PERMIT ISSUED
OCT 3 1 2001
CITY OF PORTLAND

City of Portland, Maine - Building or Use Permit Application

389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

Permit No:	Issue Date:	CBL:
01-1281	OCT 3 1 2001	032 L002001

Location of Construction:	Owner Name:	Owner Address:	Phone:
1 City Ctr	One City Center Associates	1 City Ctr	207-945-9979
Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone**
n/a	Drew Communications Group Inc.	546 Copeland Hill Road Holden	2079459979
Lessee/Buyer's Name	**Phone:**	**Permit Type:**	**Zone:**
n/a	n/a	Alterations - Commercial	B-3

Past Use:	Proposed Use:	Permit Fee:	Cost of Work:	CEO District:
Commercial / Microwave Location	Commercial / PCS Communication Site; adding 9 additional antenna's and one 4' microwave dish to the existing 40' tower located atop the building.	$174.00	$25,000.00	1

FIRE DEPT: ☑ Approved ☐ Denied
Signature:

INSPECTION: Use Group: U Type: Boca 99
Signature:

Proposed Project Description:
Add 9 antenna's & one 4' microwave dish.

PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)
Action: ☐ Approved ☐ Approved w/Conditions ☐ Denied
Signature: Date:

Permit Taken By:	Date Applied For:
gg	10/15/2001

1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.
2. Building permits do not include plumbing, septic or electrical work.
3. Building permits are void if work is not started within six (6) months of the date of issuance. False information may invalidate a building permit and stop all work..

Zoning Approval

Special Zone or Reviews	Zoning Appeal	Historic Preservation
☐ Shoreland	☐ Variance	☐ Not in District or Landmark
☐ Wetland	☐ Miscellaneous	☐ Does Not Require Review
☐ Flood Zone	☐ Conditional Use	☐ Requires Review
☐ Subdivision	☐ Interpretation	☐ Approved
☐ Site Plan	☐ Approved	☐ Approved w/Conditions
site plan Exempt Signed 9/26/01		
Maj ☐ Minor ☐ MM ☐	☐ Denied	☐ Denied
Date: OK S 10/25/01	Date:	Date:

CERTIFICATION

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

SIGNATURE OF APPLICANT ADDRESS DATE PHONE

RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE DATE PHONE

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: ONE CITY CENTER, PORTLAND ME.		
Total Square Footage of Proposed Structure	Square Footage of Lot	
Tax Assessor's Chart, Block & Lot Chart# 32 Block# L Lot# 002	Owner: COMMUNICATIONS RESIGN INC.	Telephone: (207) 945-9979
Lessee/Buyer's Name (If Applicable)	Applicant name, address & telephone: TLA SPECTRUM LLC 3905 DAKOTA STREET SW PO. 3000 ALEXANDRIA, MN. 56308	Cost Of Work: $ 25,000 Fee: $ 174.00

Current use: MICROWAVE LOCATION

If the location is currently vacant, what was prior use: _____

Approximately how long has it been vacant: _____

Proposed use: PCS COMMUNICATIONS SITE

Project description: TO ADD 9 (NINE) ADDITIONAL ANTENNAS AND ONE 4' (FOUR) MICROWAVE DISH TO THE EXISTING 40' TOWER LOCATED ATOP THE BUILDING AT 1 (ONE) CITY CENTER PORTLAND MAINE.

Contractor's name, address & telephone: DREW COMMUNICATIONS GROUP INC (207) 989-2834
546 COPELAND HILL ROAD
HOLDEN ME. 04429

Who should we contact when the permit is ready: RAY McCORMICK

Mailing address: 6 TELCOM DRIVE
BANGOR, MAINE 04401

+x Cell
Phone (207) 945-9979

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 APROVE 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 codes applicable to this permit.

Signature of applicant: Raymond J McCormick	Date: 10-15-01

This is not a permit, you may not commence ANY work until the permit is issued

TABLE OF CONTENTS

Project Description

This project is designed to make use of a 40' tower located on top of a building at One City Center. The project will include the placement of 9 new Panel Antennas and coax at the 23' level with azimuths of 0, 120, and 240 degrees. The coax will terminate in the existing room of Communications Design Inc. Additionally, a 4'microwave dish with coax will be installed at the 15'level. The coax will also terminate in the existing Communications Design Inc room. The panel antennas will be used to transmit and receive PCS Communications signals. The microwave dish will be used to connect One City Center to our site located on Blackstrap Mountain in Falmouth Maine. All items mentioned above will be installed using normal mounting brackets shown further in this document. A tower analysis is also included showing more detail as well as showing that the existing structure will support the additional equipment mentioned above.

Drew Communications Group Inc

546 Copeland Hill Rd
Holden, ME 04429
(207) 989-2834

Date: October 15, 2001

Scope of Work:

The following is the scope of work for the proposed One City Center PCS site in Portland, Maine, as prepared by Drew Communications Group Inc.

Materials:
See attached Bill Of Materials

Labor:
Crew mobilization to One City Center Portland, Maine
Transportation of materials from Portland warehouse to rooftop site
Install new rooftop entry panel near existing ports
Assemble 9 panel antennas and mounting brackets
Assemble and leg mount one sector frame on each tower leg at 23' level on existing roof top tower
Install 3 panel antennas on each mount at 23' level of existing roof top tower
Use existing cable ladder, and bridge, to support 9 cable runs by adding new cable cluster mounts
Install 9 new 1 5/8" transmission lines from antennas to equipment room complete with connectors, grounds, hoist grips, entry boots, and weatherproofing. Each cable run to be approximately 75'.
Mount new signal amplifier at top of cable run.
Install 6 new jumpers to connect receive transmission lines to amplifier.
Install 6 new jumpers to connect amplifier to 2 receive antennas on each sector
Install 3 new jumpers to connect 1 5/8" lines to transmit antennas
Sweep test each antenna system for proper performance
Remove all trash from site

Bill of Materials for Concord PCS Site

Quantity	Part Number	Vendor	Description
900'	FLC158-50J	RFS	1 5/8" COAX
9	815396-010	RFS	10' STANDARD JUMPERS
200'	SCF12-50J	RFS	1/2" SUPERFLEX CABLE
9	734832	RFS	DIN MALE CONNECTOR 1/2" SUPERFLEX
9	734864	RFS	N MALE CONNECTOR 1/2" SUPERFLEX
18	716F-LCF158-070	RFS	DIN FEMALE CONNECTOR 1 5/8" CABLE
10	915661	RFS	1 5/8" SNAPIN HANGERS
9	916535-158	RFS	1 5/8" HOIST GRIPS
5	916132	RFS	WEATHERPROOFING KIT
9	915662	RFS	1 5/8" BOOT 4" HOLE
1	916670	RFS	ROOFTOP ENTRY PANEL
27	916391	RFS	1 5/8" GROUND KIT
3	99545	VALMONT	3 ANTENNA ROOFTOP BALLAST MOUNT
72	B1969	VALMONT	RUBBER MOUNT ROOFTOP PROTECTOR KIT
9	B1461	VALMONT	ANTENNA MOUNTING PIPE
18	B1932	VALMONT	ROOF BRIDGE WITH SLEEPERS 4 LINES
18	B1943	VALMONT	STRAIGHT BRIDGE SPLICE
6	B1944	VALMONT	45 DEGREE BRIDGE SPLICE
2	B1571	VALMONT	SLEEPER ALIGNMENT GUIDE
1	B1934	VALMONT	ROOF BRIDGE WITH SLEEPER 10 LINES

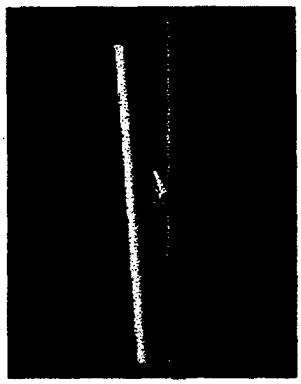
OptiRange™ *Vertical Polarization*

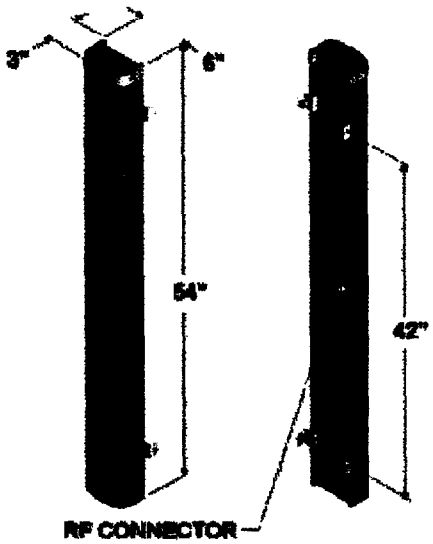
RV90-17-XX_PL2

Add to Quote

1850 MHz - 1990 MHz

General Specs	
Beamwidth	90°
Gain	14.6 dBd (16.7 dBi)





Select Electrical Downtilt

- ◉ 00°
- ○ 02°
- ○ 04°
- ○ 06°

Azimuth Polar Pattern

Elevation Polar Pattern

Select a downtilt and click either of the above Polar Pattern buttons to view a printable Polar Plot.

Full Product Specs | Mounting Options | Download PDF Format

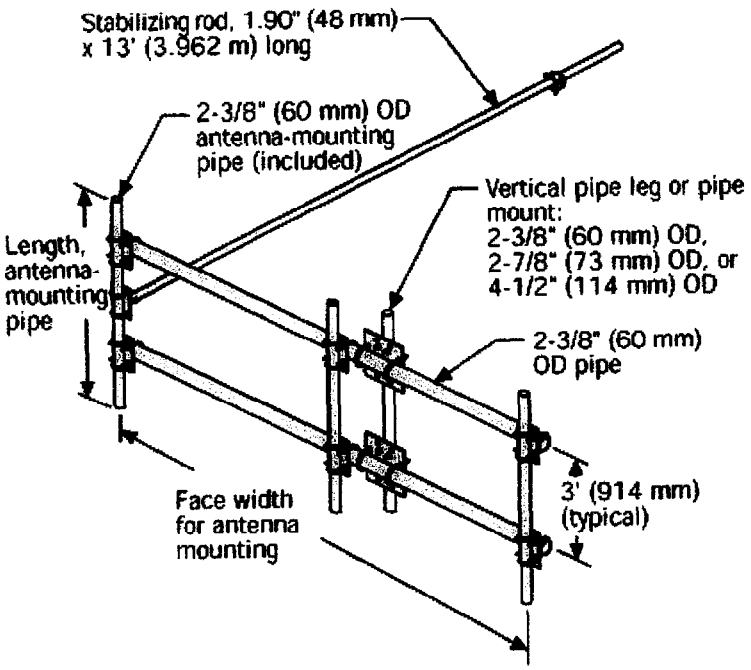
Download Pattern Data - Select Data Format -

Back

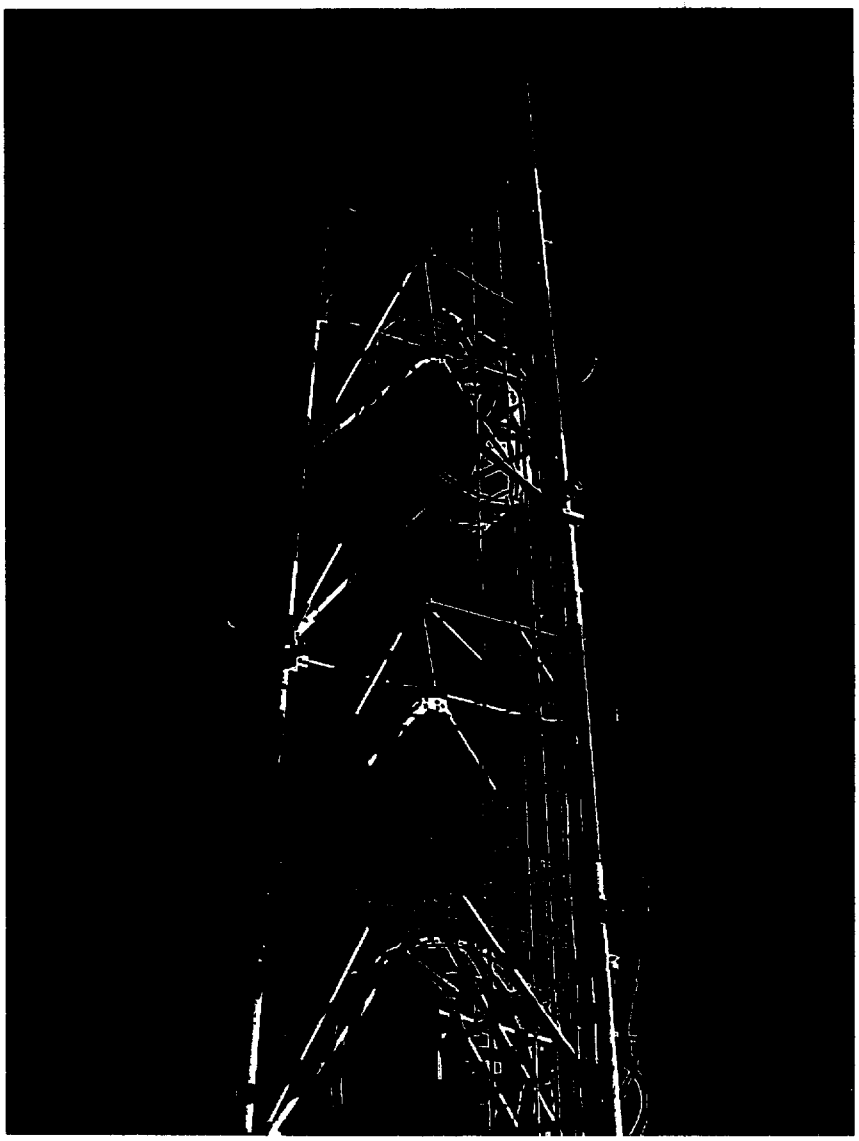
Full Product Specs	RV90-17-XX_PL2
Mechanical	
Dimension (LxWxD)	54 in x 6 in x 3 in (135 cm x 15 cm x 7.5 cm)
Rated wind Velocity	150 mph (241 kph)
Equivalent Flat Plate Area	2.3 ft2 (0.21 m2)
Front Wind Load @ 100 mph (161 kph)	65 lbs (288 N)
Side Wind Load @ 100 mph (161 kph)	31 lbs (139 N)
Weight	11 lbs (5 kg)
Electrical	
Azimuth Beamwidth	90°
Elevation Beamwidth	6°
Gain	14.6 dBd (16.7 dBi)
Polarization	Vertical
Front-to-Back Ratio	≥ 25 dB
Electrical Downtilt	00° 02° 04° 06°
VSWR	1.35:1 Max
Connectors	1;Type N or 7-16 DIN (Female)
Power Handling	250 Watts CW
Passive Intermodulation	Less than -147dBc (2 tone @ 43 dBm 20W ea)
Lightning Protection	Chassis Ground

Proposed Antenna Mounting System

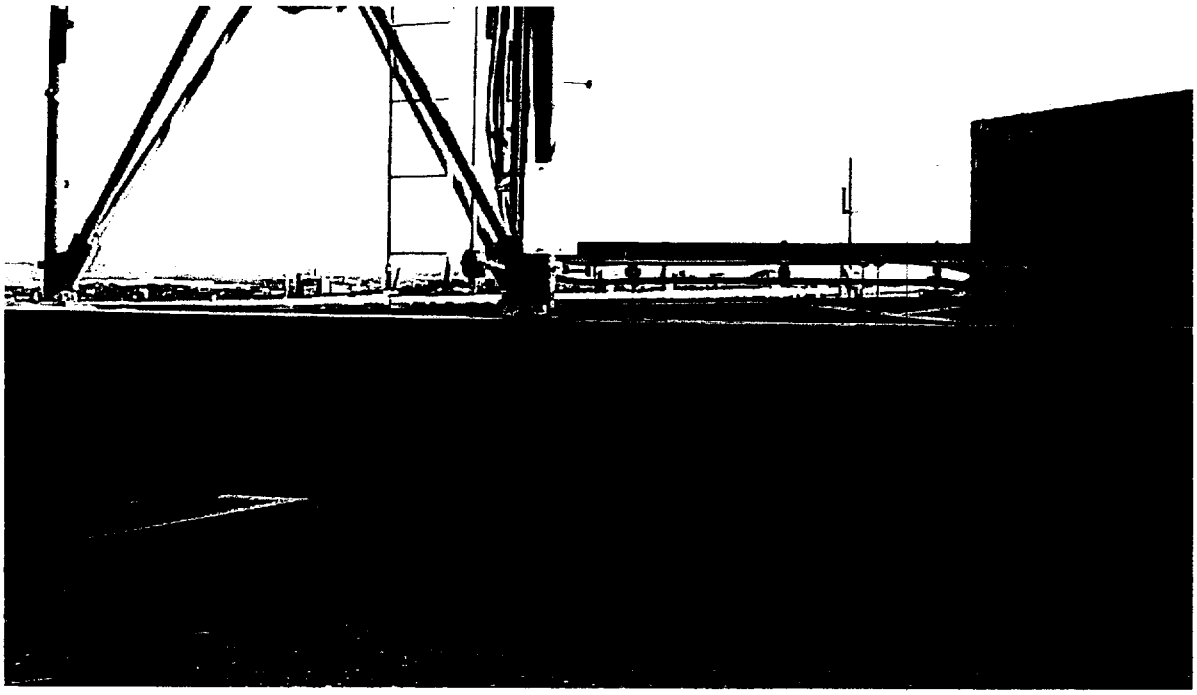
One antenna mounting frame (as shown below) holding three antennas each, mounted to each of the three tower legs.



Existing Tower - Antennas To Be Mounted At 23'

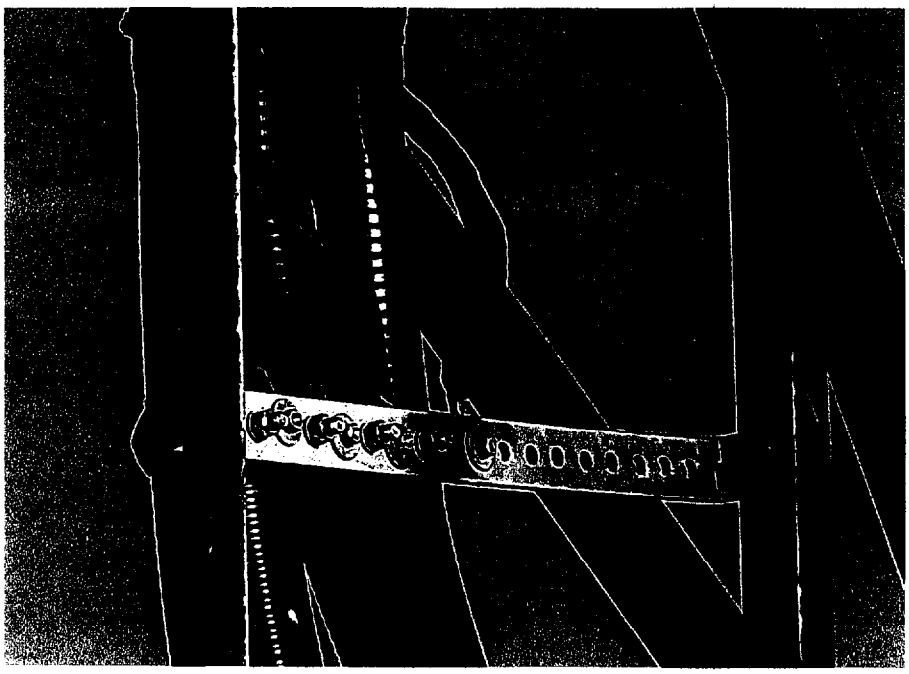


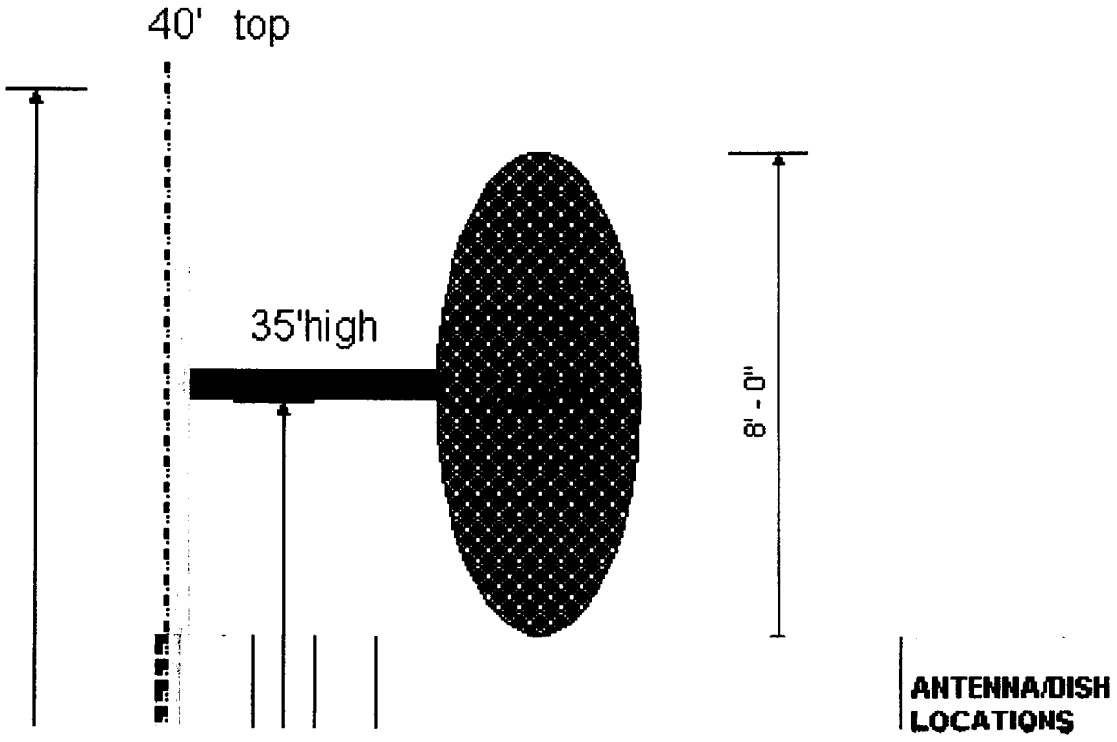
Tower Support Structure and Waveguide Bridge



Existing Rooftop Entry Ports

Waveguide ladder for securing cables to tower




40' top
35'high
8' - 0"
ANTENNA/DISH
LOCATIONS

H. E. Bergeron Engineers
• Civil • Structural • Land Surveying

P.O. Box 440
2605 White Mountain Highway
North Conway, NH 03860
(603) 356-6936
(603) 356-7715 (fax)

65 W. Commercial Street
Portland, ME 04101
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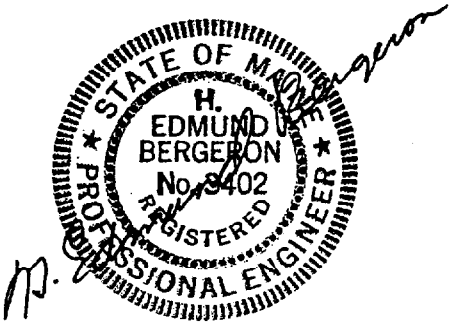
www.hebcivil.com

HEB

INSPECTION & STRUCTURAL ANALYSIS OF 40' SELF-SUPPORTING ROOFTOP TOWER ONE CITY CENTER PORTLAND, MAINE

Prepared for Rural Cellular Corporation

September 28, 2001



Prepared by: H. E. Bergeron Engineers, P.A.
P.O. Box 440, 2605 White Mountain Highway
North Conway, NH 03860
HEB Project No. 2001-123-2

H. E. Bergeron Engineers
• Civil • Structural • Land Surveying

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INSPECTION & STRUCTURAL ANALYSIS REPORT
of
40' ROOFTOP TOWER
ONE CITY CENTER
PORTLAND, MAINE
prepared for Rural Cellular Corporation

EXECUTIVE SUMMARY:

H. E. Bergeron Engineers, P.A. (HEB) performed a structural analysis of this 40-foot rooftop tower for Rural Cellular Corporation. The analysis was performed with the existing microwave dishes and the addition of a 4' dish at 15' and an antenna array comprised of nine EMS RV-90-17 panel antennas mounted on 3 Valmont Microflect Model B2072 mounts 23-feet above the base of the tower.

Our analysis indicates the tower is capable of supporting the proposed loading. The base connection to the rooftop was not analyzed but appears to be adequate.

INTRODUCTION:

An inspection and structural analysis was performed on the above-mentioned communications tower by HEB for Rural Cellular Corporation. The tower is located on the rooftop of One City Center, Portland, The site was visited on July 27, 2001 by Joseph Klementovich E.I.T. and Chris Malcolm of HEB. Mr. Klementovich climbed the tower in its entirety to measure the physical and dimensional properties of the structure and its associated antennas and appurtenances. The analysis was conducted with the addition of a 4' dish and nine EMS RV-90-17 panel antennas mounted on 3 Valmont Microflect Model B2072 mounts.

The structure is a 40-foot, three legged self-supporting tower. The analysis was performed with the following existing antenna inventory:

- (1) 8' microwave dish mounted at 10'
- (1) 8' microwave dish mounted at 35'
- (1) set of side lights at 20'
- (1) beacon at 40'

and a proposed inventory of:

- (1) 4' dish at 15'
- (9) EMS RV-90-17 panels at 23'

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STRUCTURAL ANALYSIS:

Methodology:

The structural analysis was done in accordance with EIA/TIA-222-F, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures; and the American Institute of Steel Construction (AISC), Manual of Steel Construction, Allowable Stress Design, Ninth Edition.

The analysis was conducted using a wind speed of 80 miles per hour and one-half inch of radial ice over the entire structure and all appurtenances. The EIA/TIA Standard requires a minimum wind speed of 80 miles per hour for Cumberland County, Maine. The tower was analyzed by calculating the resultant wind loading and associated maximum bending moments, shear forces, and axial loads. The moments and forces were used to calculate compressive stresses in leg members and combined axial and bending stresses in the tower mast, which were compared to allowable stresses according to AISC.

Two loading conditions were evaluated in accordance with EIA/TIA-222-F to determine the tower's capacity. The more demanding of the two cases is used to calculate the tower capacity:

- Case 1 = Wind Load (without ice) + Tower Dead Load
- Case 2 = 0.75 Wind Load (with ice) + Ice Load + Tower Dead Load

In addition, the TIA/EIA standard permits a one-third increase in allowable stresses for towers less than 700-feet tall. Allowable stresses of tower members were increased by one-third when computing the load capacity values shown below.

Analysis:

Analysis of the tower was conducted in accordance with the criteria outlined herein with antennas as previously described.

Our analysis determined the existing tower is capable of supporting the proposed antenna load. The yield strength of the tower legs is not known, so an assumption of 50 ksi was used. The following table summarizes the results of the analysis based on combined axial and bending stresses of the tower mast and compressive stresses of individual leg members:

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Tower Capacity

Elevation	Capacity
0-20'	85%
20'-40'	49%

Bracing Members:

TIA/EIA-222-F Paragraph 3.1.12 states that "Limiting values of effective slenderness ratios for compression members shall preferably be 150 for legs, 200 for bracing, and 250 for redundants...". Typically, horizontal bracing is sized to act as both tension and compression members. In this case, the pipes used for horizontal are adequately sized for compression based on the Kl/r ratio.

Base Foundation/Connection:

Evaluation of the existing foundation and connection to the building structure was beyond the scope of work for this project. The (3) 5/8" anchor bolts connecting each leg to the rooftop framing structure are adequate for the proposed loading.

Base reactions imposed with the additional antennas were calculated as follows:

Uplift:	42.3 kips
Compression:	46.1 kips
Shear:	14.6 kips
Overturning Moment:	326.3 ft-kips

CONCLUSIONS AND RECOMMENDATIONS:

Our structural analysis indicates that the 40-foot rooftop tower located on the One City Center building in Portland, Maine is capable of supporting the proposed antenna loading.

LIMITATIONS:

This report is based on the following:

1. Tower is properly installed and maintained.
2. All members are in new condition.
3. All required members are in place.

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4. All bolts are in place and are properly tightened.
5. Tower is in plumb condition.
6. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.

H. E. Bergeron Engineers, P.A. (HEB) is not responsible for any modifications completed prior to or hereafter which HEB is not or was not directly involved. Modifications include but are not limited to:

1. Replacing or strengthening bracing members.
2. Reinforcing vertical members in any manner.
3. Adding or relocating stabilizers.
4. Installing antenna mounting gates or side arms.
5. Extending tower.

HEB hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon the information contained and set forth herein. If you are aware of any information which is contrary to that which is contained herein, or you are aware of any defects arising from the original design, material, fabrication and erection deficiencies, you should disregard this report and immediately contact HEB. HEB disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

Appendix A

Photos

40' SELF-SUPPORTING ROOFTOP TOWER
ONE CITY CENTER, PORTLAND, MAINE
PREPARED FOR RURAL CELLULAR CORPORATION

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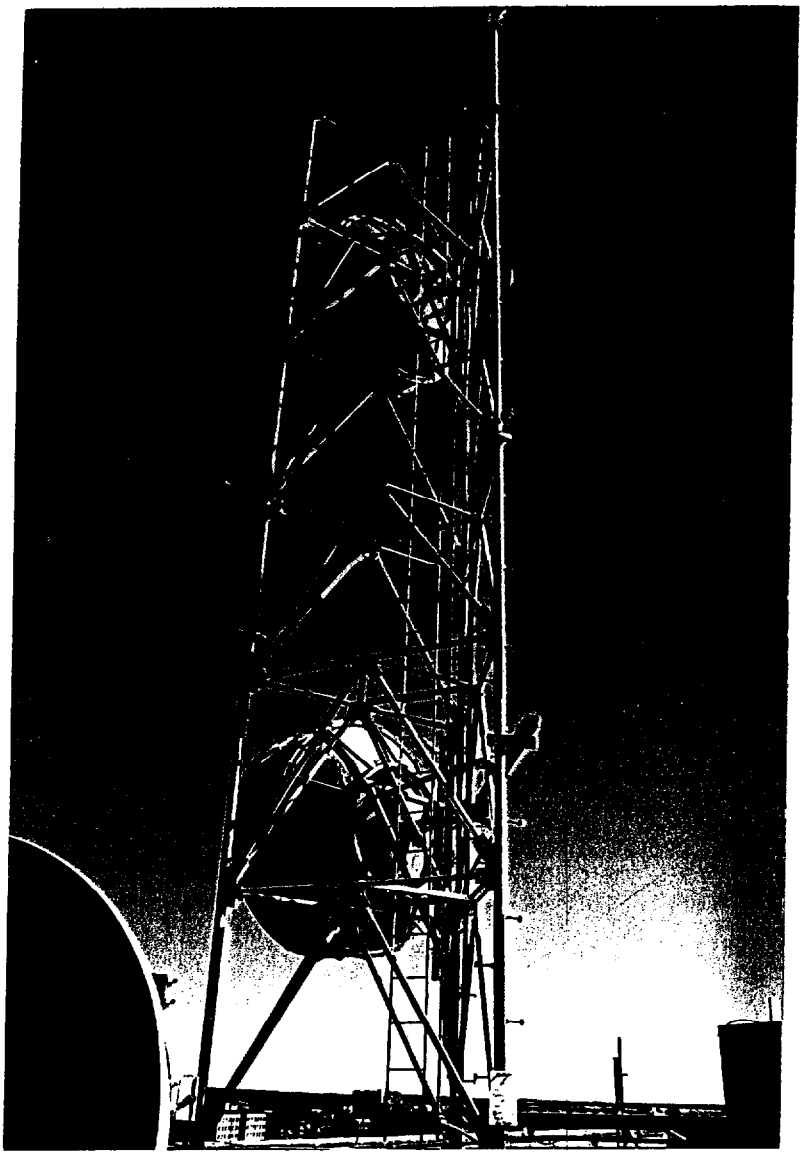

Overview of 40' self-supporting rooftop tower located on One City Center building in Portland, Maine.

Photos taken July 27, 2001 by H. E. Bergeron Engineers, P.A.

40' SELF-SUPPORTING ROOFTOP TOWER
ONE CITY CENTER, PORTLAND, MAINE
PREPARED FOR RURAL CELLULAR CORPORATION

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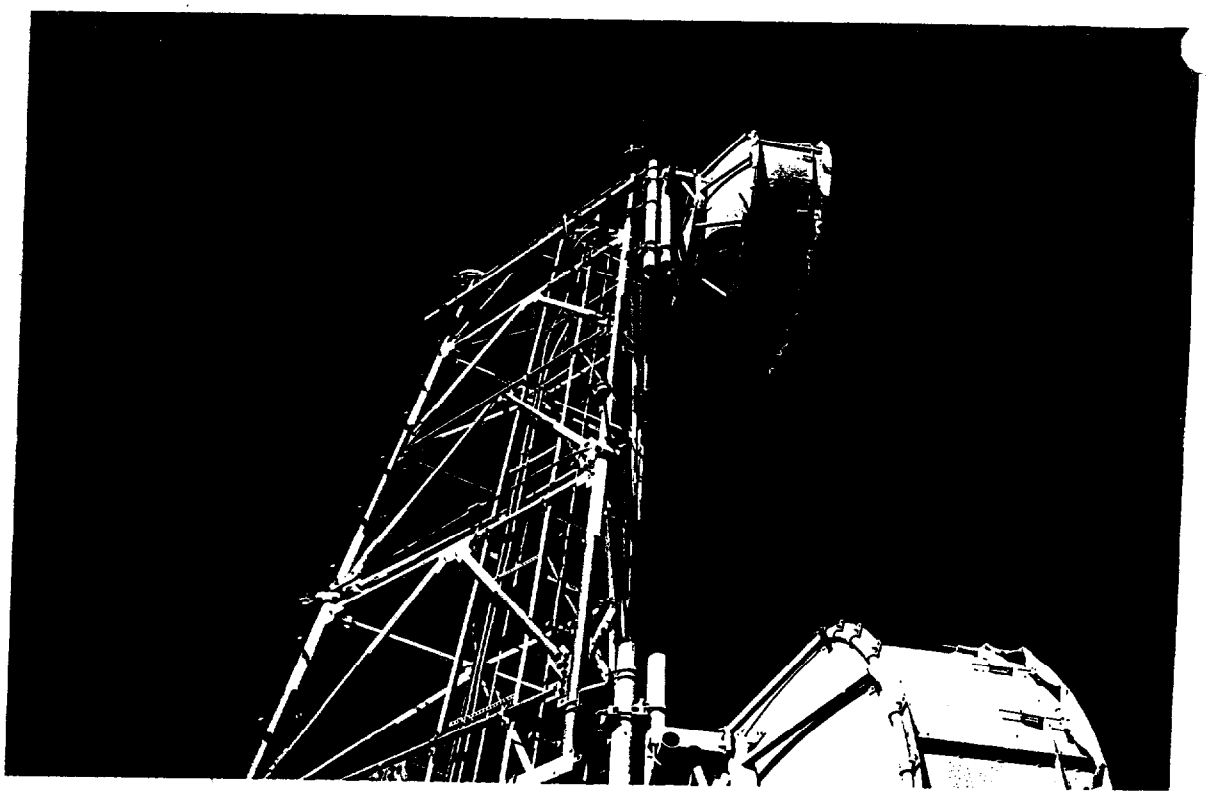
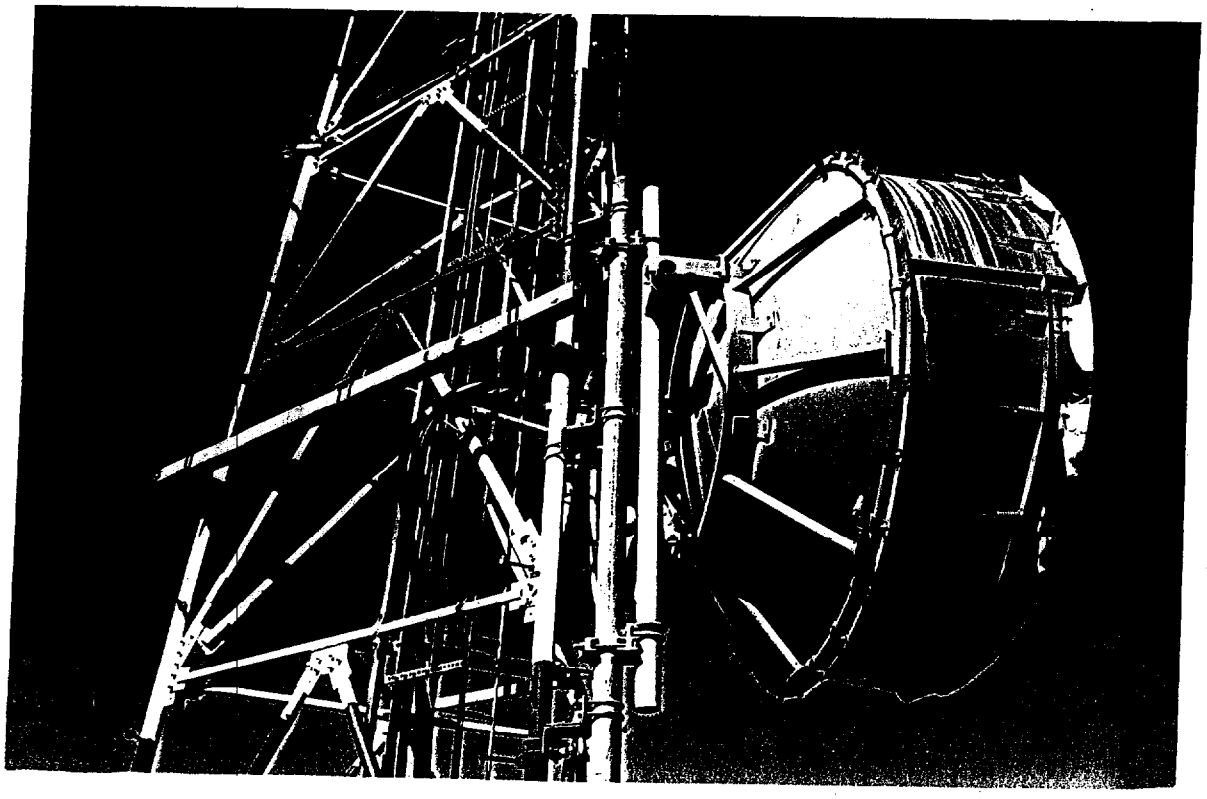


Photos showing existing 8' HP dishes.



Photos taken July 27, 2001 by H. E. Bergeron Engineers, P.A.

40' SELF-SUPPORTING ROOFTOP TOWER
ONE CITY CENTER, PORTLAND, MAINE
PREPARED FOR RURAL CELLULAR CORPORATION

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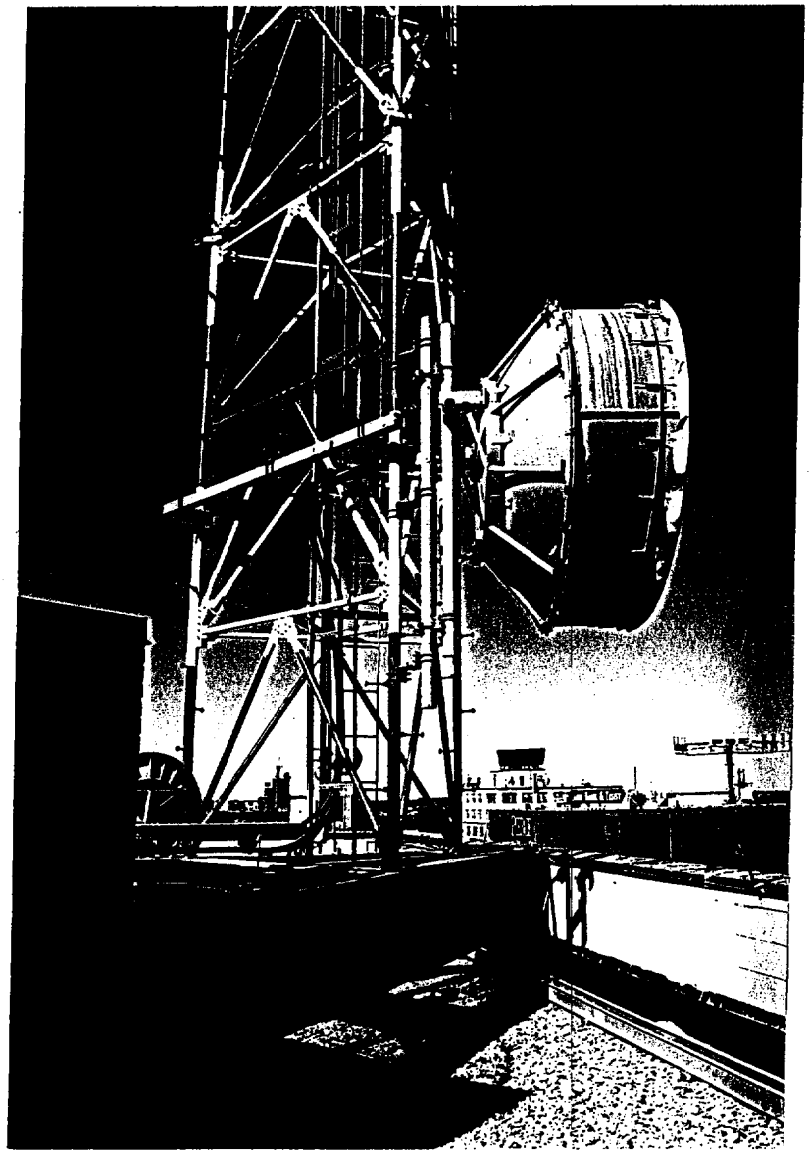

Photo showing base of tower.

Photos taken July 27, 2001 by H. E. Bergeron Engineers, P.A.

Appendix B

Calculations

H. E. BERGERON ENGINEERS, P.A.
2605 White Mountain Highway, PO Box 440
North Conway, NH 03860
(603) 356-6936

Client:	**Rural Cellular Corp**		
Job:	**Portland, ME**	Job No.:	**2001-123-2**
Calculated By:	**J. Klementovich**	Date:	**28-Sep-01**
Checked By:		Date:	

General Information

Tower Manufacturer	Unknown	
Tower Type	Self-supporting Tower	
Total Height of Tower	40	ft.
Wind Speed Cumberland County, ME	80	mph.
Radial Ice	0.5	in.
75% Reduction for ice	yes	(yes or no)
1/3 increase for allowable loads	yes	(yes or no)
Number of faces	3	faces

Antenna Force Calculations based on EIA/TIA-222-F, using the following formulas:
Force on discrete appurtenance: F=Qz*Gh*Ca*A
Force on microwave antennae: F=Cr*A*Gh*Kz*V^2, where Cr=((Ca^2)+(Cs^2))^(1/2)
Gh=.65+.60/(h/33)^(1/7) = Gh= 1.23
V as specified EIA-222-F

Fy	50	ksi
E (Modulus of Elasticity)	29000	ksi
Fb	0.6	
K	1	
Roofline Above Gound Level	180	

Section No.	Section Length	Leg Spread @ Base of section	Leg Size (Description)		Width of Leg to Wind	Leg Properties Area	r_z	Unbraced Lengths
1	20	8.58	3" X-Str.	22.00	3.50	3.02	1.14	120.00
2	20	8.58	2 1/2" X-Str.	18.00	2.88	2.25	0.92	120.00
top		8.58						

40

H. E. BERGERON ENGINEERS, P.A.
2605 White Mountain Highway, PO Box 440
North Conway, NH 03860
(603) 356-6936

Client: **Rural Cellular Corp**
Job: **Portland, ME** Job No.: **2001-123-2**

Calculated By: **J. Klementovich** Date: **28-Sep-01**
Checked By: Date:

Tower Summary

Section ***1*** ***type***

Ag = 178 sf z = 10 ft

	Quantity Per Face	Length (ft.)	Width (in.)	Area (sf)	Area w/ ice	Wt. Per ft.	Wt. (lbs.) Tower	Wt. (lbs.) Ice
Round Members								
Leg	2	20.0	3.5	11.7	15.0	10.3	616.6	146.5
Diagonal	6	8.1	2.4	9.7	13.7	8.2	1201.5	257.2
Horizontal	3	8.5	1.9	4.0	6.2	2.7	208.1	112.1
Flat Members								
Leg	2	20.0	0.0	0.0	3.3	0.0	0.0	23.3
Diagonal		12.9		0.0	0.0		0.0	0.0
				0.0	0.0		0.0	0.0

Section ***2*** ***type***

Ag = 176 sf z = 30 ft

	Quantity Per Face	Length (ft.)	Width (in.)	Area (sf)	Area w/ ice	Wt. Per ft.	Wt. (lbs.) Tower	Wt. (lbs.) Ice
Round Members								
Leg	2	20.0	2.9	9.6	12.9	7.7	459.4	123.6
Diagonal	6	8.1	2.4	9.7	13.7	8.2	1201.5	257.2
Horizontal	3	8.5	1.9	4.0	6.2	2.7	208.1	112.1
Flat Members								
Leg	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diagonal				0.0	0.0		0.0	0.0
				0.0	0.0		0.0	0.0

Section ***top*** ***type***

Ag = 0 sf z = 40 ft

	3	Length (ft.)	Width (in.)	Area (sf)	Area w/ ice	Wt. Per ft.	Wt. (lbs.) Tower	Wt. (lbs.) Ice
Round Members								
Leg	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				0.0	0.0		0.0	0.0
				0.0	0.0		0.0	0.0
Flat Members								
Leg	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diagonal				0.0	0.0		0.0	0.0
				0.0	0.0		0.0	0.0

Section ***0*** ***type***

Ag = 0 sf z = 40 ft

H. E. BERGERON ENGINEERS, P.A.
2605 White Mountain Highway, PO Box 440
North Conway, NH 03860
(603) 356-6936

Client: **Rural Cellular Corp**
Job: **Portland, ME**
Job No.: **2001-123-2**

Calculated By: **J. Klementovich**
Date: **28-Sep-01**
Checked By:
Date:

Antennas

Type	Elev. (z)	Coeff. (C)	Kz	Qz	Area (no Ice)	Area (Ice)	Force (no Ice)	Force (Ice)	Weight (no Ice)	Weight (w/ Ice)	Orient	Ca
			1.62	26.60			0	0				
Beacon	40	1.4	2.98	48.75	3.1	4.0	261	337	50	75		
			1.62	26.60			0	0				
3 Side lights	20	1.4	2.52	41.31	0.7	0.9	48	67	35	70		
			1.62	26.60			0	0				
			1.62	26.60			0	0				
			1.62	26.60			0	0				
			1.62	26.60			0	0				
			1.62	26.60			0	0				
			1.62	26.60			0	0				
			1.62	26.60			0	0				
			1.62	26.60			0	0				
			1.62	26.60			0	0				
			1.62	26.60			0	0				
			1.62	26.60			0	0				
			1.62	26.60			0	0				
			1.62	26.60			0	0				
			1.62	26.60			0	0				
			1.62	26.60			0	0				
			1.62	26.60			0	0				
Dishes												
8' HP Dish	10	0.00323	2.19	35.82	55.6	57.0	3100	3178	450	975	0	0.0032
8' HP Dish	35	0.00323	2.88	47.16	55.6	57.0	4081	4184	450	975	0	0.0032
		0.00000	1.62	26.60			0	0				
		0.00000	1.62	26.60			0	0				
		0.00000	1.62	26.60			0	0				
		0.00000	1.62	26.60			0	0				
		0.00000	1.62	26.60			0	0				
Proposed Antennae												
(9) EMS RV-90-17	23	1.4	2.60	42.65	49.3	60.1	3628	4424	1470	2160		
			1.62	26.60			0	0				
4' Dish	15	0.00320	2.37	38.81	14.2	14.8	850	886	150	250	0	0.0032

Note: Appurtenance Force Coefficients were factored into projected areas to account for member shapes.

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Client:	**Rural Cellular Corp**		
Job:	**Portland, ME**	Job No.:	**2001-123-2**
Calculated By:	**J. Klementovich**	Date:	**28-Sep-01**
Checked By:		Date:	

Existing Wind Load Without Ice

	Midpoint	Areas					Factors										Section	
Section	Height	Gross	Flats	Rounds	Ae	Aa	Df	Dr	Ca	Rr	Kz	Qz	Gh	e	Cf	Wind Load	Length	Uniform Load
1	10	177.5	0.0	25.4	14.7	2.58	1	1	1.2	0.58	1.00	16.38	1.23	0.14	2.80	895 lbs.	20	45 lbs/ft.
2	30	176.5	0.0	23.3	13.5	2.58	1	1	1.2	0.58	1.00	16.38	1.23	0.13	2.84	836 lbs.	20	42 lbs/ft.
top	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.

Existing Wind Load With Ice

	Midpoint	Areas					Factors										Section	
Section	Height	Gross	Flats	Rounds	Ae	Ai	Df	Dr	Ca	Rr	Kz	Qz	Gh	e	Cf	Wind Load	Length	Uniform Load
1	10	177.5	3.3	34.9	24.1	4.25	1	1	1.2	0.59	1.00	16.38	1.23	0.22	2.55	1341 lbs.	20	67 lbs/ft.
2	30	176.5	0.0	32.8	19.3	4.25	1	1	1.2	0.59	1.00	16.38	1.23	0.19	2.64	1134 lbs.	20	57 lbs/ft.
top	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.

H. EDMUND BERGERON CIVIL ENGINEERS, P.A.

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Client:	**Rural Cellular Corp**			
Job:	**Portland, ME**		Job No.:	**2001-123-2**
Calculated By:	**J. Klementovich**		Date:	**28-Sep-01**
Checked By:			Date:	

Proposed Wind Load Without Ice

	Midpoint	Areas					Factors										Section		
Section	Height	Gross	Flats	Rounds	Ae	Aa	Df	Dr	Ca	Rr	Kz	Qz	Gh	e	Cf	Wind Load	Length	Uniform Load	
1	10	177.5	0.0	25.4	14.7	33.67	1	1	1.2	0.58	1.00	16.38	1.23	0.14	2.80	1649 lbs.	20	82 lbs/ft.	1.68
2	30	176.5	0.0	23.3	13.5	7.04	1	1	1.2	0.58	1.00	16.38	1.23	0.13	2.84	944 lbs.	20	47 lbs/ft.	0.35
top	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.	#DIV/0!
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.	#DIV/0!
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.	#DIV/0!
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.	#DIV/0!
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.	#DIV/0!
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.	#DIV/0!
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.	#DIV/0!
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.	#DIV/0!
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.	#DIV/0!
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.	#DIV/0!

Proposed Wind Load With Ice

	Midpoint	Areas					Factors										Section		
Section	Height	Gross	Flats	Rounds	Ae	Ai	Df	Dr	Ca	Rr	Kz	Qz	Gh	e	Cf	Wind Load	Length	Uniform Load	#VALUE!
1	10	177.5	3.3	34.9	24.1	38.25	1	1	1.2	0.59	1.00	16.38	1.23	0.22	2.55	2165 lbs.	20	108 lbs/ft.	1.91
2	30	176.5	0.0	32.8	19.3	8.96	1	1	1.2	0.59	1.00	16.38	1.23	0.19	2.64	1248 lbs.	20	62 lbs/ft.	0.45
top	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.	#DIV/0!
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.	#DIV/0!
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.	#DIV/0!
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.	#DIV/0!
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.	#DIV/0!
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.	#DIV/0!
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.	#DIV/0!
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.	#DIV/0!
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.	#DIV/0!
0	40	0.0	0.0	0.0	0.0	0.00	1	1	1.2	0.57	1.06	17.31	1.23	0.00	3.40	0 lbs.	0	#DIV/0! lbs/ft.	#DIV/0!

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Client:	**Rural Cellular Corp**			
Job:	**Portland, ME**		Job No.:	**2001-123-2**
Calculated By:	**J. Klementovich**		Date:	**28-Sep-01**
Checked By:			Date:	

Uplift Due to Moment Minus 1/3 Dead & Ice Loads

	Existing W_o-DL	$.75W_I$-DL-I	W_I-DL-I	***Proposed*** W_o-DL	$.75W_I$-DL-I	W_I-DL-I
Elev.	Force	Force	Force	Force	Force	Force
0	27.9	21.9	30.0	42.3	34.7	47.0
20	9.3	7.0	9.7	10.9	8.5	11.7
40	0.0	0.0	0.0	0.0	0.0	0.0
1000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
40	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
40	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
40	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
40	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Tension in Bolts

		Existing W_o-DL	$.75W_I$-DL-I	W_I-DL-I	***Proposed*** W_o-DL	$.75W_I$-DL-I	100% wind/ice W_I-DL-I
Elev.	# of Bolts	Tension/Bolt	Tension/Bolt	Tension/Bolt	Tension/Bolt	Tension/Bolt	Tension/Bolt
0	3	9.29	7.30	9.99	14.09	11.56	15.68
20	4	2.32	1.75	2.43	2.72	2.12	2.92
40		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1000		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
40		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1000		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
40		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1000		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
40		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1000		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
40		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1000		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Maximum Shear in Bolts

		Existing			***Proposed***		
Elev.	Bolt Size (dia.)	W_o	$.75W_I$	W_I	W_o	$.75W_I$	W_I
0	5/8	1.02	0.85	1.14	1.62	1.37	1.83
20	7/8	0.51	0.44	0.58	0.88	0.77	1.03
40		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1000		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
40		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1000		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
40		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1000		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
40		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1000		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
40		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1000		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

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Client: **Rural Cellular Corp**
Job: **Portland, ME** Job No.: **2001-123-2**

Calculated By: **J. Klementovich** Date: **28-Sep-01**
Checked By: Date:

Evaluation of Bracing Members

Center Bolted? Yes
Yield Strength (F_Y): 36 ksi C_C = 126.1

Section	Member	K Value	Length (ft.)	r_x (in.)	r_z (in.)	Area (in.^{2})	kL/r_x	kL/r_z	All. Tens. (k)	F_a (ksi)	All. Comp. (k)
1	2 1/2" Std. Pipe	1.0	11.68	1.240	0.791	1.94	84.8	88.6	41.90	14.37	27.88
2			11.68				#DIV/0!	#DIV/0!	0.00	######	#DIV/0!
3			0.00				#DIV/0!	#DIV/0!	0.00	######	#DIV/0!
4			0.00				#DIV/0!	#DIV/0!	0.00	######	#DIV/0!
5			0.00				#DIV/0!	#DIV/0!	0.00	######	#DIV/0!
6			0.00				#DIV/0!	#DIV/0!	0.00	######	#DIV/0!
7			0.00				#DIV/0!	#DIV/0!	0.00	######	#DIV/0!
8			0.00				#DIV/0!	#DIV/0!	0.00	######	#DIV/0!
9			0.00				#DIV/0!	#DIV/0!	0.00	######	#DIV/0!
10			0.00				#DIV/0!	#DIV/0!	0.00	######	#DIV/0!
11			0.00				#DIV/0!	#DIV/0!	0.00	######	#DIV/0!
12			0.00				#DIV/0!	#DIV/0!	0.00	######	#DIV/0!

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Client:	Rural Cellular Corp		
Job:	Portland, ME	Job No.:	2001-123-2
Calculated By:	J. Klementovich	Date:	28-Sep-01
Checked By:		Date:	

Evaluation of Leg Members

						Existing		Proposed	
Section	Size	Kl/r	Cc	Fa allow	133% Allow	D+W$_o$	D+.75Wi+I	D+W$_o$	D+.75Wi+I
1	3" X-Str.	105.26	106.94	13.45	17.93	10.31	8.82	15.28	13.38
2	2 1/2" X-Str.	129.87	106.94	8.84	11.79	4.83	4.14	5.76	5.11
top	0.00	#DIV/0!	106.94	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0	0.00	#DIV/0!	106.94	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0	0.00	#DIV/0!	106.94	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0	0.00	#DIV/0!	106.94	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0	0.00	#DIV/0!	106.94	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0	0.00	#DIV/0!	106.94	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0	0.00	#DIV/0!	106.94	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0	0.00	#DIV/0!	106.94	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0	0.00	#DIV/0!	106.94	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0	0.00	#DIV/0!	106.94	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Percent Capacity

		Existing			Proposed			Maximum	
Section	Elev.	D+W$_o$	D+.75Wi+I	Secondary	D+W$_o$	D+.75Wi+I	Secondary	Existing	Proposed
1	0	57%	*49%*	0%	*85%*	*75%*	0%	***57%***	***85%***
2	20	41%	*35%*	0%	*49%*	*43%*	0%	***41%***	***49%***
top	40	#DIV/0!	*#DIV/0!*	#DIV/0!	*#DIV/0!*	*#DIV/0!*	#DIV/0!	***#DIV/0!***	***#DIV/0!***
0	1000	#DIV/0!	*#DIV/0!*	#DIV/0!	*#DIV/0!*	*#DIV/0!*	#DIV/0!	***#DIV/0!***	***#DIV/0!***
0	40	#DIV/0!	*#DIV/0!*	#DIV/0!	*#DIV/0!*	*#DIV/0!*	#DIV/0!	***#DIV/0!***	***#DIV/0!***
0	1000	#DIV/0!	*#DIV/0!*	#DIV/0!	*#DIV/0!*	*#DIV/0!*	#DIV/0!	***#DIV/0!***	***#DIV/0!***
0	40	#DIV/0!	*#DIV/0!*	#DIV/0!	*#DIV/0!*	*#DIV/0!*	#DIV/0!	***#DIV/0!***	***#DIV/0!***
0	1000	#DIV/0!	*#DIV/0!*	#DIV/0!	*#DIV/0!*	*#DIV/0!*	#DIV/0!	***#DIV/0!***	***#DIV/0!***
0	40	#DIV/0!	*#DIV/0!*	#DIV/0!	*#DIV/0!*	*#DIV/0!*	#DIV/0!	***#DIV/0!***	***#DIV/0!***
0	1000	#DIV/0!	*#DIV/0!*	#DIV/0!	*#DIV/0!*	*#DIV/0!*	#DIV/0!	***#DIV/0!***	***#DIV/0!***
0	40	#DIV/0!	*#DIV/0!*	#DIV/0!	*#DIV/0!*	*#DIV/0!*	#DIV/0!	***#DIV/0!***	***#DIV/0!***
0	1000	#DIV/0!	*#DIV/0!*	#DIV/0!	*#DIV/0!*	*#DIV/0!*	#DIV/0!	***#DIV/0!***	***#DIV/0!***

Maximum Reactions:

Design: Exceedance:

Uplift:	**42.3 kips**
Compression:	**46.1 kips**
Total Shear:	**14.6 kips**
Overturning Moment:	**326.3 ft-kips**

207 945-4225

APPLICATION FOR EXEMPTION FROM SITE PLAN REVIEW

TLA SPECTRUM LLC
Applicant

9-24-01
Application Date

3905 DAKOTA ST. ALEXANDRIA MN. 56308
Applicant's Mailing Address

ONE CITY CENTER ADDITION
Project Name/Description

RAY McCORMICK (207) 945-9979
Consultant/Agent/Phone Number

ONE CITY CENTER PORTLAND, ME.
Address of Proposed Site

CBL: ~~27~~ F - ALL #S
32-L-002

Description of Proposed Development:
TO ADD NINE ADDITIONAL PANEL ANTENNAS TO EXISTING COMMUNICATIONS DESIGN TOWER ATOP ONE CITY CENTER TO PROVIDE PCS TELECOMMUNICATIONS SERVICE, AND 4ft Microwave Dish – OK Sarah Hopkins

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	YES	✓
b) Footprint Increase Less Than 500 Sq. Ft.	YES	✓
c) No New Curb Cuts, Driveways, Parking Areas	N/A	✓
d) Curbs and Sidewalks in Sound Condition/ Comply with ADA	N/A	✓
e) No Additional Parking / No Traffic Increase	N/A	✓
f) No Stormwater Problems	N/A	✓
g) Sufficient Property Screening	N/A	✓
h) Adequate Utilities	YES	✓

Planning Office Use Only:

Exemption Granted ✓ Partial Exemption Exemption Denied