STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square
New Britain, Connecticut 06051
Phone: (860) 827-2935
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March 26, 2003

Diane W. Whitney
Stephen J. Humes
LeBoeuf, Lamb, Greene & MacRae
Goodwin Square
225 Asylum Street
Hartford, CT 06103

RE: **TS-T-MOBILE-078-030314** - Omnipoint Communications, Inc., a subsidiary of T-Mobile USA, Inc., request for an order to approve tower sharing at a proposed telecommunications facility located at 82 North Eagleville Road, Storrs, Connecticut.

Dear Attorney Whitney and Attorney Humes:

At a public meeting held March 25, 2003, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility may require an explicit request to this agency pursuant to General Statutes § 16-50aa or notice pursuant to Regulations of Connecticut State Agencies Section 16-50j-73, as applicable. Such request or notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction.

The proposed shared use is to be implemented as specified in your letter dated March 14, 2003.

Thank you for your attention and cooperation.

Very truly yours,

Pamela B. Katz

Pamela B. Katz, P.E.
Chairman

PBK/laf

c: Honorable Elizabeth Patterson, Mayor, Town of Mansfield
Martin H. Berliner, Town Manager, Town of Mansfield
Gregory Padick, Town Planner, Town of Mansfield
John Murphy, General Manager, WHUS Radio
Paul Shapiro, Assistant Attorney General, University of Connecticut
Thomas Regan, Esq., Brown Rudnick Berlack Israels LLP
Christopher B. Fisher, Esq., Cuddy & Feder & Worby LLP

LEBOEUF, LAMB, GREENE & MACRAE
L.L.P.
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March 14, 2003

Pamela Katz, Chairman
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: Request by T-Mobile for an Order to Approve the Shared Use of a Tower Facility at The University of Connecticut, 82 North Eagleville Road, Storrs, Connecticut

Dear Chairman Katz and Members of the Council:

Please be advised that LeBoeuf, Lamb, Greene & MacRae, L.L.P. represents Omnipoint Communications, Inc., a subsidiary of T-Mobile USA, Inc. (hereinafter T-Mobile) in the above-referenced matter. T-Mobile is the successor to VoiceStream Wireless Corp. by virtue of a recent corporate name change and nationwide re-branding strategy. Pursuant to Connecticut General Statutes §16-50aa, T-Mobile hereby requests an order from the Connecticut Siting Council ("Council") approving T-Mobile's proposed shared use of an existing tower located at 82 North Eagleville Road, on the University Of Connecticut ("UConn") campus in Storrs, Connecticut. T-Mobile proposes to install antennas on the existing tower, and the equipment associated with this facility would be located near the base of the tower within the existing compound (see drawing A-1 attached as part of Exhibit B). T-Mobile requests that the Council find that the proposed shared use of the tower satisfies the criteria stated in §16-50aa and issue an order approving the proposed use. The chief elected official of Mansfield, the host town, has been notified via First Class Mail.

Background

T-Mobile operates "Wideband PCS" licenses for the 2-Ghz PCS frequencies for the greater New York City area, including the entire State of Connecticut. Omnipoint is licensed by the Federal Communications Commission (FCC) to provide PCS wireless telecommunications service in Connecticut, which includes the area to be served by the proposed installation.

The tower at 82 North Eagleville Road, Storrs, is a two hundred thirty-five foot (235') self-supporting lattice tower. The coordinates for the site are **41°-48'-50" N** and **72°-15'-33" W**. The tower is located over sixteen hundred feet (1,600') north of North Eagleville Road, and west of Storrs Road (Route 195) in Storrs. The site is on top of a large hill behind a cemetery in the northern portion of the UConn campus. The tower is owned by UConn and is in an area containing several communications towers and associated equipment. T-Mobile and the owner have agreed to mutually acceptable terms and conditions for the proposed shared use of this tower, and the owner has authorized T-Mobile to act on its behalf to apply for all necessary local, state and federal permits, approvals and authorizations which may be required for the proposed shared use of this facility. The tower is designed and built to hold multiple carrier antennas at multiple elevations above ground level ("AGL"). These elevations are listed on the elevation drawing 1, A-2 attached as part of Exhibit B. Currently there are multiple "whip," "yagi" and "dish" antennas as well as other communications equipment on the tower. Sprint currently has telecom antennas at the two hundred forty-five foot (245'-0") centerline AGL. AT&T recently applied to the Council to install antennas at the one hundred sixty foot level (160'-0") AGL.

T-Mobile proposes to install an antenna cluster comprised of three (3) sectors, with four (4) antennas per sector for a total of twelve (12) antennas. The model number for each antenna is EMS RR90-17-02 DP. The antennas would be mounted on antenna "standoff frames" at the two hundred thirty-five foot (235'-0") centerline AGL. The antenna mounting plan is shown on drawing 2, A-2 attached as part of Exhibit B. The radio transmission equipment associated with these antennas, three (3) Nortel S8000 BTS cabinets, would be located near the base of the tower on two proposed five foot by ten foot (5'-0" x 10'-0") concrete pads within a leased fifteen foot by fifteen foot (15' x 15') square area. The tower and all of the equipment for all existing and proposed carriers is within a large existing compound surrounded by a gated six foot (6') high chain link fence with three strands of barbed wire. (shown on drawing 2, A-1, attached as part of Exhibit B). Access to the compound is via an existing access road. Utilities will be run from existing utility sources approved by UConn via underground conduits (shown in drawing 1, A-1, attached as part of Exhibit B).

C.G.S. §16-50aa (c) (1) provides, in pertinent part, that upon written request for approval of a proposed shared use, "if the council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns, the council shall issue an order approving such shared use." The shared use of the tower satisfies those criteria as follows:

A. **Technical Feasibility** - The existing tower and compound were designed to accommodate multiple carriers. A structural analysis of the tower with the proposed T-Mobile installation has been performed and is attached as Exhibit D. The proposed shared use of this tower therefore is technically feasible.

B. Legal Feasibility Under C.G.S. § 16-50aa, the Council has been authorized to issue orders approving the proposed shared use of an existing tower facility such as the facility at North Eagleville Road in Storrs. This authority complements the Council's prior-existing authority under C.G.S. § 16-50p to issue orders approving the construction of new towers that are subject to the Council's jurisdiction. C.G.S. § 16-50x(a) vests exclusive jurisdiction over these facilities in the Council, which shall "give such consideration to other state laws and municipal regulations as it shall deem appropriate" in ruling on requests for the shared use of existing tower facilities. Under this statutory authority vested in the Council, an order by the Council approving the shared use would permit the Applicant to obtain a building permit for the proposed installations.

C. Environmental Feasibility The proposed shared use would have minimal environmental effects, if any, for the following reasons:

1. The proposed installations (i.e., three (3) sectors with four (4) antennas per sector) would have an insignificant incremental visual impact, and would not cause any significant change or alteration in the physical or environmental characteristics of the existing site. In particular, the proposed installations would not increase the height of the existing tower, and would not extend the boundaries of the existing compound area. The tower is designed to accommodate multiple carriers

2. The proposed installations would not increase the noise levels at the existing facility by six decibels or more.

3. Operation of antennas at this site would not exceed the total radio frequency electromagnetic radiation power density level adopted by the American National Standards Institute ("ANSI"). The "worst-case" exposure calculated for operation of this facility (i.e., calculated at the base of the tower, which represents the closest publicly accessible point within the broadcast field of the antennas) will be 0.01358 mW/cm2, which is 1.358% of the Maximum Permissible Emission (MPE). The combined power density calculations from other carriers is 6.2907% of the MPE. This accounts for a combined power density of 7.649% of the MPE standard. These calculations are attached as Exhibit E.

4. The proposed installations would not require any water or sanitary facilities, or generate air emissions or discharges to water or sanitary facilities, or generate air emissions or discharges to water bodies. After construction is complete (approximately two (2) weeks), the proposed installations would not generate any traffic other than periodic maintenance visits.

The proposed use of this facility would therefore have a minimal environmental effect, if any, and is environmentally feasible.

D. Economic Feasibility As previously mentioned, the owner and T-Mobile have entered into a mutual agreement to share the use of the existing tower on terms agreeable to the parties. The proposed tower sharing is therefore economically feasible.

E. Public Safety Concerns As stated above, the existing tower is structurally capable of supporting the proposed T-Mobile antennas. The tower stands on a compound accessible from North Eagleville Road, via an access road. T-Mobile is not aware of any public safety concerns relative to the proposed sharing of the existing tower. In fact, the provision of new or improved phone service through shared use of the existing tower will enhance the safety and welfare of area residents and the public.

Conclusion

For the reasons discussed above, the proposed shared use of the existing tower facility at North Eagleville Road in Storrs, Connecticut satisfies the criteria stated in C.G.S. §16-50aa, and advances the General Assembly's and the Council's goal of preventing the unnecessary proliferation of towers in Connecticut. T-Mobile therefore respectfully requests that the Council issue an order approving the proposed shared use of this tower.

Thank you for your consideration of this matter.

Respectfully submitted,

T-MOBILE USA, INC.

By: _____

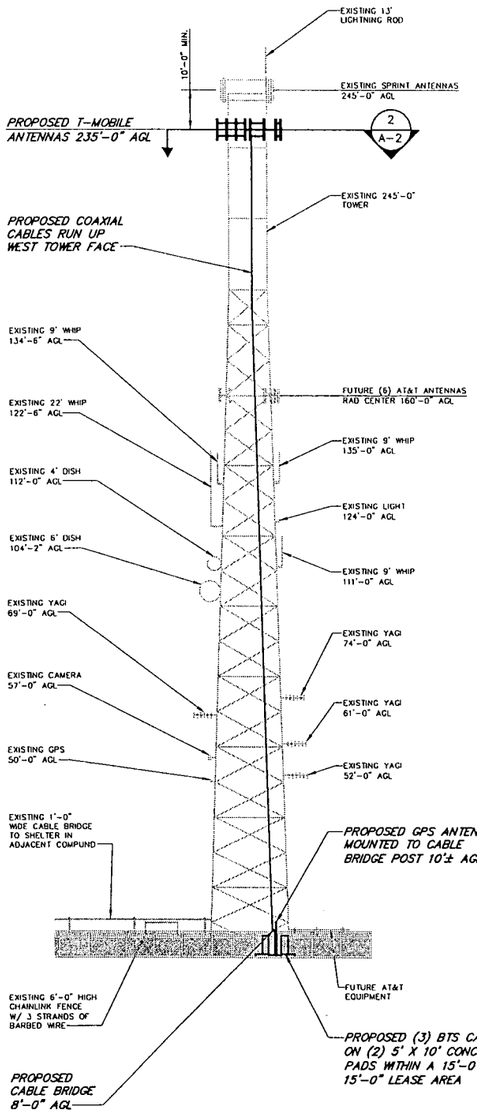
Its Counsel
Diane W. Whitney
Stephen J. Humes

Attachments

cc: Mayor Elizabeth A. Paterson, Town of Mansfield

Exhibit A

Site Map
North Eagleville Road
Storrs, Connecticut



EXISTING ANTENNAS ON NORTH TOWER LEG (NOT IN VIEW):

12 ELEMENT YAGI 32'-8" AGL
12 ELEMENT YAGI 37'-6" AGL
12 ELEMENT YAGI 38'-9" AGL
10 ELEMENT YAGI 42'-8" AGL
12 ELEMENT YAGI 51'-6" AGL
10 ELEMENT YAGI 62'-3" AGL
8 ELEMENT YAGI 74'-3" AGL

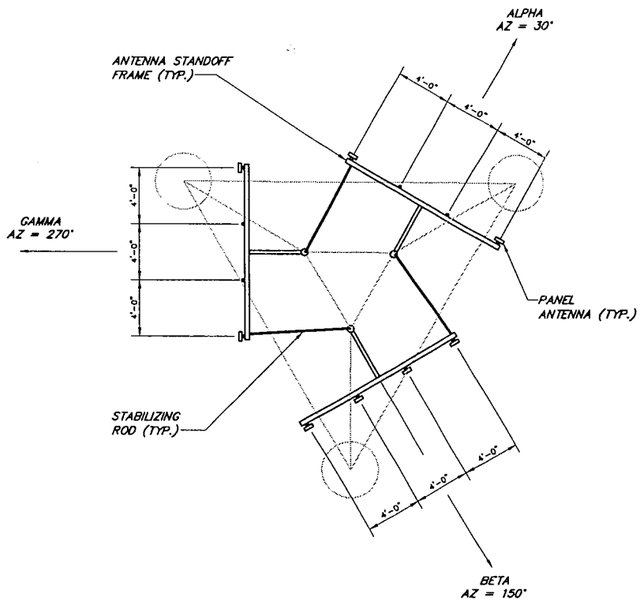
ANALYSIS OF THE STRUCTURAL ADEQUACY OF THE EXISTING TOWER AND FOUNDATION ARE NOT INCLUDED IN THIS DESIGN. THE EXISTING TOWER AND FOUNDATION HAVE BEEN ANALYZED BY PIROD INC. FOR THIS SITE. THE RESULTS AND CONCLUSIONS ARE SUMMARIZED IN A REPORT PREPARED BY THAT FIRM, DATED OCTOBER 22, 2002. PER THIS LETTER, THE TOWER AND FOUNDATION MEET THE REQUIREMENTS OF THE APPLICABLE CODE, TIA/EIA-222-F AND REQUIRE NO MODIFICATIONS.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

EAST ELEVATION (1 / A-2)
SCALE: 1" = 20'



GRAPHIC SCALE

5 0 2.5 5 10 20

(IN FEET)
1 inch = 5 ft.

ANTENNA MOUNTING PLAN (2 / A-2)
SCALE: 1" = 5'

TRUE NORTH

PER FCC MANDATE, ENHANCED EMERGENCY (E911) SERVICE IS REQUIRED TO MEET NATIONWIDE STANDARDS FOR WIRELESS COMMUNICATIONS SYSTEMS. T-MOBILE IMPLEMENTATION REQUIRES DEPLOYMENT OF EQUIPMENT AND ANTENNAS GENERALLY DEPICTED ON THIS PLAN, ATTACHED TO OR MOUNTED IN CLOSE PROXIMITY TO THE BTS RADIO CABINETS. T-MOBILE RESERVES THE RIGHT TO MAKE REASONABLE MODIFICATIONS TO E911 EQUIPMENT AND LOCATION AS TECHNOLOGY EVOLVES TO MEET REQUIRED SPECIFICATIONS.

T-Mobile
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BLOOMFIELD, CT 06002
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FAX: (860)-692-7159

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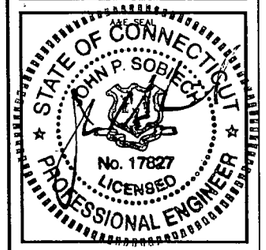


APPROVALS

LANDLORD _____
LEASING _____
R.F. _____
ZONING _____
CONSTRUCTION _____
A/E _____

PROJECT NO: 10585-1004

DRAWN BY: PAL

CHECKED BY: RJT

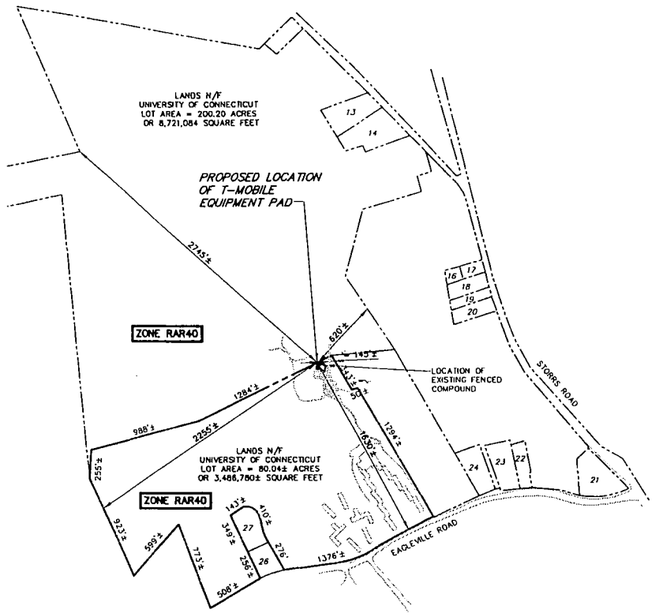
SUBMITTALS

1	12/16/02	RE-ISSUED FOR CONSTRUCTION
0	11/18/02	ISSUED FOR CONSTRUCTION

CT-11-303B
UNIVERSITY OF CONNECTICUT
82 NORTH EAGLEVILLE ROAD
STORRS, CT 06268

SHEET TITLE
SITE ELEVATION & ANTENNA PLAN

SHEET NUMBER
A-2



NOTE

1) PLOT PLAN BASED ON TAX MAP FROM TOWN OF STORRS
2) SETBACKS ARE FROM PROPERTY LINES TO T-MOBILE EQUIPMENT

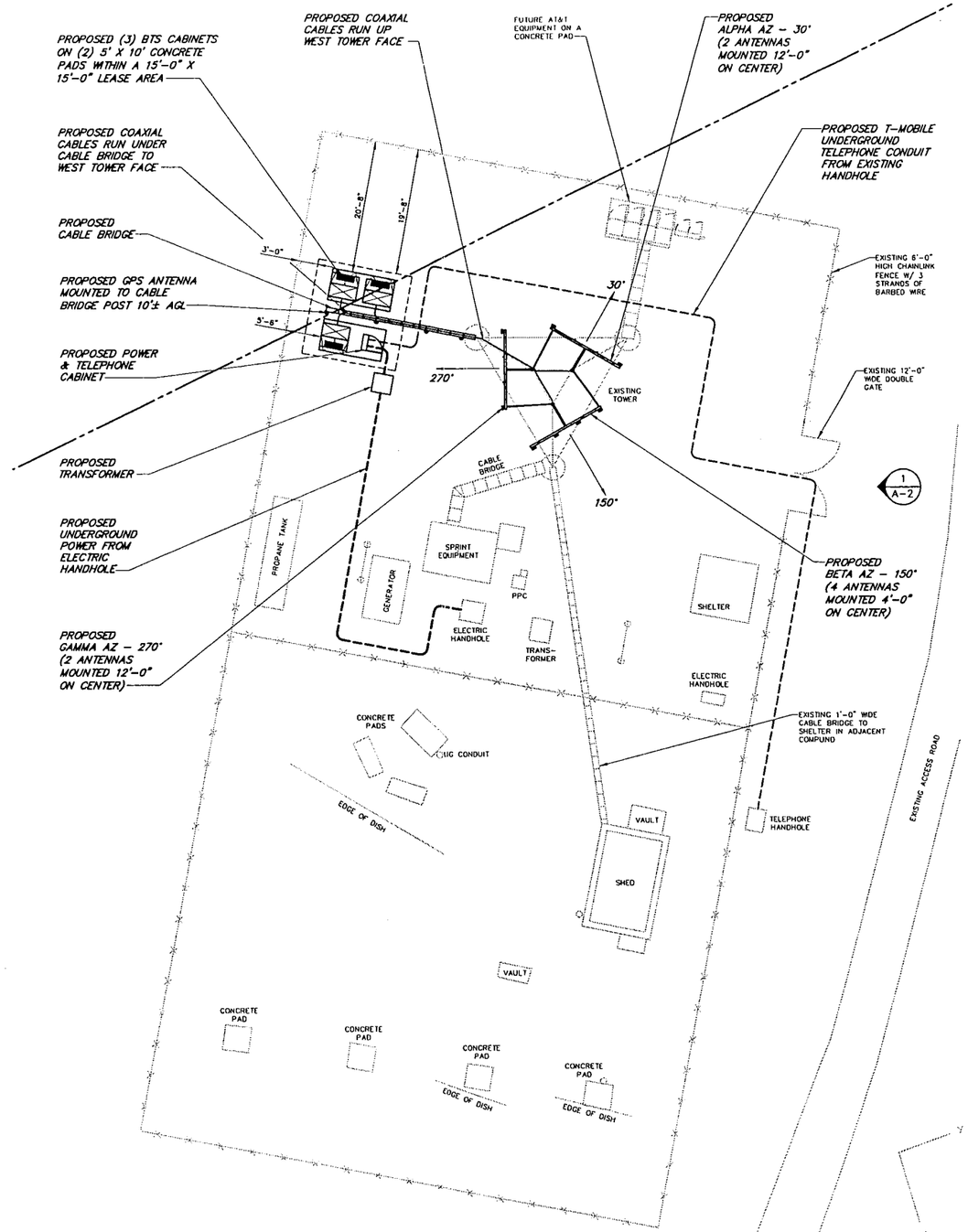
GRAPHIC SCALE

800 0 300 600 1200 2400

(IN FEET)
1 inch = 600 ft

PLOT PLAN (1 / A-1)
SCALE: 1" = 600'

TRUE NORTH



GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft

PARTIAL SITE / EQUIPMENT PLAN (2 / A-1)
SCALE: 1" = 10'

TRUE NORTH

PER FCC MANDATE, ENHANCED EMERGENCY (E911) SERVICE IS REQUIRED TO MEET NATIONWIDE STANDARDS FOR WIRELESS COMMUNICATIONS SYSTEMS. T-MOBILE IMPLEMENTATION REQUIRES DEPLOYMENT OF EQUIPMENT AND ANTENNAS GENERALLY DEPICTED ON THIS PLAN, ATTACHED TO OR MOUNTED IN CLOSE PROXIMITY TO THE BTS RADIO CABINETS. T-MOBILE RESERVES THE RIGHT TO MAKE REASONABLE MODIFICATIONS TO E911 EQUIPMENT AND LOCATION AS TECHNOLOGY EVOLVES TO MEET REQUIRED SPECIFICATIONS.

GENERAL NOTES

1. ALL DIMENSIONS SHOWN THUS ± ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS WHICH EFFECTS THE CONTRACTORS WORK. CONTRACTOR TO VERIFY ALL DIMENSIONS WITH OWNER PRIOR TO CONSTRUCTION.
2. NORTH ARROW SHOWN ON PLANS REFERS TO TRUE NORTH. CONTRACTOR SHALL VERIFY TRUE NORTH AND INFORM CONSTRUCTION MANAGER OF ANY DISCREPANCIES BEFORE STARTING CONSTRUCTION.
3. THE GENERAL CONTRACTOR AND OR HIS SUB CONSULTANT SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTRY OR LOCAL GOVERNMENT AUTHORITY.
4. ANTENNA INSTALLATION SHALL BE CONDUCTED BY FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF RADIO ANTENNAS, TRANSMISSION LINES AND SUPPORT STRUCTURES.
5. COAXIAL CABLE CONNECTORS AND TRANSMITTER EQUIPMENT SHALL BE PROVIDED BY THE OWNER AND IS NOT INCLUDED IN THESE CONSTRUCTION DOCUMENTS. A SCHEDULE OF OWNER SUPPLIED MATERIALS IS ATTACHED TO THE BID DOCUMENTS (SEE ATTACHMENT K). ALL OTHER HARDWARE TO BE PROVIDED BY THE CONTRACTOR. CONNECTION HARDWARE SHALL BE STAINLESS STEEL.
6. ANY EQUIPMENT THAT IS TO BE PAINTED SHALL BE PAINTED TO MATCH EXISTING. PAINT SHALL BE SHERWIN WILLIAMS, COROTHANE II. SURFACE PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS AND OMNIPOINT GUIDELINES.
7. COORDINATION, LAYOUT, AND FURNISHING OF CONDUIT, CABLE AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
8. PRIOR TO EXCAVATION NEAR (E)TOWER, CONTRACTOR TO CONTACT AND COORDINATE WITH PROPERTY OWNER.
9. ALL (E)ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW.
10. ALL (E)INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF UTILITY COMPANY ENGINEERING.
11. THE AREAS OF THE PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE EQUIPMENT, DRIVEWAY OR GRAVEL, SHALL BE GRADED TO A UNIFORM SLOPE, FERTILIZED, SEEDED AND COVERED WITH MULCH.
12. THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN SOIL EROSION AND SEDIMENTATION CONTROLS AT ALL TIMES DURING CONSTRUCTION.
13. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.

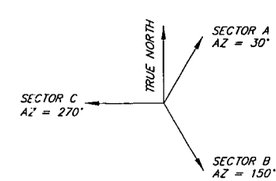
ABBREVIATIONS

ADJ	ADJUSTABLE	SF	SQUARE FOOT
APPROX	APPROXIMATE	SHT	SHEET
C	CONDUIT	SIM	SIMILAR
CONC	CONCRETE	STL	STEEL
CONT	CONTINUOUS	TOC	TOP OF CONCRETE
CJ	CONSTRUCTION JOINT	TOM	TOP OF MASONRY
DIA	DIAMETER	TYP	TYPICAL
DWG	DRAWING	VIF	VERIFY IN FIELD
EGB	EQUIPMENT GROUND BAR	UON	UNLESS OTHERWISE NOTED
EA	EACH	WWF	WELDED WIRE FABRIC
ELEC	ELECTRICAL	W/	WITH
EL	ELEVATION	BTS	BASE TRANSMISSION STATION
EQ	EQUAL	LNA	LOW NOISE AMPLIFIER
EQUIP	EQUIPMENT		
(E)	(E)		
EXT	EXTERIOR	PCS	PERSONAL COMMUNICATIONS SERVICES
FF	FINISHED FLOOR		
FG	FINISHED GRADE		
GA	GAUGE	A-1	ANTENNA MARK NO.
GALV	GALVANIZED		
GC	GENERAL CONTRACTOR		
LG	LONG	PL	PLATE
MAX	MAXIMUM	&	AND
MECH	MECHANICAL	@	AT
MFR	MANUFACTURER		
MGB	MASTER GROUND BAR		
MIN	MINIMUM		
MTL	METAL		
NIC	NOT IN CONTRACT		
NTS	NOT TO SCALE		
OC	ON CENTER		
OPP	OPPOSITE		

SYMBOLS AND MATERIALS

NEW ANTENNA	GROUT / PLASTER
EXISTING ANTENNA	BRICK
ASPHALT	MASONRY
NEW ACCESS EASEMENT	CONCRETE
CONCRETE	EARTH
ELECTRIC BOX	GRAVEL
LIGHT POLE	PLYWOOD
FND. MONUMENT	SAND
X103 SPOT ELEVATION	WOOD CONT.
SET POINT	WOOD BLOCKING
REVISION	STEEL
GRID REFERENCE	CENTER LINE
DET. # / SHT. # DETAIL REFERENCE	PROPERTY LINE
	STEPPED FOOTING
DET. # / SHT. # ELEVATION	MATCH LINE
	WORK POINT
	G GROUND WIRE
DET. # / SHT. # SECTIONS & DETAILS	COAXIAL CABLE

ANTENNA ORIENTATION KEY



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STATE OF CONNECTICUT
JOHN P. SOBIECH
No. 17827
LICENSED PROFESSIONAL ENGINEER

APPROVALS

LANDLORD _____
LEASING _____
R.F. _____
ZONING _____
CONSTRUCTION _____
A/E _____

PROJECT NO: 10585-1004

DRAWN BY: PAL

CHECKED BY: RJT

SUBMITTALS

2	12/20/02	RE-ISSUED FOR CONSTRUCTION
1	12/16/02	RE-ISSUED FOR CONSTRUCTION
0	11/18/02	ISSUED FOR CONSTRUCTION

CT-11-303B
UNIVERSITY OF CONNECTICUT
82 NORTH EAGLEVILLE ROAD
STORRS, CT 06268

SHEET TITLE
PLOT PLAN & PARTIAL SITE PLAN

SHEET NUMBER
A-1

Exhibit B

Design Drawings

North Eagleville Road
Storrs, Connecticut

Exhibit C

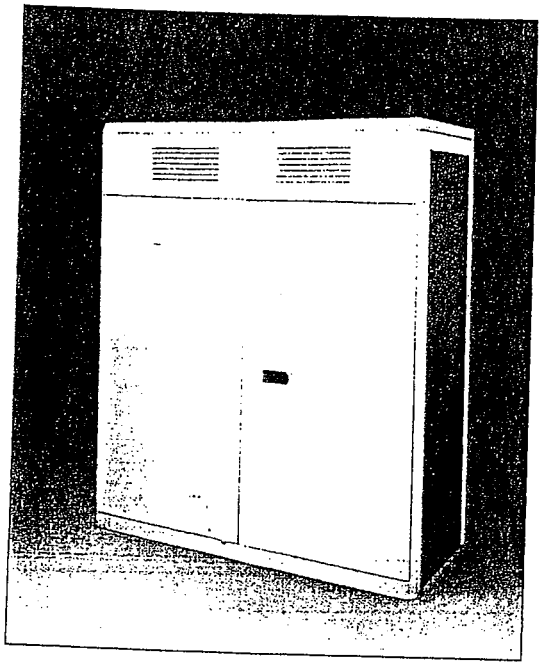
Equipment Specifications

North Eagleville Road
Storrs, Connecticut

GSM 900 / DCS 1800 / PCS 1900

NORTEL
NORTHERN TELECOM

S8000 Outdoor Base Transceiver Station



Nortel's S8000 Outdoor Base Transceiver Station has been designed to meet the economic and performance requirements of network operators. Based on a highly integrated RF and digital design, the S8000 Outdoor Base Transceiver Station represents a major technology advancement and delivers all the benefits of a compact, modular, high quality and high performance product.

Nortel's S8000 Outdoor BTS: Radio Performance Leadership - Reduced Site Acquisition and Operating Costs

Installation

- The S8000 Outdoor Base Transceiver Station (BTS) offers compact packaging and requires minimal floor space, only .88 sq m (9.5 sq ft.). Front only access keeps total space required, including maintenance access, to only 1.8 sq m (19.4 sq ft) per cabinet.

Transmission

- Integrated drop and insert connection to the Base Station Controller (BSC) and signaling concentration on the A-bis interface provide significant transmission cost reduction.
- Optional integrated digital microwave radio.

Maintenance

- Highly reliable technology, redundant architecture and integrated battery backup ensure high availability service.
- Front access and interconnections, as well as powerful fault detection, help reduce lifetime maintenance costs.

Industry leading performance

- New RF technology and advanced digital processing techniques provide very high receive sensitivity (-108 dBm guaranteed) and improved diversity gain (up to 6 dB). This provides higher resistance to interference, as well as, improved speech quality and cell coverage.
- Nortel's proven experience in frequency hopping, 1*3 frequency reuse, sophisticated microcellular handover algorithms and support of half-rate vocoders enables the operator to maximize use of available spectrum and deploy fewer cell sites.

Fast network deployment

- The S8000 BTS can be shipped fully equipped and tested, which provides fast network roll out to meet operator time to market requirements.

Modular and flexible configuration

- The S8000 supports eight transceivers (TRX) per cabinet in Omni and sectored configurations. The typical one cabinet S222 configuration may be expanded up to S332 or S422 without an additional cabinet.

Technical Data

• Frequency range		900 MHz GSM
		900 MHz GSM extended
		1800 MHz DCS
		1900 MHz PCS
• Receive sensitivity (guaranteed)		-108 dBm
• Dimensions	Height	1600 mm / 5 ft. 3 in.
	Width	1350 mm / 4 ft. 5 in.
	Depth	650 mm / 2 ft. 1 in.
• Weight	Fully equipped	600 kg / 1300 lbs.
• Capacity		8 TRX per cabinet
		up to 3 cabinets
• Configuration	Trisectorial	up to S888
	Omnidirectional	up to O16
• Amplifier output power		30 W (± 1.5 dB)
• Power control	Static	6 steps of 2 dB
	Dynamic	15 steps of 2 dB
• Frequency hopping		RF synthesized
		baseband
• Supported vocoders		Full rate
		Enhanced full rate
		Half rate
• Encryption algorithms		A5/1 A5/2
• Power supply		230V AC 50/60 Hz
• Power back-up		Integrated battery back-up plus optional battery cabinet allows provisioning up to 8 hours back-up time.
• Operating temperature range		-40°C to +50°C
		-40°F to +122°F

For more information,
please contact your local Nortel account representative.

In the USA:
Northern Telecom
2221 Lakeside Boulevard
Richardson TX 75082
USA
Telephone: 1-800-4 NORTEL
1-800-466-7838 or (214) 684-5935
http://www.nortel.com/wireless

In Canada:
Northern Telecom
2920 Matheson Boulevard East
Mississauga ON L4W 4M7
Canada
Telephone: 1-800-4 NORTEL

In the Caribbean and Latin America:
Northern Telecom (CALA) Corporation
1500 Concord Terrace
Sunrise FL 33323
USA
Telephone: (305) 851-8400

In Asia:
Northern Telecom (Asia) Limited
151 Lorong Chuan
#02-01 New Tech Park
Singapore 1955
Telephone: (65) 287-2877

Nortel China Ltd.
34th Floor, Central Plaza
18 Harbour Road, Wanchai
Hong Kong
Telephone (852) 2585 2888

In Europe:
Nortel Limited
Stafferton Way
Maidenhead
Berkshire SL6 1AY
England
Telephone: (44) (1628) 812000

Nortel Matra Cellular
BP 50
1 place des Frères Montgolfier
78042 Guyancourt Cedex
France
Telephone (33) (1) 34 52 52 52

Nortel Europe
12-12bis rue Jean Jaurès
92807 Puteaux
France
Telephone (33) (1) 46 96 15 15

NORTEL
NORTHERN TELECOM

3 CABINET DESCRIPTION

3.1 PHYSICAL CHARACTERISTICS

3.1.1 S8000 Outdoor BTS

3.1.1.1 BTS cabinet

Dimensions

The BTS S8000 Outdoor has the following dimensions:

- height: 160 cm (63 in.)
- width: 135 cm (52.8 in.)
- depth: 65 cm (25.6 in.)

Weight

The weight of the cabinet when empty, that is, without its battery, fan units or boards, is 164 kg (361 lb). Depending on the configuration, a fully equipped cabinet weighs approximately 480 kg (1056 lb) with ACU unit or 440 kg (968 lb) with DACS unit.

These weights do not include the plinth.

Operating temperature

To operate correctly, the BTS requires a temperature greater than –40°C (–40°F) and less than +50°C (+122°F).

Consumption

BTS input voltage:

- GSM 900/1800
  - nominal voltage contained between 220V AC and 240V AC
  - minimum voltage: 220 – 10% = 198V AC
  - maximum voltage: 240 + 6% = 254V AC
- GSM 1900 (with DACS)
  - nominal voltage: 208V AC to 240V AC
  - minimum voltage: 208 – 10% = 187V AC
  - maximum voltage: 240 + 6% = 254V AC
- GSM 1900 (with ACU and/or the power system six–rectifier type)
  - nominal voltage: 240V AC
  - minimum voltage: 240 – 10% = 187V AC
  - maximum voltage: 240 + 6% = 254V AC

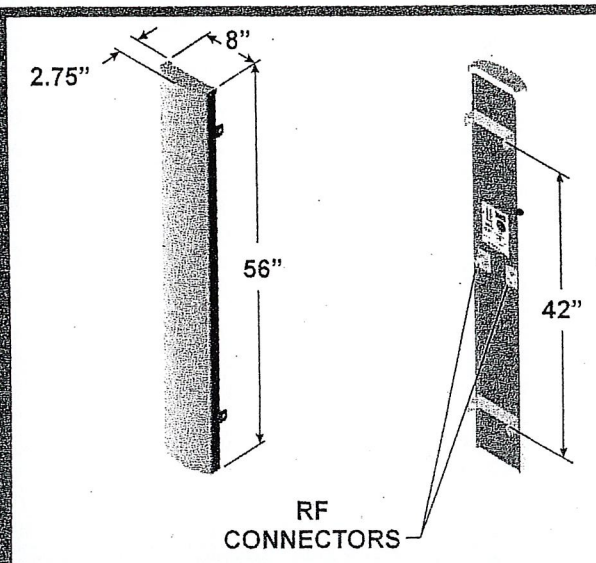
NON - PREMIUM BTS ONLY

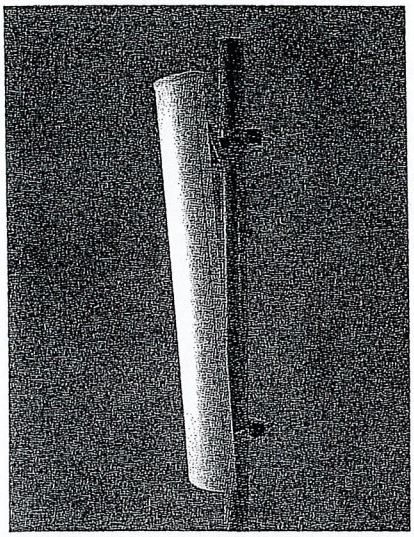
EMS WIRELESS

OptiRange™

RR90-17-XXXP

1850 MHz - 1990 MHz (P)





90° beamwidth

16.5 dBi gain

±45° DualPol™

56 inch

SPECIFICATIONS

Electrical

Azimuth Beamwidth	90°
Elevation Beamwidth	6°
Gain	16.5 dBi (14.4 dBd)
Polarization	Slant, ±45°
Port-to-Port Isolation	≥ 30 dB
Front-to-Back Ratio	≥ 25 dB (≥ 30 dB Typ.)
Electrical Downtilt Options	0°, 2°, 4°, 6°
VSWR	1.35:1 Max
Connectors	2;Type N or 7-16 DIN (female)
Power Handling	250 Watts CW
Passive Intermodulation	<-147 dBc (2 tone @ +43 dBm {20W} ea.)
Lightning Protection	Chassis Ground

Mechanical

Dimensions (L x W x D)	56in x 8in x 2.75in (142 cm x 20.3 cm x 7.0 cm)
Rated Wind Velocity	150 mph (241 km/hr)
Equivalent Flat Plate Area	3.1ft² (.29 m²)
Front Wind Load @ 100 mph (161 kph)	90 lbs (400 N)
Side Wind Load @ 100 mph (161 kph)	31 lbs (139 N)
Weight	18 lbs (8.2 kg)

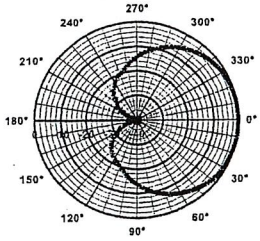
Note: Patent Pending and US Patent number 5, 757, 246.

Values and patterns are representative and variations may occur. Specifications may change without notice due to continuous product enhancements. Digitized pattern data is available from the factory or via the web site www.emswireless.com and reflect all updates.

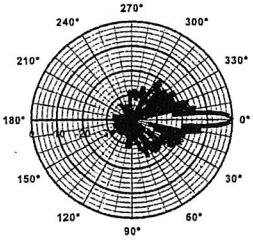
MOUNTING OPTIONS

Model Number	Description	Comments
MTG-P00-10	Standard Mount (Supplied with antenna)	Mounts to Wall or 1.5 inch to 5.0 inch O.D. Pole (3.8 cm to 12.7 cm)
MTG-S02-10	Swivel Mount	Mounting kit providing azimuth adjustment.
MTG-DXX-20*	Mechanical Downtilt Kits	0° - 10° or 0° - 15° Mechanical Downtilt
MTG-CXX-10*	Cluster Mount Kits	3 antennas 120° apart or 2 antennas 180° apart
MTG-C02-10	U-Bolt Cluster Mount Kit	3 antennas 120° apart , 4.5" O.D. pole.
MTG-TXX-10*	Steel Band Mount	Pole diameters 7.5" - 45"

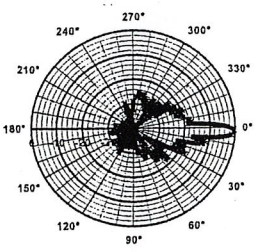
* Model number shown represents a series of products. See mounting options section for specific model number.



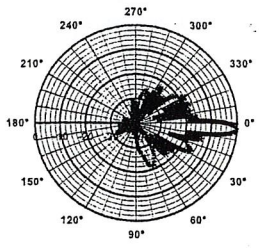
Azimuth



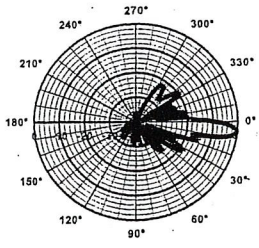
Elevation
0° Downtilt



Elevation
2° Downtilt



Elevation
4° Downtilt



Elevation
6° Downtilt

Exhibit D

Structural Analysis
North Eagleville Road
Storrs, Connecticut

PiROD INC.
A Valmont Industries Company

Tower Reanalysis Report

Proposal PR-2002-11-018
November 15, 2002

U-24.0 x 245' Tower
CT-11-303B, Storrs, CT
PiRod Engineering File A-113846

Prepared for
T-Mobile
Attn: Debra Overbey
100 Filley Street
Bloomfield, CT 06002

Authorization Provided by
George Davis
University of Connecticut
1814 Route 171
Woodstock Valley, CT 06282

J:\REANALYS\113\113846b.doc

1545 Pidco Drive, Plymouth, Indiana 46563
Phone: 574-936-4221 *www.pirod.com* *Fax: 574-936-6458*

November 15, 2002
113846b.doc

Tower Reanalysis Report
Proposal PR-2002-11-018

U-24.0 x 245' Tower
CT-11-303B, Storrs, CT
PiRod Engineering File A-113846

Completed under the Supervision and Approval by
Dennis D. Abel, P.E.
Manager of Reanalysis Services
e-mail: dabel@pirod.com
telephone extension: 5257

11/15/2002

Dennis D. Abel, CT Professional Engineer # 23247

1.0 EXECUTIVE SUMMARY

This reanalysis was performed by PiRod to determine if the structure is capable of accommodating loading that is different than previous design specifications. This engineering report gives the tower history, details how the loading changes affect the tower, specifies feasible modifications, and proposes modification materials. PiRod's engineering study concludes that the tower complies without modifications. See section 6.0 for details.

2.0 ASSUMPTIONS

This engineering study is based on the theoretical capacity of the structure. It is not a condition assessment of the tower. This report is being provided by PiRod without the benefit of an inspection by PiRod personnel and is based on information supplied by the customer to PiRod. PiRod has made no independent determination, nor is required to, of the accuracy of the information provided. Therefore, unless specifically informed to the contrary by the customer in writing, PiRod assumes the following:

1. The subsoil characteristics exist as stated on the tower drawing or stated elsewhere in this report;
2. The tower is erected and maintained in accordance with the manufacturer's plans and specifications and is plumb;
3. There is no damage, natural or manmade, to the structure, either gradual or sudden;
4. All connections and guy cables are properly installed;
5. The information concerning the components, existing and proposed, is accurate; and
6. There are no modifications to the tower itself, except as may be disclosed elsewhere in this report.

PiRod recommends that qualified personnel assess the physical condition of the tower, preferably under the direction of a licensed professional engineer. Following is a list of the general areas that PiRod recommends to be inspected. Contact PiRod for a complete checklist.

Tower Structure	Guyed Towers	Foundations	Appurtenances
Tower Sections	Guy Cables	Cracking	Antennas
Bolted Connections	Turnbuckles	Drainage	Mounts
Welded Connections	Preforms	Spalling	Transmission Lines
Plumbness	Guy Lugs	Anchor Bolts	Line Brackets
Corrosion	Thimbles	Settling	Cable Hangers
Linearity	Torque Arms	Grounding	Lighting
Galvanization	Ice Clips	Grout	
Paint	Guy Tensions	Subsoil	
	Anchor Rods	Characteristics	
	Shackles	Erosion	
	Insulators		

3.0 TOWER HISTORY

Date of Origination: September 19, 1997
PiRod Model: U-24.0 x 245' Tower
Sold to: Bechtel National, Inc.

ORIGINAL DESIGN CRITERIA				
Code/Standard	**Wind Loading**	**Radial Ice**	**Wind Load Reduction Used**	**Allowable Stress Increase Used**
TIA/EIA-222-F	90 mph fastest mile	no	none	yes
TIA/EIA-222-F	90 mph fastest mile	½" solid	25%	yes

The original design is based on the following antenna loading. This may not truly represent the antennas that have actually been placed on the tower.

HEIGHT (FT)	ANTENNAS		ASSUMED CAAC (SQ.FT.)	MOUNTS		LINES	
	QTY.	MODEL		QTY.	MODEL	QTY.	SIZE
Top	1	Dual Light				1	1"
Top				1	15' Lightning Rod Extender		
245'	12	Decibel DB980		1	15' Rotatable Platform	12	1-5/8"
225'	12	Swedcom ALP9212		3	15' Universal T-Frame	12	1-5/8"
120'	1	Decibel DB201		1	3' Standoff	1	7/8"
115'	2	Decibel DB201		1	3' Standoff	1	7/8"
115'	1	4' Grid Dish				1	7/8"
103'	1	6' Solid Dish w/ Radome				1	7/8"
65'	1	Camera *	4.0				
50'	1	GPS *	14.0 including mount				

For the structural analysis, the tower and foundation are assumed to exist as shown on the enclosed tower drawing, which is PiRod's latest revision.

4.0 CURRENT WIND LOAD REQUIREMENT

The TIA/EIA Standard is currently at version F. Tolland County is designated as an 85 mph basic wind speed zone by the current TIA/EIA Standard. We have taken the opportunity to reanalyze this structure using the following wind speed and ice load conditions.

Code/Standard	Wind Loading	Radial Ice	Wind Load Reduction Used (1)	Allowable Stress Increase Used (2)
TIA/EIA-222-F	90 mph fastest mile	no	none	yes
TIA/EIA-222-F	90 mph fastest mile	½" solid	25%	yes

(1) The wind load reduction is permitted by the TIA/EIA-222-F Standard section 2.3.16 and most other codes to account for the minimal chance that the maximum wind speed will occur simultaneously with the ice load.

(2) The allowable stress increase is permitted by the TIA/EIA-222-F Standard and most other codes in accordance with the AISC-ASD Manual of Steel Construction.

Note: Some localities stipulate wind load requirements that are different from that required by the TIA/EIA Standard. Please check with your local building department and verify the required wind load.

5.0 ANTENNA LOADING

The tower analysis uses the following antenna loading, which was provided on October 7, 2002. The existing loading is shown as reported in the antenna inventory by Clough, Harbour & Associates, dated September 24, 2002.

HEIGHT (FT)	ANTENNAS		ASSUMED CAAC (SQ.FT.)	MOUNTS		LINES	
	QTY.	MODEL		QTY.	MODEL	QTY.	SIZE
Existing Loading							
Top	1	Dual Light				1	1"
Top				1	15' Lightning Rod Extender (806011)		
245'	6	Decibel DB980H		1 12	15' Rotatable Top 2" x 84" Antenna Pipe	6	1-5/8"
74'-3"	1	13', 8-Element Yagi *	13.6			1	5/8"
62'-3"	1	8', 10-Element Yagi *	3.6			1	5/8"
51'-6"	1	4.5', 12-Element Yagi *	2.43			1	5/8"
42'-6"	1	3', 10-Element Yagi *	1.18			1	5/8"
38'-9"	1	4.5', 12-Element Yagi *	2.43			1	5/8"
37'-6"	1	4.5', 12-Element Yagi *	2.43			1	5/8"
32'-8"	1	4.5', 12-Element Yagi *	2.43			1	5/8"
135'	1	9' Whip *	3.00	1	3' Standoff	1	5/8"
111'	1	9' Whip *	3.00	1	3' Standoff	1	5/8"
74'	1	11'-5", 8-Element Yagi *	11.12			1	5/8"
61'	1	13', 8-Element Yagi *	13.00			1	5/8"
52'	1	4'-9", 12-Element Yagi *	2.60			1	5/8"
134'-6"	1	9' Whip *	3.00	1	3' Standoff	1	5/8"
122'-6"	1	22' Whip *	6.60	1	6' Standoff (assumed CaAc = 9.85 sq. ft.)	1	1-1/2"
112'	1	4' Grid Dish				1	3/8"
104'-2"	1	6' Solid Dish w/ Radome				1	EW63
69'	1	4.7', 12-Element Yagi *	2.54			1	1/2"
57'	1	Camera *	1.50			2 1	3/8" 1/4"
50'	1	GPS *	1.00	1	3' Standoff	1	3/4"
Proposed Additional Loading							
235'	8 6	EMS RR90-17 Amplifier, 5-3/8" x 5-1/2" x 11-3/4" *T-Mobile*		3 8	12' Lightweight T-frame 2" x 84" Antenna Pipe	16	1-5/8"
160'	3	Allgon 7250.03 *AT&T*			leg mounted	3	1-5/8"

These antennas, mounts, and lines represent our understanding of the antenna loading required. Please contact us if any discrepancies are evident. If different antennas, mounts, or lines are installed on this structure, this analysis is invalid.

* An asterisk indicates that we were not provided with a value for the effective projected area (C_AA_C), and that the area has been assumed based on any information that was made available. The actual effective projected area for each antenna must be confirmed to be equal to the assumed area listed above. If it is determined that the area is different than that stated for any of the above items, this analysis is invalid.

6.0 RESULTS

With the antennas listed in section 5.0, the following modifications are required for the tower to comply with the indicated code and TIA/EIA Standard listed in section 4.0.

6.1 Tower Modifications

When analyzed at 90 mph with ½" radial ice and a 25% reduction in the wind load, the tower is acceptable without any modifications to the tower. The stress ratios of the legs and bracing are shown in the table below.

	No Ice		½" Ice	
Section Height	Leg Compressive Stress	Bracing Stress	Leg Compressive Stress	Bracing Stress
230' - 245'	0.48	0.67	0.50	0.71
210' - 230'	0.67	0.58	0.74	0.70
190' - 210'	0.69	0.51	0.80	0.65
180' - 190'	0.62	0.26	0.74	0.42
160' - 180'	0.73	0.41	0.90	0.66
140' - 160'	0.61	0.61	0.77	0.93
120' - 140'	0.71	0.51	0.89	0.74
100' - 120'	0.61	0.47	0.78	0.65
80' - 100'	0.70	0.65	0.89	0.87
60' - 80'	0.63	0.55	0.79	0.72
40' - 60'	0.70	0.73	0.87	0.93
20' - 40'	0.77	0.76	0.96	0.94
0' - 20'	0.69	0.36	0.85	0.42

The proposed materials, associated hardware, and updated engineering documentation are priced on the appended Reanalysis Parts Pricing Proposal.

6.2 Foundation Modifications

The foundation analysis is based on the soil report by Clough, Harbour & Assoicates, LLP, dated June 6, 1997 (CHA project #5835.07.64).

The foundation complies without modifications.

7.0 LIST OF APPENDICES

Reanalysis Parts Pricing Proposal
Main Tower Drawing, latest revision 202932-B

Note: The tower drawing included with this report is PiRod's latest revision and depicts the tower as we understand it to currently exist. It has not been updated to show the existing or proposed antenna loading or any modifications required as a result of this analysis.

Exhibit E

Power Density Calculations

North Eagleville Road

Storrs, Connecticut

VOICESTREAM WIRELESS CORPORATION
100 Filley St, Bloomfield, CT 06002-1853
Phone: (860) 692-7100
Fax: (860) 692-7159

Technical Memo

To: Karina Hansen
From: Hassan Syed - Radio Frequency Engineer
cc: Mike Fulton
Subject: Power Density Report for CT11303
Date: March 12, 2003

1. Introduction:

This report is the result of an Electromagnetic Field Intensities (EMF - Power Densities) study for the Voicestream Wireless Corporation PCS antenna installation on a Existing Lattice Tower at North Eagle Rd.RT 195, Storrs, CT. This study incorporates the most conservative consideration for determining the practical combined worst case power density levels that would be theoretically encountered from locations surrounding the transmitting location.

2. Discussion:

The following assumptions were used in the calculations:

1) The emissions from Voicestream Wireless transmitters are in the 1935-1945 MHz frequency band.
2) The antenna array consists of three sectors, with 4 antennas per sector.
3) The model number for each antenna is EMS RR90-17-02DP.
4) The antenna center line height is 235 ft.
5) The maximum transmit power from any sector is 3245.73 Watts Effective Radiated Power (EiRP) assuming 8 channels per sector.
6) All the antennas are simultaneously transmitting and receiving, 24 hours a day.
7) Power levels emitting from the antennas are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
8) The average ground level of the studied area does not change significantly with respect to the transmitting location

Equations given in "FCC OET Bulletin 65, Edition 97-01" were then used with the above information to perform the calculations.

3. Conclusion:

Based on the above worst case assumptions, the power density calculation from the VoiceStream Wireless Corporation PCS antenna installation on a Existing Lattice Tower at North Eagle Rd.RT 195, Storrs, CT, is 0.01358 mW/cm^2. This value represents 1.358% of the Maximum Permissible Emission (MPE) standard of 1 milliwatt per square centimeter (mW/cm^2) set forth in the FCC/ANSI/IEEE C95.1-1991. Furthermore, the proposed antenna location for VoiceStream Wireless will not interfere with existing public safety communications, AM or FM radio broadcasts, TV, Police Communications, HAM Radio communications or any other signals in the area.
The combined Power Density from other carriers is 6.2907%. The combined Power Density for the site is 7.649% of the M.P.E. standard.

New England Market

Connecticut

Worst Case Power Density

Site:	**CT11303**
Site Address:	**North Eagle Rd.RT 195**
Town:	**Storrs**
Tower Height:	**248 ft.**
Tower Style:	**Existing Lattice Tower**
Base Station TX output	22 W
Number of channels	8
Antenna Model	EMS RR90-17-02DP
Cable Size	1 5/8 in.
Cable Length	245 ft.
Antenna Height	235.0 ft.
Ground Reflection	1.6
Frequency	1935.0 MHz
Jumper & Connector loss	1.00 dB
Antenna Gain	16.5 dBi
Cable Loss per foot	0.0116 dB
Total Cable Loss	2.8420 dB
Total Attenuation	3.8420 dB
Total EIRP per Channel	56.08 dBm
(In Watts)	405.72 W
Total EIRP per Sector	65.11 dBm
(In Watts)	3245.73 W
nsg	12.6580
Power Density (S) =	**0.013579 mW/cm^2**
Voicestream Worst Case % MPE =	**1.3579%**

Equation Used :

$$S = \frac{(1000)(grf)^2(Power)*10^{(nsg/10)}}{4\pi(R)^2}$$

Office of Engineering and Technology (OET) Bulletin 65, Edition 97-01, August 1997

Co-Location Total

Carrier	% of Standard
Verizon	
Cingular	
Sprint PCS	2.0807 %
AT&T Wireless	4.2100 %
Nextel	
Total Excluding Voicestream	**6.2907 %**
Voicestream	1.3579
Total % MPE for Site	**7.6486%**