



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

October 4, 2000

J. Brendan Sharkey, Esq.
VoiceStream Wireless Corporation
100 Filley Street
Bloomfield, CT 06002

Ten Franklin Square
New Britain, Connecticut 06051
Phone: (860) 827-2935
Fax: (860) 827-2950

RE: **TS-VOICESTREAM-076-000922** - VoiceStream Wireless, Inc. request for an order to approve tower sharing at an existing telecommunications tower located at 864 Opening Hill Road, Madison, Connecticut.

Dear Attorney Sharkey:

At a public meeting held Monday, October 2, 2000, 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 September 22, 2000.

Thank you for your attention and cooperation.

Very truly yours,

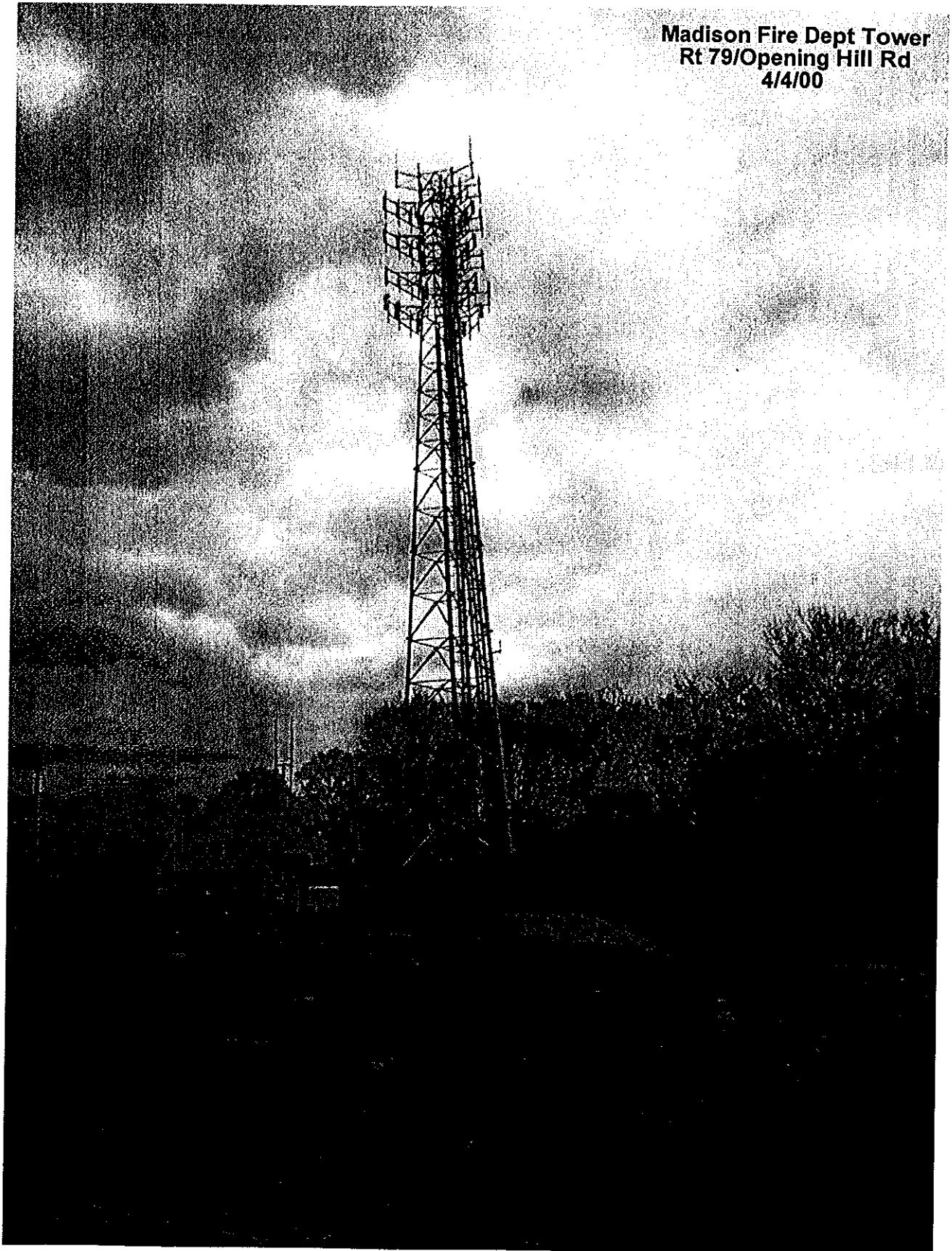


Mortimer A. Gelston
Chairman

MAG/RKE/laf

- c: Honorable David S. LaFemina, First Selectman, Town of Madison
Charles Daricek, Fire Chief, Town of Madison Volunteer Fire Department
Paul Jakubsen, Chief of Police, Madison Police Department
Sandy M. Carter, Verizon Wireless
Ronald C. Clark, Nextel Communications
Julie M. Cashin, Esq., Hurwitz & Sagarin, LLC
Peter W. van Wilgen, Springwichee Cellular Limited Partnership

**Madison Fire Dept Tower
Rt 79/Opening Hill Rd
4/4/00**





STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Ten Franklin Square
New Britain, Connecticut 06051
Phone: (860) 827-2935
Fax: (860) 827-2950

September 27, 2000

Honorable David S. LaFemina
First Selectman
Town of Madison
Madison Town Campus
8 Campus Drive
Madison, CT 06443-2563

TS-VOICESTREAM-076-000922 - VoiceStream Wireless, Inc. request for an order to approve tower sharing at an existing telecommunications tower located at 864 Opening Hill Road, Madison, Connecticut.

Dear Mr. LaFemina:

The Connecticut Siting Council (Council) received this request for tower sharing, pursuant to Connecticut General Statutes § 16-50aa.

The Council will consider this item at the next meeting scheduled for October 2, 2000, at 2:00 p.m. in Hearing Room Three, Ten Franklin Square, New Britain, Connecticut.

Please call me or inform the Council if you have any questions or comments regarding this proposal.

Thank you for your cooperation and consideration.

Very truly yours,

Joel M. Rinebold
Executive Director

JMR/RKE/laf

Enclosure: Notice of Tower Sharing

100 Filley Street, Bloomfield, CT 06002
(860) 692-7154 phone
(860) 692-7159 fax

22 September, 2000

Mortimer A. Gelston, Chairman
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

**Re: Request by VoiceStream Wireless for an Order
to Approve the Shared Use of a Tower Facility
864 Opening Hill Road, Madison, Connecticut**

RECEIVED

SEP 22 2000

CONNECTICUT
SITING COUNCIL

Dear Chairman Gelston and Members of the Council:

Pursuant to Connecticut General Statutes §16-50aa, VoiceStream Wireless, Inc. ("VoiceStream") hereby requests an order from the Connecticut Siting Council ("Council") to approve the proposed shared use of an existing tower located at 864 Opening Hill Road in Madison, Connecticut. The tower is owned and operated by the North Madison Volunteer Fire Department. VoiceStream proposes to install antennas on the existing tower located within an existing and approved compound area, and to install related equipment near the base of the tower within the existing compound (see "Exhibit A"). VoiceStream 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.

Background

VoiceStream is licensed by the Federal Communications Commission (FCC) to provide PCS wireless telecommunications service in the State of Connecticut, which includes the area to be served by the proposed installation.

The Volunteer Fire Department tower on Opening Hill Road in Madison is a 180-foot lattice tower located on a compound. The coordinates for this location are 41-21-27 N and 72-38-20 W. The Madison Police and Fire Departments currently have antennas mounted on the top of the tower. In addition, Bell Atlantic Mobile ("BAM") has been approved for antennas with centerlines at 170 feet above ground level ("AGL"); Nextel Communications ("Nextel") has antennas approved at 160 feet AGL; Sprint PCS ("Sprint") has antennas installed at 150' AGL; and Springwich Cellular Limited Partnership ("SNET") has been approved by the Council to install its antennas with centerlines at 140-foot AGL. VoiceStream and the Volunteer Fire Department have agreed to mutually acceptable terms and conditions for the proposed shared use of this tower, and the department has authorized VoiceStream 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.

As shown on the site plan drawings and tower elevations attached as Exhibit A, VoiceStream proposes to install a total of twelve (12) antennas, EMS Dual-Pol Model RR90-17-02DP, on a platform with centerlines at 130-feet AGL. The radio transmission equipment associated with

864 Opening Hill Road, Madison
Page 2

these antennas, Nortel S8000 cabinets, would be mounted on a concrete slab at the base of the tower.

C.G.S. §16-50aa (c) (1) provides 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 was designed to accommodate multiple carriers, and VoiceStream is the fifth carrier to propose co-location. As the structural analysis attached as Exhibit C indicates, the tower is structurally sound and capable of supporting the proposed antennas. 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 on Opening Hill Road in Madison. (Public Acts 93-268, Section 2; and 94-242, Section 6 (c)). 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 towers 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 a minimal environmental effect, for the following reasons:

1. The proposed installations 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.
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), with the BAM, Nextel, Sprint, SNET, Town of Madison and VoiceStream antennas,

8 Meetinghouse Lane, Madison
Page 3

would be 21.23% of the ANSI standard. These calculations are attached as Exhibit D.

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 weeks), the proposed installations would not generate any traffic other than for periodic maintenance visits.

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

E. Economic Feasibility - As previously mentioned, VoiceStream has entered into an agreement with the Volunteer Fire Department to share the use of the existing tower on terms agreeable to the parties. The proposed tower sharing is therefore economically feasible.

F. Public Safety Concerns - As stated above, the existing tower is structurally capable of supporting the proposed VoiceStream antennas. The tower stands on a compound, the size and location of which, have been approved by the Town of Madison which considered public health and safety in its review. VoiceStream is not aware of any other 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 is expected to enhance the safety and welfare of area residents and travelers.

Conclusion

For the reasons discussed above, the proposed shared use of the existing tower facility on Opening Hill Road in Madison, Connecticut satisfies the criteria stated in C.G.S. §16-50aa, and advances the General Assembly's and the Siting Council's goal of preventing the proliferation of towers in Connecticut. VoiceStream therefore request that the Siting Council issue an order approving the proposed shared use.

Thank you for your consideration of this matter.

Sincerely,



J. Brendan Sharkey, Esq.
for VoiceStream Wireless

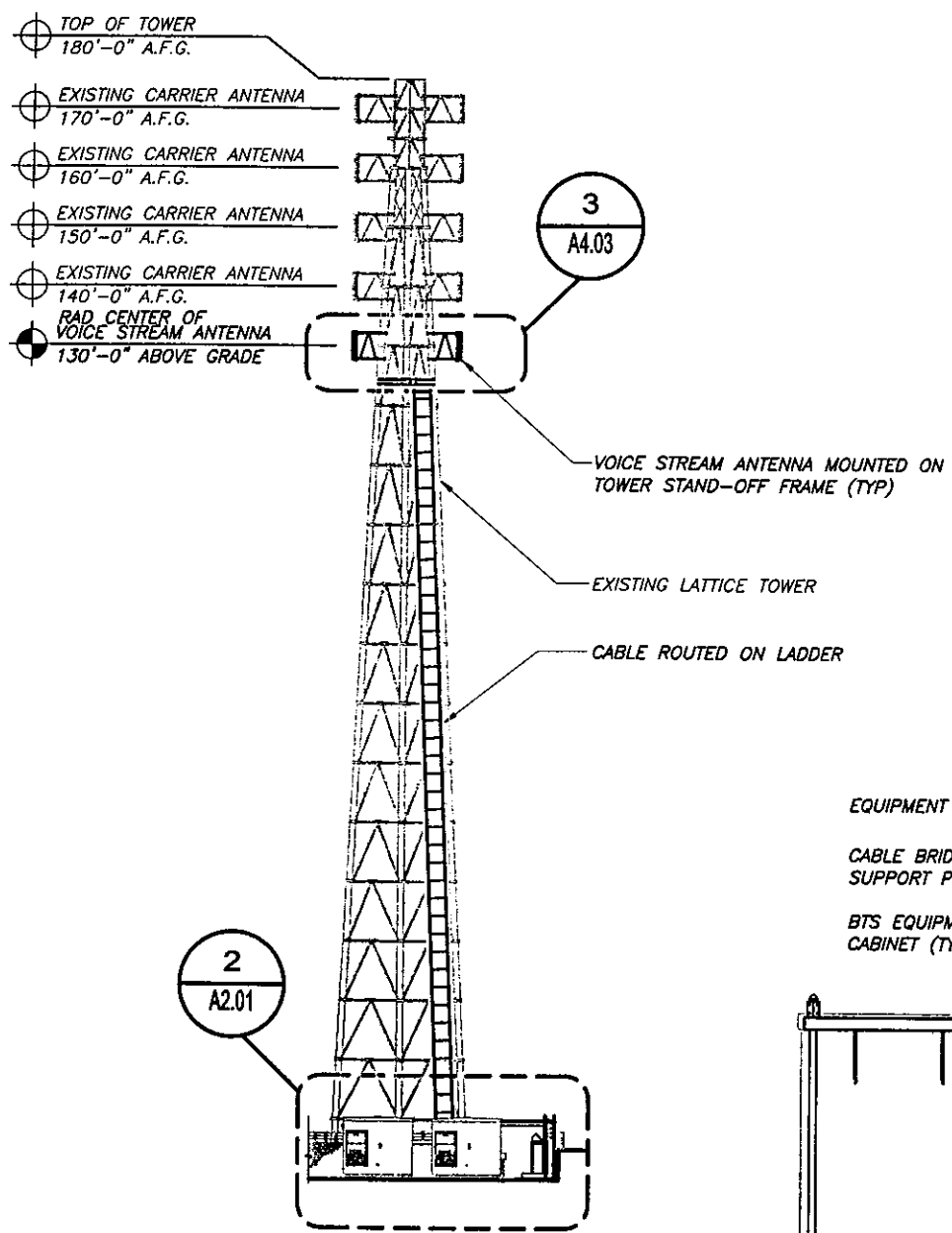
Attachments

cc: David LaFemina, First Selectman

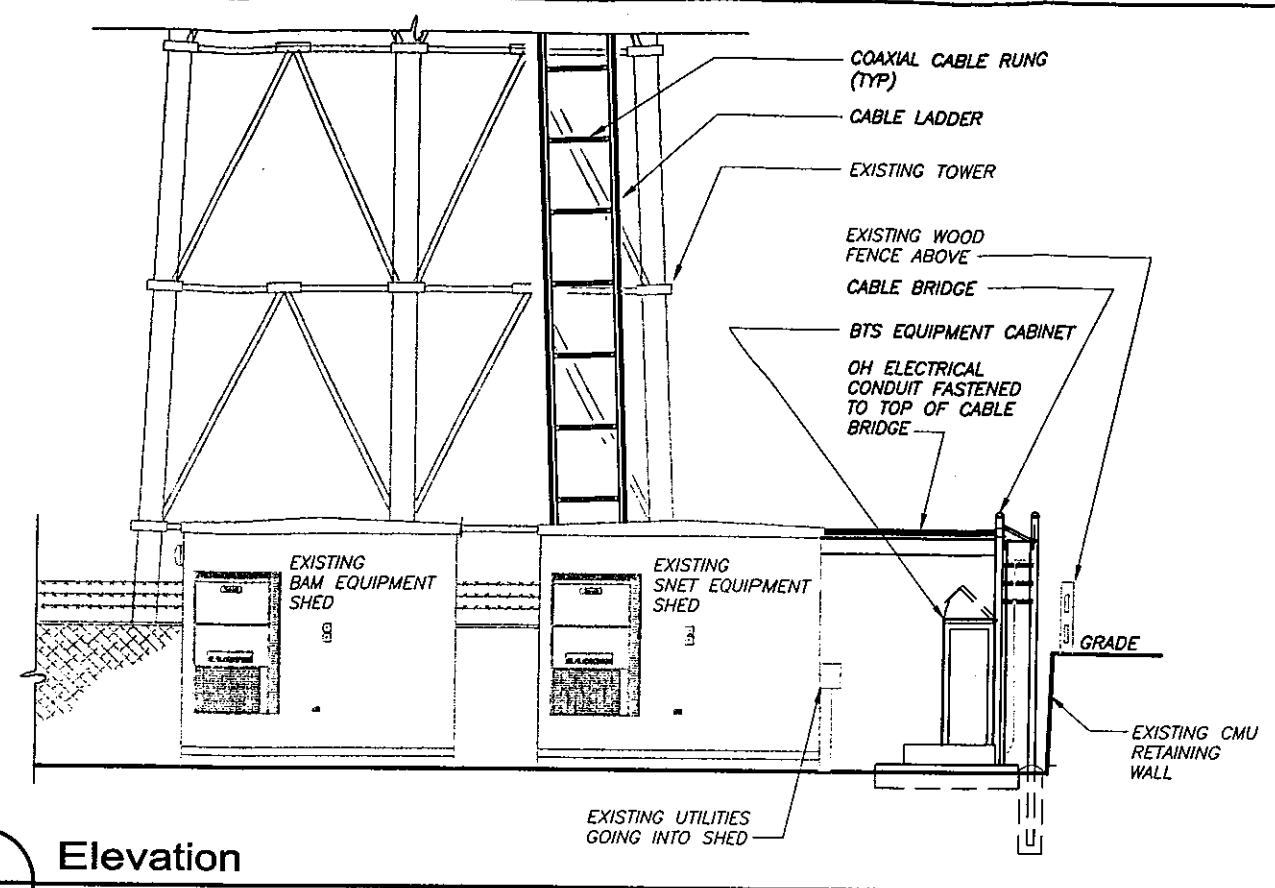
Exhibit A

Design Drawings
Opening Hill Road
Madison, CT

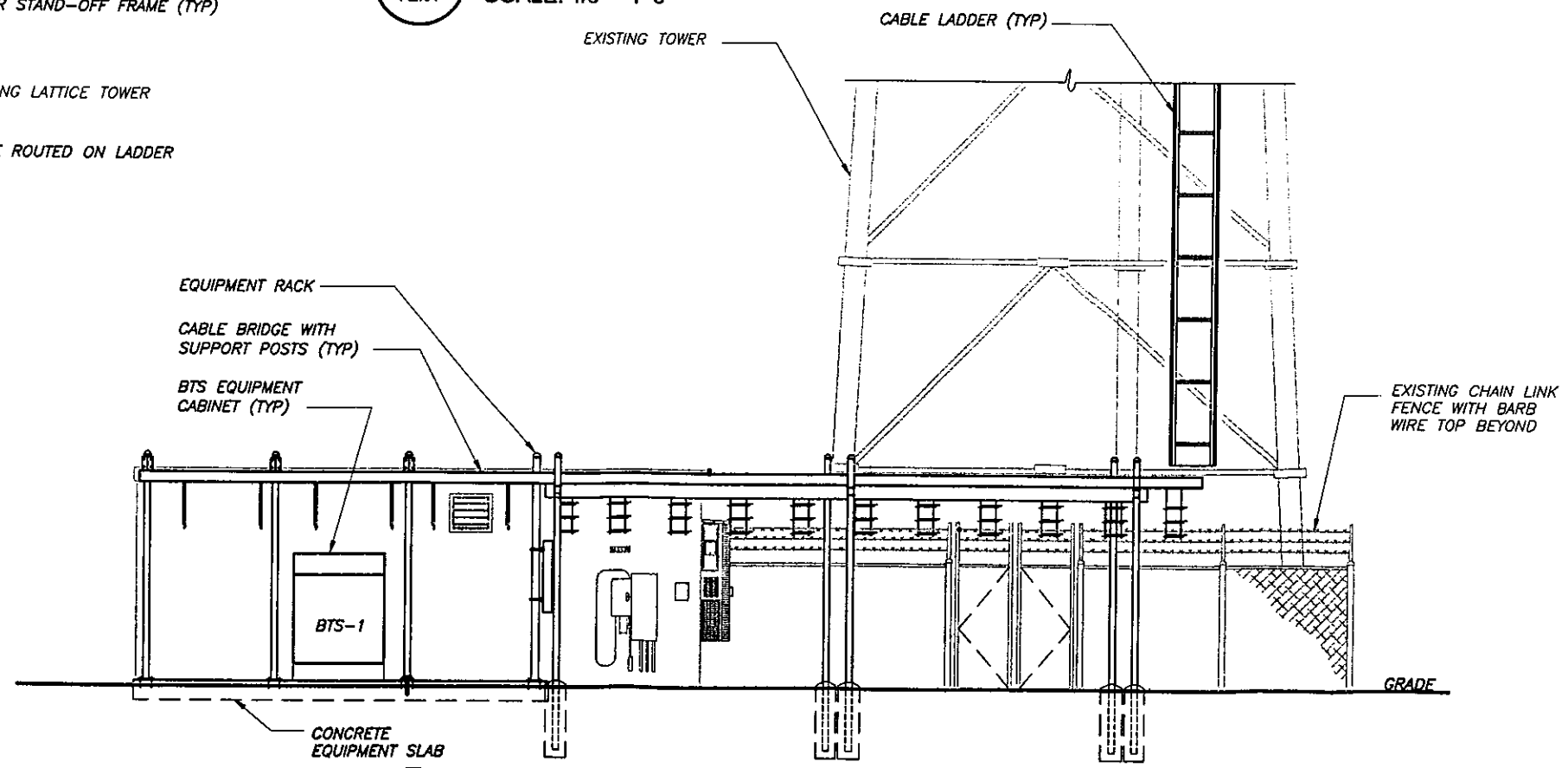
WED, SEP 13, 2000 04:46 P JJM H:\VOICESTREAM-OMNIPONT\NORTH MADISON\320376-3944\CAD\320376-3944-A2-01.DWG X-REFS. VSDR-11X17.DWG, 320376-3944-A1-01.DWG, TMA-SECTRD.DWG



1 Lattice Tower Elevation
 A2.01 SCALE: 1/32" = 1'-0"

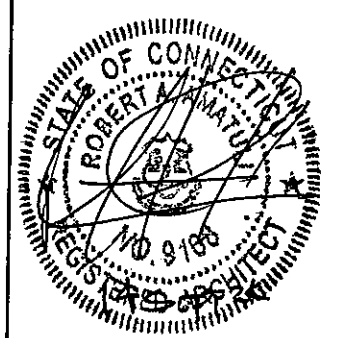


2 Elevation
 A2.01 SCALE: 1/8" = 1'-0"



3 Elevation
 A2.01 SCALE: 1/8" = 1'-0"

Carter Burgess
 481 BUCKLAND ROAD, SUITE 201
 SOUTH WINDSOR, CT 06074
 TEL 800-648-5819 FAX 800-648-5865



Addenda/Rev No.	Date:
Addenda	9/14/00

Client:
VoiceStream WIRELESS
 100 FILLEY STREET
 BLOOMFIELD, CT 06002
OMNIPONT
 Omnipoint Communications Inc.
 A subsidiary of VoiceStream Wireless Corporation

Client Approvals:

Approved By:	Signature:	Date:
OWNER/SAC:		
RF ENGINEER:		
CONSTRUCTION:		

Drawing Title:
ELEVATIONS
 Project Name:
NORTH MADISON
864 OPENING HILL ROAD
NORTH MADISON, CT.

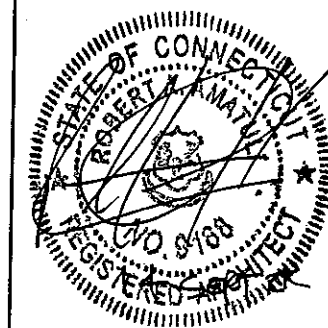
Client Site I.D.:
CT-11-394A

Drawing No.
A2.01

Plt:	Drawn By:	Date:
KAM	RGG	8/10/00

CB Project No:
320376

Carter Burgess
 481 BUCKLAND ROAD, SUITE 201
 SOUTH WINDSOR, CT 06074
 TEL. 800-648-5819 FAX 800-648-5885



Addenda/Rev. No. Date:
 Addenda 9/14/00

Client:
VoiceStream WIRELESS
 100 FILLEY STREET
 BLOOMFIELD, CT 06002
OMNIPPOINT
 Omnipoint Communications Inc.
 A subsidiary of VoiceStream Wireless Corporation

Client Approvals:
 Approved By: Signature: Date:
 OWNER/SAC:
 RF ENGINEER:
 CONSTRUCTION:

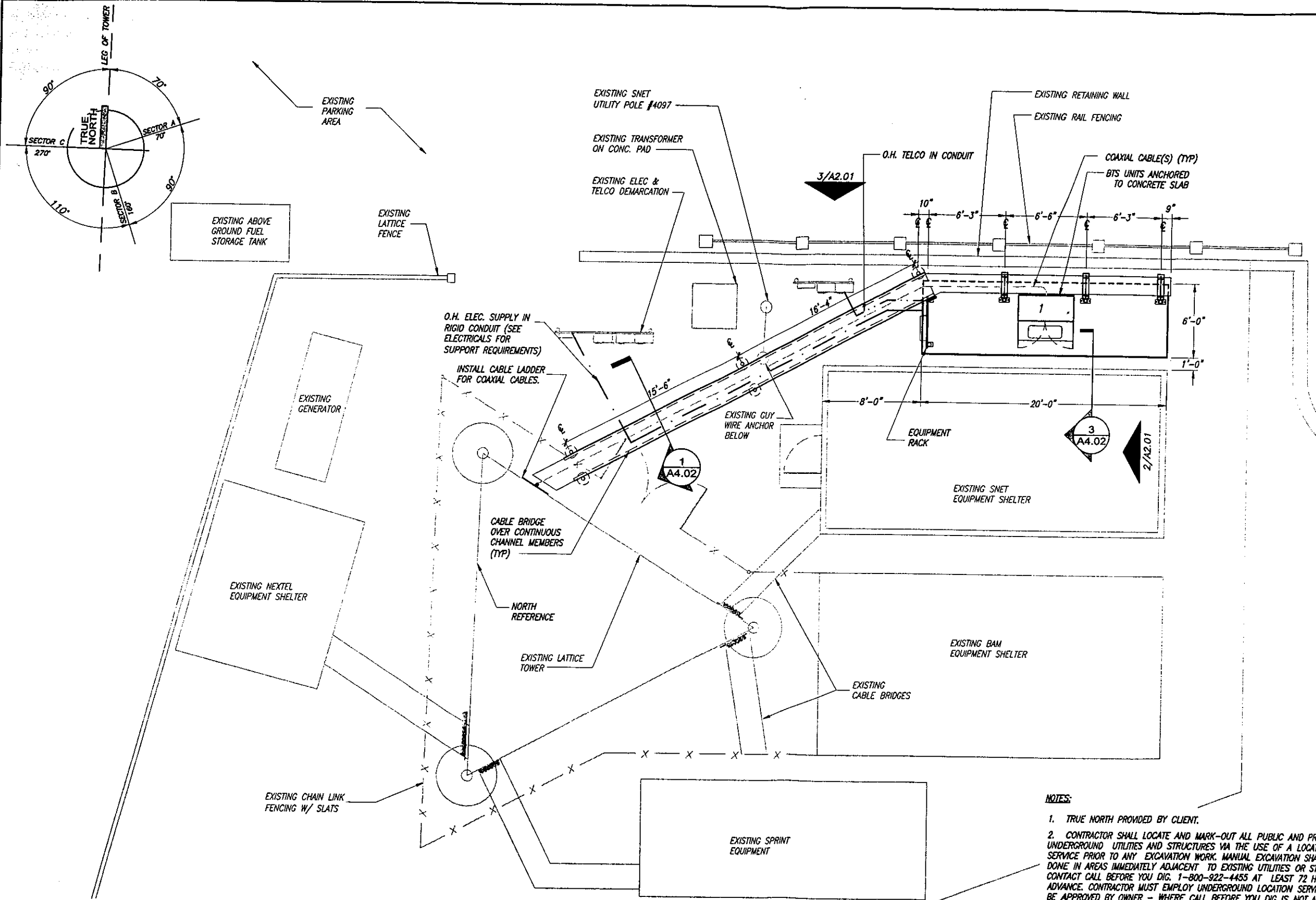
Drawing Title:
COMPOUND PLAN
 Project Name:
NORTH MADISON
864 OPENING HILL ROAD
NORTH MADISON, CT.

Client Site I.D.:
CT-11-394A

Drawing No.
A1.01

PK: Drawn By: Date:
 KAM RGG 8/10/00

CB Project No:
320376



NOTES:
 1. TRUE NORTH PROVIDED BY CLIENT.
 2. CONTRACTOR SHALL LOCATE AND MARK-OUT ALL PUBLIC AND PRIVATE UNDERGROUND UTILITIES AND STRUCTURES VIA THE USE OF A LOCATING SERVICE PRIOR TO ANY EXCAVATION WORK. MANUAL EXCAVATION SHALL BE DONE IN AREAS IMMEDIATELY ADJACENT TO EXISTING UTILITIES OR STRUCTURES. CONTACT CALL BEFORE YOU DIG. 1-800-922-4455 AT LEAST 72 HOURS IN ADVANCE. CONTRACTOR MUST EMPLOY UNDERGROUND LOCATION SERVICE - TO BE APPROVED BY OWNER - WHERE CALL BEFORE YOU DIG IS NOT AVAILABLE.

LEGEND:
 - - - - - OVERHEAD (O.H.) TELCO LINE
 - - - - - OVERHEAD (O.H.) ELEC LINE
 X X CHAIN LINK FENCE
 ——— EXISTING

2 Compound Plan
 A1.01 SCALE: 1/8"=1'-0"

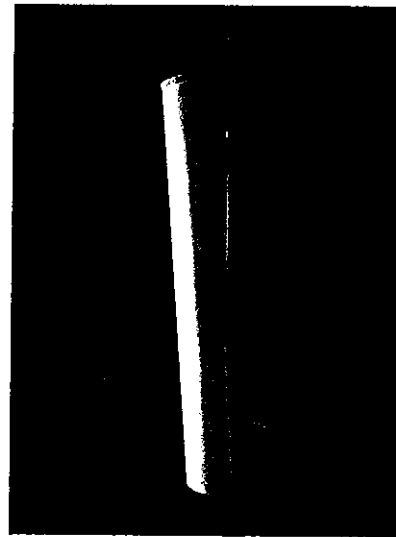
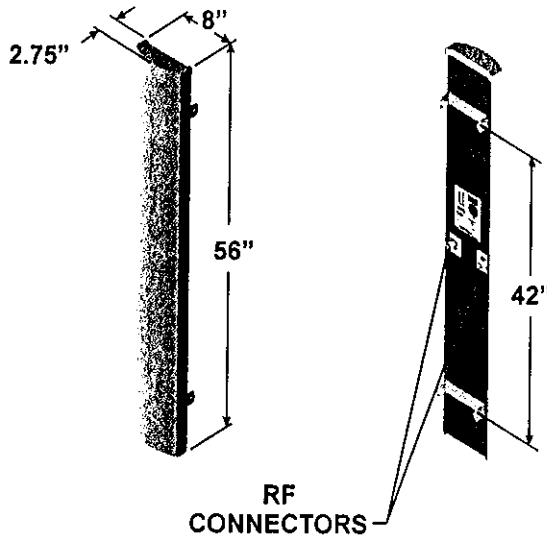
WED, SEP 13, 2000 04:43 P JAM H:\VOICESTREAM-OMNIPPOINT\NORTH MADISON\320376-394A\CAD\320376-394A-A1-01.DWG X-REFS: VSDR-11X17.DWG, TMA-SECTRD.DWG

Exhibit B

Equipment Specifications

Opening Hill Road

Madison, CT

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	3.1ft ² (.29 m ²)
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)

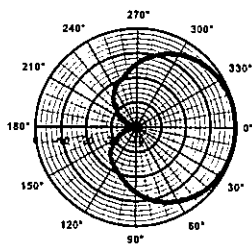
Note: Patent Pending and US Patent number 5, 757, 246.

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.

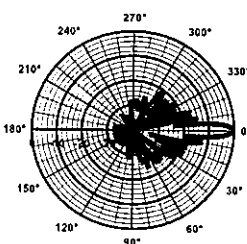
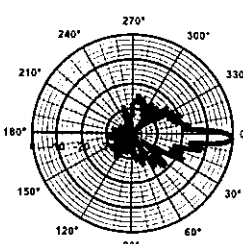
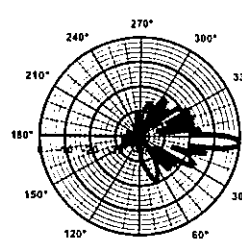
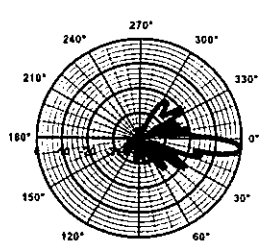
MOUNTING OPTIONS

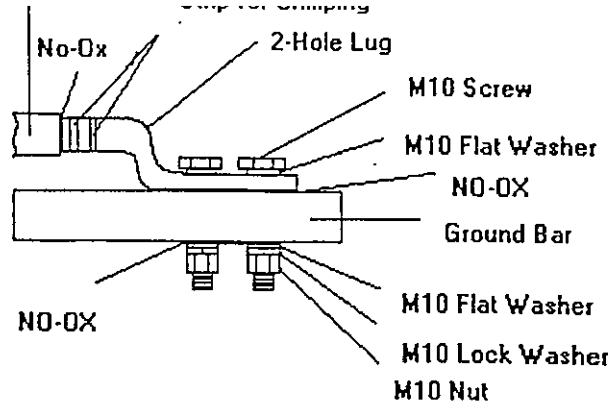
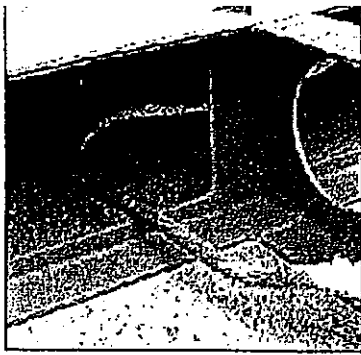
Model Number	Description	Comments
MTG-P00-10	Standard Mount (Supplied with antenna)	Mounts to Wall or 1.5 inch to 5.0 inch O.D. Pole (3.8 cm to 12.7 cm)
MTG-S02-10	Swivel Mount	Mounting kit providing azimuth adjustment.
MTG-DXX-20*	Mechanical Downtilt Kits	0° - 10° or 0° - 15° Mechanical Downtilt
MTG-CXX-10*	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



Apply a light coating of No Oxidation (NO-OX) to the ground bar area.

Dimensions, Weights & Clearances

BTS

Weight: 915 pounds

Dimensions: 53.2"W x 26"D x 63"H

Clearances while transporting in building:

Door Access:

Height: 6.6 feet

Width 3 feet

Corridor Access:

Height: 6.6 feet

Width: 3.6 feet (straight), 6.6 feet (right angle)

Clearances when installed:

Above: 28 inches for opening of hood

Rear: 8 inches for installation of outer skin

Sides: 8 inches for adjustment of door hinges

Front: 54 inches to open door and technician access

Plinth

Weight:

87 pounds

Dimensions:

53.2"W x 44"D x 10.2"H

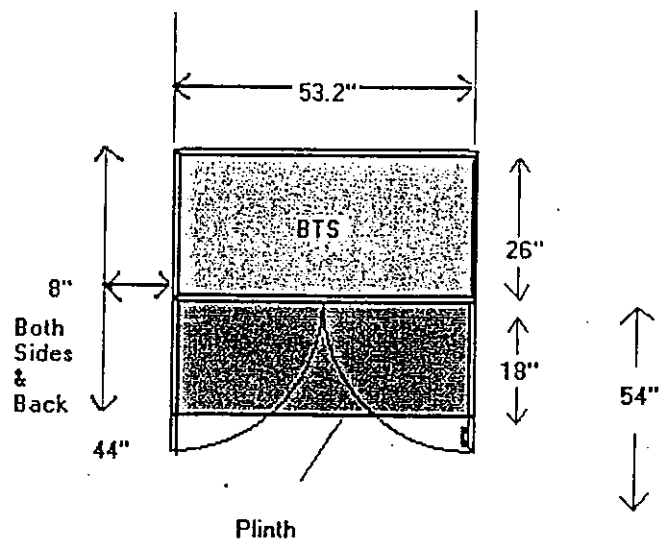
Floor Characteristics

Minimum Floor Resistance:

123 pounds/foot²

Flatness:

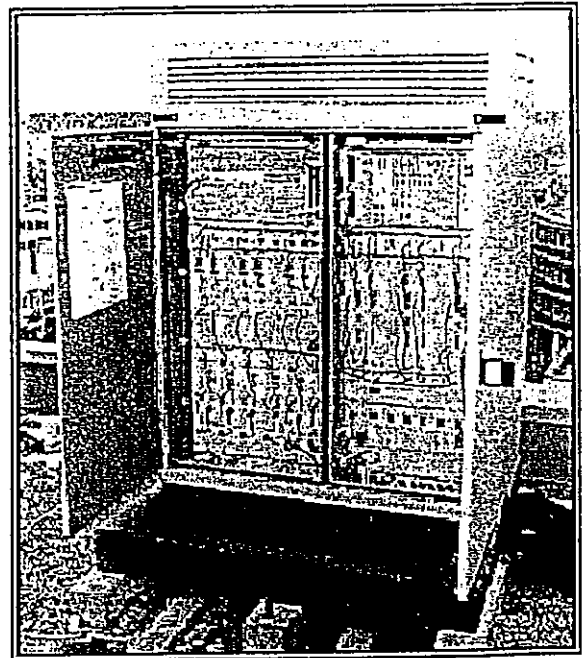
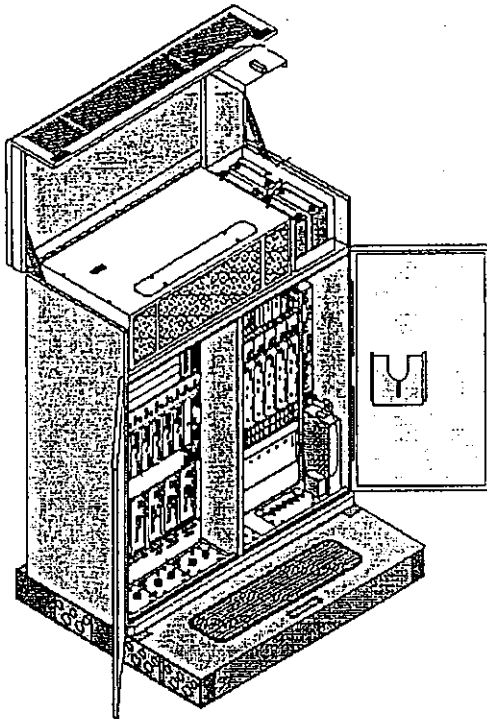
¼ inch over 78 inches





S8000 BTS

Site Specifications



Electrical Specifications

Split Single-Phase

3 wires plus ground

L1: Black 6 gauge

L2: Red 6 gauge

Neutral: White 6 gauge

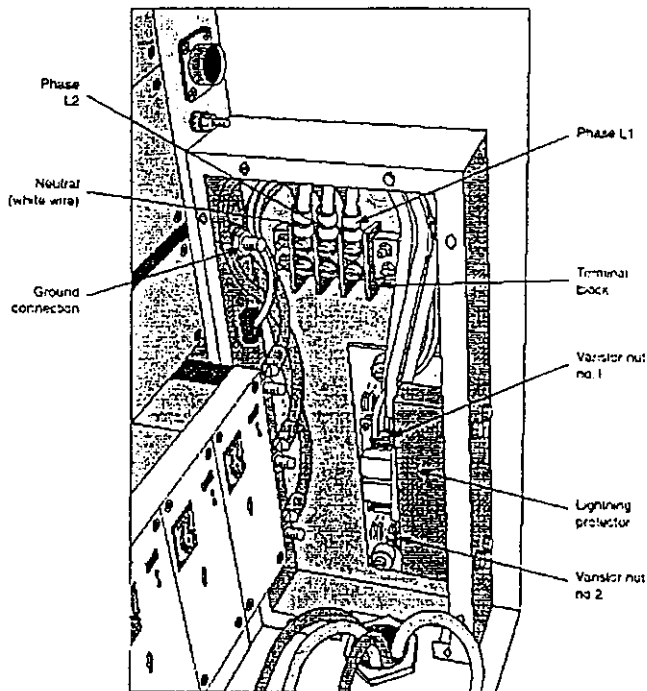
Ground: Yellow/Green 6 gauge

Maximum distance between AC box and BTS: 105 feet

187 ~ 254 VAC between L1 and L2

99 ~ 127 VAC between Neutral and L1 or L2

45 ~ 65 Hertz



AC connection to BTS located at the front, lower, right-hand side of BTS

Circuit Breaker in AC Box

Up to 4 transmitters

30 A, bipolar, C curve

5 or more transmitters

40A, bipolar, C curve

BTS to Ground connection

Minimum 2 AWG, run in most direct route as possible towards true earth, minimizing bends. No bend shall be less than 90 degrees.

Exhibit C

Structural Analysis
Opening Hill Road
Madison, CT



PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 500 • Columbus, Ohio 43215

September 21, 2000

Carter & Burgess
481 Buckland Rd. Suite 201
South Windsor, CT 06074

ATTN: Mr. Joseph J. Minuta

RE: Existing 180 ft Self-Support Tower
Located in North Madison, Connecticut
(PJF # 36500-15)

Dear Joseph,

We have re-analyzed the existing 180-ft self-support tower located in North Madison, Connecticut. Twelve (12) EMS RR90-17 antennas with twenty-four (24) 1 5/8" coaxes were manipulated at elevation 130-ft. The analysis was performed according to the recommendations of the Electronic Industries Association Standard ANSI/EIA-222 revision F 1996. The standard recommends a minimum design wind velocity of 85-mph for New Haven County. The existing tower has the capacity to safely withstand 103-mph winds when supporting the new antenna and coax loading listed on page 1 of the enclosed sketches.

If ice accumulation is to be considered, then the EIA standard recommends a minimum design wind velocity of 74-mph with 1/2" of radial ice accumulation. The existing tower has the capacity to safely withstand 90-mph winds with 1/2" of radial ice accumulation.

As you can see, the existing tower is more than adequate to safely support the proposed antenna loads.

We could not verify the capacity of the existing foundations since the original geotechnical report and foundation design were not provided.

If you have any questions or require any further information, please feel free to call.

Sincerely,

PAUL J. FORD AND COMPANY

Yan Wang, E.I.T.
Engineer
e-mail: ywang@pjfweb.com

COLUMBUS, OHIO
614-221-6679
FAX 614-221-2540

• ATLANTA, GEORGIA •
404-266-2407
FAX 404-869-4608

ORLANDO, FLORIDA
407-898-9039
FAX 407-897-3662

• www.pjfweb.com •

Exhibit D

Power Density Calculations

Opening Hill Road

Madison, CT

Technical Memo

To: Dennis Brown
From: Chetan Dhaduk (Radio Engineering Consultant)
cc: Mike Fulton
Subject: Power Density Report for CT11394A
Date: 9/22/00

1. Introduction:

This report is the result of an Electromagnetic Field Intensities (EMF - Power Densities) study for the proposed VoiceStream Wireless PCS antenna installation on Fire Dept. Tower at 864 Opening Hill Road, North Madison CT. This study incorporates the most conservative considerations for determining the practical combined worst case power density levels that would be theoretically encountered from several locations surrounding the transmitting location.

2. Discussion:

The following assumptions were used in the calculations:

- 1) The emissions from the VSW transmitters are in the 1930-1945 MHz frequency band.
- 2) The antenna cluster consists of three sectors, with up to four antennas per sector. The model number for each antenna is EMS RR90-17-02 DP.
- 3) The EMS antenna height is 130' centerline.
- 4) The maximum transmit power from each sector is 3232.36 Watts Effective Isotropic Radiated Power (EiRP).
- 5) All the antennas are simultaneously transmitting and receiving, 24 hours a day.
- 6) 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.
- 7) The average ground level of the studied area does not significantly change 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 worse case assumptions, the power density calculations from the proposed VoiceStream Wireless, PCS antenna installation at Fire Dept. Tower is 0.041962 mW/cm². This value represents only 4.1962% of the Maximum Permissible Emission (MPE) standard of 1000 microwatts per square centimeter ($\mu\text{w}/\text{cm}^2$) set forth in the FCC/ANSI/IEEE C95.1-1991.

The collective "worst-case" exposure would be only 20.6462% of ANSI/IEE Standard, as calculated for mixed frequency sites. Details are shown in the attachment. Furthermore, the proposed antenna locations for VoiceStream Wireless on Fire Dept. Tower at 864 Opening Hill Road, North Madison CT will not interfere with existing public safety telecommunications, AM band and FM band radio broadcast, TV, Police Communication, HAM Radio communications and other signals in the area.

Worst Case Power Density for Fire Dept. Tower in North Madison, CT

Region 11 - Connecticut	
Power Density Calculation - Worst Case	
Base Station TX output	20 W
Number of channels	8
Antenna Model	EMS: RR-90-17/ RV-90-17
Antenna Gain	16.5 dBi
Cable Size	1 5/8"
Cable Length	185 ft
Jumper & Connector loss	1.3 dB
Cable Loss per foot	0.0116
Total Cable Loss	2.146 dB
Total Attenuation	3.446 dB
Total EIRP per channel	56.06 dB
Total EIRP per sector	65.10 dB
Ground Reflection	1.6
Frequency	1930 MHz
Antenna Height	130 ft
nsq	13.054
Power Density (S) =	0.041962 mW / cm ²
% MPE =	4.1962%

Combined %MPE Without Voicestream = 16.4500%
Combined %MPE With SNET, Sprint, Nextel, Bell Atlantic, Voicestream Fire & Police Dept. = 20.6462%

Equation Used :

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

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