

**The State of New Hampshire  
Before the  
Public Utilities Commission  
Docket No. DT 10-010**

PETITION OF BAYRING COMMUNICATIONS FOR LICENSE TO CONSTRUCT AND MAINTAIN A UTILITY CABLE/CONDUIT OVER AND ACROSS THE MERRIMACK RIVER BETWEEN UTILITY POLE CECO 51 AND UTILITY POLE CECO 50.

TO THE PUBLIC UTILITIES COMMISSION:

BayRing Communications, a public utility engaged in the generation, transmission, distribution and sale of telecommunications in the State of New Hampshire, hereby petitions the Public Utilities Commission ("Commission"), pursuant to RSA 371:17, for a license to construct and maintain telecommunication lines over and across the public waters of the Merrimack River in the City of Concord, New Hampshire, and in support of its petition states as follows:

1. In order to meet the reasonable requirements of service to the public, BayRing Communications is proposing to construct a new 216 fiber optic line. The new line will help to accommodate the growth in demand for the Concord Hospital and to obtain a greater level of reliability in the Concord area.
2. The new line will cross the Merrimack River along the northwest side of Federal Bridge – Bridge I-72 "E. Concord" – (Old Bridge #5).
3. The location of the proposed crossing is shown on the attached location map.
4. The design and proposed construction of the crossing is shown on the attached Dewsnap Engineering Associates LLP Distribution Business Plan Consulting Engineers and Group Inc. Profile drawing entitled "Existing Overhead River Crossing, Plan of Land in Concord, NH".
5. The proposed crossing will occur between two existing Utility poles set approximately 524 feet apart. The existing pole on the north side of the Merrimack River, Utility Pole CECO 51 is approximately 45 feet tall. The existing pole on the south side of the Merrimack River, Utility Pole CECO 50 is approximately 45 feet tall. The line will be made up of two materials; Conductor nominal diameter 5/16in 7-strand steel EHS and 1 non-supporting cable, added diameter = 0.750 in, weight = 0.124lb/F which contains 216 fiber optic. The Strand and non-supporting cable will be sagged using the Heavy Load condition (0° F, pounds psf wing loading and ½" radial ice) with a maximum tension of 3286 lbs under that load.

6. The flood water elevation for the Merrimack River is based on information from the flood Insurance Rate Map (FIRM), City of Concord, New Hampshire, Merrimack County, Community Panel Number: 330110 0020 B, Map revised August 23, 1999. The 10 year flood elevation for this location is approximately 227.5 feet. These elevations are based on the national Geodetic Vertical Datum of 1929 (NGVD 29). For the purpose of this petition, the more conservative 10 year flood elevation was used as the basis for design of the conductor clearance.
7. Using the above design criteria, the maximum sag of the non-supporting cable and minimum clearances for the crossing have been determined and designed as follows:
  - A. 0° F, Non-supporting cable – The maximum sag on the fiber optic cable under this condition is 26.0'. The minimum clearance to land is 31.5'. The minimum clearance to the 10 year flood level is 14.4'.
  - B. 120° F, Non-supporting cable – The maximum sag on the fiber optic cable under this condition is 24.2'. The minimum clearance to land is 31.5'. The minimum clearance to the 10 year flood level is 16.9'.
  - C. 50° F, Non-supporting cable – The maximum sag on the fiber optic cable under this condition is 23.1'. The minimum clearance to land is 31.5'. The minimum clearance to the 10 year flood level is 18.0'.
8. There are no NHDES or NHDOT permits necessary specifically for the construction of this crossing.
9. The proposed crossing has been designed and will be constructed, maintained and operated by BayRing Communications, its affiliates and contractors.
10. BayRing Communications submits that the license petitioned for herein may be exercised without substantially affecting the rights of the public in the public water of the Merrimack River. Minimum safe line clearances above the water surface and affected shorelines will be maintained at all times. The use and enjoyment by the public of the Merrimack River will not be diminished in any material respect as a result of the overhead line crossing.

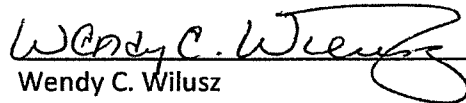
WHEREFORE, BAYRING COMMUNICATIONS respectfully requests that the Commission:

- a. Find that the license petitioned for herein may be exercised without substantially affecting the public rights in the public water which are the subject of this petition;

- b. Grant BayRing Communications a license to construct and maintain communication lines over and across the public waters of the Merrimack River in Concord, New Hampshire, as specified in the petition; and
  - c. Issue an Order Nisi and orders for its publication.
- Dated at Portsmouth the \_\_\_1\_\_\_ day of April, 2010.

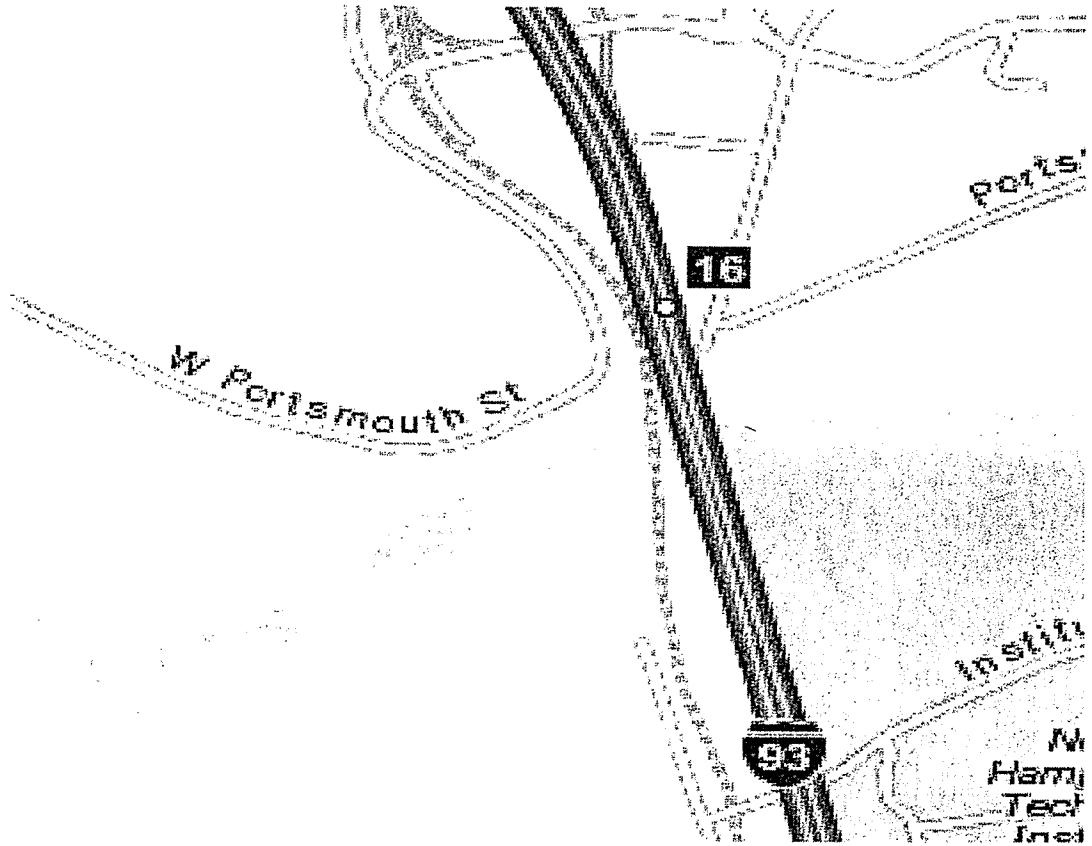
Respectfully submitted,

BAYRING COMMUNICATIONS  
By Its Director of Operations

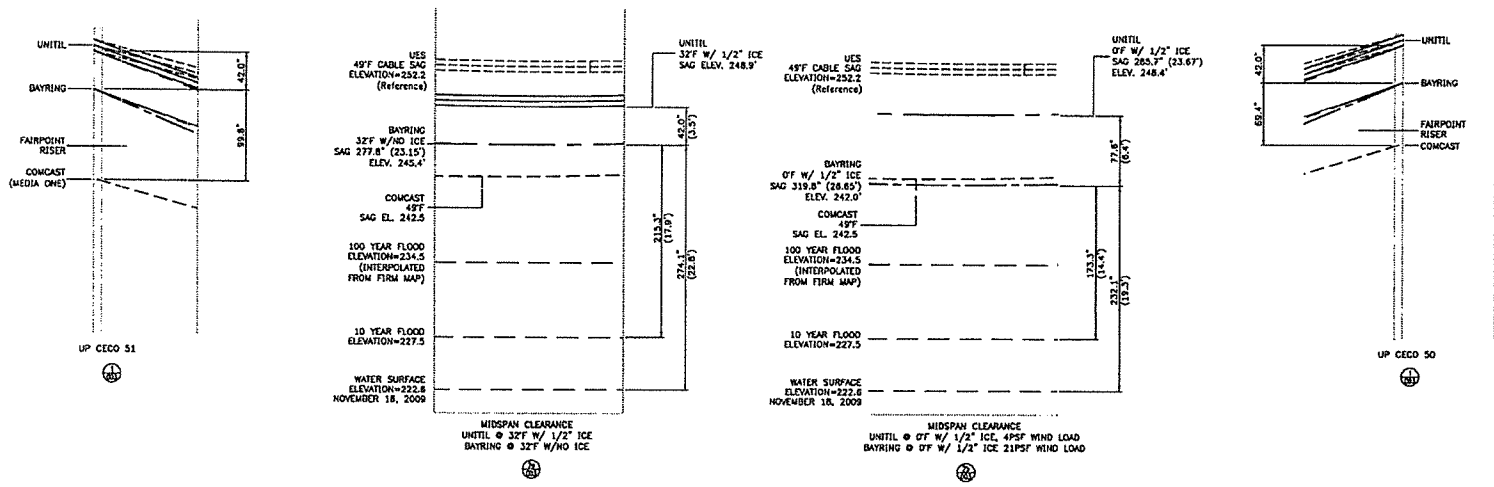


Wendy C. Wilusz  
Director of Operations  
BayRing Communications  
359 Corporate Drive  
Portsmouth, NH 03801  
(603) 766-1000

# Water Crossing Location







PROFILE DETAILS  
Scale: 1" = 10' HORIZ  
1" = 5' VERT

**BAYRING CABLE SAG CHART**

ALUMINUM COMPANY OF AMERICA SAG AND TENSION DATA  
Bayring Communication  
Merrimack River Crossing

Conductor: nominal diameter 3/16 7 Strand Steel SW  
Area: .8115 Sq. In Dia: .232 In Wt: .165 LB/FT 525- 12268 Lb  
SAG Form Chart No. 1-1293  
English Units

Span: 221.0 Feet  
Temp to 60°F Factor  
Temp to 60°F Factor  
Design Wind  
Final  
Initial

Temp	Ice	Wind	C	Height	Eq	Tension	W/F	Eq	Tension	W/F
F	In	MP	MP/FT	FT	WT	WT	WT	WT	WT	WT
-10	.00	.00	.00	-7.05				31.67	339	1557.
0	.00	.00	.00	-7.05				31.67	339	1557.
10	.00	.00	.00	-7.05				32.10	349	1615.
20	.00	.00	.00	-7.05				32.53	359	1673.
30	.00	.00	.00	-7.05				32.96	369	1731.
40	.00	.00	.00	-7.05				33.39	379	1789.
50	.00	.00	.00	-7.05				33.82	389	1847.
60	.00	.00	.00	-7.05				34.25	399	1905.
70	.00	.00	.00	-7.05				34.68	409	1963.
80	.00	.00	.00	-7.05				35.11	419	2021.
90	.00	.00	.00	-7.05				35.54	429	2079.
100	.00	.00	.00	-7.05				35.97	439	2137.
110	.00	.00	.00	-7.05				36.40	449	2195.
120	.00	.00	.00	-7.05				36.83	459	2253.
130	.00	.00	.00	-7.05				37.26	469	2311.
140	.00	.00	.00	-7.05				37.69	479	2369.
150	.00	.00	.00	-7.05				38.12	489	2427.
160	.00	.00	.00	-7.05				38.55	499	2485.
170	.00	.00	.00	-7.05				38.98	509	2543.
180	.00	.00	.00	-7.05				39.41	519	2601.
190	.00	.00	.00	-7.05				39.84	529	2659.
200	.00	.00	.00	-7.05				40.27	539	2717.

Notes:  
1. Design Condition  
2. Below 100°F, Supporting Cable Sag and Tension Data are based on a 100°F temperature.  
3. Above 100°F, Supporting Cable Sag and Tension Data are based on a 100°F temperature plus the temperature increase.  
4. The sag and tension data are based on a 100°F temperature plus the temperature increase.  
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REVISION: 01-04-2010  
CONNECTOR SIDE OF EXISTING BRIDGE & REMOVED LANES IN PROFILE

**EXISTING OVERHEAD RIVER CROSSING**

PLAN of LAND in  
**CONCORD, NH**

Prepared For: Bayring Communications  
200 Corporate Blvd  
Plymouth, NH 03257-0001

SCALE: As Shown  
DATE: November 23, 2009

Prepared By:  
CONVEY ENGINEERING ASSOCIATES LLP  
100 LINCOLN AVENUE  
MERRIMACK, NH 03001-1000  
TEL: 603-881-1000

This plan was prepared for the express use of Bayring Communications and Convey Engineering Associates LLP. Use of this plan by others without the written consent of Bayring Communications is strictly prohibited.

DATE: 12/14/09 10/PP  
DATE: 03/25/10 10/PP

7306, P.A.D. & S.E.A.  
P.E.

Sheet 2 of 2

**Consulting Engineers Group Inc.**  
ENGINEERS & CONSULTANTS

ONE CHANDLER RD. WINDHAM, VERMONT 05793  
www.CEG.com/vermont-office

ADD Proposed Communication line profiles and data table 12/14/09 10/PP  
ADD upon date and details 03/25/10 10/PP

**C  
E  
G**

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**Donny Pellitier  
Outside Plant Manager  
Baying Communication  
359 Corporate Drive  
Portsmouth NH, 03801-2888**

**March 30, 2010**

**Subject: Merrimack River Crossing Pole Loading**

**Dear Mr. Pellitier,**

Attached are pole loading calculations for Poles CECO 50 and CECO 51 for the proposed Merrimack River crossing. The pole loading calculations were performed using Power line Technology, Pole Foreman software version 3.1.10. As identified on the attached Pole Loading Analysis Reports, the pole loading is within the limits of the pole and the attached guying.

To develop the pole loading analysis, certain assumptions were made as data could not be confirmed by Unitil. The existing guying and new Bayring Guy wire were modeled as 7/16 EHS strand with a 1 to 1 lead to height ratio. Per Skip Zogopoulos, Unitil uses either 3/8" or 7/16" standard guy wire. The software rates the 7/16EHS strand for 18,720 pounds and Unitil rates their strand for 18,000 pounds so results are consistent. Additional assumptions were the tension for the Comcast Cable. Per Glen Fiore at Comcast they do not have records for the existing line tensions, they match the sag to the other utilities at the time of installation. Therefore the same tension as proposed for Bayring were used for the Comcast cable crossing the river.

As stated above it is assumed that 7/16" guy wires with a 1 to 1 lead to height ratio are installed. Unitil and Comcast will need to confirm the guying installed and leads on these poles and replace as needed to meet the new loading criteria. Bayring will also need to add a 7/16" guy attached at the proposed height.

Should you have any questions, or require additional information, please do not hesitate to call me.

Sincerely,

Thomas O'Loughlin, PE  
Principal Engineer

# PoleForeman - Pole Loading Analysis Report



License: Consulting Engineers Group

## POLE LOADING DATA

Pole: 45/2

Pole Loading

Horizontal: 29% (250B)  
Vertical: 27% (250B)

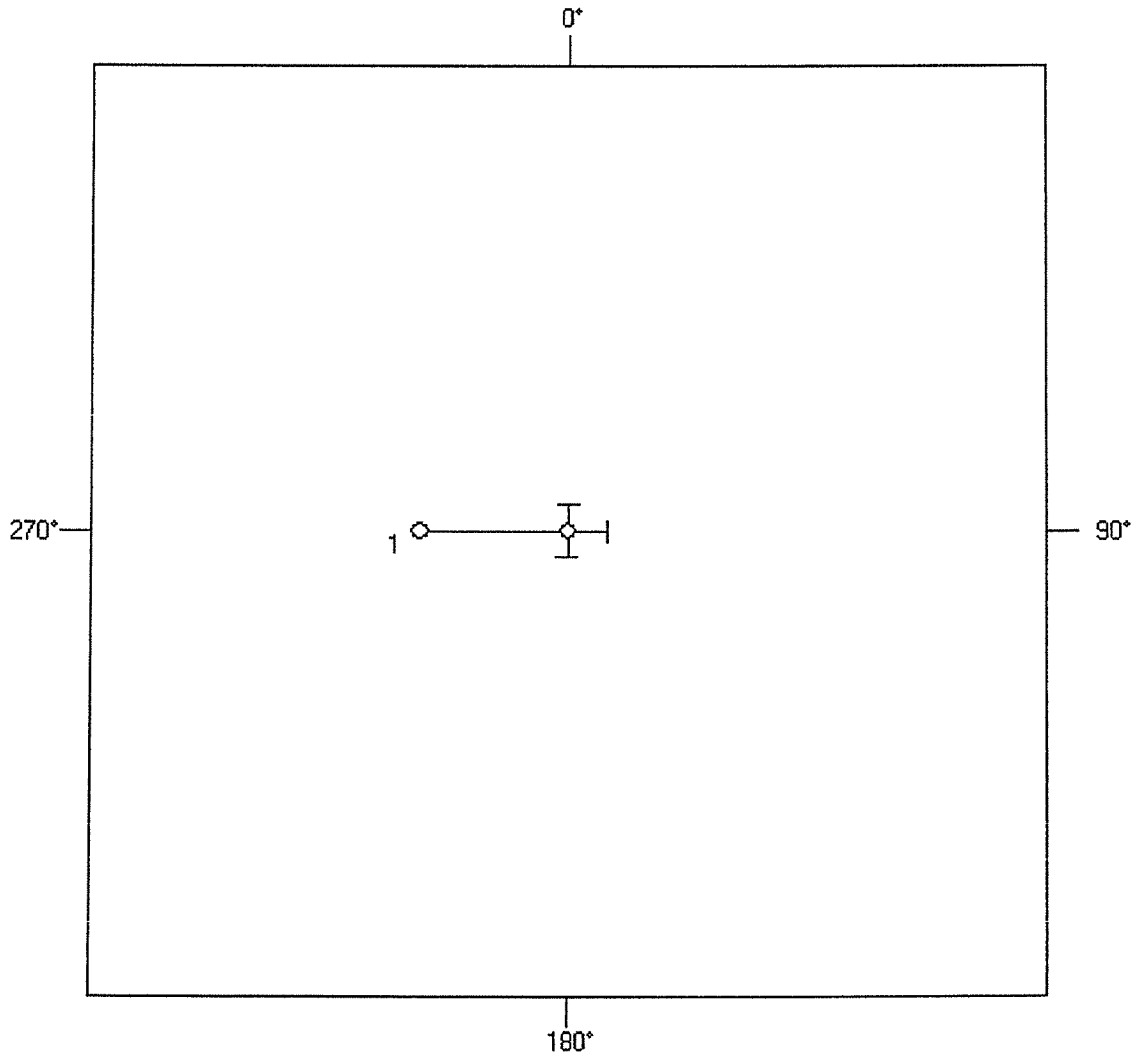
NESC Edition: 2007  
Loading District: Heavy  
Construction: Grade B

Rule 250B Loading: Wind (psf): 4 Ice (in): 0.5

## POLES

Pole #	Length (ft)	Depth (ft)	Elevation (ft)
0	45/2	6.5	0
1	45	6.5	-1

## POLE LINE TOPOLOGY





# PoleForeman - Pole Loading Analysis Report

License: Consulting Engineers Group

GUY STRAND DATA							
Anchor	Strand	Attach	Length	Direction	Tension	Strength	Loading
1	7/16" EHS	13"	37'	90°	14,300	18,720	76%
1	7/16" EHS	67"	37'	90°	10,951	18,720	58%
1	7/16" EHS	167"	37'	90°	5,974	18,720	32%
2	3/8" EHS	13"	25'	180°	599	13,860	4%
3	3/8" EHS	13"	25'	0°	599	13,860	4%

ANCHOR DATA						
Anchor	Rod	Anchor	Soil	Tension	Rod Strength	Anchor Strength
1	1" Rod	10" Single Heil	None	31,137	36,000	0
2	1" Rod	10" Single Heil	None	599	36,000	0
3	1" Rod	10" Single Heil	None	599	36,000	0

INSULATORS				
Insulator	Attach	Loading	Angle	
ASC 3Ø Spacer	13"		0°	

ARM / BRACKET DATA				
Arm/Bracket	Attach	Vert Loading	Horz Loading	
ASC 24" Tang Bracket	13"	3%		

SPANS							
<b>Span: 1</b>		<b>Span Length (ft): 142</b>	<b>Direction: 270°</b>				
<b>Circuit: 1</b>							
Primary	Ruling Span (ft)	Offset (in)	Attach A (in)	Attach B (in)	Tension		
7 # 8 AW	500	0	13	13	7279		
<b>Joint Use</b>							
Joint Use Cable	Ruling Span (ft)	Diameter (in)	Weight (lbs/ft)	Attach A (in)	Attach B (in)	Tension (lbs)	Description
User Defined	0	1.03	0.33	67	67	3286	
User Defined	0	1.03	0.33	167	167	3286	

# PoleForeman - Pole Loading Analysis Report



License: Consulting Engineers Group

## POLE LOADING DATA

Pole: 45/2

Pole Loading

Horizontal: 29% (250B)  
Vertical: 26% (250B)

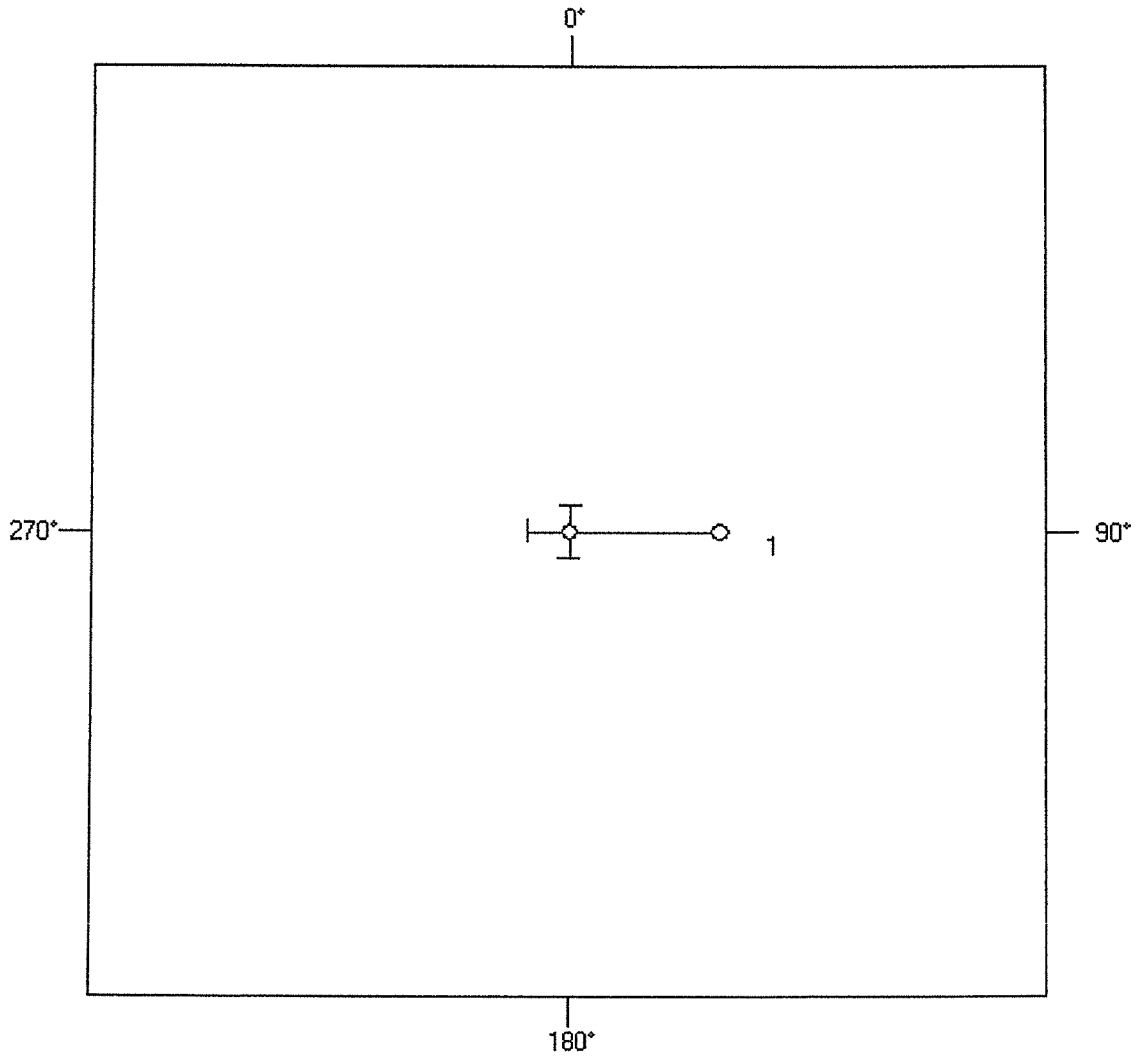
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## POLE LINE TOPOLOGY



# PoleForeman - Pole Loading Analysis Report

License: Consulting Engineers Group

GUY STRAND DATA							
Anchor	Strand	Attach	Length	Direction	Tension	Strength	Loading
1	7/16" EHS	13°	39'	270°	13,977	18,720	75%
1	7/16" EHS	67°	39'	270°	10,676	18,720	57%
1	7/16" EHS	167°	39'	270°	5,851	18,720	31%
2	3/8" EHS	13°	25'	180°	600	13,860	4%
3	3/8" EHS	13°	25'	0°	600	13,860	4%

ANCHOR DATA						
Anchor	Rod	Anchor	Soil	Tension	Rod Strength	Anchor Strength
1	1" Rod	10" Single Heli	None	30,420	36,000	0
2	1" Rod	10" Single Heli	None	600	36,000	0
3	1" Rod	10" Single Heli	None	600	36,000	0

INSULATORS				
Insulator	Attach	Loading	Angle	
ASC 3Ø Spacer	13°		0°	

ARM / BRACKET DATA				
Arm/Bracket	Attach	Vert Loading	Horz Loading	
ASC 24" Tang Bracket	13°	3%		

SPANS							
<b>Span: 1</b>	<b>Span Length (ft): 142</b>	<b>Direction: 90°</b>					
<b>Circuit: 1</b>							
Primary	Ruling Span (ft)	Offset (in)	Attach A (in)	Attach B (in)	Tension		
7 # 8 AW	500	0	13	13	7279		
<b>Joint Use</b>							
Joint Use Cable	Ruling Span (ft)	Diameter (in)	Weight (lbs/ft)	Attach A (in)	Attach B (in)	Tension (lbs)	Description
User Defined	0	1.03	0.33	67	67	3286	
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