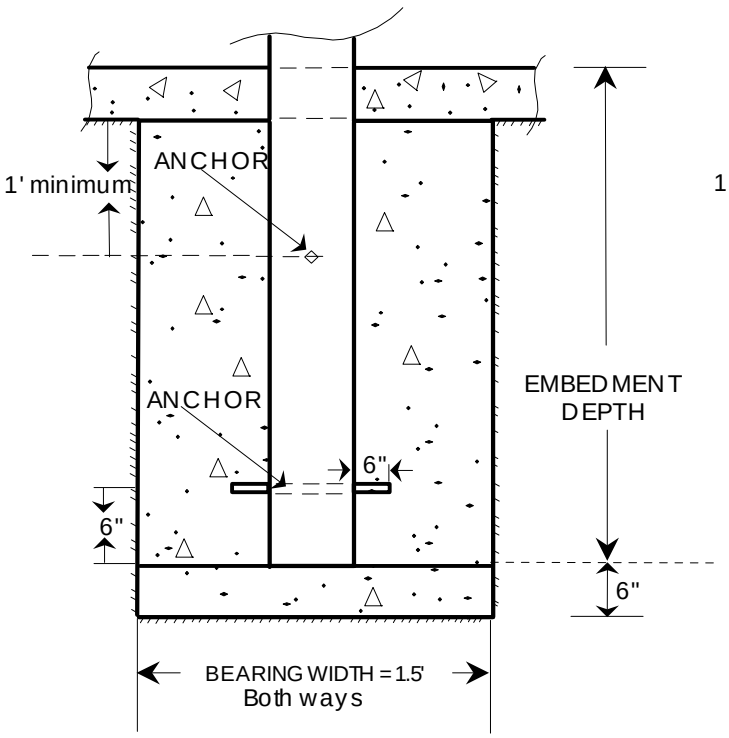


Front View

Side View

Figure 3. Post Embedment Diagram

CONSTRAINED CASE



NON-CONSTRAINED CASE

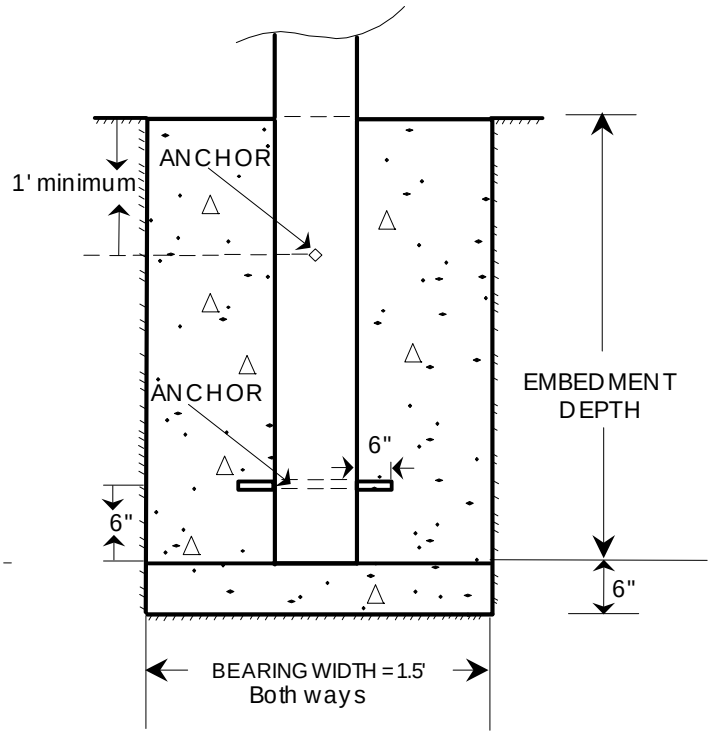
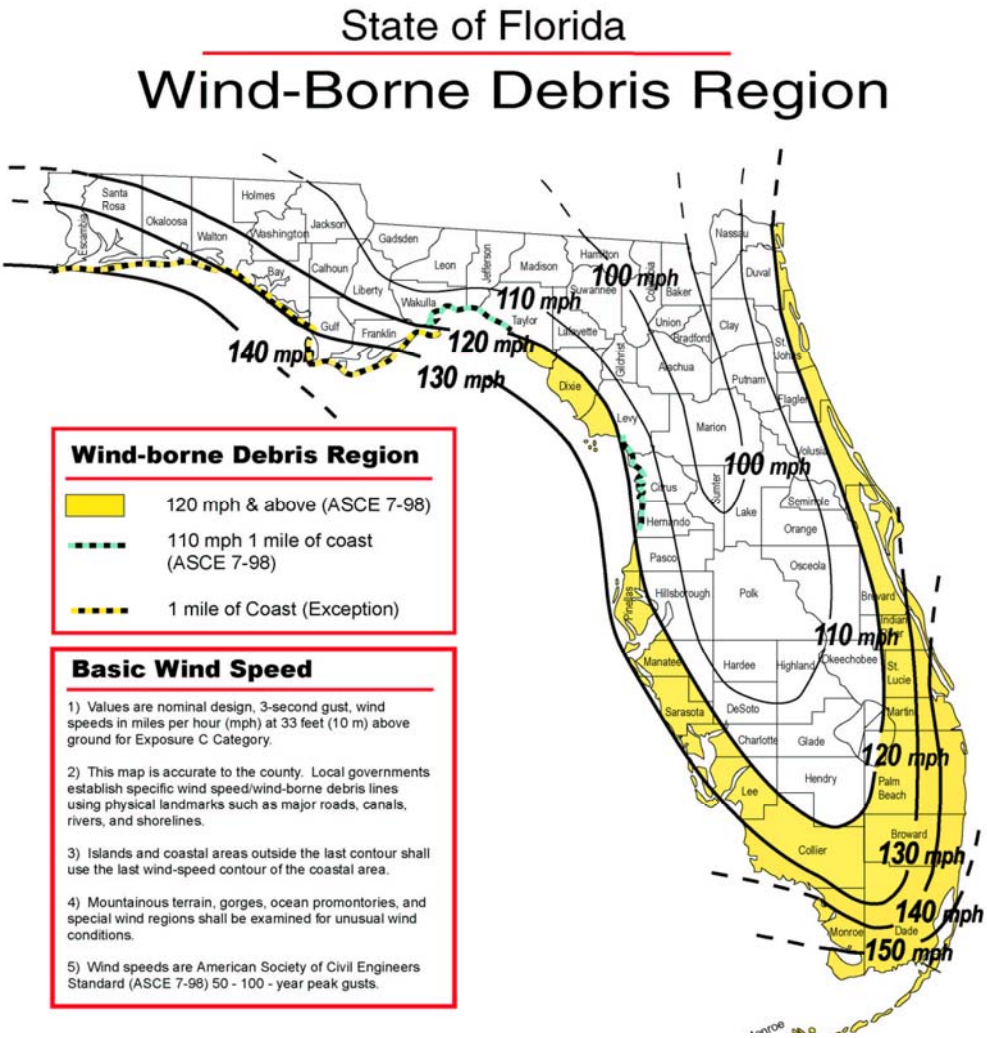


Figure 4. Wind Zone Requirements



High Velocity Hurricane Zone - Miami-Dade and Broward Counties

In these highly vulnerable counties, stricter design and construction measures have been adopted than those provided by ASCE 7-98 – most notably, the requirements to protect windows with either shutters or impact resistant glass, and for wall and roof systems resistant to wind-borne debris penetration.

Wind-Borne Debris Region

Areas with wind speeds in excess of 120 MPH and/or areas within one mile of the coast where wind speed is 110 MPH or higher. In these areas, buildings must be designed to protect openings or to withstand the increase in internal pressures that will occur if an unprotected window or glass door is broken by debris.

Panhandle Protection Provision Zone

From Franklin County to the Alabama state line, the wind-borne debris region is restricted to the area within one mile of the coast.

Remaining Florida

Wind loads are calculated based on wind speed estimates as determined by ASCE 7-98 base wind speed map. For these areas, the buildings are designed and built much as they were using previous codes.

Exposure to Wind.

Except in the High Velocity Hurricane Zone, exposure C means that area which lies within 1500 feet of the coastal construction control line, or within 1500 feet of the mean high tide line, whichever is less. The forces exerted on buildings by winds are affected by obstructions such as trees and other buildings. Exposure C exists where there are few obstructions. Exposure B is characteristic of subdivisions and towns.

For more information on wind-zone requirements and the Florida Building Code, visit www.floridabuilding.org

3:12 Roof Slope

Table 1 - POST SIZE

Structure Type: Umbrella
Bracing: Yes

Roof Slope 3:12

Post Height: 12 Feet
Post Spacing: 8 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	3.5 x 5.5	4 x 6	class 7	3.5 x 5.5	4 x 6	class 7
110	3.5 x 5.5	4 x 6	class 7	3.5 x 5.5	4 x 6	class 7
120	3.5 x 5.5	4 x 6	class 7	5.5 x 5.5	4 x 6	class 6
130	3.5 x 5.5	4 x 6	class 7	5.5 x 5.5	4 x 6	class 6
140	5.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 5

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	3.5 x 5.5	4 x 6	class 7	5.5 x 5.5	4 x 6	class 6
110	3.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 6
120	5.5 x 5.5	6 x 6	class 6	5.5 x 5.5	6 x 6	class 5
130	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
140	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 4

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	6 x 6	class 6	5.5 x 5.5	6 x 6	class 6
110	5.5 x 5.5	6 x 6	class 5	5.5 x 5.5	6 x 6	class 5
120	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
130	5.5 x 7.5	6 x 6	class 4	5.5 x 7.5	6 x 6	class 4
140	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	6 x 6	class 5	5.5 x 5.5	6 x 6	class 5
110	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
120	5.5 x 7.5	6 x 6	class 4	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
140	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3

Table 2 - POST SIZE

Structure Type: Umbrella
Bracing: Yes

Roof Slope 3:12

Post Height: 12 Feet
Post Spacing: 10 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	3.5 x 5.5	4 x 6	class 7	3.5 x 5.5	4 x 6	class 7
110	3.5 x 5.5	4 x 6	class 7	5.5 x 5.5	4 x 6	class 6
120	5.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 6
130	5.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 5
140	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 6
110	5.5 x 5.5	6 x 6	class 6	5.5 x 5.5	6 x 6	class 5
120	5.5 x 5.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
130	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 4
140	5.5 x 7.5	6 x 6	class 4	5.5 x 7.5	6 x 8	class 4

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
110	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
120	5.5 x 7.5	6 x 6	class 4	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 8	class 3	5.5 x 7.5	6 x 8	class 3

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 5
110	5.5 x 7.5	6 x 6	class 4	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 3	5.5 x 7.5	6 x 8	class 3
140	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 4	5.5 x 7.5	6 x 8	class 4
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 3	5.5 x 7.5	6 x 8	class 3
130	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
140	7.5 x 7.5	6 x 8	class 2	7.5 x 7.5	8 x 8	class 2

Table 3 - POST SIZE

Structure Type: Umbrella
Bracing: Yes

Roof Slope 3:12

Post Height: 12 Feet
Post Spacing: 12 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	3.5 x 5.5	4 x 6	class 7	5.5 x 5.5	4 x 6	class 6
110	5.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 6
120	5.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 5
130	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
140	5.5 x 5.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 4

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	6 x 6	class 6	5.5 x 5.5	6 x 6	class 5
110	5.5 x 5.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
120	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 6	class 4	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
110	5.5 x 7.5	6 x 6	class 4	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
140	7.5 x 7.5	8 x 8	class 3	7.5 x 7.5	8 x 8	class 3

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 4	5.5 x 7.5	6 x 8	class 4
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 3	5.5 x 7.5	6 x 8	class 3
130	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
140	7.5 x 7.5	6 x 8	class 2	7.5 x 7.5	8 x 8	class 2

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
110	5.5 x 7.5	6 x 8	class 3	5.5 x 7.5	6 x 8	class 3
120	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 2
130	7.5 x 7.5	6 x 8	class 2	7.5 x 9.5	8 x 8	class 2
140	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 2

Table 4 - POST SIZE

Structure Type: Umbrella
Bracing: Yes

Roof Slope 3:12

Post Height: 14 Feet
Post Spacing: 8 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	3.5 x 5.5	4 x 6	class 7	3.5 x 5.5	4 x 6	class 7
110	3.5 x 5.5	4 x 6	class 7	5.5 x 5.5	4 x 6	class 6
120	5.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 6
130	5.5 x 5.5	4 x 6	class 6	5.5 x 7.5	6 x 6	class 5
140	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 6
110	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
120	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
130	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
110	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 4
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 8	class 3	5.5 x 7.5	6 x 8	class 3

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 4
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 3	5.5 x 7.5	6 x 8	class 3
140	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
120	5.5 x 7.5	6 x 8	class 3	5.5 x 7.5	6 x 8	class 3
130	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 2
140	7.5 x 7.5	6 x 8	class 2	7.5 x 7.5	8 x 8	class 2

Table 5 - POST SIZE

Structure Type: Umbrella
Bracing: Yes

Roof Slope 3:12

Post Height: 14 Feet
Post Spacing: 10 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	3.5 x 5.5	4 x 6	class 7	5.5 x 5.5	4 x 6	class 6
110	5.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 6
120	5.5 x 5.5	4 x 6	class 6	5.5 x 7.5	6 x 6	class 5
130	5.5 x 5.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
140	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
110	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 4
120	5.5 x 7.5	6 x 6	class 4	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	6 x 6	class 5	5.5 x 5.5	6 x 6	class 4
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 6	class 4
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
130	5.5 x 7.5	6 x 8	class 3	5.5 x 7.5	6 x 8	class 3
140	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 2

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 6	class 4
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
120	5.5 x 7.5	6 x 8	class 3	5.5 x 7.5	6 x 8	class 3
130	7.5 x 7.5	6 x 8	class 3	7.5 x 9.5	6 x 8	class 2
140	7.5 x 7.5	6 x 8	class 2	7.5 x 9.5	8 x 8	class 2

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
110	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
120	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 2
130	7.5 x 7.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 2
140	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 1

Table 6 - POST SIZE

Structure Type: Umbrella
Bracing: Yes

Roof Slope 3:12

Post Height: 14 Feet
Post Spacing: 12 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 6
110	5.5 x 5.5	4 x 6	class 6	5.5 x 7.5	6 x 6	class 5
120	5.5 x 5.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
130	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 4
110	5.5 x 7.5	6 x 6	class 4	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
140	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 6	class 4
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
120	5.5 x 7.5	6 x 8	class 3	5.5 x 7.5	6 x 8	class 3
130	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 2
140	7.5 x 7.5	8 x 8	class 2	7.5 x 7.5	8 x 8	class 2

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 4	5.5 x 7.5	6 x 8	class 3
110	5.5 x 7.5	6 x 8	class 3	5.5 x 7.5	6 x 8	class 3
120	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 2
130	7.5 x 7.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 2
140	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 1

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
110	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 2
120	7.5 x 7.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 2
130	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 10	class 1
140	7.5 x 9.5	8 x 10	class 1	7.5 x 9.5	8 x 10	class 1

Table 7 - POST SIZE

Structure Type: Umbrella
Bracing: No

Roof Slope 3:12

Post Height: 12 Feet
Post Spacing: 8 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	3.5 x 5.5	4 x 6	class 7	5.5 x 5.5	4 x 6	class 7
110	5.5 x 5.5	4 x 6	class 7	5.5 x 5.5	4 x 6	class 7
120	5.5 x 5.5	4 x 6	class 7	5.5 x 5.5	6 x 6	class 6
130	5.5 x 5.5	4 x 6	class 7	5.5 x 5.5	6 x 6	class 6
140	5.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 6

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	4 x 6	class 7	5.5 x 5.5	6 x 6	class 6
110	5.5 x 5.5	6 x 6	class 6	5.5 x 5.5	6 x 6	class 6
120	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
130	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
140	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 5

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	6 x 6	class 6	5.5 x 5.5	6 x 6	class 6
110	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
120	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
130	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
110	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 5
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
140	7.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 3

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 5
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
130	7.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 3
140	7.5 x 7.5	8 x 8	class 3	7.5 x 7.5	8 x 8	class 3

Table 8 - POST SIZE

Structure Type: Umbrella
Bracing: No

Roof Slope 3:12

Post Height: 12 Feet
Post Spacing: 10 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	3.5 x 5.5	4 x 6	class 7	5.5 x 5.5	4 x 6	class 7
110	5.5 x 5.5	4 x 6	class 7	5.5 x 5.5	6 x 6	class 6
120	5.5 x 5.5	6 x 6	class 7	5.5 x 5.5	6 x 6	class 6
130	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
140	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	6 x 6	class 6	5.5 x 5.5	6 x 6	class 6
110	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
120	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 5
130	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
110	5.5 x 7.5	6 x 8	class 5	5.5 x 7.5	6 x 8	class 5
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
140	7.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 3

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 5
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
130	7.5 x 7.5	6 x 8	class 4	7.5 x 7.5	8 x 8	class 3
140	7.5 x 7.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 3

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
110	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
120	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	8 x 8	class 3
130	7.5 x 9.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 3
140	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 10	class 2

Table 9 - POST SIZE

Structure Type: Umbrella
Bracing: No

Roof Slope 3:12

Post Height: 12 Feet
Post Spacing: 12 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	4 x 6	class 7	5.5 x 5.5	6 x 6	class 6
110	5.5 x 5.5	4 x 6	class 7	5.5 x 5.5	6 x 6	class 6
120	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
130	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
140	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 5

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
110	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
120	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 3

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
130	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
140	7.5 x 7.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 3

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
110	7.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
120	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	8 x 8	class 3
130	7.5 x 7.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 3
140	7.5 x 9.5	8 x 8	class 2	9.5 x 9.5	8 x 10	class 2

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
110	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	8 x 8	class 3
120	7.5 x 9.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 2
130	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 10	class 2
140	9.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 2

Table 10 - POST SIZE

Structure Type: Umbrella
Bracing: No

Roof Slope 3:12

Post Height: 14 Feet
Post Spacing: 8 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	3.5 x 5.5	4 x 6	class 7	5.5 x 5.5	4 x 6	class 7
110	5.5 x 5.5	4 x 6	class 7	5.5 x 5.5	6 x 6	class 6
120	5.5 x 5.5	4 x 6	class 7	5.5 x 5.5	6 x 6	class 6
130	5.5 x 5.5	6 x 6	class 6	5.5 x 5.5	6 x 6	class 5
140	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5

Wind Speed (mph)	Span					
		20 ft.			25 ft.	
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	6 x 6	class 6	5.5 x 5.5	6 x 6	class 6
110	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
120	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
130	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4

Wind Speed (mph)	Span					
		30 ft.			32 ft.	
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
110	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
140	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3

Wind Speed (mph)	Span					
		36 ft.			40 ft.	
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
130	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
140	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	8 x 8	class 3

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
120	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
130	7.5 x 7.5	8 x 8	class 3	7.5 x 7.5	8 x 8	class 3
140	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 2

Table 11 - POST SIZE

Structure Type: Umbrella
Bracing: No

Roof Slope 3:12

Post Height: 14 Feet
Post Spacing: 10 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	4 x 6	class 7	5.5 x 5.5	4 x 6	class 6
110	5.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 6
120	5.5 x 5.5	6 x 6	class 6	5.5 x 5.5	6 x 6	class 5
130	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
140	5.5 x 5.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
110	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
120	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 3

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 4
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
130	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
140	7.5 x 7.5	8 x 8	class 3	7.5 x 7.5	8 x 8	class 3

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
110	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 3
120	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
130	7.5 x 7.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 2
140	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 10	class 2

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
110	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	8 x 8	class 3
120	7.5 x 7.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 2
130	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 10	class 2
140	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 1

Table 12 - POST SIZE

Structure Type: Umbrella
Bracing: No

Roof Slope 3:12

Post Height: 14 Feet
Post Spacing: 12 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 6
110	5.5 x 5.5	6 x 6	class 6	5.5 x 5.5	6 x 6	class 5
120	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
130	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
110	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 3
140	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	8 x 8	class 3

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
120	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
130	7.5 x 7.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 2
140	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 2

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
110	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
120	7.5 x 7.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 2
130	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 10	class2
140	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 1

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
110	7.5 x 7.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 2
120	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 10	class 2
130	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 1
140	7.5 x 9.5	8 x 10	class 1	9.5 x 9.5	8 x 10	class 1

Table 13 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: Yes
Concrete Slab: Yes

Roof Slope 3:12

Post Height: 12 Feet
Soil Bearing Pressure: 150 psf

Post Spacing: 8 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.0	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0
110	2.0	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5
120	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5
130	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5
140	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0

Post Spacing: 10 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.5
110	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5
120	2.5	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	3.5
130	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0	4.0
140	3.0	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0

Post Spacing: 12 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5
110	2.5	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	3.5
120	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0	4.0
130	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0
140	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.5

Table 14 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: Yes
Concrete Slab: Yes

Roof Slope 3:12

Post Height: 12 Feet
Soil Bearing Pressure: 200 psf

Post Spacing: 8 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0
110	2.0	2.0	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0
120	2.0	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
130	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.5
140	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5

Post Spacing: 10 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.0	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0
110	2.0	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
120	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5
130	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5
140	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0

Post Spacing: 12 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.0	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
110	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5
120	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5
130	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0
140	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0	4.0

Table 15 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: Yes
Concrete Slab: Yes

Roof Slope 3:12

Post Height: 14 Feet
Soil Bearing Pressure: 150 psf

Post Spacing: 8 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.0	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.5
110	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5
120	2.5	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5
130	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0
140	2.5	3.0	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0

Post Spacing: 10 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5
110	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0
120	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0	4.0
130	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0
140	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.5

Post Spacing: 12 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0
110	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0	4.0
120	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0
130	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5
140	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5

Table 16 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: Yes
Concrete Slab: Yes

Roof Slope 3:12

Post Height: 14 Feet
Soil Bearing Pressure: 200 psf

Post Spacing: 8 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.0	2.0	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0
110	2.0	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
120	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5
130	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5
140	2.5	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5

Post Spacing: 10 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.0	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5
110	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5
120	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5
130	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0
140	2.5	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0

Post Spacing: 12 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5
110	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5
120	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0
130	2.5	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0
140	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0

Table 17 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: Yes
Concrete Slab: No

Roof Slope 3:12

Post Height: 12 Feet
Soil Bearing Pressure: 150 psf

Post Spacing: 8 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.5
110	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5
120	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0
130	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0
140	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5

Post Spacing: 10 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5
110	3.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0	5.0
120	3.5	3.5	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5
130	3.5	4.0	4.0	4.5	5.0	5.0	5.0	5.0	5.5	5.5
140	3.5	4.0	4.5	4.5	5.0	5.0	5.5	5.5	5.5	6.0

Post Spacing: 12 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.5	3.5	4.0	4.0	4.5	4.5	4.5	4.5	5.0
110	3.5	3.5	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5
120	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5
130	4.0	4.0	4.5	5.0	5.0	5.0	5.5	5.5	5.5	6.0
140	4.0	4.5	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.5

Table 18 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: Yes
Concrete Slab: No

Roof Slope 3:12

Post Height: 12 Feet
Soil Bearing Pressure: 200 psf

Post Spacing: 8 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0
110	2.5	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0
120	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.5
130	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
140	3.0	3.5	3.5	4.0	4.0	4.5	4.5	4.5	4.5	5.0

Post Spacing: 10 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0
110	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5
120	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0
130	3.0	3.5	4.0	4.0	4.5	4.5	4.5	4.5	5.0	5.0
140	3.5	3.5	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5

Post Spacing: 12 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5
110	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0
120	3.0	3.5	4.0	4.0	4.5	4.5	4.5	4.5	5.0	5.0
130	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5
140	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5

Table 19 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: Yes
Concrete Slab: No

Roof Slope 3:12

Post Height: 14 Feet
Soil Bearing Pressure: 150 psf

Post Spacing: 8 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5
110	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0
120	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0
130	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5
140	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5

Post Spacing: 10 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0
110	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0
120	3.5	4.0	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5
130	3.5	4.0	4.5	4.5	5.0	5.0	5.5	5.5	5.5	6.0
140	4.0	4.5	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.0

Post Spacing: 12 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	48 ft.
100	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0
110	3.5	4.0	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5
120	3.5	4.0	4.5	5.0	5.0	5.0	5.5	5.5	5.5	6.0
130	4.0	4.5	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.5
140	4.0	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.5	6.5

Table 20 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: Yes
Concrete Slab: No

Roof Slope 3:12

Post Height: 14 Feet
Soil Bearing Pressure: 200 psf

Post Spacing: 8 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0
110	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5
120	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5
130	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0
140	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0

Post Spacing: 10 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.5
110	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
120	3.0	3.5	4.0	4.0	4.5	4.5	4.5	4.5	5.0	5.0
130	3.5	3.5	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5
140	3.5	4.0	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5

Post Spacing: 12 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
110	3.0	3.5	4.0	4.0	4.5	4.5	4.5	4.5	5.0	5.0
120	3.5	3.5	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5
130	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5
140	4.0	4.0	4.5	5.0	5.0	5.0	5.5	5.5	5.5	6.0

Table 21 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: No
Concrete Slab: Yes

Roof Slope 3:12

Post Height: 12 Feet
Soil Bearing Pressure: 150 psf

Post Spacing: 8 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5
110	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5
120	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0
130	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0	4.0
140	3.0	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0

Post Spacing: 10 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5
110	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0
120	2.5	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0
130	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5
140	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5

Post Spacing: 12 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0
110	2.5	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0
120	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5
130	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5
140	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0

Table 22 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: No
Concrete Slab: Yes

Roof Slope 3:12

Post Height: 12 Feet
Soil Bearing Pressure: 200 psf

Post Spacing: 8 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.0	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0
110	2.0	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5
120	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5
130	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5
140	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0

Post Spacing: 10 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.0	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5
110	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5
120	2.5	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5
130	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0
140	2.5	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0

Post Spacing: 12 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5
110	2.5	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5
120	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0
130	2.5	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0
140	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5

Table 23 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: No
Concrete Slab: Yes

Roof Slope 3:12

Post Height: 14 Feet
Soil Bearing Pressure: 150 psf

Post Spacing: 8 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5
110	2.5	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0
120	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0	4.0
130	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0
140	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.5

Post Spacing: 10 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0
110	2.5	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0
120	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5
130	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5
140	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5

Post Spacing: 12 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0
110	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5
120	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5
130	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0
140	3.5	3.5	4.0	4.0	4.5	4.5	4.5	4.5	5.0	5.0

Table 24 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: No
Concrete Slab: Yes

Roof Slope 3:12

Post Height: 14 Feet
Soil Bearing Pressure: 200 psf

Post Spacing: 8 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.0	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5
110	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5
120	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5
130	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0
140	2.5	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0

Post Spacing: 10 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5
110	2.5	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5
120	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0
130	2.5	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0
140	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5

Post Spacing: 12 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5
110	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0
120	2.5	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0
130	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.5
140	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5

Table 25 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: No
Concrete Slab: No

Roof Slope 3:12

Post Height: 12 Feet
Soil Bearing Pressure: 150 psf

Post Spacing: 8 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5
110	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0
120	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0
130	3.5	4.0	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5
140	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	6.0

Post Spacing: 10 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5	5.0
110	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.5
120	3.5	4.0	4.0	4.5	5.0	5.0	5.0	5.0	5.5	5.5
130	3.5	4.0	4.5	5.0	5.0	5.0	5.5	5.5	5.5	6.0
140	4.0	4.5	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.5

Post Spacing: 12 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.5
110	3.5	4.0	4.0	4.5	5.0	5.0	5.0	5.0	5.5	5.5
120	3.5	4.0	4.5	5.0	5.0	5.0	5.5	5.5	5.5	6.0
130	4.0	4.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.5
140	4.0	4.5	5.0	5.5	5.5	6.0	6.0	6.0	6.5	7.0

Table 26 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: No
Concrete Slab: No

Roof Slope 3:12

Post Height: 12 Feet
Soil Bearing Pressure: 200 psf

Post Spacing: 8 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0
110	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.5
120	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
130	3.5	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0
140	4.0	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.5

Post Spacing: 10 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5
110	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0
120	3.0	3.5	4.0	4.0	4.5	4.5	4.5	4.5	5.0	5.0
130	3.5	3.5	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5
140	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5

Post Spacing: 12 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0
110	3.0	3.5	4.0	4.0	4.5	4.5	4.5	4.5	5.0	5.0
120	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5
130	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	6.0
140	4.0	4.0	4.5	5.0	5.0	5.0	5.5	5.5	6.0	6.0

Table 27 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: No
Concrete Slab: No

Roof Slope 3:12

Post Height: 14 Feet
Soil Bearing Pressure: 150 psf

Post Spacing: 8 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0
110	3.0	3.5	4.0	4.0	4.5	4.5	4.5	4.5	5.0	5.0
120	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5
130	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5
140	4.0	4.0	4.5	5.0	5.0	5.0	5.5	5.5	6.0	6.0

Post Spacing: 10 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0
110	3.5	4.0	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5
120	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	6.0
130	4.0	4.5	4.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0
140	4.0	4.5	5.0	5.0	5.5	5.5	6.0	6.0	6.0	6.5

Post Spacing: 12 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5
110	3.5	4.0	4.5	4.5	5.0	5.0	5.5	5.5	5.5	6.0
120	4.0	4.5	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.5
130	4.0	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.5	6.5
140	4.5	5.0	5.0	5.5	6.0	6.0	6.0	6.5	6.5	7.0

Table 28 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: No
Concrete Slab: No

Roof Slope 3:12

Post Height: 14 Feet
Soil Bearing Pressure: 200 psf

Post Spacing: 8 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.5
110	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5
120	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0
130	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0
140	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5

Post Spacing: 10 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
110	3.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0	5.0
120	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.5
130	3.5	4.0	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5
140	3.5	4.0	4.5	4.5	5.0	5.0	5.5	5.5	5.5	6.0

Post Spacing: 12 Feet

Wind Speed	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.5	3.5	3.5	4.0	4.0	4.5	4.5	4.5	4.5	5.0
110	3.5	3.5	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5
120	3.5	4.0	4.0	4.5	5.0	5.0	5.0	5.0	5.5	5.5
130	3.5	4.0	4.5	5.0	5.0	5.0	5.5	5.5	5.5	6.0
140	4.0	4.5	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.5

Table 29 - BEAM WIDTH SIZE (in) - Nominal

Structure Type: Umbrella
Post Spacing: 8 Feet

Roof Slope 3:12

Thickness: 1.5 inches

Wind Speed (mph)	Span			
	10 ft.		15 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	5.5	5.5	7.25	5.5
110	7.25	5.5	7.25	7.25
120	7.25	5.5	--	7.25
130	7.25	5.5	--	7.25
140	--	5.5	--	7.25

Wind Speed (mph)	Span			
	20 ft.		25 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	7.25	5.5	--	7.25
110	--	7.25	--	7.25
120	--	7.25	--	7.25
130	--	7.25	--	9.25
140	--	9.25	--	9.25

Wind Speed (mph)	Span			
	30 ft.		32 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	7.25	--	7.25
110	--	7.25	--	9.25
120	--	9.25	--	9.25
130	--	9.25	--	9.25
140	--	9.25	--	11.25

Wind Speed (mph)	Span			
	36 ft.		40 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	7.25	--	9.25
110	--	9.25	--	9.25
120	--	9.25	--	9.25
130	--	9.25	--	11.25
140	--	11.25	--	11.25

Wind Speed (mph)	Span			
	44 ft.		50 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	9.25	--	9.25
110	--	9.25	--	11.25
120	--	11.25	--	11.25
130	--	11.25	--	11.25
140	--	11.25	--	--

Table 30 - BEAM WIDTH SIZE (in) - Nominal

Structure Type: Umbrella
Post Spacing: 10 Feet

Roof Slope 3:12

Thickness: 1.5 inches

Wind Speed (mph)	Span			
	10 ft.		15 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	5.5	--	7.25
110	--	7.25	--	7.25
120	--	7.25	--	7.25
130	--	7.25	--	7.25
140	--	7.25	--	9.25

Wind Speed (mph)	Span			
	20 ft.		25 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	7.25	--	9.25
110	--	9.25	--	9.25
120	--	9.25	--	11.25
130	--	9.25	--	11.25
140	--	11.25	--	11.25

Wind Speed (mph)	Span			
	30 ft.		32 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	9.25	--	9.25
110	--	11.25	--	11.25
120	--	11.25	--	11.25
130	--	11.25	--	--
140	--	--	--	--

Wind Speed (mph)	Span			
	36 ft.		40 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	11.25	--	11.25
110	--	11.25	--	11.25
120	--	--	--	--
130	--	--	--	--
140	--	--	--	--

Wind Speed (mph)	Span			
	44 ft.		50 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	11.25	--	--
110	--	--	--	--
120	--	--	--	--
130	--	--	--	--
140	--	--	--	--

Table 31 - BEAM WIDTH SIZE (in) - Nominal

Structure Type: Umbrella
Post Spacing: 12 Feet

Roof Slope 3:12

Thickness: 1.5 inches

Wind Speed (mph)	Span			
	10 ft.		15 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	7.25	--	9.25
110	--	7.25	--	9.25
120	--	9.25	--	9.25
130	--	9.25	--	11.25
140	--	9.25	--	11.25

Wind Speed (mph)	Span			
	20 ft.		25 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	9.25	--	11.25
110	--	11.25	--	--
120	--	11.25	--	--
130	--	--	--	--
140	--	--	--	--

Wind Speed (mph)	Span			
	30 ft.		32 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	11.25	--	--
110	--	--	--	--
120	--	--	--	--
130	--	--	--	--
140	--	--	--	--

Wind Speed (mph)	Span			
	36 ft.		40 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	--	--	--
110	--	--	--	--
120	--	--	--	--
130	--	--	--	--
140	--	--	--	--

Wind Speed (mph)	Span			
	44 ft.		50 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	--	--	--
110	--	--	--	--
120	--	--	--	--
130	--	--	--	--
140	--	--	--	--

Table 32 - BEAM WIDTH SIZE (in) – Full Cut

Structure Type: Umbrella
Post Spacing: 8 Feet

Roof Slope 3:12

Thickness: 2 inches

Wind Speed (mph)	Span			
	10 ft.		15 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	6	4	6	4
110	6	4	6	6
120	6	4	6	6
130	6	6	8	6
140	6	6	8	6

Wind Speed (mph)	Span			
	20 ft.		25 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	6	6	8	6
110	8	6	8	6
120	8	6	8	6
130	8	6	8	8
140	8	6	10	8

Wind Speed (mph)	Span			
	30 ft.		32 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	8	6	8	6
110	8	6	8	6
120	8	8	8	8
130	10	8	10	8
140	10	8	10	8

Wind Speed (mph)	Span			
	36 ft.		40 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	8	6	8	8
110	8	8	10	8
120	10	8	10	8
130	10	8	10	8
140	--	8	--	10

Wind Speed (mph)	Span			
	44 ft.		50 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	10	8	10	8
110	10	8	10	8
120	10	8	--	10
130	--	10	--	10
140	--	10	--	10

Table 33 - BEAM WIDTH SIZE (in) – Full Cut

Structure Type: Umbrella
Post Spacing: 10 Feet

Roof Slope 3:12

Thickness: 2 inches

Wind Speed (mph)	Span			
	10 ft.		15 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	6	6	8	6
110	6	6	8	6
120	8	6	8	6
130	8	6	8	8
140	8	6	10	8

Wind Speed (mph)	Span			
	20 ft.		25 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	8	6	8	8
110	8	8	10	8
120	10	8	12	8
130	10	8	--	8
140	--	8	--	10

Wind Speed (mph)	Span			
	30 ft.		32 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	10	8	10	8
110	10	8	--	8
120	--	8	--	10
130	--	10	--	10
140	--	10	--	10

Wind Speed (mph)	Span			
	36 ft.		40 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	10	8	--	8
110	--	10	--	10
120	--	10	--	10
130	--	10	--	10
140	--	12	--	12

Wind Speed (mph)	Span			
	44 ft.		50 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	10	--	10
110	--	10	--	10
120	--	10	--	12
130	--	12	--	12
140	--	12	--	12

Table 34 - BEAM WIDTH SIZE (in) – Full Cut

Structure Type: Umbrella
Post Spacing: 12 Feet

Roof Slope 3:12

Thickness: 2 inches

Wind Speed (mph)	Span			
	10 ft.		15 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	8	6	8	8
110	8	6	10	8
120	8	8	--	8
130	10	8	--	8
140	--	8	--	10

Wind Speed (mph)	Span			
	20 ft.		25 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	10	8	--	8
110	--	8	--	10
120	--	10	--	10
130	--	10	--	10
140	--	10	--	12

Wind Speed (mph)	Span			
	30 ft.		32 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	10	--	10
110	--	12	--	10
120	--	12	--	12
130	--	12	--	12
140	--	12	--	12

Wind Speed (mph)	Span			
	36 ft.		40 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	10	--	10
110	--	12	--	12
120	--	12	--	12
130	--	12	--	--
140	--	--	--	--

Wind Speed (mph)	Span			
	44 ft.		50 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	12	--	12
110	--	12	--	--
120	--	--	--	--
130	--	--	--	--
140	--	--	--	--

4:12 Roof Slope

Table 35 - POST SIZE

Structure Type: Umbrella
Bracing: Yes

Roof Slope 4:12

Post Height: 12 Feet
Post Spacing: 8 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	3.5 x 5.5	4 x 6	class 7	5.5 x 5.5	4 x 6	class 6
110	3.5 x 5.5	4 x 6	class 7	5.5 x 5.5	4 x 6	class 6
120	5.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 6
130	5.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 5
140	5.5 x 5.5	4 x 6	class 5	5.5 x 7.5	6 x 6	class 5

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 5
110	5.5 x 5.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
120	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 4
130	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
110	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 4
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
140	5.5 x 7.5	6 x 8	class 3	5.5 x 7.5	6 x 8	class 3

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 4
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
130	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
140	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 2

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
120	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
130	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 2
140	7.5 x 7.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 2

Table 36 - POST SIZE

Structure Type: Umbrella
Bracing: Yes

Roof Slope 4:12

Post Height: 12 Feet
Post Spacing: 10 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	3.5 x 5.5	4 x 6	class 7	5.5 x 5.5	4 x 6	class 6
110	5.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 5
120	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
130	5.5 x 5.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
140	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
110	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 4
120	5.5 x 7.5	6 x 6	class 4	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 4	5.5 x 7.5	6 x 6	class 4
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
130	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
140	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 2

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
120	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
130	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	8 x 8	class 2
140	7.5 x 7.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 2

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
110	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
120	7.5 x 7.5	6 x 8	class 2	7.5 x 7.5	8 x 8	class 2
130	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 2
140	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 10	class 1

Table 37 - POST SIZE

Structure Type: Umbrella
Bracing: Yes

Roof Slope 4:12

Post Height: 12 Feet
Post Spacing: 12 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 5
110	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
120	5.5 x 5.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 4
130	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 6	class 4	5.5 x 7.5	6 x 8	class 4

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 4
110	5.5 x 7.5	6 x 6	class 4	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
130	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 3
140	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 2

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
120	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
130	7.5 x 7.5	6 x 8	class 2	7.5 x 7.5	6 x 8	class 2
140	7.5 x 7.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 2

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
110	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
120	7.5 x 7.5	6 x 8	class 2	7.5 x 7.5	8 x 8	class 2
130	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 2
140	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 10	class 1

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
110	7.5 x 7.5	6 x 8	class 2	7.5 x 7.5	8 x 8	class 2
120	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 2
130	7.5 x 9.5	8 x 8	class 1	7.5 x 9.5	8 x 10	class 1
140	7.5 x 9.5	8 x 10	class 1	7.5 x 9.5	8 x 10	--

Table 38 - POST SIZE

Structure Type: Umbrella
Bracing: Yes

Roof Slope 4:12

Post Height: 14 Feet
Post Spacing: 8 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	3.5 x 5.5	4 x 6	class 7	5.5 x 5.5	4 x 6	class 6
110	5.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 5
120	5.5 x 5.5	6 x 6	class 6	5.5 x 5.5	6 x 6	class 5
130	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 4
140	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	6 x 6	class 5	5.5 x 7.5	6 x 6	class 5
110	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
140	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 4	5.5 x 7.5	6 x 8	class 4
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 3	5.5 x 7.5	6 x 8	class 3
130	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
140	7.5 x 7.5	6 x 8	class 2	7.5 x 7.5	6 x 8	class 2

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 6	class 4
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
120	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
130	7.5 x 7.5	6 x 8	class 2	7.5 x 7.5	6 x 8	class 2
140	7.5 x 7.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 2

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
110	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
120	7.5 x 7.5	6 x 8	class 2	7.5 x 7.5	8 x 8	class 2
130	7.5 x 7.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 2
140	7.5 x 9.5	8 x 8	class 1	7.5 x 9.5	8 x 10	class 1

Table 39 - POST SIZE

Structure Type: Umbrella
Bracing: Yes

Roof Slope 4:12

Post Height: 14 Feet
Post Spacing: 10 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	4 x 6	class 6	5.5 x 5.5	6 x 6	class 5
110	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
120	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
130	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
140	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 2

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
110	5.5 x 7.5	6 x 8	class 3	5.5 x 7.5	6 x 8	class 3
120	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
130	7.5 x 7.5	6 x 8	class 2	7.5 x 7.5	8 x 8	class 2
140	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 2

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 3	5.5 x 7.5	6 x 8	class 3
110	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 2
120	7.5 x 7.5	6 x 8	class 2	7.5 x 7.5	8 x 8	class 2
130	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 1
140	7.5 x 9.5	8 x 8	class 1	7.5 x 9.5	8 x 10	class 1

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 2
110	7.5 x 7.5	6 x 8	class 2	7.5 x 7.5	8 x 8	class 2
120	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 1
130	7.5 x 9.5	8 x 10	class 1	7.5 x 9.5	8 x 10	class 1
140	7.5 x 9.5	8 x 10	class 1	7.5 x 9.5	8 x 10	--

Table 40 - POST SIZE

Structure Type: Umbrella
Bracing: Yes

Roof Slope 4:12

Post Height: 14 Feet
Post Spacing: 12 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
110	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
140	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 3
120	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
130	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 2
140	7.5 x 7.5	6 x 8	class 2	7.5 x 9.5	8 x 8	class 2

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 3	5.5 x 7.5	6 x 8	class 3
110	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
120	7.5 x 7.5	6 x 8	class 2	7.5 x 7.5	8 x 8	class 2
130	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 2
140	7.5 x 9.5	8 x 10	class 1	7.5 x 9.5	8 x 10	class 1

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
110	7.5 x 7.5	6 x 8	class 2	7.5 x 7.5	8 x 8	class 2
120	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 1
130	7.5 x 9.5	8 x 10	class 1	7.5 x 9.5	8 x 10	class 1
140	7.5 x 9.5	8 x 10	class 1	7.5 x 9.5	8 x 10	--

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	7.5 x 7.5	6 x 8	class 2	7.5 x 7.5	8 x 8	class 2
110	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 1
120	7.5 x 9.5	8 x 10	class 1	7.5 x 9.5	8 x 10	class 1
130	7.5 x 9.5	8 x 10	--	9.5 x 9.5	8 x 10	--
140	9.5 x 9.5	8 x 10	--	9.5 x 9.5	10 x 10	--

Table 41 - POST SIZE

Structure Type: Umbrella
Bracing: No

Roof Slope 4:12

Post Height: 12 Feet
Post Spacing: 8 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	4 x 6	class 7	5.5 x 5.5	4 x 6	class 7
110	5.5 x 5.5	6 x 6	class 7	5.5 x 5.5	6 x 6	class 6
120	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 6
130	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
140	5.5 x 7.5	6 x 6	class 6	5.5 x 7.5	6 x 8	class 5

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 6
110	5.5 x 7.5	6 x 6	class 6	5.5 x 7.5	6 x 8	class 5
120	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 5
130	5.5 x 7.5	6 x 8	class 5	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 5
110	5.5 x 7.5	6 x 8	class 5	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
130	7.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
140	7.5 x 7.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 3

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 5	5.5 x 7.5	6 x 8	class 4
110	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
120	7.5 x 7.5	6 x 8	class 4	7.5 x 7.5	8 x 8	class 4
130	7.5 x 7.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 3
140	7.5 x 9.5	8 x 8	class 3	7.5 x 9.5	8 x 10	class 3

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
110	7.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
120	7.5 x 7.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 3
130	7.5 x 9.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 3
140	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 2

Table 42 - POST SIZE

Structure Type: Umbrella
Bracing: No

Roof Slope 4:12

Post Height: 12 Feet
Post Spacing: 10 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	6 x 6	class 7	5.5 x 5.5	6 x 6	class 6
110	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 6
120	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
130	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 5
140	5.5 x 7.5	6 x 8	class 5	5.5 x 7.5	6 x 8	class 4

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 5
110	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
130	7.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
140	7.5 x 7.5	6 x 8	class 4	7.5 x 9.5	8 x 8	class 3

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 5	5.5 x 7.5	6 x 8	class 4
110	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
120	7.5 x 7.5	8 x 8	class 4	7.5 x 7.5	8 x 8	class 3
130	7.5 x 9.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 3
140	7.5 x 9.5	8 x 8	class 3	7.5 x 9.5	8 x 10	class 2

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
110	7.5 x 7.5	8 x 8	class 4	7.5 x 9.5	8 x 8	class 3
120	7.5 x 9.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 3
130	7.5 x 9.5	8 x 10	class 3	7.5 x 9.5	8 x 10	class 2
140	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 2

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	7.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 3
110	7.5 x 9.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 3
120	7.5 x 9.5	8 x 10	class 3	7.5 x 9.5	8 x 10	class 2
130	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 2
140	9.5 x 9.5	8 x 10	class 2	9.5 x 9.5	8 x 10	class 1

Table 43 - POST SIZE

Structure Type: Umbrella
Bracing: No

Roof Slope 4:12

Post Height: 12 Feet
Post Spacing: 12 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 6
110	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 8	class 5
120	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 5
130	5.5 x 7.5	6 x 8	class 5	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 8	class 5	7.5 x 7.5	6 x 8	class 4

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 5	5.5 x 7.5	6 x 8	class 4
110	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
120	7.5 x 7.5	6 x 8	class 4	7.5 x 7.5	8 x 8	class 4
130	7.5 x 7.5	6 x 8	class 4	7.5 x 9.5	8 x 8	class 3
140	7.5 x 9.5	8 x 8	class 3	7.5 x 9.5	8 x 10	class 3

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	7.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
110	7.5 x 7.5	6 x 8	class 4	7.5 x 7.5	8 x 8	class 3
120	7.5 x 9.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 3
130	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 2
140	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 2

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	7.5 x 7.5	8 x 8	class 4	7.5 x 7.5	8 x 8	class 3
110	7.5 x 9.5	8 x 10	class 3	7.5 x 9.5	8 x 8	class 3
120	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 2
130	7.5 x 9.5	8 x 10	class 2	9.5 x 9.5	8 x 10	class 2
140	9.5 x 9.5	8 x 10	class 2	9.5 x 9.5	8 x 10	class 1

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	7.5 x 9.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 3
110	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 2
120	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 2
130	9.5 x 9.5	8 x 10	class 1	9.5 x 9.5	8 x 10	class 1
140	--	10 x 10	class 1	--	10 x 10	--

Table 44 - POST SIZE

Structure Type: Umbrella
Bracing: No

Roof Slope 4:12

Post Height: 14 Feet
Post Spacing: 8 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	4 x 6	class 7	5.5 x 5.5	6 x 6	class 6
110	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
120	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
130	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
110	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	8 x 8	class 3
140	7.5 x 7.5	6 x 8	class 4	7.5 x 7.5	8 x 8	class 3

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	5.5 x 7.5	6 x 8	class 4
110	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
120	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	6 x 8	class 3
130	7.5 x 7.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 3
140	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 2

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
110	7.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 3
120	7.5 x 7.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 3
130	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 10	class 2
140	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 2

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	7.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 3
110	7.5 x 7.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 3
120	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 8	class 2
130	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 2
140	7.5 x 9.5	8 x 10	class 1	9.5 x 9.5	8 x 10	class 1

Table 45 - POST SIZE

Structure Type: Umbrella
Bracing: No

Roof Slope 4:12

Post Height: 14 Feet
Post Spacing: 10 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	4 x 6	class 6	5.5 x 7.5	6 x 6	class 5
110	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
120	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 5	5.5 x 7.5	6 x 8	class 4
140	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 5	5.5 x 7.5	6 x 8	class 4
110	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
120	7.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 3
130	7.5 x 7.5	6 x 8	class 3	7.5 x 9.5	8 x 8	class 3
140	7.5 x 9.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 2

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
110	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	8 x 8	class 3
120	7.5 x 9.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 3
130	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 2
140	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 2

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	8 x 8	class 3
110	7.5 x 9.5	8 x 8	class 3	7.5 x 9.5	8 x 10	class 2
120	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 2
130	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 1
140	9.5 x 9.5	8 x 10	class 1	9.5 x 9.5	8 x 10	class 1

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	7.5 x 9.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 2
110	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 2
120	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 1
130	9.5 x 9.5	8 x 10	class 1	9.5 x 9.5	8 x 10	class 1
140	9.5 x 9.5	10 x 10	class 1	9.5 x 9.5	10 x 10	--

Table 46 - POST SIZE

Structure Type: Umbrella
Bracing: No

Roof Slope 4:12

Post Height: 14 Feet
Post Spacing: 12 Feet

Wind Speed (mph)	Span					
	10 ft.			15 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 5.5	6 x 6	class 6	5.5 x 7.5	6 x 6	class 5
110	5.5 x 7.5	6 x 6	class 5	5.5 x 7.5	6 x 8	class 4
120	5.5 x 7.5	6 x 8	class 5	5.5 x 7.5	6 x 8	class 4
130	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 3
140	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	8 x 8	class 3

Wind Speed (mph)	Span					
	20 ft.			25 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	5.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 4
110	7.5 x 7.5	6 x 8	class 4	7.5 x 7.5	6 x 8	class 3
120	7.5 x 7.5	6 x 8	class 3	7.5 x 9.5	8 x 8	class 3
130	7.5 x 9.5	8 x 8	class 3	7.5 x 9.5	8 x 10	class 2
140	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 10	class 2

Wind Speed (mph)	Span					
	30 ft.			32 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	7.5 x 7.5	6 x 8	class 3	7.5 x 7.5	8 x 8	class 3
110	7.5 x 9.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 3
120	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 2
130	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 2
140	9.5 x 9.5	8 x 10	class 1	9.5 x 9.5	8 x 10	class 1

Wind Speed (mph)	Span					
	36 ft.			40 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	7.5 x 9.5	8 x 8	class 3	7.5 x 9.5	8 x 8	class 3
110	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 2
120	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 1
130	9.5 x 9.5	8 x 10	class 1	9.5 x 9.5	8 x 10	class 1
140	9.5 x 9.5	10 x 10	class 1	--	10 x 10	--

Wind Speed (mph)	Span					
	44 ft.			50 ft.		
	Dressed (in.)	Full Cut (in.)	Pole	Dressed (in.)	Full Cut (in.)	Pole
100	7.5 x 9.5	8 x 8	class 2	7.5 x 9.5	8 x 10	class 2
110	7.5 x 9.5	8 x 10	class 2	7.5 x 9.5	8 x 10	class 1
120	9.5 x 9.5	8 x 10	class 1	9.5 x 9.5	8 x 10	class 1
130	--	10 x 10	--	--	10 x 10	--
140	--	--	--	--	--	--

Table 47 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: Yes
Concrete Slab: Yes

Roof Slope 4:12

Post Height: 12 Feet
Soil Bearing Pressure: 150 psf

Post Spacing: 8 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5
110	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5
120	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0
130	2.5	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0
140	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0

Post Spacing: 10 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5
110	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0
120	2.5	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0
130	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5
140	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5

Post Spacing: 12 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0
110	2.5	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0
120	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.5
130	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
140	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0

Table 48 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: Yes
Concrete Slab: Yes

Roof Slope 4:12

Post Height: 12 Feet
Soil Bearing Pressure: 200 psf

Post Spacing: 8 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.0	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0
110	2.0	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5
120	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5
130	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5
140	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0

Post Spacing: 10 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.5
110	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5
120	2.5	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	3.5
130	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0	4.0
140	3.0	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0

Post Spacing: 12 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5
110	2.5	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	3.5
120	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0	4.0
130	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0
140	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.5

Table 49 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: Yes
Concrete Slab: Yes

Roof Slope 4:12

Post Height: 14 Feet
Soil Bearing Pressure: 150 psf

Post Spacing: 8 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5
110	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0
120	2.5	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0
130	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5
140	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5

Post Spacing: 10 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0
110	3.0	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0
120	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.5
130	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
140	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0

Post Spacing: 12 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0
110	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.5
120	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
130	3.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5	5.0
140	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0

Table 50 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: Yes
Concrete Slab: Yes

Roof Slope 4:12

Post Height: 14 Feet
Soil Bearing Pressure: 200 psf

Post Spacing: 8 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.0	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.5
110	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5
120	2.5	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5
130	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0
140	2.5	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0

Post Spacing: 10 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5
110	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0
120	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0	4.0
130	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0
140	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.5

Post Spacing: 12 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0
110	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0	4.0
120	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0
130	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5
140	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5

Table 51 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: Yes
Concrete Slab: No

Roof Slope 4:12

Post Height: 12 Feet
Soil Bearing Pressure: 150 psf

Post Spacing: 8 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5
110	3.0	3.5	4.0	4.0	4.5	4.5	4.5	4.5	5.0	5.0
120	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5
130	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5
140	4.0	4.0	4.5	5.0	5.0	5.0	5.5	5.5	6.0	6.0

Post Spacing: 10 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0
110	3.5	4.0	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5
120	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	6.0
130	4.0	4.5	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.0
140	4.0	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.5	6.5

Post Spacing: 12 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.5	4.0	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5
110	3.5	4.0	4.5	4.5	5.0	5.0	5.5	5.5	5.5	6.0
120	4.0	4.5	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.5
130	4.0	4.5	5.0	5.5	5.5	6.0	6.0	6.0	6.5	6.5
140	4.5	5.0	5.5	5.5	6.0	6.0	6.5	6.5	7.0	7.0

Table 52 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: Yes
Concrete Slab: No

Roof Slope 4:12

Post Height: 12 Feet
Soil Bearing Pressure: 200 psf

Post Spacing: 8 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.5
110	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5
120	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0
130	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0
140	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5

Post Spacing: 10 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5
110	3.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0	5.0
120	3.5	3.5	4.0	4.5	4.5	4.5	4.5	5.0	5.0	5.5
130	3.5	4.0	4.0	4.5	5.0	5.0	5.0	5.0	5.5	5.5
140	3.5	4.0	4.5	4.5	5.0	5.0	5.5	5.5	5.5	6.0

Post Spacing: 12 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.5	3.5	4.0	4.0	4.5	4.5	4.5	4.5	5.0
110	3.5	3.5	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5
120	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5
130	4.0	4.0	4.5	5.0	5.0	5.0	5.5	5.5	5.5	6.0
140	4.0	4.5	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.5

Table 53 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: Yes
Concrete Slab: No

Roof Slope 4:12

Post Height: 14 Feet
Soil Bearing Pressure: 150 psf

Post Spacing: 8 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0	5.0
110	3.5	3.5	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5
120	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5
130	4.0	4.0	4.5	5.0	5.0	5.0	5.5	5.5	6.0	6.0
140	4.0	4.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.5

Post Spacing: 10 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5
110	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	6.0
120	4.0	4.5	4.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0
130	4.0	4.5	5.0	5.0	5.5	5.5	6.0	6.0	6.0	6.5
140	4.5	5.0	5.0	5.5	6.0	6.0	6.0	6.5	6.5	7.0

Post Spacing: 12 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	6.0
110	4.0	4.5	4.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0
120	4.0	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.5	6.5
130	4.5	5.0	5.0	5.5	6.0	6.0	6.5	6.5	6.5	7.0
140	4.5	5.0	5.5	6.0	6.0	6.5	6.5	7.0	7.0	7.5

Table 54 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: Yes
Concrete Slab: No

Roof Slope 4:12

Post Height: 14 Feet
Soil Bearing Pressure: 200psf

Post Spacing: 8 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5
110	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0
120	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0
130	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5
140	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5

Post Spacing: 10 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0
110	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0
120	3.5	4.0	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5
130	3.5	4.0	4.5	4.5	5.0	5.0	5.5	5.5	5.5	6.0
140	4.0	4.5	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.0

Post Spacing: 12 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0
110	3.5	4.0	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5
120	3.5	4.0	4.5	5.0	5.0	5.0	5.5	5.5	5.5	6.0
130	4.0	4.5	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.5
140	4.0	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.5	6.5

Table 55 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: No
Concrete Slab: Yes

Roof Slope 4:12

Post Height: 12 Feet
Soil Bearing Pressure: 150 psf

Post Spacing: 8 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	3.5
110	2.5	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0
120	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.0
130	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5
140	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5

Post Spacing: 10 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0
110	2.5	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.0
120	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
130	3.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5
140	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0

Post Spacing: 12 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.0
110	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
120	3.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5
130	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0
140	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5

Table 56 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: No
Concrete Slab: Yes

Roof Slope 4:12

Post Height: 12 Feet
Soil Bearing Pressure: 200 psf

Post Spacing: 8 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5
110	2.5	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5
120	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0
130	3.0	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0
140	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.0

Post Spacing: 10 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	3.5
110	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0	4.0
120	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0
130	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5
140	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5

Post Spacing: 12 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0	4.0
110	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0
120	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5
130	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5
140	3.5	3.5	4.0	4.0	4.5	4.5	4.5	4.5	4.5	5.0

Table 57 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: No
Concrete Slab: Yes

Roof Slope 4:12

Post Height: 14 Feet
Soil Bearing Pressure: 150 psf

Post Spacing: 8 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0
110	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.0
120	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5
130	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5
140	3.5	3.5	4.0	4.0	4.5	4.5	4.5	4.5	5.0	5.0

Post Spacing: 10 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.0
110	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
120	3.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5
130	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0
140	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.0

Post Spacing: 12 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
110	3.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5
120	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0
130	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.0
140	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	--	--

Table 58 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: No
Concrete Slab: Yes

Roof Slope 4:12

Post Height: 14 Feet
Soil Bearing Pressure: 200 psf

Post Spacing: 8 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5
110	2.5	3.0	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0
120	3.0	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.0
130	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.0
140	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5

Post Spacing: 10 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	2.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.0	4.0
110	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0
120	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5
130	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
140	3.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5

Post Spacing: 12 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0
110	3.0	3.0	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5
120	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5
130	3.5	3.5	4.0	4.0	4.5	4.5	4.5	4.5	4.5	5.0
140	3.5	3.5	4.0	4.5	4.5	4.5	4.5	5.0	--	--

Table 59 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: No
Concrete Slab: No

Roof Slope 4:12

Post Height: 12 Feet
Soil Bearing Pressure: 150 psf

Post Spacing: 8 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0
110	3.5	4.0	4.0	4.5	5.0	5.0	5.0	5.0	5.5	5.5
120	4.0	4.0	4.5	5.0	5.0	5.0	5.5	5.5	5.5	6.0
130	4.0	4.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
140	4.0	4.5	5.0	5.5	5.5	6.0	6.0	6.0	6.5	6.5

Post Spacing: 10 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5
110	3.5	4.0	4.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0
120	4.0	4.5	5.0	5.0	5.5	5.5	6.0	6.0	6.0	6.5
130	4.0	5.0	5.0	5.5	6.0	6.0	6.0	6.5	6.5	6.5
140	4.5	5.0	5.5	6.0	6.0	6.5	6.5	6.5	7.0	7.0

Post Spacing: 12 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	4.0	4.0	4.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0
110	4.0	4.5	5.0	5.0	5.5	5.5	6.0	6.0	6.0	6.5
120	4.5	5.0	5.0	5.5	6.0	6.0	6.0	6.5	6.5	6.5
130	4.5	5.0	5.5	6.0	6.0	6.5	6.5	7.0	7.0	7.0
140	5.0	5.5	6.0	6.0	6.5	6.5	7.0	7.0	7.5	7.5

Table 60 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: No
Concrete Slab: No

Roof Slope 4:12

Post Height: 12 Feet
Soil Bearing Pressure: 200 psf

Post Spacing: 8 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5
110	3.0	3.5	4.0	4.0	4.5	4.5	4.5	4.5	5.0	5.0
120	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.0
130	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5
140	4.0	4.0	4.5	5.0	5.0	5.0	5.5	5.5	6.0	6.0

Post Spacing: 10 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0
110	3.5	4.0	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5
120	3.5	4.0	4.5	4.5	5.0	5.0	5.5	5.5	5.5	5.5
130	4.0	4.5	4.5	5.0	5.5	5.5	5.5	5.5	6.0	6.0
140	4.0	4.5	5.0	5.0	5.5	5.5	6.0	6.0	6.5	6.5

Post Spacing: 12 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5
110	3.5	4.0	4.5	4.5	5.0	5.0	5.5	5.5	5.5	5.5
120	4.0	4.5	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.0
130	4.0	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.5	6.5
140	4.5	5.0	5.0	5.5	6.0	6.0	6.5	6.5	6.5	7.0

Table 61 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: No
Concrete Slab: No

Roof Slope 4:12

Post Height: 14 Feet
Soil Bearing Pressure: 150 psf

Post Spacing: 8 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.5
110	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5
120	4.0	4.5	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.0
130	4.0	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.5	6.5
140	4.5	5.0	5.0	5.5	6.0	6.0	6.0	6.5	6.5	6.5

Post Spacing: 10 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	4.0	4.0	4.5	5.0	5.0	5.0	5.5	5.5	5.5	5.5
110	4.0	4.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
120	4.5	4.5	5.0	5.5	5.5	6.0	6.0	6.0	6.5	6.5
130	4.5	5.0	5.5	5.5	6.0	6.0	6.5	6.5	7.0	7.0
140	4.5	5.0	5.5	6.0	6.5	6.5	6.5	7.0	7.0	7.5

Post Spacing: 12 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	4.0	4.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
110	4.5	4.5	5.0	5.5	5.5	6.0	6.0	6.5	6.5	6.5
120	4.5	5.0	5.5	6.0	6.0	6.0	6.5	6.5	7.0	7.0
130	5.0	5.5	5.5	6.0	6.5	6.5	7.0	7.0	7.5	7.5
140	5.0	5.5	6.0	6.5	7.0	7.0	7.0	7.5	--	--

Table 62 - POST EMBEDMENT DEPTH – in feet

Structure Type: Umbrella
Bracing: No
Concrete Slab: No

Roof Slope 4:12

Post Height: 14 Feet
Soil Bearing Pressure: 200 psf

Post Spacing: 8 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5	5.0
110	3.5	3.5	4.0	4.5	4.5	4.5	4.5	5.0	5.0	5.0
120	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.0	5.5	5.5
130	4.0	4.0	4.5	5.0	5.0	5.0	5.5	5.5	5.5	5.5
140	4.0	4.5	4.5	5.0	5.5	5.5	5.5	6.0	6.0	6.0

Post Spacing: 10 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.0
110	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5
120	4.0	4.5	4.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0
130	4.0	4.5	5.0	5.0	5.5	5.5	6.0	6.0	6.0	6.0
140	4.5	4.5	5.0	5.5	6.0	6.0	6.0	6.5	6.5	6.5

Post Spacing: 12 Feet

Wind Speed (mph)	Span									
	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	32 ft.	36 ft.	40 ft.	44 ft.	50 ft.
100	3.5	4.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5
110	4.0	4.5	4.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0
120	4.0	4.5	5.0	5.0	5.5	5.5	6.0	6.0	6.0	6.5
130	4.5	5.0	5.0	5.5	6.0	6.0	6.0	6.5	6.5	6.5
140	4.5	5.0	5.5	6.0	6.0	6.5	6.5	6.5	--	--

Table 63 - BEAM WIDTH SIZE (in) - Nominal

Structure Type: Umbrella
Post Spacing: 8 Feet

Roof Slope 4:12

Post Height: 12 Feet
Thickness: 1.5 inches

Wind Speed (mph)	Span			
	10 ft.		15 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	5.5	3.5	5.5	5.5
110	5.5	5.5	7.25	5.5
120	5.5	5.5	--	5.5
130	7.25	5.5	--	5.5
140	--	5.5	--	7.25

Wind Speed (mph)	Span			
	20 ft.		25 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	7.25	5.5	--	5.5
110	--	5.5	--	7.25
120	--	7.25	--	7.25
130	--	7.25	--	7.25
140	--	7.25	--	9.25

Wind Speed (mph)	Span			
	30 ft.		32 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	7.25	--	7.25
110	--	7.25	--	7.25
120	--	7.25	--	7.25
130	--	9.25	--	9.25
140	--	9.25	--	9.25

Wind Speed (mph)	Span			
	36 ft.		40 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	7.25	--	7.25
110	--	7.25	--	9.25
120	--	9.25	--	9.25
130	--	9.25	--	11.25
140	--	11.25	--	11.25

Wind Speed (mph)	Span			
	44 ft.		48 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	7.25	--	7.25
110	--	9.25	--	9.25
120	--	9.25	--	9.25
130	--	11.25	--	11.25
140	--	11.25	--	11.25

Table 64 - BEAM WIDTH SIZE (in) - Nominal

Structure Type: Umbrella
Post Spacing: 10 Feet

Roof Slope 4:12

Post Height: 12 Feet
Thickness: 1.5 inches

Wind Speed (mph)	Span			
	10 ft.		15 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	5.5	--	5.5
110	--	5.5	--	7.25
120	--	5.5	--	7.25
130	--	7.25	--	7.25
140	--	7.25	--	9.25

Wind Speed (mph)	Span			
	20 ft.		25 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	7.25	--	7.25
110	--	7.25	--	9.25
120	--	9.25	--	9.25
130	--	9.25	--	11.25
140	--	11.25	--	11.25

Wind Speed (mph)	Span			
	30 ft.		32 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	9.25	--	9.25
110	--	9.25	--	11.25
120	--	11.25	--	11.25
130	--	11.25	--	--
140	--	--	--	--

Wind Speed (mph)	Span			
	36 ft.		40 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	9.25	--	11.25
110	--	11.25	--	11.25
120	--	--	--	--
130	--	--	--	--
140	--	--	--	--

Wind Speed (mph)	Span			
	44 ft.		48 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	11.25	--	11.25
110	--	--	--	--
120	--	--	--	--
130	--	--	--	--
140	--	--	--	--

Table 65 - BEAM WIDTH SIZE (in) - Nominal

Structure Type: Umbrella
Post Spacing: 12 Feet

Roof Slope 4:12

Post Height: 12 Feet
Thickness: 1.5 inches

Wind Speed (mph)	Span			
	10 ft.		15 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	7.25	--	7.25
110	--	7.25	--	9.25
120	--	7.25	--	9.25
130	--	9.25	--	11.25
140	--	9.25	--	11.25

Wind Speed (mph)	Span			
	20 ft.		25 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	9.25	--	11.25
110	--	9.25	--	11.25
120	--	11.25	--	--
130	--	--	--	--
140	--	--	--	--

Wind Speed (mph)	Span			
	30 ft.		32 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	11.25	--	--
110	--	--	--	--
120	--	--	--	--
130	--	--	--	--
140	--	--	--	--

Wind Speed (mph)	Span			
	36 ft.		40 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	--	--	--
110	--	--	--	--
120	--	--	--	--
130	--	--	--	--
140	--	--	--	--

Wind Speed (mph)	Span			
	44 ft.		48 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	--	--	--
110	--	--	--	--
120	--	--	--	--
130	--	--	--	--
140	--	--	--	--

Table 66 - BEAM WIDTH SIZE (in) – Full Cut

Structure Type: Umbrella
Post Spacing: 8 Feet

Roof Slope 4:12

Post Height: 12 Feet
Thickness: 2 inches

Wind Speed (mph)	Span			
	10 ft.		15 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	4	4	6	4
110	4	4	6	4
120	6	4	6	4
130	6	4	6	4
140	6	4	6	6

Wind Speed (mph)	Span			
	20 ft.		25 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	6	4	6	4
110	6	4	8	6
120	6	6	8	6
130	8	6	8	6
140	8	6	8	6

Wind Speed (mph)	Span			
	30 ft.		32 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	8	6	8	6
110	8	6	8	6
120	8	6	8	6
130	8	6	8	8
140	8	8	10	8

Wind Speed (mph)	Span			
	36 ft.		40 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	8	6	8	6
110	8	6	8	6
120	8	6	10	8
130	10	8	10	8
140	--	8	--	8

Wind Speed (mph)	Span			
	44 ft.		48 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	8	6	8	6
110	8	8	10	8
120	10	8	10	8
130	--	8	--	8
140	--	8	--	10

Table 67 - BEAM WIDTH SIZE (in) – Full Cut

Structure Type: Umbrella
Post Spacing: 10 Feet

Roof Slope 4:12

Post Height: 12 Feet
Thickness: 2 inches

Wind Speed (mph)	Span			
	10 ft.		15 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	6	4	6	6
110	6	4	8	6
120	6	6	8	6
130	8	6	8	6
140	8	6	8	6

Wind Speed (mph)	Span			
	20 ft.		25 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	8	6	8	6
110	8	6	8	8
120	8	6	--	8
130	8	8	--	8
140	--	8	--	8

Wind Speed (mph)	Span			
	30 ft.		32 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	8	8	10	8
110	--	8	--	8
120	--	8	--	8
130	--	8	--	10
140	--	10	--	10

Wind Speed (mph)	Span			
	36 ft.		40 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	10	8	--	8
110	--	8	--	8
120	--	8	--	10
130	--	10	--	10
140	--	10	--	12

Wind Speed (mph)	Span			
	44 ft.		48 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	8	--	8
110	--	10	--	10
120	--	10	--	10
130	--	12	--	12
140	--	12	--	--

Table 68 - BEAM WIDTH SIZE (in) – Full Cut

Structure Type: Umbrella
Post Spacing: 12 Feet

Roof Slope 4:12

Post Height: 12 Feet
Thickness: 2 inches

Wind Speed (mph)	Span			
	10 ft.		15 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	6	6	8	6
110	8	6	8	6
120	8	6	--	8
130	8	6	--	8
140	--	8	--	8

Wind Speed (mph)	Span			
	20 ft.		25 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	10	8	--	8
110	--	8	--	8
120	--	8	--	10
130	--	8	--	10
140	--	10	--	12

Wind Speed (mph)	Span			
	30 ft.		32 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	8	--	8
110	--	10	--	10
120	--	10	--	10
130	--	12	--	12
140	--	12	--	--

Wind Speed (mph)	Span			
	36 ft.		40 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	10	--	10
110	--	10	--	12
120	--	12	--	12
130	--	12	--	--
140	--	--	--	--

Wind Speed (mph)	Span			
	44 ft.		48 ft.	
	1 Board	2 Boards	1 Board	2 Boards
100	--	10	--	12
110	--	12	--	12
120	--	--	--	--
130	--	--	--	--
140	--	--	--	--

Table 69 Purlin Size- in inches

Structure Type: Umbrella **Purlin Spacing: 2 feet**

Flatwise Purlin

Wind Speed (mph)	Truss Spacing					
	4 ft.	5 ft.	6 ft.	8 ft.	10 ft.	12 ft.
100	2 x 4	2 x 4	2 x 4	2 x 4	2 x 4	2 x 8
110	2 x 4	2 x 4	2 x 4	2 x 4	2 x 6	2 x 8
120	2 x 4	2 x 4	2 x 4	2 x 4	2 x 6	--
130	2 x 4	2 x 4	2 x 4	2 x 4	2 x 8	--
140	2 x 4	2 x 4	2 x 4	2 x 6	2 x 8	--

Vertical Purlin

Wind Speed (mph)	Truss Spacing					
	4 ft.	5 ft.	6 ft.	8 ft.	10 ft.	12 ft.
100	2 x 4	2 x 4	2 x 4	2 x 4	2 x 4	2 x 6
110	2 x 4	2 x 4	2 x 4	2 x 4	2 x 4	2 x 6
120	2 x 4	2 x 4	2 x 4	2 x 4	2 x 4	2 x 6
130	2 x 4	2 x 4	2 x 4	2 x 4	2 x 4	2 x 6
140	2 x 4	2 x 4	2 x 4	2 x 4	2 x 4	2 x 6

Figure 5- Truss Design Documentation

1) **Land Owner:** _____

2) **Location:** _____

3) **50 yr Recurrance Wind Speed:** _____ **mph**

4) **Truss Type: Wood or Steel (circle one used in design)**

5) **Brace: yes or no (circle one used in design)**

6) **Eve Overhang** ____ **(2.5 ft. max)**

7) **Roof Slope 3:12 or 4:12 (circle one used in design)**

8) **Roof Material:** _____.

9) **Post Height:** _____**ft.**

10) **Span between Post:** _____**ft.**

11) **Truss Spacing:** _____**ft.**

12) **Beam Size:** ___**in. x** ___**in.** [1/]

13) **Soil Name:** _____

14) **Soil Classification:** _____

15) **Soil Bearing Pressure:** _____

16) **Type of Foundation: Concrete or Limerock (circle one used in design)**

17) **Post Embedment Depth:** _____**ft.** [1/]

18) **Support Post Dimension** ___**in. x** ___**in.** [1/]

[1/] **Post dimension, beam size,and post embedment based on Technical Note ENG-FL-23**

Designed By: _____ **Date:** _____

Checked By: _____ **Date:** _____

Approved By: _____ **Date:** _____