08SR083

1079 N. 204th Avenue
Elkhorn, NE 68022
Ph: 402-289-1888
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SEMAAN ENGINEERING SOLUTIONS

100 ft Valmont Monopole
Structural Analysis

Prepared for:
KGI
6200 Bridge Point Parkway
Building IV, Suite 520
Austin, TX 78730

Site: 23398
For: Verizon
SDRC Rapid City N
Rapid City, SD

February 12, 2008

Ms. Michelle Giannascoli
KGI
6200 Bridge Point Parkway
Building IV, Suite 520
Austin, TX 78730

Re: Site Number 23398 – SDRC Rapid City N. Rapid City, SD.

Dear Ms. Giannascoli:

We have completed the structural analysis for the existing monopole, located at the above referenced site. The purpose of this analysis is to determine that the existing monopole design is in conformance with the ANSI/TIA-222 Rev G standard and local building codes for the proposed antennae loads installation. Refer to the Review and Recommendations section at the end of this report for the analysis results.

Description of Structure:

The structure is a 100 ft Valmont Monopole.

Refer to TowerKraft Engineering, P.C. Project No. 5200 dated April 5, 2005 for a detailed description of the structure.

Method of analysis:

The tower was analyzed using Semaan Engineering Solutions' software suite for communication structures. The structural analysis is performed using the SAPS finite element engine. The method is 3D, non-linear, which accounts for the second order geometric effects due to the displacements. It also treats guys as exact cable elements and therefore is ideal for guyed towers. The analysis was performed in conformance with ANSI/TIA-222 Rev G and local building codes for a basic wind speed of 90 mph and 1/2" radial ice with reduced wind speed (3-second gust), Structure Classification II, Exposure C. This is in conformance with the IBC 2006: Section 1609.1.1, Exception (4) and Section 3108.4. Wind is applied to the structure, accessories and antennas.

Structure loading:

The following loads were used in the tower analysis:

Elev (ft)	Qty	Antennas	Mounts	Coax	Carrier
97.0	4	WPA-80063/8CF	Low Profile Platform	(2) 1 1/4	AllTel
	2	RWA-80014	Low Profile Platform	(2) 1 1/4	
93.0	7	LPD-7905/4	Low Profile Platform	(7) 1 1/4	

Proposed Loads:

Elev (ft)	Qty	Antennas	Mounts	Coax	Carrier
76.0	6	BSA-185090/10	Low Profile Platform	(6) 1 5/8	Verizon
	6	LPA-80090/8	Low Profile Platform	(6) 1 5/8	

All new access holes shall be reinforced with welded rims that are compatible with the pole and to be sized and supplied by pole manufacturer.
All transmission lines are assumed running inside of pole shaft.

Results of Analysis:
Refer to the attached Computer Summary sheets for detailed analysis results.

Structure:
The existing monopole is structurally capable of supporting the existing and proposed antennas. The maximum structure usage is: 55.9%.

Foundation:

Pole Reactions	Original Design Reactions	Current Analysis Reactions	% Of Design
Moment (ft-kips)	1,829.00	1,355.44	54.9*
Shear (kips)	24.50	18.60	56.2*

(*) The percentage is factored by 1.35 per TIA-EIA Rev G
The original foundation design details are on Wireless Structures Consulting drawing No. 01-0161-DP dated August 30, 2001. Per the WSC drawings, soil information was obtained from the geotechnical report by American Engineering Testing, Inc (job #18-00619 dated August 20, 2001). The analysis reactions are less than the design reactions therefore no foundation modifications are required.

Review and Recommendations:

Based on the analysis results, the existing structure meets the requirements per the ANSI/TIA-222 Rev G standards for a basic wind speed of 90 mph and 1/2" radial ice with reduced wind speed.

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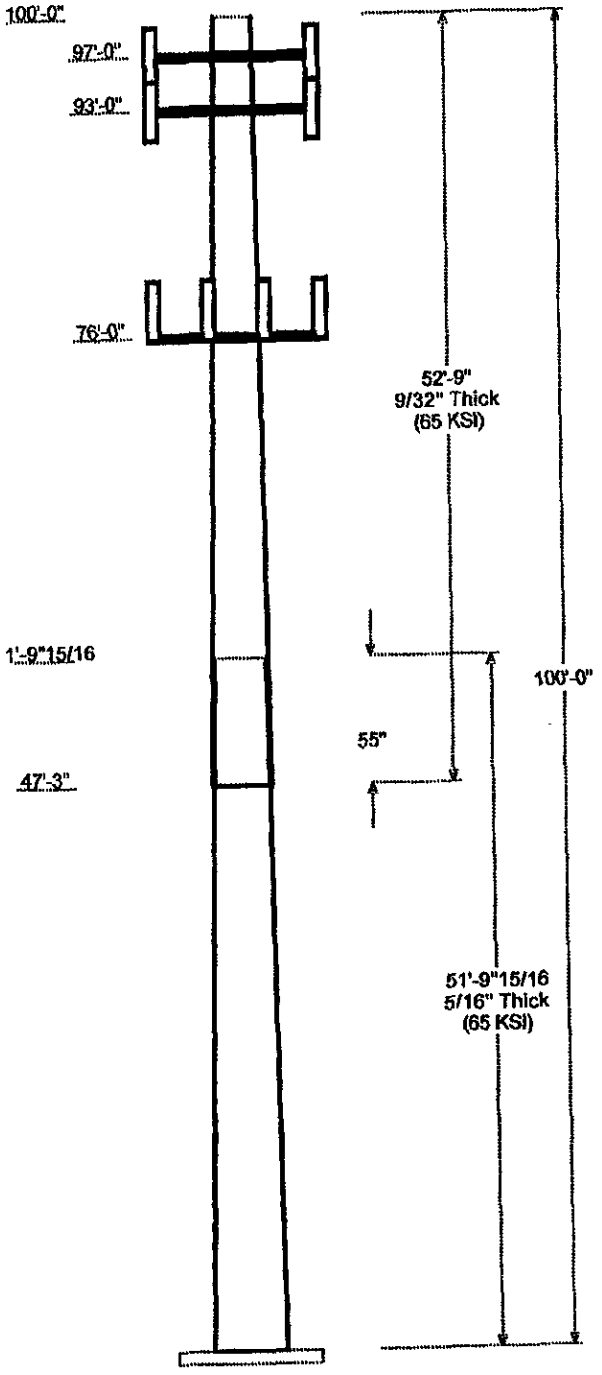

Job Information

Pole :	23398	Code: ANSI/TIA-222 Rev G	
Description :			Struct Class : II
Client :	KGI		Exposure : C
Location :	SDRC Rapid City N, Rapid City, SD		Topo : 1
Shape :	16 Sides	Base Elev (ft): 0.00	
Height :	100.00 (ft)	Taper: 0.198525(in/ft)	

Sections Properties

Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Taper (in/ft)	Steel Grade (ksi)
1	51.830	35.71	46.00	0.313		0.000	0.198525	65
2	52.750	26.71	37.18	0.281	Slip Joint	54.960	0.198525	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
97.000	97.000	1	Low Profile Platform
97.000	97.000	4	WPA-80063/8CF
97.000	97.000	2	RWA-80014
93.000	93.000	1	Low Profile Platform
93.000	93.000	7	LPD-7905/4
76.000	76.000	1	Low Profile Platform
76.000	80.000	6	BSA-185080/10
76.000	80.000	6	LPA-80090/8

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	76.000	1 5/8" Coax	No
0.000	76.000	7/8 Coax	No
0.000	93.000	1 1/4" Coax	No
0.000	97.000	1 1/4" Coax	No
0.000	97.000	7/8 Coax	No

Load Cases

1.2D + 1.6W	90.00 mph with No Ice
0.9D + 1.6W	90.00 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	60.00 mph with 0.50 in Radial Ice
1.0D + 1.0W	60.00 mph Serviceability

Reactions

Load Case	Moment (Kip-ft)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W	1355.44	18.60	22.70
0.9D + 1.6W	1349.40	18.59	17.02
1.2D + 1.0Di + 1.0Wi	463.53	6.75	31.32
1.0D + 1.0W	375.45	5.16	18.93

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	0.00	0.000	0.000

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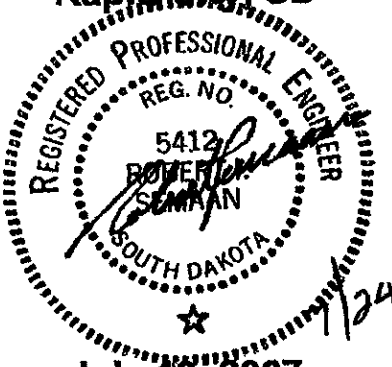

7/24/07

July 19, 2007

Ms. Michelle Giannascoli
KGI
6200 Bridge Point Parkway
Building IV, Suite 520
Austin, TX 78730

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Description of Structure:

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Refer to Towercraft Engineering, P.C. Project No. 5200 dated April 5, 2005 for a detailed description of the structure.

Method of analysis:

The tower was analyzed using Semaan Engineering Solutions' software suite for communication structures. The structural analysis is performed using the SAPS finite element engine. The method is 3D, non-linear, which accounts for the second order geometric effects due to the displacements. It also treats guys as exact cable elements and therefore is ideal for guyed towers. The analysis was performed in conformance with ANSI/TIA-222 Rev G and local building codes for a basic wind speed of 90 mph and 1/2" radial ice with reduced wind speed (3-second gust), Structure Classification II, Exposure C. This is in conformance with the IBC 2003: Section 1609.1.1, Exception (5) and Section 3108.4 . Wind is applied to the structure, accessories and antennas.

Structure loading:

The following loads were used in the tower analysis:

Elev (ft)	Qty	Antennas	Mounts	Coax	Carrier
97.0	4	WPA-80063/8CF	Low Profile Platform	(4) 7/8	AllTel
	2	RWA-80014		(2) 1 1/4	
93.0	7	LPD-7905/4	Low Profile Platform	(7) 1 1/4	

Proposed Loads:

Elev (ft)	Qty	Antennas	Mounts	Coax	Carrier
80.0	6	BSA-185090/10	Low Profile Platform	(6) 1 5/8	Verizon
	6	LPA-80090/8		(6) 7/8	

All new access holes shall be reinforced with welded rims that are compatible with the pole and to be sized and supplied by pole manufacturer.
All transmission lines are assumed running inside of pole shaft.

Results of Analysis:

Refer to the attached Computer Summary sheets for detailed analysis results.

Structure:

The existing monopole is structurally capable of supporting the existing and proposed antennas.
The maximum structure usage is: 55.3%.

Foundation:

Pole Reactions	Current Analysis Reactions
Moment (ft-kips)	1,340.58
Shear (kips)	18.57

The foundation was not investigated due to the lack of design drawings and documents and is not part of this analysis.

Review and Recommendations:

Based on the analysis results, the existing structure meets the requirements per the ANSI/TIA-222 Rev G standards for a basic wind speed of 90 mph and 1/2" radial ice with reduced wind speed.

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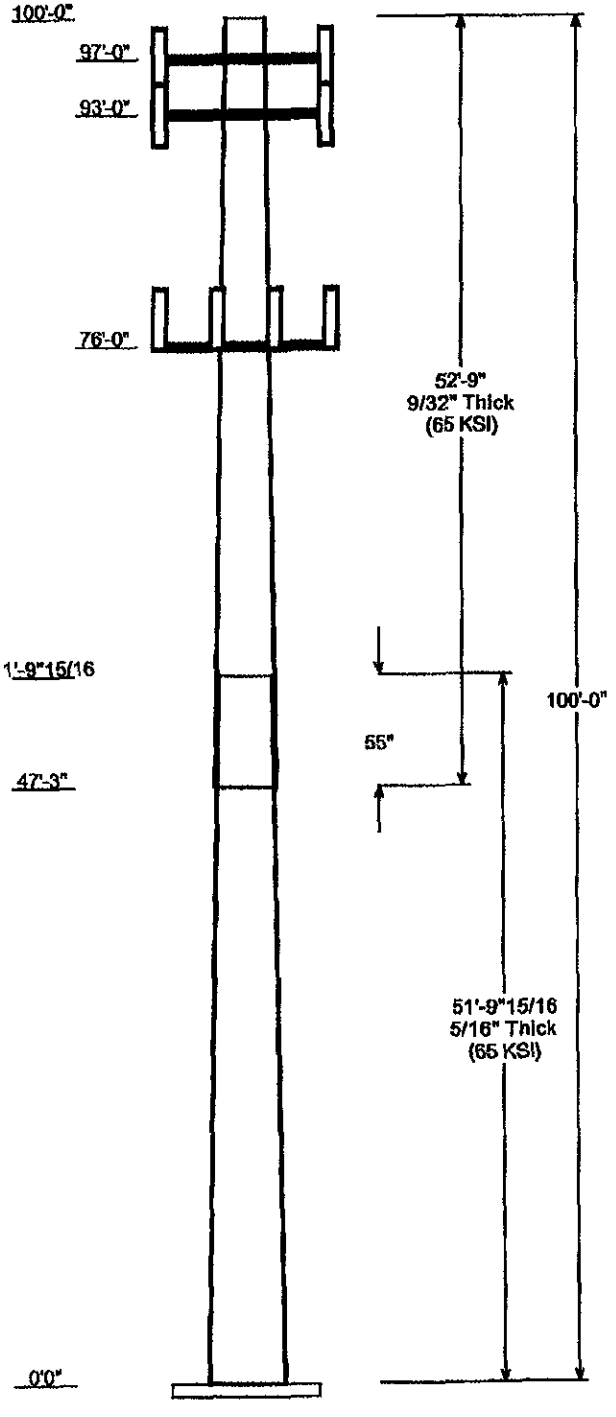

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