

# DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK CITY OF PORTLAND

BUILDING DEPARTMENT

Please Read Application And Notes, If Any, Attached

## PERMIT

Permit Number: 030458

This is to certify that American Tower Corp/Applicant

has permission to Communications Tower with additional dishes

AT 220 Riverside Ind Pkwy City of Portland 330 H005003

provided that the person or persons, firm or corporation accepting this permit shall comply with all of the provisions of the Statutes of Maine and of the ordinances of the City of Portland regulating the construction, maintenance and use of buildings and structures, and of the application on file in this department.

Notification of inspection must be given and work on permit on procedure before this building or part thereof is closed or closed-in. 24 HOUR NOTICE IS REQUIRED.

Apply to Public Works for street line and grade if nature of work requires such information.

A certificate of occupancy must be procured by owner before this building or part thereof is occupied.

### OTHER REQUIRED APPROVALS

Fire Dept. [Signature]

Health Dept. \_\_\_\_\_

Appeal Board \_\_\_\_\_

Other \_\_\_\_\_  
Department Name

[Signature]  
Director - Building Inspection Services

**PENALTY FOR REMOVING THIS CARD**



03-0458

# All Purpose Building Permit Application

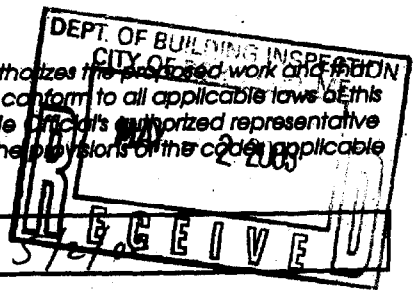
If you or the property owner owes real estate or personal property taxes or user charges on any property within the City, payment arrangements must be made before permits of any kind are accepted.

Location/Address of Construction: <u>200 Riverside Industrial Parkway</u>		
Total Square Footage of Proposed Structure	Square Footage of Lot <u>.355 acres</u>	
Tax Assessor's Chart, Block & Lot Chart# <u>330</u> Block# <u>H</u> Lot# <u>005003</u>	Owner: <u>American Tower - Tower</u> <u>Ronald Dwyer - Land</u>	Telephone:
Lessee/Buyer's Name (If Applicable) <u>Cellco Partnership d/b/a Verizon Wireless</u>	Applicant name, address & telephone: <u>Verizon Wireless</u> <u>978-337-5210</u> <u>400 Friberg Pkwy</u> <u>Westborough MA</u>	Cost of Work: \$ <u>4000</u> Fee: \$ <u>51.00</u>
Current use: <u>communication tower</u> <span style="float: right;">01801</span>		
If the location is currently vacant, what was prior use: _____		
Approximately how long has it been vacant: _____		
Proposed use: <u>communication tower w/ additional 4' dish</u>		
Project description: <u>install 4' dish on communications tower</u>		
Contractor's name, address & telephone:		
Who should we contact when the permit is ready: <u>Amy Mower 978-337-5210</u>		
Mailing address:		
We will contact you by phone when the permit is ready. You must come in and pick up the permit and review the requirements before starting any work with a Plan Reviewer. A stop work order will be issued and a \$100.00 fee if any work starts before the permit is picked up. PHONE:		

IF THE REQUIRED INFORMATION IS NOT INCLUDED IN THE SUBMISSIONS THE PERMIT WILL BE AUTOMATICALLY DENIED AT THE DISCRETION OF THE BUILDING/PLANNING DEPARTMENT, WE MAY REQUIRE ADDITIONAL INFORMATION IN ORDER TO APPROVE THIS PERMIT.

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Code Official's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the code applicable to this permit.

Signature of applicant: <u>[Signature]</u> <small>Cellco Part. 978-337-5210</small>	Date: <u>5/27/08</u>
---	----------------------



This is NOT a permit, you may not commence ANY work until the permit is issued. If you are in a Historic District you may be subject to additional permitting and fees with the Planning Department on the 4th floor of City Hall



# AMERICAN TOWER

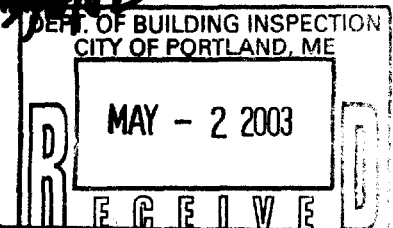
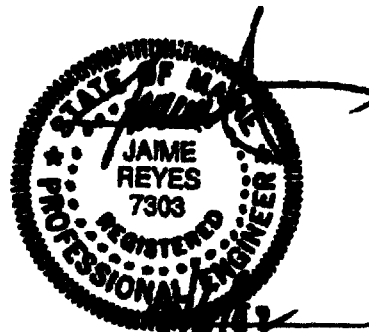
---

## Structural Analysis Report

**Structure** : Existing 275 ft PIROD guyed tower  
**ATC Site Name** : Portland, ME  
**ATC Site Number** : 10047  
**Proposed Carrier** : Verizon  
**Carrier Site Name** : Portland North  
**Carrier Site Number** : N/A  
**County** : Cumberland  
**Project Number** : 16100  
**Eng. Number** : 73114890  
**Date** : September 6, 2002

### ATC ENGINEERING SERVICES

11312 South Pipeline Road  
Euless, Texas 76040  
Phone: (817) 355-4100  
Fax: (817) 858-0398



**Table of Contents**

Introduction.....	1
Analysis.....	1
Antenna Loads .....	1
Results .....	2
Conclusion .....	2
Standard Conditions .....	Attached
Calculations .....	Attached
Original Design Profile.....	Attached

**Introduction**

The purpose of this report is to summarize results of the structural analysis performed on the existing 275 ft PIROD model #42 guyed tower located at Portland, ME, Cumberland County (ATC site # 10047). The tower was originally designed and manufactured by PIROD, Inc. (Drawing # 87-07-131 dated July 18, 1987).

**Analysis**

The existing tower was analyzed using Semaan Engineering Solutions, Inc., Software. The analysis assumes that the tower is in good, undamaged, and non-corroded condition. A 5% overstress is allowed in the existing structural members to account for program variances.

Basic wind speed: 80.0 mph  
 Radial Ice: 0.50" w/ reduced wind  
 Code: EIA/TIA-222-F

**Antenna Leads**

**Existing Antennas**

Elev. (ft)	Qty	Antennas	Mount	Coax	Carrier
271.0	3	Metrowave High Gain	(3) Sector mount	(12) 1 5/8"	Verizon
271.0	12	Hazeltine 806-105-11-0		(12) 1 5/8"	Verizon
265.0	1	D6C-22 6' Std. MW Dish w Radome	Dish Mount	(1) 2"	Verizon
260.0	9	Allgon 7182.15	(3) Sector mount	(9) 1 5/8"	Omnipoint
260.0	1	G3-2.4, 3' Grid Dish	Dish Mount	(1) 1/2"	Omnipoint
241.0	1	D8E-22, 8' HP MW Dish	Dish Mount	(1) 7/8"	Verizon
231.0	1	D6C-22 6' Std. MW Dish w Radome	Dish Mount	(1) 1 5/8"	Verizon
220.0	3	EMS RR65-18-XXNP	(3) 4' stand-off Mount	(3) 1/2"	Nextwave
216.0	3	Lucent RFU	Leg mounted	(3) 11 mm	Nextwave
192.0	1	8' Omni	Standoff Mount	(1) 1 1/4"	Unknown
168.0	2	8' Omni	Standoff Mount	(2) 7/8"	Unknown
125.0	2	10022-1, 12' Omni	Standoff Mount	(2) 1/2"	Unknown
100.0	1	Cushcraft S8063B	Standoff Mount	(1) 1 1/2"	Nextel

**Proposed Antennas**

Elev. (ft)	Qty	Antennas	Mount	Coax	Carrier
155.0	1	Andrew P4-57 4' Std. MW Dish	Dish Mount	(1) EW90	Verizon

**Results**

The existing 275 ft PIROD tower with the existing and the proposed antennas is structurally acceptable per EIA/TIA-222-F standards.

The maximum structure usage is: 84.0%

Foundation (Location)	Reactions	Original Design Reactions (kips)	Current Analysis Reactions (kips)	% Of Original Design
Tower Base	Compression	244.7	252.19	103.1
	Horizontal	4.5	1.27	28.3
Anchor at Radius of 115'	Uplift	116.9	108.61	92.9
	Horizontal	79.9	70.63	88.4

The structure base reactions resulting from this analysis do not exceed the ones shown on the original structural drawings, therefore no modifications or reinforcement of the foundations will be needed.

**Conclusion**

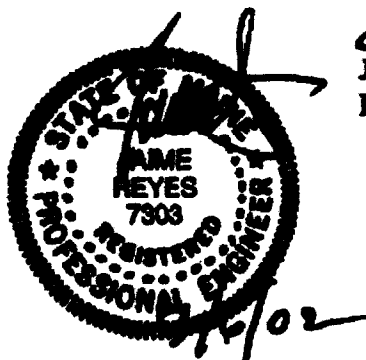
The existing tower can support the existing and proposed antennas as described in this report. If you have any questions or require additional information, please call (817) 355-4100.

Submitted by:

*Jianwei Kong*  
 Jianwei "Jack" Kong, P.E.  
 Project Engineer

Reviewed by:

*Jaimo Reyes*  
 Jaimo Reyes, P.E.  
 Director, A/E Services



### **Standard Conditions**

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

- Information supplied by the client regarding the structure itself, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from fields and/or drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to ATC Engineering Services and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated; and we, therefore, assume that their capacity has not significantly changed from the "as new" condition.

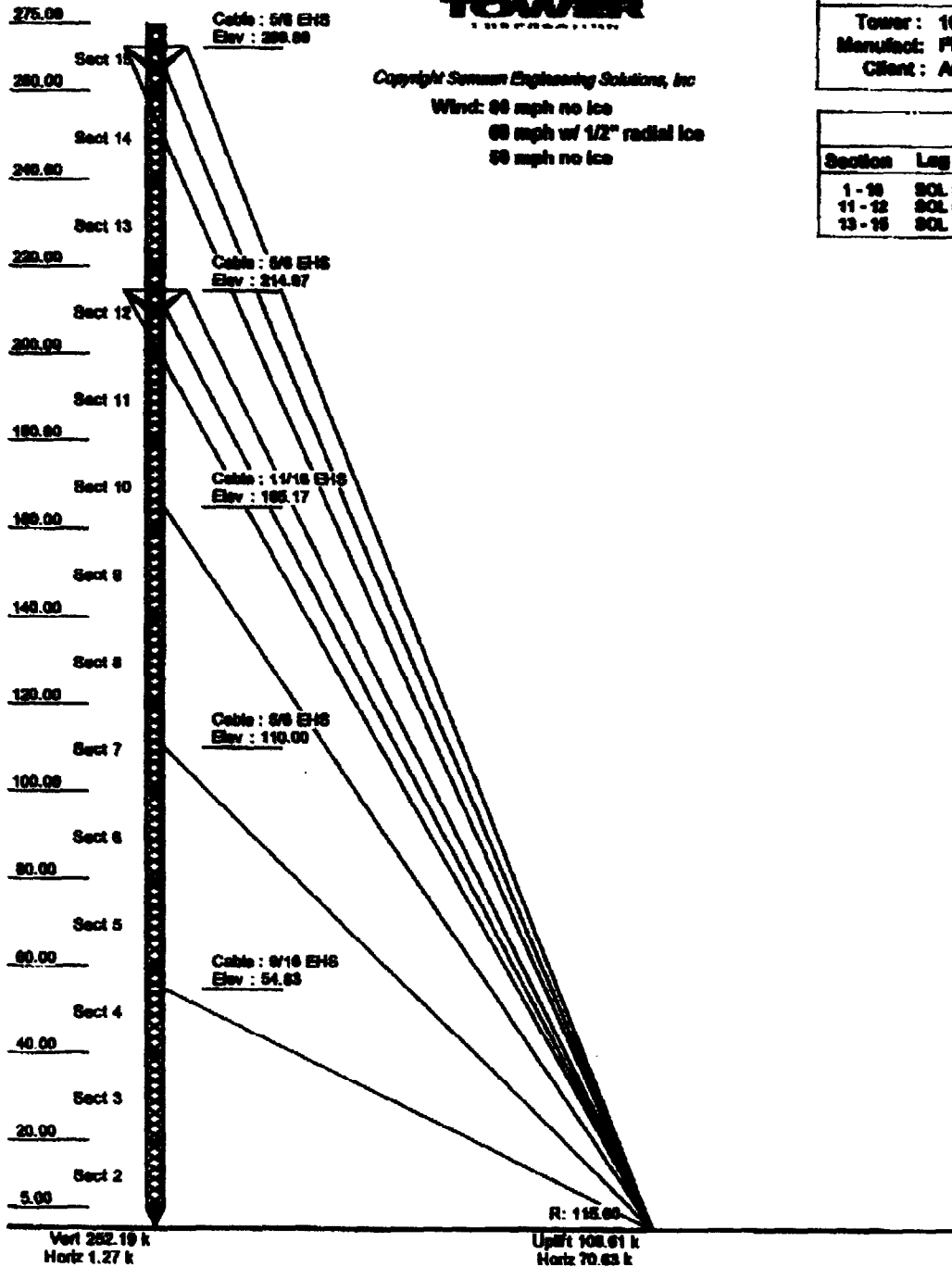
All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/EIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. ATC Engineering Service is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.



# AMERICAN TOWER

Copyright Swann Engineering Solutions, Inc  
 Wind: 88 mph no ice  
 88 mph w/ 1/2" radial ice  
 88 mph no ice



### Job Information

Tower : 10047	Location : Portland, ME	Base Width : 3.50 ft
Manufact: PEROD	Shape : Triangle	
Client : American Tower		

### Sections Properties

Section	Leg Members	Diagonal Members	Horizontal Members
1 - 10	SOL 80x1 2 1/4" SOLID	SOL 80x1 3/4" SOLID	SOL 80x1 3/4" SOLID
11 - 12	SOL 80x1 2" SOLID	SOL 80x1 3/4" SOLID	SOL 80x1 3/4" SOLID
13 - 15	SOL 80x1 1 3/4" SOLID	SOL 80x1 3/4" SOLID	SOL 80x1 3/4" SOLID

### Discrete Appurtenance

Elev (ft)	Type	Qty	Description
271.00	Panel	3	Mastcam High Gain
271.00	Mounting Frame	3	Sector mount
271.00	Panel	12	Horizontal 800-105-11-0
265.00	Dish	1	Std. MW Dish w/Para. Radome,
265.00	Dish	1	Gold MW Dish, 3' Dia.
265.00	Mounting Frame	3	Sector mount
265.00	Panel	9	Alphas 7152.15
241.00	Dish	1	HP MW Dish, 6' Dia.
231.00	Dish	1	Std. MW Dish w/Para. Radome,
229.00	Panel	3	RFMS-16-80MP
229.00	Straight Arm	3	4' stand-off
216.00	Panel	3	RFU
182.00	Straight Arm	1	Standard Mount
182.00	Whip	1	5' Mast
182.00	Straight Arm	1	Standard Mount
168.00	Whip	2	5' Mast
168.00	Dish	1	Std. MW Dish w/o Radome, 4' D
125.00	Straight Arm	1	Standard Mount
125.00	Whip	2	12' Mast
100.00	Straight Arm	1	Standard Mount
100.00	Whip	1	Cumcroft 500038

### Linear Appurtenance

Elev (ft)	From	To	Qty	Description
0.000	271.00	12	1 5/8" Coax	
0.000	271.00	12	1 5/8" Coax	
0.000	265.00	1	2" Coax	
0.000	265.00	1	1 1/2" Coax	
0.000	265.00	9	1 5/8" Coax	
0.000	241.00	1	7/8" Coax	
0.000	231.00	1	1 5/8" Coax	
0.000	229.00	3	1/2" Coax	
0.000	216.00	3	3/8" Coax	
0.000	182.00	1	1 1/4" Coax	
0.000	182.00	2	7/8" Coax	
0.000	182.00	1	EN900	
0.000	125.00	2	1/2" Coax	
0.000	100.00	1	1 1/2" Coax	



Gh: 1.00

**Section Forces**

**LoadCase 60 deg Ice**

**69.28 mph Wind at 60 deg From Face with Ice**

Allow Stress Inc: 1.333  
Dead LP: 1.000  
Wind LP: 1.000

Sect Seq	Wind Height (ft)	qx	Flat Area (sqft)	Ice		Sol Ratio	Cf	Df	Dr	Rr	EFF Area (sqft)	Linear Area (sqft)	Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	EFF Face	
				Round Area (sqft)	Round Area (sqft)															
18	267.5	22.34	0.00	7.90	7.32	0.20	2.32	0.00	1.00	0.01	8.30	18.38	16.77	1,178.84	104.37	531.82	941.80	1,473.32	1	
14	290.0	21.91	0.00	10.82	8.00	0.20	2.33	0.00	1.00	0.01	12.31	60.01	48.16	2,291.00	264.30	667.23	3,126.5	3,983.06	1	
13	230.0	21.40	0.00	10.84	8.01	0.20	2.33	0.00	1.00	0.01	12.33	64.18	60.00	2,300.15	264.67	671.87	3,223.4	3,274.91	1	
12	210.0	20.90	0.00	11.37	8.01	0.30	2.30	0.00	1.00	0.02	12.82	70.08	60.40	2,554.78	264.03	678.21	3,885.0	3,190.80	1	
11	190.0	20.38	0.00	11.38	8.00	0.30	2.30	0.00	1.00	0.02	12.80	72.67	62.40	2,584.15	263.58	688.38	3,890.0	3,100.93	1	
10	170.0	19.83	0.00	12.10	8.00	0.31	2.27	0.00	1.00	0.02	13.40	78.18	64.40	2,800.07	272.72	695.60	3,893.0	3,003.94	1	
9	150.0	19.34	0.00	12.10	8.00	0.31	2.27	0.00	1.00	0.02	13.40	79.66	67.66	2,800.83	272.72	633.04	3,844.5	2,908.41	1	
8	130.0	18.18	0.00	12.10	8.00	0.31	2.27	0.00	1.00	0.02	13.40	80.14	68.90	2,876.41	272.72	667.66	3,884.4	2,782.30	1	
7	110.0	17.33	0.00	12.10	8.00	0.31	2.27	0.00	1.00	0.02	13.40	81.77	71.40	2,902.35	272.72	678.98	3,462.5	2,662.62	1	
6	90.0	16.37	0.00	12.10	8.00	0.31	2.27	0.00	1.00	0.02	13.40	84.36	73.07	2,940.62	272.72	647.67	3,379.7	2,584.91	1	
5	70.0	15.23	0.00	12.10	8.00	0.31	2.27	0.00	1.00	0.02	13.40	84.36	73.07	2,940.62	272.72	608.17	3,148.5	2,331.26	1	
4	50.0	13.94	0.00	12.10	8.00	0.31	2.27	0.00	1.00	0.02	13.40	84.36	73.07	2,940.62	272.72	462.90	2,867.2	2,117.98	1	
3	30.0	12.20	0.00	12.10	8.00	0.31	2.27	0.00	1.00	0.02	13.40	84.36	73.07	2,940.62	272.72	416.73	2,637.3	1,880.83	1	
2	12.0	12.20	0.00	8.34	7.32	0.32	2.28	0.00	1.00	0.02	10.20	63.26	64.90	2,218.01	208.11	311.80	1,903.0	1,410.40	1	
1	2.0	12.20	0.00	3.19	2.48	0.64	1.78	0.00	1.00	0.78	4.41	21.80	18.27	782.17	66.88	106.88	634.36	236.07	1	
															37,667.70	3,896.9				

\*\* = 2QzGhAg Controls

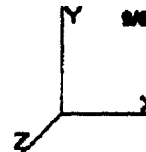
**LoadCase 60 deg No Ice**

**80.00 mph Wind at 60 deg From Face with No Ice**

Allow Stress Inc: 1.333  
Dead LP: 1.000  
Wind LP: 1.000

Sect Seq	Wind Height (ft)	qx	Flat Area (sqft)	Ice		Sol Ratio	Cf	Df	Dr	Rr	EFF Area (sqft)	Linear Area (sqft)	Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	EFF Face	
				Round Area (sqft)	Round Area (sqft)															
18	267.5	20.78	0.00	7.90	0.00	0.15	2.78	0.00	1.00	0.00	4.08	18.38	0.00	888.91	0.00	418.48	888.02	1,918.42	1	
14	290.0	20.22	0.00	10.82	0.00	0.15	2.77	0.00	1.00	0.00	6.12	60.01	0.00	1,848.38	0.00	641.67	2,323.3	2,964.67	1	
13	230.0	20.83	0.00	10.84	0.00	0.15	2.77	0.00	1.00	0.00	6.13	64.18	0.00	1,862.84	0.00	620.37	2,482.3	2,901.70	1	
12	210.0	20.30	0.00	11.37	0.00	0.16	2.73	0.00	1.00	0.00	6.63	70.08	0.00	1,798.73	0.00	646.67	2,677.5	3,127.21	1	
11	190.0	20.02	0.00	11.38	0.00	0.16	2.73	0.00	1.00	0.00	6.63	72.67	0.00	1,743.88	0.00	633.67	2,575.4	3,100.07	1	
10	170.0	20.17	0.00	12.10	0.00	0.17	2.68	0.00	1.00	0.00	7.14	78.18	0.00	1,827.86	0.00	648.21	2,881.1	3,128.34	1	
9	150.0	20.38	0.00	12.10	0.00	0.17	2.68	0.00	1.00	0.00	7.14	79.06	0.00	1,844.94	0.00	628.98	2,818.6	3,147.81	1	
8	130.0	24.34	0.00	12.10	0.00	0.17	2.68	0.00	1.00	0.00	7.14	80.14	0.00	1,908.14	0.00	667.70	2,848.4	3,088.23	1	
7	110.0	23.11	0.00	12.10	0.00	0.17	2.68	0.00	1.00	0.00	7.14	81.77	0.00	1,982.93	0.00	684.00	2,478.9	2,963.04	1	
6	90.0	21.22	0.00	12.10	0.00	0.17	2.68	0.00	1.00	0.00	7.14	84.36	0.00	1,988.13	0.00	467.12	2,414.7	2,871.80	1	
5	70.0	20.31	0.00	12.10	0.00	0.17	2.68	0.00	1.00	0.00	7.14	84.36	0.00	1,988.13	0.00	338.48	2,267.4	2,672.90	1	
4	50.0	19.48	0.00	12.10	0.00	0.17	2.68	0.00	1.00	0.00	7.14	84.36	0.00	1,988.13	0.00	308.48	2,041.4	2,437.91	1	
3	30.0	16.38	0.00	12.10	0.00	0.17	2.68	0.00	1.00	0.00	7.14	84.36	0.00	1,988.13	0.00	343.19	1,812.9	2,166.12	1	
2	12.0	16.38	0.00	8.34	0.00	0.18	2.68	0.00	1.00	0.00	6.41	63.26	0.00	1,481.84	0.00	289.86	1,389.7	1,918.38	1	
1	2.0	16.38	0.00	3.19	0.00	0.36	2.14	0.00	1.00	0.64	2.03	21.00	0.00	886.80	0.00	77.88	483.23	313.44	1	
															26,118.04	0.00				

\*\* = 2QzGhAg Controls



Gh: 1.00

**Section Forces**

**LoadCase 90 deg**

50.00 mph Wind at 90 deg From Face with No Ice

Allow Stress Inc: 1.333  
Dead LF: 1.000  
Wind LF: 1.000

Sect Seq	Wind Height (ft)	qr	Flat Area (sqft)	Ice		Sol Ratio	CF	DF	Dr	Rr	EFF Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	EFF Face
				Round Area (sqft)	Round Area (sqft)														
15	267.5	11.54	0.00	7.90	0.00	0.15	2.75	0.00	1.00	0.00	4.65	15.35	0.00	988.91	0.00	183.44	234.38	397.82	1
14	250.0	11.41	0.00	10.52	0.00	0.15	2.77	0.00	1.00	0.00	6.12	60.61	0.00	1,540.30	0.00	211.88	907.84	1,119.00	1
13	230.0	11.15	0.00	10.54	0.00	0.15	2.77	0.00	1.00	0.00	6.13	64.18	0.00	1,593.84	0.00	206.79	938.41	1,145.19	1
12	210.0	10.90	0.00	11.37	0.00	0.16	2.73	0.00	1.00	0.00	6.63	78.65	0.00	1,735.73	0.00	214.72	1,008.8	1,221.57	1
11	190.0	10.65	0.00	11.30	0.00	0.16	2.73	0.00	1.00	0.00	6.63	72.67	0.00	1,743.00	0.00	206.48	1,008.0	1,214.48	1
10	170.0	10.22	0.00	12.19	0.00	0.17	2.66	0.00	1.00	0.00	7.14	75.19	0.00	1,927.00	0.00	214.14	1,008.2	1,222.40	1
9	150.0	9.95	0.00	12.19	0.00	0.17	2.66	0.00	1.00	0.00	7.14	79.05	0.00	1,944.04	0.00	206.82	1,022.9	1,229.84	1
8	130.0	9.47	0.00	12.19	0.00	0.17	2.66	0.00	1.00	0.00	7.14	80.14	0.00	1,948.14	0.00	198.34	988.00	1,186.34	1
7	110.0	9.03	0.00	12.19	0.00	0.17	2.66	0.00	1.00	0.00	7.14	81.77	0.00	1,952.93	0.00	188.10	988.24	1,176.34	1
6	90.00	8.52	0.00	12.19	0.00	0.17	2.66	0.00	1.00	0.00	7.14	84.35	0.00	1,985.13	0.00	178.65	943.27	1,121.93	1
5	70.00	7.93	0.00	12.19	0.00	0.17	2.66	0.00	1.00	0.00	7.14	84.35	0.00	1,985.13	0.00	188.19	877.91	1,066.10	1
4	50.00	7.21	0.00	12.19	0.00	0.17	2.66	0.00	1.00	0.00	7.14	84.35	0.00	1,985.13	0.00	188.96	797.44	986.40	1
3	30.00	6.40	0.00	12.19	0.00	0.17	2.66	0.00	1.00	0.00	7.14	84.35	0.00	1,985.13	0.00	134.06	708.18	842.23	1
2	12.00	6.40	0.00	8.34	0.00	0.18	2.66	0.00	1.00	0.00	5.41	63.28	0.00	1,481.84	0.00	101.43	531.13	632.56	1
1	2.00	6.40	0.00	3.10	0.00	0.38	2.14	0.00	1.00	0.04	2.03	21.00	0.00	500.00	0.00	38.41	177.04	122.44	1
														25,118.04	0.00				

\*\* = 2QzGhAg Controls

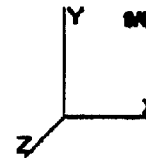
**LoadCase 90 deg ice**

60.25 mph Wind at 90 deg From Face with ice

Allow Stress Inc: 1.333  
Dead LF: 1.000  
Wind LF: 1.000

Sect Seq	Wind Height (ft)	qr	Flat Area (sqft)	Ice		Sol Ratio	CF	DF	Dr	Rr	EFF Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	EFF Face
				Round Area (sqft)	Round Area (sqft)														
15	267.5	22.34	0.00	7.90	7.32	0.20	2.32	0.00	1.00	0.01	8.30	15.35	16.77	1,178.84	184.37	531.82	841.88	1,473.32	1
14	250.0	21.91	0.00	10.52	8.90	0.20	2.33	0.00	1.00	0.01	12.31	60.61	48.18	2,231.00	254.39	607.23	3,125.5	3,383.06	1
13	230.0	21.40	0.00	10.54	8.91	0.20	2.33	0.00	1.00	0.01	12.33	64.18	50.65	2,280.16	264.87	671.87	3,223.4	3,274.91	1
12	210.0	20.95	0.00	11.37	9.01	0.20	2.30	0.00	1.00	0.02	12.82	78.65	60.40	2,584.78	284.03	678.31	3,505.0	3,190.88	1
11	190.0	20.20	0.00	11.30	8.90	0.20	2.30	0.00	1.00	0.02	12.90	72.67	62.40	2,584.18	283.85	668.38	3,500.0	3,108.93	1
10	170.0	19.63	0.00	12.19	9.00	0.21	2.27	0.00	1.00	0.02	13.40	75.19	64.40	2,803.97	272.72	668.00	3,593.3	3,003.94	1
9	150.0	18.94	0.00	12.19	9.00	0.21	2.27	0.00	1.00	0.02	13.40	79.05	67.85	2,880.83	272.72	633.04	3,644.5	2,988.41	1
8	130.0	18.18	0.00	12.19	9.00	0.21	2.27	0.00	1.00	0.02	13.40	80.14	68.88	2,876.41	272.72	607.88	3,684.4	2,782.30	1
7	110.0	17.33	0.00	12.19	9.00	0.21	2.27	0.00	1.00	0.02	13.40	81.77	71.40	2,882.90	272.72	679.39	3,482.8	2,682.82	1
6	90.00	16.37	0.00	12.19	9.00	0.21	2.27	0.00	1.00	0.02	13.40	84.35	73.07	2,940.82	272.72	647.87	3,378.7	2,804.81	1
5	70.00	16.23	0.00	12.19	9.00	0.21	2.27	0.00	1.00	0.02	13.40	84.35	73.07	2,940.82	272.72	608.17	3,148.5	2,331.26	1
4	50.00	13.84	0.00	12.19	9.00	0.21	2.27	0.00	1.00	0.02	13.40	84.35	73.07	2,940.82	272.72	482.90	2,887.2	2,117.98	1
3	30.00	12.20	0.00	12.19	9.00	0.21	2.27	0.00	1.00	0.02	13.40	84.35	73.07	2,940.82	272.72	416.79	2,537.3	1,880.83	1
2	12.00	12.20	0.00	8.34	7.32	0.32	2.28	0.00	1.00	0.02	10.25	63.28	64.80	2,216.91	285.11	311.90	1,903.5	1,410.40	1
1	2.00	12.20	0.00	3.10	2.45	0.64	1.78	0.00	1.00	0.78	4.41	21.00	18.27	782.17	68.88	105.88	634.36	236.07	1
														37,067.70	3,880.9				

\*\* = 2QzGhAg Controls



Gh : 1.00

## Section Forces

### LoadCase 90 deg No Ice

50.00 mph Wind at 90 deg From Face with No Ice

Allow Stress Inc: 1.333  
Dead LF: 1.000  
Wind LF: 1.000

Seq	Wind Sect Height (ft)	g <sub>r</sub>	Flat Area (sqft)	Ice		Sol Ratio	Cf	Df	Dr	Rr	EFF Area (sqft)	Linear Area (sqft)	Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	EFF Face
				Round Area (sqft)	Round Area (sqft)														
15	267.8	29.79	0.00	7.90	0.00	0.16	2.76	0.85	1.00	0.88	4.68	18.38	0.00	908.91	0.00	418.40	600.02	1,018.42	1
14	250.9	29.22	0.00	10.82	0.00	0.16	2.77	0.85	1.00	0.88	6.12	60.91	0.00	1,540.38	0.00	841.57	2,323.3	2,984.87	1
13	230.0	28.63	0.00	10.64	0.00	0.16	2.77	0.85	1.00	0.88	6.13	64.18	0.00	1,562.64	0.00	829.37	2,402.3	2,931.70	1
12	210.0	27.90	0.00	11.37	0.00	0.16	2.73	0.85	1.00	0.88	6.63	70.88	0.00	1,736.73	0.00	849.67	2,877.6	3,127.21	1
11	190.0	27.62	0.00	11.38	0.00	0.16	2.73	0.85	1.00	0.88	6.63	72.67	0.00	1,743.66	0.00	833.67	2,878.4	3,168.07	1
10	170.0	26.17	0.00	12.19	0.00	0.17	2.68	0.85	1.00	0.89	7.14	78.18	0.00	1,827.88	0.00	848.21	2,891.1	3,129.34	1
9	150.0	25.25	0.00	12.19	0.00	0.17	2.68	0.85	1.00	0.89	7.14	79.88	0.00	1,844.94	0.00	828.96	2,818.6	3,147.81	1
8	130.0	24.24	0.00	12.19	0.00	0.17	2.68	0.85	1.00	0.89	7.14	80.14	0.00	1,848.14	0.00	807.78	2,848.4	3,086.23	1
7	110.0	22.11	0.00	12.19	0.00	0.17	2.68	0.85	1.00	0.89	7.14	81.77	0.00	1,862.93	0.00	484.08	2,478.8	2,963.04	1
6	90.00	21.82	0.00	12.19	0.00	0.17	2.68	0.85	1.00	0.89	7.14	84.38	0.00	1,906.13	0.00	487.12	2,414.7	2,871.88	1
5	70.00	20.31	0.00	12.19	0.00	0.17	2.68	0.85	1.00	0.89	7.14	84.38	0.00	1,906.13	0.00	426.46	2,347.4	2,672.98	1
4	50.00	18.48	0.00	12.19	0.00	0.17	2.68	0.85	1.00	0.89	7.14	84.38	0.00	1,906.13	0.00	388.48	2,041.4	2,427.91	1
3	30.00	16.38	0.00	12.19	0.00	0.17	2.68	0.85	1.00	0.89	7.14	84.38	0.00	1,906.13	0.00	343.19	1,812.9	2,166.12	1
2	12.00	16.38	0.00	9.24	0.00	0.18	2.68	0.85	1.00	0.89	6.41	63.26	0.00	1,481.84	0.00	289.88	1,388.7	1,818.38	1
1	2.00	16.38	0.00	3.19	0.00	0.38	2.14	0.85	1.00	0.84	2.83	21.88	0.00	886.88	0.00	77.88	463.23	313.44	1
														25,118.04	0.00				

\*\* = 2QzGhAg Controls

### LoadCase 90 deg

50.00 mph Wind at 90 deg From Face with No Ice

Allow Stress Inc: 1.333  
Dead LF: 1.000  
Wind LF: 1.000

Seq	Wind Sect Height (ft)	g <sub>r</sub>	Flat Area (sqft)	Ice		Sol Ratio	Cf	Df	Dr	Rr	EFF Area (sqft)	Linear Area (sqft)	Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	EFF Face
				Round Area (sqft)	Round Area (sqft)														
15	267.8	11.64	0.00	7.90	0.00	0.16	2.76	0.85	1.00	0.88	4.68	18.38	0.00	908.91	0.00	163.44	234.38	397.82	1
14	250.0	11.41	0.00	10.82	0.00	0.16	2.77	0.85	1.00	0.88	6.12	60.91	0.00	1,540.38	0.00	211.58	867.54	1,119.08	1
13	230.0	11.16	0.00	10.64	0.00	0.16	2.77	0.85	1.00	0.88	6.13	64.18	0.00	1,562.64	0.00	206.79	938.41	1,148.19	1
12	210.0	10.88	0.00	11.37	0.00	0.16	2.73	0.85	1.00	0.88	6.63	70.88	0.00	1,736.73	0.00	214.72	1,808.8	1,221.87	1
11	190.0	10.68	0.00	11.38	0.00	0.16	2.73	0.85	1.00	0.88	6.63	72.67	0.00	1,743.66	0.00	208.48	1,808.0	1,214.48	1
10	170.0	10.22	0.00	12.19	0.00	0.17	2.68	0.85	1.00	0.89	7.14	78.18	0.00	1,827.88	0.00	214.14	1,808.2	1,222.48	1
9	150.0	9.88	0.00	12.19	0.00	0.17	2.68	0.85	1.00	0.89	7.14	79.88	0.00	1,844.94	0.00	208.82	1,822.9	1,228.84	1
8	130.0	9.47	0.00	12.19	0.00	0.17	2.68	0.85	1.00	0.89	7.14	80.14	0.00	1,848.14	0.00	188.34	986.88	1,188.84	1
7	110.0	9.08	0.00	12.19	0.00	0.17	2.68	0.85	1.00	0.89	7.14	81.77	0.00	1,862.93	0.00	188.10	988.34	1,187.44	1
6	90.00	8.82	0.00	12.19	0.00	0.17	2.68	0.85	1.00	0.89	7.14	84.38	0.00	1,906.13	0.00	178.88	943.27	1,121.83	1
5	70.00	7.98	0.00	12.19	0.00	0.17	2.68	0.85	1.00	0.89	7.14	84.38	0.00	1,906.13	0.00	188.18	877.91	1,044.18	1
4	50.00	7.21	0.00	12.19	0.00	0.17	2.68	0.85	1.00	0.89	7.14	84.38	0.00	1,906.13	0.00	188.88	787.44	948.48	1
3	30.00	6.40	0.00	12.19	0.00	0.17	2.68	0.85	1.00	0.89	7.14	84.38	0.00	1,906.13	0.00	134.08	708.18	842.23	1
2	12.00	6.40	0.00	9.24	0.00	0.18	2.68	0.85	1.00	0.89	6.41	63.26	0.00	1,481.84	0.00	101.43	631.13	632.88	1
1	2.00	6.40	0.00	3.19	0.00	0.38	2.14	0.85	1.00	0.84	2.83	21.88	0.00	886.88	0.00	38.41	177.04	122.44	1
														25,118.04	0.00				

\*\* = 2QzGhAg Controls



Gt: 1.00

**Section Forces**

**LoadCase Normal Ice**

60.28 mph Wind Normal To Face with Ice

Allow Stress Inc: 1.333  
Dead LF: 1.000  
Wind LF: 1.000

Seq	Wind Height (ft)	qr	Flat Area (sqft)	Ice		Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face
				Round Area (sqft)	Round Area (sqft)														
15	267.6	22.94	0.00	7.00	7.32	0.20	2.32	1.00	1.00	0.01	0.20	15.36	10.77	1,176.04	194.37	631.82	641.00	1,473.32	1
14	250.0	21.91	0.00	10.02	9.00	0.20	2.33	1.00	1.00	0.01	12.31	60.01	48.18	2,231.00	264.30	687.23	3,120.5	3,363.86	1
13	230.0	21.40	0.00	10.64	9.01	0.20	2.33	1.00	1.00	0.01	12.33	64.18	60.00	2,200.10	264.07	671.87	3,223.4	3,274.91	1
12	210.0	20.85	0.00	11.37	9.01	0.20	2.30	1.00	1.00	0.02	12.92	70.88	68.48	2,064.70	204.03	676.21	3,000.0	3,190.88	1
11	190.0	20.26	0.00	11.98	9.00	0.20	2.30	1.00	1.00	0.02	12.90	72.87	62.40	2,004.18	203.85	680.30	3,000.0	3,100.83	1
10	170.0	19.63	0.00	12.10	9.00	0.21	2.27	1.00	1.00	0.02	13.40	78.18	64.40	2,003.07	272.72	690.00	3,000.0	3,000.04	1
9	160.0	19.04	0.00	12.10	9.00	0.21	2.27	1.00	1.00	0.02	13.40	78.06	67.00	2,000.03	272.72	633.04	3,044.8	2,890.41	1
8	130.0	18.18	0.00	12.10	9.00	0.21	2.27	1.00	1.00	0.02	13.40	80.14	60.00	2,070.41	272.72	607.00	3,004.4	2,702.30	1
7	110.0	17.33	0.00	12.10	9.00	0.21	2.27	1.00	1.00	0.02	13.40	81.77	71.40	2,002.20	272.72	670.30	3,482.6	2,802.02	1
6	90.00	16.37	0.00	12.10	9.00	0.21	2.27	1.00	1.00	0.02	13.40	84.30	73.07	2,040.02	272.72	647.07	3,370.7	2,804.01	1
5	70.00	16.23	0.00	12.10	9.00	0.21	2.27	1.00	1.00	0.02	13.40	84.30	73.07	2,040.02	272.72	600.17	3,145.6	2,331.20	1
4	60.00	13.84	0.00	12.10	9.00	0.21	2.27	1.00	1.00	0.02	13.40	84.30	73.07	2,040.02	272.72	480.00	2,907.2	2,117.00	1
3	30.00	12.20	0.00	12.10	9.00	0.21	2.27	1.00	1.00	0.02	13.40	84.30	73.07	2,040.02	272.72	410.73	2,637.3	1,800.03	1
2	12.00	12.20	0.00	9.34	7.32	0.22	2.26	1.00	1.00	0.02	10.20	63.20	84.00	2,210.01	200.11	311.00	1,903.0	1,410.40	1
1	2.00	12.20	0.00	3.10	2.40	0.04	1.70	1.00	1.00	0.70	4.41	21.00	10.27	702.17	00.00	100.00	634.30	230.07	1
														37,007.70	3,000.00				

\*\* = 2QzGhAg Controls

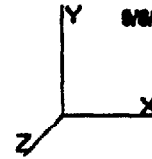
**LoadCase Normal No Ice**

80.00 mph Wind Normal To Face with No Ice

Allow Stress Inc: 1.333  
Dead LF: 1.000  
Wind LF: 1.000

Seq	Wind Height (ft)	qr	Flat Area (sqft)	Ice		Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face
				Round Area (sqft)	Round Area (sqft)														
15	267.6	20.70	0.00	7.00	0.00	0.10	2.70	1.00	1.00	0.00	4.00	10.30	0.00	900.01	0.00	410.40	600.02	1,010.42	1
14	250.0	20.22	0.00	10.02	0.00	0.10	2.77	1.00	1.00	0.00	6.12	60.01	0.00	1,000.30	0.00	641.07	2,323.3	2,904.07	1
13	230.0	20.03	0.00	10.64	0.00	0.10	2.77	1.00	1.00	0.00	6.13	64.18	0.00	1,002.04	0.00	620.37	2,402.3	2,801.70	1
12	210.0	20.00	0.00	11.37	0.00	0.10	2.73	1.00	1.00	0.00	6.03	70.88	0.00	1,700.73	0.00	640.07	2,077.0	3,127.21	1
11	190.0	20.00	0.00	11.98	0.00	0.10	2.73	1.00	1.00	0.00	6.03	72.87	0.00	1,740.00	0.00	633.07	2,070.4	3,100.07	1
10	170.0	20.17	0.00	12.10	0.00	0.17	2.00	1.00	1.00	0.00	7.14	78.18	0.00	1,007.00	0.00	640.21	2,001.1	3,120.34	1
9	160.0	20.20	0.00	12.10	0.00	0.17	2.00	1.00	1.00	0.00	7.14	78.06	0.00	1,044.04	0.00	630.00	2,010.0	3,147.01	1
8	130.0	24.34	0.00	12.10	0.00	0.17	2.00	1.00	1.00	0.00	7.14	80.14	0.00	1,040.14	0.00	607.70	2,040.4	3,000.23	1
7	110.0	22.11	0.00	12.10	0.00	0.17	2.00	1.00	1.00	0.00	7.14	81.77	0.00	1,002.00	0.00	494.00	2,470.0	2,900.04	1
6	90.00	21.02	0.00	12.10	0.00	0.17	2.00	1.00	1.00	0.00	7.14	84.30	0.00	1,000.10	0.00	487.12	2,414.7	2,871.00	1
5	70.00	20.31	0.00	12.10	0.00	0.17	2.00	1.00	1.00	0.00	7.14	84.30	0.00	1,000.10	0.00	480.40	2,347.4	2,672.00	1
4	60.00	18.40	0.00	12.10	0.00	0.17	2.00	1.00	1.00	0.00	7.14	84.30	0.00	1,000.10	0.00	390.40	2,041.4	2,427.01	1
3	30.00	16.30	0.00	12.10	0.00	0.17	2.00	1.00	1.00	0.00	7.14	84.30	0.00	1,000.10	0.00	340.10	1,812.0	2,100.12	1
2	12.00	16.30	0.00	9.34	0.00	0.10	2.00	1.00	1.00	0.00	6.41	63.20	0.00	1,001.04	0.00	200.00	1,300.7	1,010.30	1
1	2.00	16.30	0.00	3.10	0.00	0.00	2.14	1.00	1.00	0.04	2.00	21.00	0.00	000.00	0.00	77.00	400.20	310.44	1
														20,110.04	0.00				

\*\* = 2QzGhAg Controls



Gh : 1.00

**Section Forces**

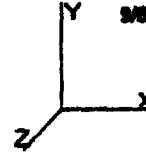
**LoadCase Normal**

50.00 mph Wind Normal To Face with No Ice

Allow Stress Inc: 1.333  
Dead LF: 1.000  
Wind LF: 1.000

Sect Seq	Wind		Flat Area (sqft)	Ice		Sol Ratio	Cf	Df	Dv	Rr	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face	
	Height (ft)	sqz		Round Area (sqft)	Round Area (sqft)							Linear Area (sqft)	Linear Area (sqft)							
15	257.5	11.84	0.00	7.90	0.00	0.15	2.75	1.00	1.00	0.00	4.85	18.38	0.00	988.91	0.00	183.44	234.38	387.82	1	
14	263.0	11.41	0.00	10.82	0.00	0.15	2.77	1.00	1.00	0.00	5.12	69.91	0.00	1,548.38	0.00	211.85	897.84	1,119.09	1	
13	236.0	11.18	0.00	10.84	0.00	0.15	2.77	1.00	1.00	0.00	5.13	64.18	0.00	1,582.84	0.00	206.79	938.41	1,145.19	1	
12	216.0	10.86	0.00	11.97	0.00	0.15	2.73	1.00	1.00	0.00	5.83	76.88	0.00	1,738.73	0.00	214.72	1,008.8	1,221.67	1	
11	196.0	10.58	0.00	11.38	0.00	0.15	2.73	1.00	1.00	0.00	5.83	72.87	0.00	1,743.88	0.00	208.46	1,008.0	1,214.46	1	
10	176.0	10.22	0.00	12.19	0.00	0.17	2.88	1.00	1.00	0.00	7.14	78.18	0.00	1,827.88	0.00	214.14	1,008.2	1,222.40	1	
9	166.0	9.88	0.00	12.19	0.00	0.17	2.88	1.00	1.00	0.00	7.14	78.88	0.00	1,844.84	0.00	208.82	1,022.9	1,229.84	1	
8	136.0	9.47	0.00	12.19	0.00	0.17	2.88	1.00	1.00	0.00	7.14	88.14	0.00	1,948.14	0.00	198.34	988.80	1,183.84	1	
7	116.0	8.83	0.00	12.19	0.00	0.17	2.88	1.00	1.00	0.00	7.14	81.77	0.00	1,982.93	0.00	198.19	988.34	1,187.44	1	
6	98.00	8.82	0.00	12.19	0.00	0.17	2.88	1.00	1.00	0.00	7.14	84.35	0.00	1,988.13	0.00	178.88	843.27	1,121.83	1	
5	78.00	7.23	0.00	12.19	0.00	0.17	2.88	1.00	1.00	0.00	7.14	84.35	0.00	1,988.13	0.00	188.19	877.91	1,044.19	1	
4	68.00	7.21	0.00	12.19	0.00	0.17	2.88	1.00	1.00	0.00	7.14	84.35	0.00	1,988.13	0.00	188.88	787.44	948.49	1	
3	38.00	6.40	0.00	12.19	0.00	0.17	2.88	1.00	1.00	0.00	7.14	84.35	0.00	1,988.13	0.00	134.88	708.18	843.23	1	
2	12.80	6.40	0.00	8.34	0.00	0.18	2.88	1.00	1.00	0.00	6.41	83.38	0.00	1,481.84	0.00	191.43	581.13	632.88	1	
1	2.80	6.40	0.00	3.19	0.00	0.38	2.14	1.00	1.00	0.84	2.88	21.88	0.00	888.88	0.00	30.41	177.84	122.44	1	
															25,118.94	0.00				

\*\*\* = 2QzGhAg Controls



**Tower Loading**

**Discrete Aperture Properties**

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAs (sf)	No Ice CaAs Factor	Ice Weight (lb)	Ice CaAs (sf)	Ice CaAs Factor	Distance From Face (ft)	X Angle (deg)	Vert Ecc (ft)
271.0	Metawave High Gain	3	180.00	28.200	0.78	280.00	28.800	0.78	0.000	0.00	0.000
271.0	Sector mount	3	400.00	11.000	0.78	600.00	14.000	0.78	0.000	0.00	0.000
271.0	Haxline 808-105-11-0	12	17.00	3.900	0.78	58.00	4.430	0.78	0.000	0.00	0.000
268.0	Std. MW Dish w/Para.	1	182.00	24.410	1.00	321.00	28.000	1.00	0.000	0.00	0.000
268.0	Grid MW Dish, 3' Dia.	1	51.00	8.000	1.00	102.00	12.000	1.00	0.000	0.00	0.000
268.0	Sector mount	3	400.00	11.000	0.78	600.00	14.000	0.78	0.000	0.00	0.000
268.0	Allgon 7182.15	9	18.00	2.800	0.78	24.00	3.300	0.78	0.000	0.00	0.000
241.0	HP MW Dish, 6' Dia.	1	478.00	63.420	1.00	1010.00	64.780	1.00	0.000	0.00	0.000
231.0	Std. MW Dish w/Para.	1	182.00	24.410	1.00	321.00	28.000	1.00	0.000	0.00	0.000
228.0	RRSS-18-00NP	3	12.00	6.230	1.00	36.00	8.800	1.00	0.000	0.00	0.000
228.0	4' stand-off	3	41.00	4.000	0.87	128.00	8.000	0.87	0.000	0.00	0.000
216.0	RFU	3	20.00	6.820	1.00	63.00	6.440	1.00	0.000	0.00	0.000
192.0	Standoff Mount	1	188.00	4.000	1.00	280.00	6.000	1.00	0.000	0.00	0.000
192.0	5' Omni	1	12.00	2.800	1.00	20.00	2.800	1.00	0.000	0.00	4.280
192.0	Standoff Mount	1	188.00	4.000	1.00	280.00	6.000	1.00	0.000	0.00	0.000
192.0	5' Omni	2	12.00	2.800	1.00	20.00	2.800	1.00	0.000	0.00	4.280
188.0	Std. MW Dish w/o Radome,	1	188.00	20.910	1.00	277.00	21.780	1.00	0.000	0.00	0.000
125.0	Standoff Mount	1	180.00	4.000	1.00	280.00	6.000	1.00	0.000	0.00	0.000
125.0	12' Omni	2	40.00	4.220	1.00	78.00	6.800	1.00	0.000	0.00	8.288
100.0	Standoff Mount	1	180.00	4.000	1.00	280.00	6.000	1.00	0.000	0.00	0.000
100.0	Cushcraft 89063B	1	10.00	2.000	1.00	20.00	3.000	1.00	0.000	0.00	9.040
<b>Totals</b>		<b>84</b>	<b>2787.00</b>			<b>4874.00</b>			<b>Number of Apertures : 21</b>		

**Linear Aperture Properties**

Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Includes in Wind	Spread On Faces	Bundling Arrangement
0.00	271.0	1 5/8" Coax	12	1.98	1.04	Y	Lin App	Bundled
0.00	271.0	1 5/8" Coax	12	1.98	1.04	Y	Lin App	Bundled
0.00	268.0	2" Coax	1	2.00	1.04	Y	Lin App	Separate
0.00	268.0	1 5/8" Coax	9	1.98	1.04	Y	Lin App	Separate
0.00	268.0	1/2" Coax	1	0.65	0.18	Y	Lin App	Separate
0.00	241.0	7/8" Coax	1	1.11	0.82	Y	Lin App	Separate
0.00	231.0	1 5/8" Coax	1	1.98	1.04	Y	Lin App	Separate
0.00	228.0	1/2" Coax	3	0.65	0.18	Y	Lin App	Separate
0.00	216.0	3/8" Coax	3	0.44	0.98	Y	Lin App	Separate
0.00	192.0	1 1/4" Coax	1	1.68	0.98	Y	Lin App	Separate
0.00	192.0	7/8" Coax	2	1.11	0.82	Y	Lin App	Separate
0.00	188.0	EW90	1	1.32	0.32	Y	Lin App	Separate
0.00	125.0	1/2" Coax	2	0.65	0.18	Y	Lin App	Separate
0.00	100.0	1 1/2" Coax	1	1.65	0.98	Y	Lin App	Separate



**Force/Stress Summary**

**Section: 1 PIROD42B Bot Elev (ft): 0.00 Height (ft): 6.000**

Max Compression Member	Force (kip)	Load Case	Len Bracing %				KL/R	F <sub>c</sub> (ksf)	Member			Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
			(ft)	X	Y	Z			Cap (kip)	Num Bolts	Num Holes				
LEG SOL - 2 1/4" SOLID	-82.77	Normal Ice	1.88	100	100	100	38.3	34.7	138.18	0	0	0.00	0.00	67	Member
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SOL - 3/4" SOLID	-4.84	Normal Ice	2.448	80	80	80	78.1	25.9	11.42	0	0	0.00	0.00	36	Member

Max Tension Member	Force (kip)	Load Case	F <sub>y</sub> (ksf)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG	0.00		0	0.00	0	0	0.00	0.00	0	
HORIZ SOL - 3/4" SOLID	12.44	Normal Ice	80	17.67	0	0	0.00	0.00	70	Member
DIAG SOL - 3/4" SOLID	1.86	Normal Ice	80	17.67	0	0	0.00	0.00	11	Member

**Section: 2 PIROD42 Bot Elev (ft): 5.00 Height (ft): 15.000**

Max Compression Member	Force (kip)	Load Case	Len Bracing %				KL/R	F <sub>c</sub> (ksf)	Member			Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
			(ft)	X	Y	Z			Cap (kip)	Num Bolts	Num Holes				
LEG SOL - 2 1/4" SOLID	-85.00	Normal Ice	2.30	100	100	100	51.0	32.3	125.28	0	0	0.00	0.00	66	Member
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SOL - 3/4" SOLID	-0.74	Normal Ice	4.236	80	80	80	136.6	10.8	4.78	0	0	0.00	0.00	16	Member

Max Tension Member	Force (kip)	Load Case	F <sub>y</sub> (ksf)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG	0.00		0	0.00	0	0	0.00	0.00	0	
HORIZ SOL - 3/4" SOLID	6.83	Normal Ice	80	17.67	0	0	0.00	0.00	31	Member
DIAG SOL - 3/4" SOLID	0.80	90 deg No Ice	80	17.67	0	0	0.00	0.00	3	Member

**Section: 3 PIROD42 Bot Elev (ft): 20.00 Height (ft): 20.000**

Max Compression Member	Force (kip)	Load Case	Len Bracing %				KL/R	F <sub>c</sub> (ksf)	Member			Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
			(ft)	X	Y	Z			Cap (kip)	Num Bolts	Num Holes				
LEG SOL - 2 1/4" SOLID	-88.80	Normal Ice	2.42	100	100	100	51.8	32.1	127.80	0	0	0.00	0.00	70	Member
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SOL - 3/4" SOLID	-1.80	90 deg Ice	4.283	80	80	80	136.1	10.7	4.78	0	0	0.00	0.00	31	Member

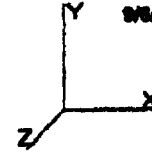
Max Tension Member	Force (kip)	Load Case	F <sub>y</sub> (ksf)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG	0.00		0	0.00	0	0	0.00	0.00	0	
HORIZ SOL - 3/4" SOLID	0.84	Normal No Ice	80	17.67	0	0	0.00	0.00	3	Member
DIAG SOL - 3/4" SOLID	0.84	90 deg No Ice	80	17.67	0	0	0.00	0.00	6	Member





**Force/Stress Summary**

Section: 4		PIROD42		Bot Elev (ft): 40.00				Height (ft): 28.000						
		Force (kip)		Len Bracing % (ft)			Member (kip)		Shear Bear (kip)		Use Controls			
	Load Case		X	Y	Z	KL/R	Fa	Cap Num	Num	Cap	Cap	%	Controls	
<b>Max Compression Member</b>														
LEG SOL - 2 1/4" SOLID	Normal Ice	-188.10	2.42	100	100	100	81.8	32.1	127.88	0	0	0.00	0.00	83 Member
HORIZ		0.00	0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0
DIAG SOL - 3/4" SOLID	90 deg No Ice	-3.24	4.253	80	80	80	138.1	10.7	4.78	0	0	0.00	0.00	70 Member
<b>Max Tension Member</b>														
LEG		0.00	0	0.00	0	0	0.00	0.00	0.00	0	0	0	0	
HORIZ SOL - 3/4" SOLID	Normal No Ice	1.84	80	17.87	0	0	0.00	0.00	0.00	0	0	0	0	Member
DIAG SOL - 3/4" SOLID	90 deg No Ice	3.45	80	17.87	0	0	0.00	0.00	0.00	0	0	0	0	Member
Section: 5		PIROD42		Bot Elev (ft): 60.00				Height (ft): 28.000						
<b>Max Compression Member</b>														
LEG SOL - 2 1/4" SOLID	Normal Ice	-88.85	2.42	100	100	100	81.8	32.1	127.88	0	0	0.00	0.00	77 Member
HORIZ		0.00	0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0
DIAG SOL - 3/4" SOLID	90 deg No Ice	-1.77	4.253	80	80	80	138.1	10.7	4.78	0	0	0.00	0.00	37 Member
<b>Max Tension Member</b>														
LEG		0.00	0	0.00	0	0	0.00	0.00	0.00	0	0	0	0	
HORIZ SOL - 3/4" SOLID	Normal No Ice	0.88	80	17.87	0	0	0.00	0.00	0.00	0	0	0	0	Member
DIAG SOL - 3/4" SOLID	Normal No Ice	1.87	80	17.87	0	0	0.00	0.00	0.00	0	0	0	0	Member
Section: 6		PIROD42		Bot Elev (ft): 80.00				Height (ft): 28.000						
<b>Max Compression Member</b>														
LEG SOL - 2 1/4" SOLID	Normal Ice	-88.85	2.42	100	100	100	81.8	32.1	127.88	0	0	0.00	0.00	73 Member
HORIZ		0.00	0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0
DIAG SOL - 3/4" SOLID	90 deg No Ice	-1.28	4.253	80	80	80	138.1	10.7	4.78	0	0	0.00	0.00	28 Member
<b>Max Tension Member</b>														
LEG		0.00	0	0.00	0	0	0.00	0.00	0.00	0	0	0	0	
HORIZ SOL - 3/4" SOLID	90 deg Ice	0.71	80	17.87	0	0	0.00	0.00	0.00	0	0	0	0	Member
DIAG SOL - 3/4" SOLID	90 deg No Ice	0.75	80	17.87	0	0	0.00	0.00	0.00	0	0	0	0	Member



**Force/Stress Summary**

Section: 7 PROD42 Bot Elev (ft): 199.0 Height (ft): 20.000

Member	Force (kip)	Load Case	Len Bracing %				KL/R	F <sub>a</sub> (ksi)	Member		Shear Bear		Use %	Controls	
			(ft)	X	Y	Z			Cap (kip)	Num	Cap (kip)	Num			
LEG SOL - 2 1/4" SOLID	-193.87	Normal Ice	2.42	100	100	100	81.8	32.1	127.88	0	0	0.00	0.00	81	Member
HORIZ SOL - 3/4" SOLID	-0.13	90 deg No Ice	3.899	100	100	100	234.9	4.0	1.78	0	0	0.00	0.00	7	Member
DIAG SOL - 3/4" SOLID	-3.36	90 deg No Ice	4.293	80	80	80	136.1	18.7	4.78	0	0	0.00	0.00	70	Member

Member	Force (kip)	Load Case	F <sub>y</sub> (ksi)	Cap Num		Num	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
				(kip)	Bolts					
LEG	0.00		0	0.00	0	0	0.00	0.00	0	
HORIZ SOL - 3/4" SOLID	1.19	Normal No Ice	88	17.87	0	0	0.00	0.00	8	Member
DIAG SOL - 3/4" SOLID	4.81	90 deg No Ice	88	17.87	0	0	0.00	0.00	22	Member

Section: 8 PROD42 Bot Elev (ft): 129.0 Height (ft): 20.000

Member	Force (kip)	Load Case	Len Bracing %				KL/R	F <sub>a</sub> (ksi)	Member		Shear Bear		Use %	Controls	
			(ft)	X	Y	Z			Cap (kip)	Num	Cap (kip)	Num			
LEG SOL - 2 1/4" SOLID	-83.83	Normal Ice	2.42	100	100	100	81.8	32.1	127.88	0	0	0.00	0.00	86	Member
HORIZ SOL - 3/4" SOLID	-0.87	90 deg No Ice	3.899	100	100	100	234.9	4.0	1.78	0	0	0.00	0.00	3	Member
DIAG SOL - 3/4" SOLID	-2.23	90 deg Ice	4.293	80	80	80	136.1	18.7	4.78	0	0	0.00	0.00	47	Member

Member	Force (kip)	Load Case	F <sub>y</sub> (ksi)	Cap Num		Num	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
				(kip)	Bolts					
LEG	0.00		0	0.00	0	0	0.00	0.00	0	
HORIZ SOL - 3/4" SOLID	0.91	90 deg Ice	88	17.87	0	0	0.00	0.00	8	Member
DIAG SOL - 3/4" SOLID	1.80	Normal No Ice	88	17.87	0	0	0.00	0.00	9	Member

Section: 9 PROD42 Bot Elev (ft): 149.0 Height (ft): 20.000

Member	Force (kip)	Load Case	Len Bracing %				KL/R	F <sub>a</sub> (ksi)	Member		Shear Bear		Use %	Controls	
			(ft)	X	Y	Z			Cap (kip)	Num	Cap (kip)	Num			
LEG SOL - 2 1/4" SOLID	-88.89	Normal Ice	2.42	100	100	100	81.8	32.1	127.88	0	0	0.00	0.00	84	Member
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SOL - 3/4" SOLID	-1.87	90 deg No Ice	4.293	80	80	80	136.1	18.7	4.78	0	0	0.00	0.00	36	Member

Member	Force (kip)	Load Case	F <sub>y</sub> (ksi)	Cap Num		Num	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
				(kip)	Bolts					
LEG	0.00		0	0.00	0	0	0.00	0.00	0	
HORIZ SOL - 3/4" SOLID	0.72	Normal No Ice	88	17.87	0	0	0.00	0.00	4	Member
DIAG SOL - 3/4" SOLID	1.26	90 deg No Ice	88	17.87	0	0	0.00	0.00	7	Member



**Force/Stress Summary**

**Section: 10 PIROD42 Bot Elev (ft): 100.0 Height (ft): 20.000**

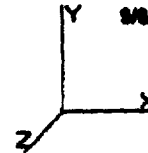
Member	Force (kip)	Load Case	Len Bracing %				Fa (ksi)	Member		Shear Bear		Use %	Controls	
			(ft)	X	Y	Z		KL/R	Cap Num (kip)	Num Holes	Cap (kip)			Cap (kip)
<b>Max Compression Member</b>														
LEG SOL - 2 1/4" SOLID	-73.17	Normal ice	2.42	100	100	100	81.6	32.1	127.00	0	0	0.00	0.00	57 Member
HORIZ SOL - 3/4" SOLID	-8.12	90 deg No ice	3.800	100	100	100	234.0	4.0	1.76	0	0	0.00	0.00	7 Member
DIAG SOL - 3/4" SOLID	-3.34	90 deg ice	4.283	80	80	80	138.1	10.7	4.78	0	0	0.00	0.00	70 Member
<b>Max Tension Member</b>														
LEG	0.00		0	0.00	0	0	0.00	0.00	0.00	0	0	0.00	0.00	0
HORIZ SOL - 3/4" SOLID	1.00	Normal No ice	80	17.67	0	0	0.00	0.00	0.00	9	0	0.00	0.00	9 Member
DIAG SOL - 3/4" SOLID	3.02	90 deg ice	80	17.67	0	0	0.00	0.00	0.00	22	0	0.00	0.00	22 Member

**Section: 11 PIROD42 Bot Elev (ft): 100.0 Height (ft): 20.000**

Member	Force (kip)	Load Case	Len Bracing %				Fa (ksi)	Member		Shear Bear		Use %	Controls	
			(ft)	X	Y	Z		KL/R	Cap Num (kip)	Num Holes	Cap (kip)			Cap (kip)
<b>Max Compression Member</b>														
LEG SOL - 2" SOLID	-62.97	Normal ice	2.42	100	100	100	88.0	30.7	95.57	0	0	0.00	0.00	88 Member
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0
DIAG SOL - 3/4" SOLID	-1.66	90 deg ice	4.283	80	80	80	138.1	10.7	4.78	0	0	0.00	0.00	30 Member
<b>Max Tension Member</b>														
LEG	0.00		0	0.00	0	0	0.00	0.00	0.00	0	0	0.00	0.00	0
HORIZ SOL - 3/4" SOLID	0.00	90 deg ice	80	17.67	0	0	0.00	0.00	0.00	3	0	0.00	0.00	3 Member
DIAG SOL - 3/4" SOLID	0.92	90 deg ice	80	17.67	0	0	0.00	0.00	0.00	8	0	0.00	0.00	8 Member

**Section: 12 PIROD42 Bot Elev (ft): 200.0 Height (ft): 20.000**

Member	Force (kip)	Load Case	Len Bracing %				Fa (ksi)	Member		Shear Bear		Use %	Controls	
			(ft)	X	Y	Z		KL/R	Cap Num (kip)	Num Holes	Cap (kip)			Cap (kip)
<b>Max Compression Member</b>														
LEG SOL - 2" SOLID	-91.88	Normal ice	2.44	100	100	100	85.6	36.6	98.18	0	0	0.00	0.00	84 Member
HORIZ SOL - 3/4" SOLID	-8.03	90 deg No ice	3.800	100	100	100	234.0	4.0	1.76	0	0	0.00	0.00	36 Member
DIAG SOL - 3/4" SOLID	-4.18	Normal ice	4.286	40	40	40	133.8	11.1	4.91	0	0	0.00	0.00	83 Member
<b>Max Tension Member</b>														
LEG SOL - 2" SOLID	11.00	90 deg No ice	80	17.67	0	0	0.00	0.00	0.00	9	0	0.00	0.00	9 Member
HORIZ SOL - 3/4" SOLID	0.91	Normal ice	80	17.67	0	0	0.00	0.00	0.00	8	0	0.00	0.00	8 Member
DIAG SOL - 3/4" SOLID	3.87	90 deg No ice	80	17.67	0	0	0.00	0.00	0.00	22	0	0.00	0.00	22 Member



**Force/Stress Summary**

Section: 13 PIROD42 Bot Elev (ft): 220.0 Height (ft): 20.000

Max Compression Member	Force (kip)	Load Case	Len Bracing %				Fa (ksi)	Member		Shear Bear		Use %	Controls	
			(%)	X	Y	Z		KL/R	Cap (kip)	Num Bolts	Num Holes			Cap (kip)
LEG SOL - 1 3/4" SOLID	-48.82	99 deg ice	2.44	100	100	100	66.9	28.7	66.96	0	0	0.00	0.00	68 Member
HORIZ SOL - 3/4" SOLID	-0.98	99 deg ice	3.809	100	100	100	234.0	4.0	1.78	0	0	0.00	0.00	86 Member
DIAG SOL - 3/4" SOLID	-3.43	99 deg ice	4.288	99	99	99	138.8	16.7	4.72	0	0	0.00	0.00	72 Member

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
HORIZ SOL - 3/4" SOLID	1.11	Normal ice	99	17.87	0	0	0.00	0.00	6	Member
DIAG SOL - 3/4" SOLID	3.21	99 deg No ice	99	17.87	0	0	0.00	0.00	18	Member

Section: 14 PIROD42 Bot Elev (ft): 248.0 Height (ft): 20.000

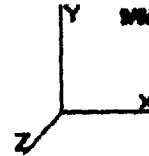
Max Compression Member	Force (kip)	Load Case	Len Bracing %				Fa (ksi)	Member		Shear Bear		Use %	Controls	
			(%)	X	Y	Z		KL/R	Cap (kip)	Num Bolts	Num Holes			Cap (kip)
LEG SOL - 1 3/4" SOLID	-69.74	99 deg ice	2.42	100	100	100	66.3	28.8	66.32	0	0	0.00	0.00	86 Member
HORIZ SOL - 3/4" SOLID	-0.46	Normal ice	3.809	100	100	100	234.9	4.0	1.78	0	0	0.00	0.00	26 Member
DIAG SOL - 3/4" SOLID	-1.99	99 deg ice	4.283	99	99	99	138.1	16.7	4.78	0	0	0.00	0.00	33 Member

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
HORIZ SOL - 3/4" SOLID	0.83	Normal No ice	99	17.87	0	0	0.00	0.00	4	Member
DIAG SOL - 3/4" SOLID	1.26	99 deg ice	99	17.87	0	0	0.00	0.00	7	Member

Section: 15 PIROD42 Bot Elev (ft): 266.0 Height (ft): 18.000

Max Compression Member	Force (kip)	Load Case	Len Bracing %				Fa (ksi)	Member		Shear Bear		Use %	Controls	
			(%)	X	Y	Z		KL/R	Cap (kip)	Num Bolts	Num Holes			Cap (kip)
LEG SOL - 1 3/4" SOLID	-67.71	99 deg ice	2.39	100	100	100	66.5	29.0	66.76	0	0	0.00	0.00	82 Member
HORIZ SOL - 3/4" SOLID	-0.47	99 deg ice	3.800	99	99	99	212.8	4.4	1.94	0	0	0.00	0.00	24 Member
DIAG SOL - 3/4" SOLID	-3.19	99 deg ice	4.238	99	99	99	136.6	16.8	4.78	0	0	0.00	0.00	66 Member

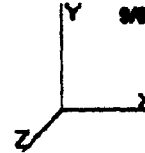
Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
HORIZ SOL - 3/4" SOLID	0.84	Normal No ice	99	17.87	0	0	0.00	0.00	3	Member
DIAG SOL - 3/4" SOLID	3.29	99 deg ice	99	17.87	0	0	0.00	0.00	18	Member



**Support Forces Summary**

Load Case	Node	FX (kip)	FY (kip)	FZ (kip)	(-) = Up/R (+) = Down
00 deg	A1b	4.18	-8.36	-2.78	
	A1a	-25.25	-43.86	-14.22	
	A1	-0.88	-28.94	17.01	
	1	-0.88	113.18	-0.04	
00 deg	A1b	5.27	-15.71	-5.40	
	A1a	-28.81	-46.18	-16.31	
	A1	-0.98	-15.88	9.97	
	1	-0.84	112.85	-6.32	
Normal	A1b	29.32	-36.63	-12.48	
	A1a	-29.32	-36.63	-12.38	
	A1	0.00	-8.35	3.21	
	1	0.00	111.87	-0.98	
00 deg ice	A1b	3.98	-13.33	-3.91	
	A1a	-82.12	-188.81	-33.83	
	A1	-3.88	-81.83	38.88	
	1	-0.18	238.48	-0.68	
00 deg ice	A1b	19.91	-25.91	-8.42	
	A1a	-81.87	-188.32	-36.28	
	A1	-2.71	-25.88	14.19	
	1	-0.98	218.30	-8.48	
Normal ice	A1b	88.88	-83.83	-32.71	
	A1a	-88.88	-83.84	-32.88	
	A1	0.00	-18.38	3.38	
	1	0.00	282.18	0.38	
00 deg No ice	A1b	2.28	-7.84	-2.14	
	A1a	-88.78	-87.75	-31.43	
	A1	-1.98	-82.88	34.84	
	1	-0.82	183.32	-8.48	
00 deg No ice	A1b	6.88	-18.42	-5.88	
	A1a	-83.88	-84.87	-31.13	
	A1	-1.48	-18.38	8.88	
	1	-1.88	182.48	-8.88	
Normal No ice	A1b	47.88	-84.81	-28.48	
	A1a	-47.88	-84.82	-28.38	
	A1	0.00	-8.77	1.88	
	1	0.00	288.28	-8.28	

Max Up/R: 188.81 (kip)  
Max Down: 282.18 (kip)  
Max Shear: 78.83 (kip)

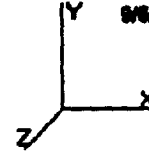


**Cable Forces Summary**

Load Case	Elevation (ft)	Node 1	Node 2	Allow Tension (kip)	Applied Tension (kip)	Use %
Normal No Ice	84.83	A1	29	18.88	8.23	1
	84.83	A1b	29a	18.88	8.18	84
	84.83	A1a	29b	18.88	8.18	84
	118.00	A1	87	21.20	0.00	0
	118.00	A1b	87a	21.20	13.72	64
	118.00	A1a	87b	21.20	13.71	64
	168.17	A1	88	25.00	0.48	1
	168.17	A1b	88a	25.00	18.88	64
	168.17	A1a	88b	25.00	18.83	64
	214.87	A1	T4	21.20	0.88	4
	214.87	A1a	T4a	21.20	11.89	88
	214.87	A1b	T4a	21.20	11.48	83
	214.87	A1b	T4	21.20	12.88	88
	214.87	A1a	T4a	21.20	11.89	64
	214.87	A1	T4b	21.20	0.88	4
	214.87	A1	100	21.20	8.84	3
	214.87	A1b	100a	21.20	11.78	88
	214.87	A1a	100b	21.20	11.78	88
	288.88	A1	T8	21.20	1.44	8
	288.88	A1a	T8b	21.20	18.83	88
	288.88	A1b	T8a	21.20	8.37	44
	288.88	A1b	T8	21.20	18.71	88
	288.88	A1a	T8a	21.20	8.48	44
	288.88	A1	T8b	21.20	1.44	8
	288.88	A1	137	21.20	1.43	8
	288.88	A1b	137a	21.20	18.14	47
	288.88	A1a	137b	21.20	18.16	47



80 deg No Ice	84.83	A1	29	16.85	1.18	7
	84.83	A1b	29a	16.85	1.14	8
	84.83	A1a	29b	16.85	9.73	57
	116.89	A1	57	21.20	1.30	8
	116.89	A1b	57a	21.20	1.25	5
	116.89	A1a	57b	21.20	14.80	69
	106.17	A1	88	26.00	1.85	7
	106.17	A1b	88a	26.00	1.86	7
	106.17	A1a	88b	26.00	17.84	71
	214.97	A1	T4	21.20	2.48	11
	214.97	A1a	T4b	21.20	13.88	84
	214.97	A1b	T4a	21.20	2.27	10
	214.97	A1b	T4	21.20	2.30	10
	214.97	A1a	T4a	21.20	13.12	81
	214.97	A1	T4b	21.20	2.18	10
	214.97	A1	100	21.20	2.29	10
	214.97	A1b	100a	21.20	2.29	10
	214.97	A1a	100b	21.20	13.30	83
	200.80	A1	T5	21.20	3.22	15
	200.80	A1a	T5b	21.20	11.65	84
	200.80	A1b	T5a	21.20	3.02	14
	200.80	A1b	T5	21.20	3.24	15
	200.80	A1a	T5a	21.20	11.24	83
	200.80	A1	T5b	21.20	2.87	13
	200.80	A1	137	21.20	3.07	14
	200.80	A1b	137a	21.20	3.12	14
	200.80	A1a	137b	21.20	11.80	84

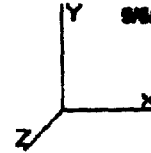


90 deg No Ice						
	84.83	A1	29	18.96	5.72	33
	84.83	A1b	29a	18.85	0.36	1
	84.83	A1a	29b	18.85	18.85	62
	118.00	A1	67	21.20	8.24	38
	118.00	A1b	67a	21.20	0.36	1
	118.00	A1a	67b	21.20	18.00	75
	165.17	A1	85	25.00	8.83	38
	165.17	A1b	85a	25.00	0.79	2
	165.17	A1a	85b	25.00	18.78	75
	214.97	A1	T4	21.20	7.73	38
	214.97	A1a	T4a	21.20	13.77	64
	214.97	A1b	T4a	21.20	1.06	4
	214.97	A1b	T4	21.20	1.10	5
	214.97	A1a	T4a	21.20	13.84	64
	214.97	A1	T4b	21.20	6.84	32
	214.97	A1	100	21.20	7.39	34
	214.97	A1b	100a	21.20	1.08	6
	214.97	A1a	100b	21.20	13.78	64
	269.89	A1	T8	21.20	7.82	35
	269.89	A1a	T8a	21.20	11.35	63
	269.89	A1b	T8a	21.20	1.88	7
	269.89	A1b	T8	21.20	1.78	8
	269.89	A1a	T8a	21.20	11.78	65
	269.89	A1	T8b	21.20	8.02	28
	269.89	A1	137	21.20	8.78	31
	269.89	A1b	137a	21.20	1.71	8
	269.89	A1a	137b	21.20	11.71	65





Normal Ice						
84.83	A1	29	18.85	0.88	3	
84.83	A1b	29a	18.85	8.18	48	
84.83	A1a	29b	18.85	8.18	48	
110.00	A1	57	21.20	0.30	0	
110.00	A1b	57a	21.20	12.78	80	
110.00	A1a	57b	21.20	12.77	80	
165.17	A1	85	25.00	0.85	3	
165.17	A1b	85a	25.00	18.85	88	
165.17	A1a	85b	25.00	18.82	88	
214.97	A1	T4	21.20	1.88	7	
214.97	A1a	T4b	21.20	13.33	63	
214.97	A1b	T4a	21.20	13.47	63	
214.97	A1b	T4	21.20	13.48	63	
214.97	A1a	T4a	21.20	13.88	64	
214.97	A1	T4b	21.20	1.88	7	
214.97	A1	100	21.20	1.88	7	
214.97	A1b	100a	21.20	13.48	63	
214.97	A1a	100b	21.20	13.48	63	
200.00	A1	T5	21.20	2.80	11	
200.00	A1a	T5b	21.20	12.88	88	
200.00	A1b	T5a	21.20	11.98	88	
200.00	A1b	T5	21.20	12.88	81	
200.00	A1a	T5a	21.20	12.97	88	
200.00	A1	T5b	21.20	2.81	11	
200.00	A1	137	21.20	2.48	11	
200.00	A1b	137a	21.20	12.84	88	
200.00	A1a	137b	21.20	12.88	88	

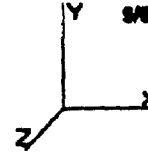


60 deg ice

84.83	A1	20	16.95	2.35	13
84.83	A1b	20a	16.95	2.30	13
84.83	A1a	20b	16.95	3.03	67
110.00	A1	57	21.20	2.35	11
110.00	A1b	57a	21.20	2.31	10
110.00	A1a	57b	21.20	14.91	60
105.17	A1	95	25.00	3.05	12
105.17	A1b	95a	25.00	3.03	12
105.17	A1a	95b	25.00	19.37	77
214.97	A1	T4	21.20	3.78	17
214.97	A1a	T4a	21.20	16.67	74
214.97	A1b	T4a	21.20	3.66	17
214.97	A1b	T4	21.20	3.66	17
214.97	A1a	T4a	21.20	16.67	73
214.97	A1	T4b	21.20	3.67	16
214.97	A1	100	21.20	3.67	17
214.97	A1b	100a	21.20	3.67	17
214.97	A1a	100b	21.20	15.71	74
200.00	A1	T5	21.20	4.95	23
200.00	A1a	T5b	21.20	14.67	66
200.00	A1b	T5a	21.20	4.95	22
200.00	A1b	T5	21.20	4.92	23
200.00	A1a	T5a	21.20	14.32	67
200.00	A1	T5b	21.20	4.95	21
200.00	A1	137	21.20	4.78	22
200.00	A1b	137a	21.20	4.90	22
200.00	A1a	137b	21.20	14.67	66



90 deg loc						
	54.53	A1	29	16.55	5.51	32
	54.53	A1b	29a	16.55	0.75	4
	54.53	A1a	29b	16.55	0.05	57
	118.00	A1	57	21.20	8.03	37
	118.00	A1b	57a	21.20	0.73	3
	118.00	A1a	57b	21.20	15.15	71
	165.17	A1	85	25.00	19.20	40
	165.17	A1b	85a	25.00	1.27	8
	165.17	A1a	85b	25.00	19.91	78
	214.97	A1	T4	21.20	5.89	41
	214.97	A1a	T4a	21.20	15.89	75
	214.97	A1b	T4a	21.20	1.91	9
	214.97	A1b	T4	21.20	1.95	9
	214.97	A1a	T4a	21.20	15.89	73
	214.97	A1	T4b	21.20	5.89	40
	214.97	A1	100	21.20	5.73	41
	214.97	A1b	100a	21.20	1.84	9
	214.97	A1a	100b	21.20	15.74	74
	269.89	A1	T8	21.20	9.30	43
	269.89	A1a	T8a	21.20	14.16	85
	269.89	A1b	T8a	21.20	2.91	13
	269.89	A1b	T8	21.20	2.89	14
	269.89	A1a	T8a	21.20	14.46	88
	269.89	A1	T8b	21.20	8.21	38
	269.89	A1	137	21.20	8.75	41
	269.89	A1b	137a	21.20	2.93	13
	269.89	A1a	137b	21.20	14.43	88

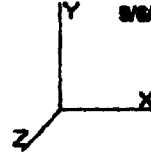


Normal						
	64.83	A1	29	16.85	0.88	8
	64.83	A1b	29a	16.85	4.47	26
	64.83	A1a	29b	16.85	4.47	26
	110.00	A1	57	21.20	0.63	2
	110.00	A1b	57a	21.20	5.71	26
	110.00	A1a	57b	21.20	5.71	26
	106.17	A1	85	25.00	0.43	1
	106.17	A1b	85a	25.00	6.31	26
	106.17	A1a	85b	25.00	6.30	26
	214.97	A1	T4	21.20	0.84	2
	214.97	A1a	T4a	21.20	4.89	23
	214.97	A1b	T4a	21.20	4.78	22
	214.97	A1b	T4	21.20	5.05	23
	214.97	A1a	T4a	21.20	4.82	22
	214.97	A1	T4b	21.20	0.88	2
	214.97	A1	100	21.20	0.91	2
	214.97	A1b	100a	21.20	4.93	23
	214.97	A1a	100b	21.20	4.93	23
	200.00	A1	T5	21.20	1.44	6
	200.00	A1a	T5b	21.20	4.89	23
	200.00	A1b	T5a	21.20	4.48	21
	200.00	A1b	T5	21.20	4.91	23
	200.00	A1a	T5a	21.20	4.82	21
	200.00	A1	T5b	21.20	1.46	6
	200.00	A1	137	21.20	1.41	6
	200.00	A1b	137a	21.20	4.74	22
	200.00	A1a	137b	21.20	4.74	22



90 deg

84.83	A1	29	18.98	2.06	12
84.83	A1b	29a	18.98	2.04	12
84.83	A1a	29b	18.98	6.35	31
110.80	A1	57	21.20	1.90	8
110.80	A1b	57a	21.20	1.89	8
110.80	A1a	57b	21.20	7.19	33
165.17	A1	85	25.00	2.14	8
165.17	A1b	85a	25.00	2.14	8
165.17	A1a	85b	25.00	6.33	33
214.97	A1	T4	21.20	2.28	10
214.97	A1a	T4a	21.20	6.63	30
214.97	A1b	T4b	21.20	2.14	10
214.97	A1	T4	21.20	2.20	10
214.97	A1a	T4a	21.20	6.49	30
214.97	A1	T4b	21.20	2.08	9
214.97	A1	100	21.20	2.17	10
214.97	A1b	100a	21.20	2.17	10
214.97	A1a	100b	21.20	6.49	30
289.80	A1	T8	21.20	2.84	13
289.80	A1a	T8a	21.20	6.99	26
289.80	A1b	T8b	21.20	2.53	11
289.80	A1b	T8	21.20	2.77	13
289.80	A1a	T8a	21.20	6.87	27
289.80	A1	T8b	21.20	2.44	11
289.80	A1	137	21.20	2.63	12
289.80	A1b	137a	21.20	2.65	12
289.80	A1a	137b	21.20	6.99	28



90 deg

54.83	A1	29	16.86	3.27	19
54.83	A1b	29a	16.86	1.30	7
54.83	A1a	29b	16.86	5.16	30
116.00	A1	57	21.20	3.86	18
116.00	A1b	57a	21.20	0.84	3
116.00	A1a	57b	21.20	6.89	32
166.17	A1	86	26.00	4.30	17
166.17	A1b	86a	26.00	0.86	3
166.17	A1a	86b	26.00	7.87	31
214.97	A1	T4	21.20	3.76	17
214.97	A1a	T4b	21.20	6.11	28
214.97	A1b	T4a	21.20	1.07	6
214.97	A1b	T4	21.20	1.12	6
214.97	A1a	T4a	21.20	6.03	28
214.97	A1	T4b	21.20	3.30	16
214.97	A1	100	21.20	3.01	17
214.97	A1b	100a	21.20	1.06	6
214.97	A1a	100b	21.20	6.10	28
266.80	A1	T6	21.20	3.98	18
266.80	A1a	T6b	21.20	6.85	28
266.80	A1b	T6a	21.20	1.76	6
266.80	A1b	T6	21.20	1.83	6
266.80	A1a	T6a	21.20	6.64	28
266.80	A1	T6b	21.20	3.38	16
266.80	A1	137	21.20	3.70	17
266.80	A1b	137a	21.20	1.76	6
266.80	A1a	137b	21.20	6.88	28

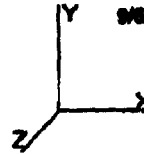
**AMERICAN  
TOWER**

Site Number: 10047  
Location: Portland, ME

Copyright Samsen Engineering Solutions, Inc

8/6/2002 4:10:12 PM





**Deflections and Rotations**

Lead Case	Elevation (ft)	Deflection (in)	Twist (deg)	Sway (deg)
50.00 mph Wind Normal To Face with No Ice	100.00	0.1838	-0.0003	0.0706
	126.17	0.1961	-0.0002	0.1221
	154.53	0.2348	0.0000	0.0823
	167.88	0.2461	0.0001	0.0832
	192.42	0.2648	0.0000	0.0362
	214.97	0.2716	0.0001	0.0364
	220.00	0.2767	0.0001	0.1371
	220.91	0.2800	0.0000	0.0700
	240.33	0.2987	0.0000	0.1436
	260.00	0.2987	0.0000	0.0064
50.00 mph Wind at 90 deg From Face with No Ice	100.00	0.2828	0.0000	0.0000
	126.17	0.2800	0.0000	0.0026
	154.53	0.1207	0.0030	0.0480
	167.88	0.1001	0.0463	0.0072
	192.42	0.2136	0.0324	0.0700
	214.97	0.2200	0.0336	0.0000
	220.00	0.2019	0.0283	0.0004
	220.91	0.2035	0.0301	0.0770
	240.33	0.2019	0.0100	0.1700
	260.00	0.3063	0.0100	0.1001
50.00 mph Wind at 90 deg From Face with No Ice	100.00	0.3200	0.0117	0.1918
	126.17	0.3306	0.0104	0.0003
	154.53	0.3364	0.0007	0.0014
	167.88	0.3330	0.0000	0.0040
	192.42	0.1400	0.0003	0.0002
	214.97	0.1007	0.0000	0.0000
	220.00	0.2300	0.0403	0.0072
	220.91	0.3402	0.0403	0.0700
	240.33	0.2701	0.0300	0.0016
	260.00	0.2001	0.0316	0.0021
50.00 mph Wind Normal To Face with Ice	100.00	0.3003	0.0300	0.1000
	126.17	0.3003	0.0200	0.0003
	154.53	0.3300	0.0200	0.1732
	167.88	0.3348	0.0182	0.0003
	192.42	0.3204	0.0100	0.0734
	214.97	0.3233	0.0173	0.0704
	220.00	0.0001	-0.0213	0.4074
	220.91	0.0000	-0.0100	0.7279
	240.33	1.2000	-0.0164	0.6476
	260.00	1.3000	-0.0146	0.0040
50.00 mph Wind Normal To Face with Ice	100.00	1.0000	-0.0122	0.0413
	126.17	1.0000	-0.0000	0.0000
	154.53	1.0000	-0.0000	0.0000
	167.88	1.0000	-0.0000	0.0000
	192.42	1.0000	-0.0000	0.0000
	214.97	1.0000	-0.0000	0.0000
	220.00	1.0000	-0.0000	0.0000
	220.91	1.0000	-0.0000	0.0000
	240.33	2.0414	-0.0003	0.0000
	260.00	2.1643	-0.0073	0.0340
50.00 mph Wind Normal To Face with Ice	100.00	2.3023	-0.0064	0.1700
	126.17	2.3182	-0.0000	0.1700
	154.53	2.3300	-0.0064	0.1701





**60.26 mph Wind at 90 deg From Face with Ice**

100.00	0.3087	0.3701	0.2044
125.17	0.5181	0.4875	0.3653
154.53	0.7103	0.5906	0.5180
167.55	0.7891	0.6346	0.6255
182.42	0.8675	0.6295	0.5993
214.97	1.1086	0.6273	0.4191
228.00	1.1808	0.6276	0.6094
229.91	1.2271	0.6257	0.4923
240.33	1.3279	0.5848	0.7266
260.00	1.4344	0.4358	0.6798
265.11	1.4328	0.3842	0.0479
269.89	1.4354	0.4357	0.0634

**60.26 mph Wind at 90 deg From Face with Ice**

100.00	0.6399	0.1872	0.3981
125.17	0.7677	0.1671	0.5316
154.53	1.0633	0.1386	0.5465
167.55	1.1637	0.1573	0.5841
182.42	1.4385	0.1546	0.5275
214.97	1.6218	0.1897	0.5175
228.00	1.6728	0.1698	0.7582
229.91	1.7622	0.1630	0.5784
240.33	1.6788	0.1278	0.7879
260.00	1.9838	0.1525	0.1299
265.11	2.0071	0.1275	0.1188
269.89	2.0183	0.1526	0.1101

**60.00 mph Wind Normal To Face with No Ice**

100.00	0.7286	-0.0320	0.4388
125.17	0.9829	-0.0327	0.6216
154.53	1.2219	-0.0480	0.4573
167.55	1.3236	-0.0333	0.4888
182.42	1.6203	-0.0325	0.4286
214.97	1.6887	-0.0322	0.3865
228.00	1.6884	-0.0323	0.6358
229.91	1.7783	-0.0317	0.4434
240.33	1.9815	-0.0382	0.8880
260.00	1.9293	-0.0388	0.6380
265.11	1.9311	-0.0379	0.0888
269.89	1.9333	-0.0315	0.0125

**60.00 mph Wind at 90 deg From Face with No Ice**

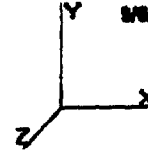
100.00	0.5838	0.4185	0.1742
125.17	0.8267	0.4464	0.3125
154.53	0.8736	0.4210	0.2823
167.55	0.7288	0.4886	0.3088
182.42	0.9484	0.4822	0.2444
214.97	0.9383	0.4810	0.2708
228.00	0.8887	0.4811	0.5288
229.91	1.0838	0.4883	0.3388
240.33	1.0816	0.4326	0.5716
260.00	1.1288	0.4882	0.0838
265.11	1.1285	0.4318	0.0788
269.89	1.1186	0.4881	0.0844

**60.00 mph Wind at 90 deg From Face with No Ice**

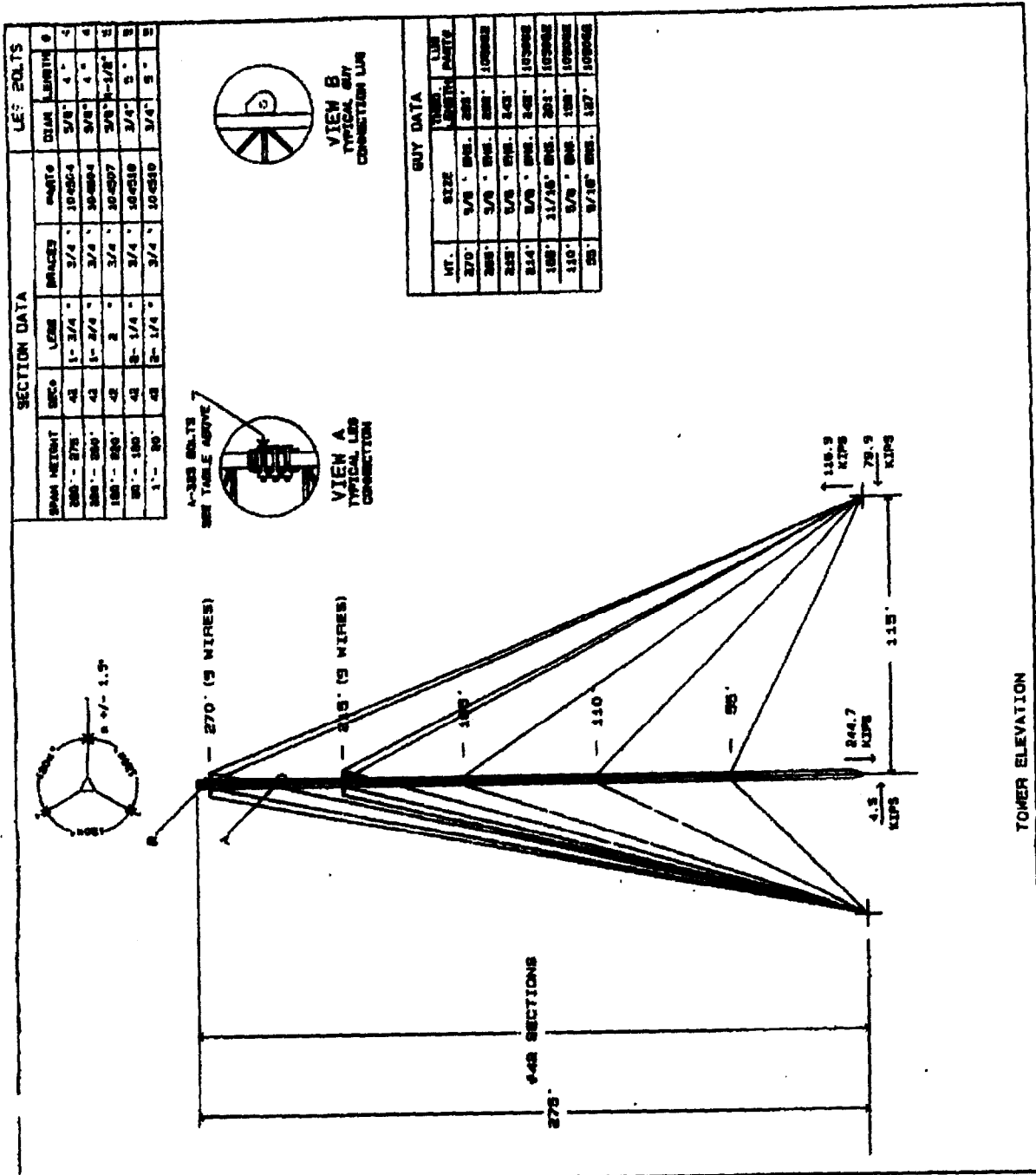
100.00	0.6348	0.2148	0.3487
125.17	0.8388	0.1884	0.4425
154.53	1.0678	0.1615	0.3836
167.55	1.1513	0.1888	0.4885
182.42	1.3188	0.1877	0.3336
214.97	1.4343	0.1888	0.3388
228.00	1.4884	0.1288	0.5888

Site Number: 10047  
Location: Portland, ME

1/8/2002 4:19:12 PM



229.91	1.8267	0.1863	0.3886
240.33	1.8070	0.1835	0.6610
260.09	1.8044	0.1888	0.0000
266.11	1.8042	0.1838	0.0406
269.99	1.8008	0.1887	0.0638
	0.0000	0.0000	0.0000



SECTION DATA				LEG BOLTS		
SPAN HEIGHT	SECS	LENS	BRACES	PARTS	DIA	LENGTH
200 - 275'	42	1 - 3/4"	3/4"	10-05C-4	5/8"	4' - 4"
200 - 200'	42	1 - 2 1/4"	3/4"	10-05C-4	5/8"	4' - 4"
100 - 200'	42	2	3/4"	10-05C-7	3/8"	1 1/2" - 2"
00 - 100'	42	2 - 1/4"	3/4"	10-05D	3/4"	5' - 5"
1' - 00'	42	2 - 1/4"	3/4"	10-05D	3/4"	5' - 5"

GUY DATA			
HT.	SIZE	WIND LOAD PARTS	LEG PARTS
270	5/8" - 5/8"	200	10-05C-4
215	5/8" - 5/8"	200	10-05C-4
150	5/8" - 5/8"	200	10-05C-4
110	3/4" - 5/8"	200	10-05C-4
110	3/4" - 5/8"	200	10-05C-4
110	3/4" - 5/8"	200	10-05C-4
110	3/4" - 5/8"	200	10-05C-4
110	3/4" - 5/8"	200	10-05C-4
110	3/4" - 5/8"	200	10-05C-4
110	3/4" - 5/8"	200	10-05C-4

**GENERAL NOTES**

1. TOWER DESIGN CONFORMS TO ETA STANDARD RS-200-C FOR 50 PSF WINDLOAD WITH 0.50" RADIAL ICE.
2. MATERIAL: (A) TOWER MEMBERS 3/4" AND LARGER: FY=36,000 PSI. (B) TOWER MEMBERS LESS THAN 3/4" FY=36,000 PSI.
3. FINISH: NOT DIPPED GALVANIZED AFTER FABRICATION, FAA CODE PAINTED PRIOR TO SHIPMENT.
4. ANTENNAS: FOUR 6' SOLID DISKS WITH RADIIUS AT TOP WITH 7/8" LINE THREE 4' SOLID DISKS AT 200' WITH 7/8" LINE FIVE TWO WAYS AT 100' WITH 7/8" LINE THREE 6' SOLID DISKS WITH RADIIUS AT 200' W/7/8" LINE ONE 4' SOLID DISK AT 200 WITH 7/8" LINE
5. MIN. WELDS 1/4" UNLESS OTHERWISE SPECIFIED. ALL WELDING TO CONFORM TO AWS SPEC.
6. ETA GROUNDING FOR TOWER.
- A - 1 LIGHT KIT IN CONDUIT PER FAA AC 70/7480-10

MAINE MICROWAVE ASSOCIATES RIVERSIDE, MAINE		PART NO.
NAME 642 X 275' GUYED TOWER		PI-ROD, INC.
APPROVED BY	DR BY DATE	PLYMOUTH, INDIANA 48583
DESIGNER	JRE 10-JUL-87	
REVISIONS	SCALE AS NOTED	DWG. NO. 87-07-131 PAGE 1 OF 3

**APPLICATION FOR EXEMPTION FROM SITE PLAN REVIEW**

Cellco Partnership d/b/a Verizon Wireless 4/10/03

Applicant

Application Date

400 Friberg Pkwy Westborough MA 01581

Portland North

Applicant's Mailing Address

Project Name/Description

Timy Mower 978 549 5570

Riverside Industrial Park

Consultant/Agent/Phone Number

Address of Proposed Site

70 Broadway St  
Westford MA  
01586

CIBL 330 H005 003

Description of Proposed Development:

Installation of 4' microwave on existing tower

Please Attach Sketch/Plan of Proposal/Development

Applicant's Assessment  
(Yes, No, N/A)

Planning Office  
Use Only

Criteria for Exemptions:

See Section 14-523 (4)

a) Within Existing Structures; No New Buildings, Demolitions or Additions

NO

b) Footprint Increase Less Than 500 Sq. Ft.

NO

c) No New Curb Cuts, Driveways, Parking Areas

NO

d) Curbs and Sidewalks in Sound Condition/ Comply with ADA

NO

e) No Additional Parking / No Traffic Increase

NO

f) No Stormwater Problems

NO

g) Sufficient Property Screening

YES

h) Adequate Utilities

YES

Planning Office Use Only:

Exemption Granted  Partial Exemption \_\_\_\_\_ Exemption Denied \_\_\_\_\_



## CITY OF PORTLAND, MAINE

Department of Building Inspections

5/2 20 03

Received from Hubbman Assos.

Location of Work 220 Riverside Ind. Pkwy.

Cost of Construction \$ 4000.00

Permit Fee \$ 51.00

Building (IL)  Plumbing (I5)  Electrical (I2)  Site Plan (U2)

Other \_\_\_\_\_

CBL: 330 H 005 003

Check #: 2727 Total Collected \$ 51.00

### THIS IS NOT A PERMIT

No work is to be started until PERMIT CARD is actually posted upon the premises. Acceptance of fee is no guarantee that permit will be granted. PRESERVE THIS RECEIPT. In case permit cannot be granted the amount of the fee will be refunded upon return of the receipt less \$10.00 or 10% whichever is greater.

WHITE - Applicant's Copy

YELLOW - Office Copy

PINK - Permit Copy