STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

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

April 17, 2000

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

RE: TS-VOICESTREAM-115-000327 - VoiceStream Wireless request for an order to approve tower sharing at an existing telecommunications facility located at Kluge Road in Prospect, Connecticut.

Dear Mr. Sharkey:

At a public meeting held April 12, 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 March 27, 2000.

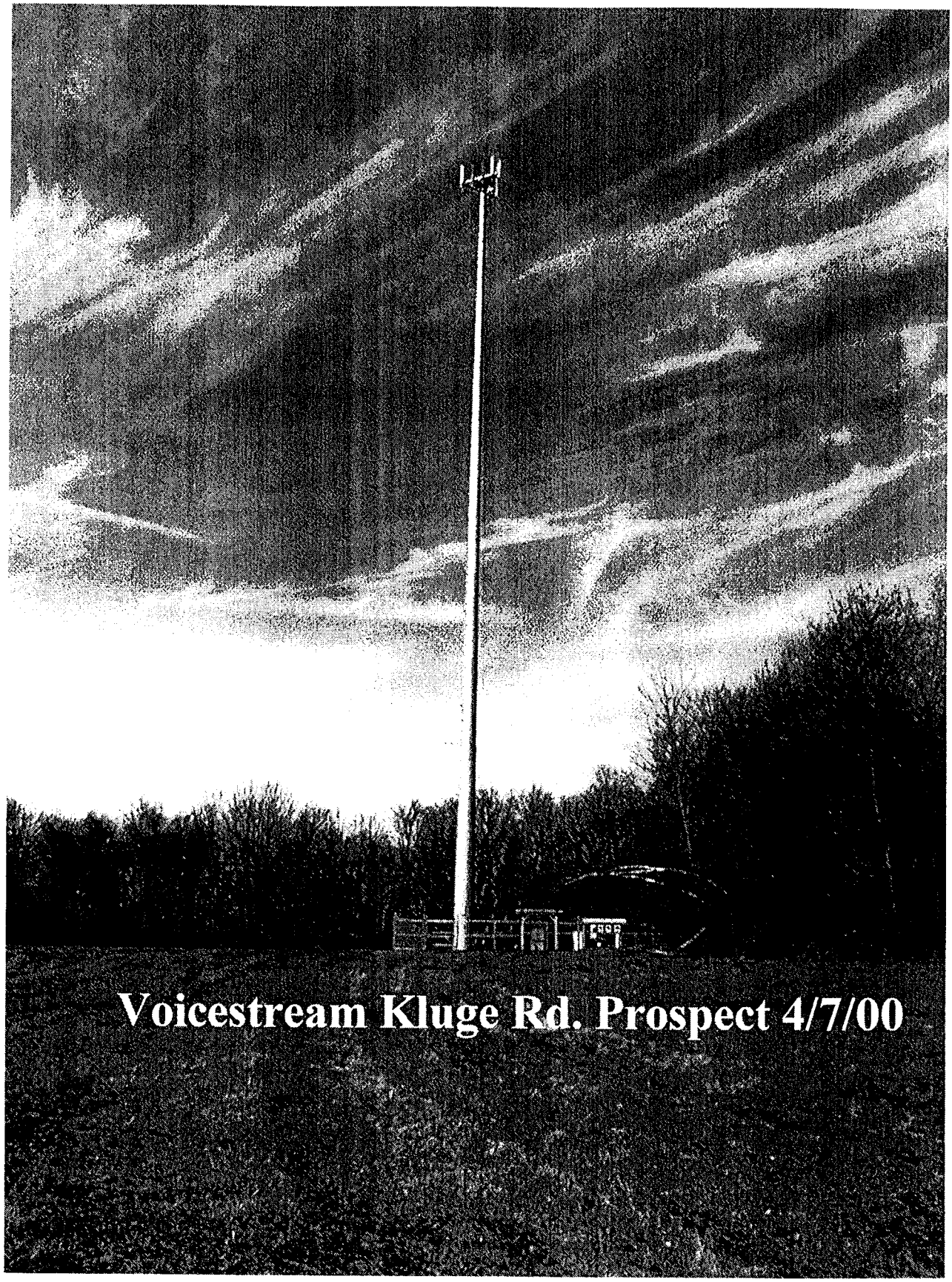
Thank you for your attention and cooperation.

Very truly yours,

Mortimer A. Gelston
Chairman

MAG/RKE/grg

c: Honorable Robert J. Chatfield, Mayor, Town of Prospect
Mike Loucy, Sprint PCS



Voicestream Kluge Rd. Prospect 4/7/00

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

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

April 5, 2000

Honorable Robert J. Chatfield
Mayor
Town of Prospect
Town Office Building
36 Center Street
Prospect, CT 067121699

RE: TS-VOICESTREAM-115-000327 - VoiceStream Wireless request for an order to approve tower sharing at an existing telecommunications facility located at Kluge Road in Prospect, Connecticut.

Dear Mayor Chatfield:

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 Wednesday, April 12, 2000, at 1:30 p.m. in Hearing Room One, 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/jlh

Enclosure: Notice of Tower Sharing

I:\siting\cm\vstream\prospect\chatfiel.doc

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

27 March, 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
Kluge Road, Prospect, Connecticut

Dear Chairman Gelston and Members of the Council:

Pursuant to Connecticut General Statutes §16-50aa, VoiceStream Wireless ("VoiceStream") hereby requests an order from the Connecticut Siting Council ("Council") to approve the proposed shared use by the Applicant of an existing tower located at Kluge Road in Prospect, Connecticut. The tower is owned and operated by Sprint Spectrum L.P. ("Sprint"). VoiceStream proposes to install antennas on the existing tower located within Sprint's leased compound area, and the equipment associated with this facility would be located near the base of the tower within the existing compound (see "Exhibit A"). The Applicant 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

In February, 2000, VoiceStream acquired from Omnipoint Communications, Inc. the "A block" "Wideband PCS" license for the 2-GH_Z PCS frequencies for the Greater New York City area, including the entire State of Connecticut. VoiceStream provides PCS wireless telephone service in the State of Connecticut, which includes the area to be served by VoiceStream's proposed installation.

The Sprint tower at Kluge Road in Prospect is a 190-foot monopole located on a 60' x 60' or 3600 sq. ft. leased compound off Kluge Road. The coordinates for the site are **41-28-11 N** and **72-58-21 W**. The tower currently holds Sprint's antennas at the top level with centerlines at 190 feet. VoiceStream and Sprint have agreed to the proposed shared use of this tower pursuant to mutually acceptable terms and conditions, and Sprint 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.

VoiceStream proposes to install six (6) EMS RR 90-1702 DP antennas at the 180-foot level. The radio transmission equipment associated with these antennas, a Nortel S8000 cabinet, would be located near the base of the tower on an existing concrete pad. Exhibit B contains specifications for the proposed antennas and equipment cabinet.

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 is structurally sound and capable of supporting the proposed VoiceStream antennas. A structural analysis of the tower with the proposed VoiceStream installation has been performed and is attached as Exhibit C. 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 Kluge Road in Prospect. 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 Sprint 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 Sprint and VoiceStream antennas, would be 0.025087 mW/cm^2 , or 2.5087% 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 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, Sprint and VoiceStream 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.

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 accessible from an existing access drive off Kluge Road. VoiceStream is not aware of any other public safety concerns relative to the proposed sharing of the existing tower. In fact, the tower was initially approved by the Prospect Planning and Zoning Commission with an eye toward public health and safety concerns, and the provision of new or improved phone service through shared use of the existing tower will enhance the safety and welfare of area residents.

Conclusion

For the reasons discussed above, the proposed shared use of the existing tower facility at Kluge Road in Prospect, 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. The Applicant therefore requests that the Siting Council issue an order approving the proposed shared use.

Thank you for your consideration of this matter.

Sincerely,

J. Brendan Sharkey
for VoiceStream Wireless, Inc.

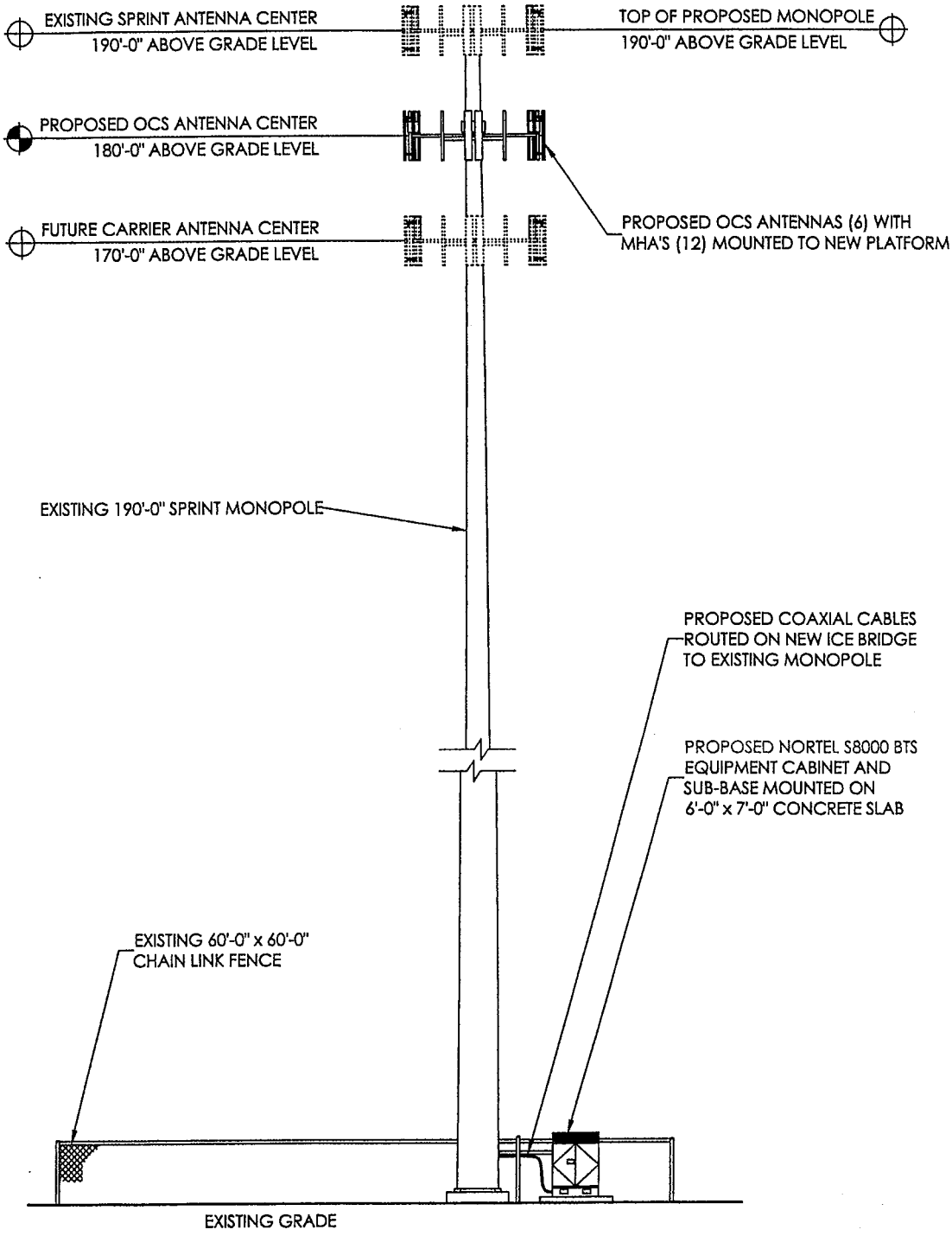
Attachments
cc: Robert J. Chatfield, Mayor of Prospect

Exhibit A

Design Drawings

Kluge Road

Prospect, CT



1 / LE-2 ELEVATION
SCALE: 1/16" = 1'

NOTE:
THIS EXHIBIT REPRESENTS A CONCEPTUAL PLAN BASED ON THE DEVELOPMENT/LEASE AGREEMENT REQUIREMENTS. ACTUAL CONSTRUCTION DOCUMENTS MAY VARY FROM THIS EXHIBIT TO COMPLY WITH ALL APPLICABLE CODES.

OMNIPOINT COMMUNICATIONS INC.
100 Filley Street, Bloomfield, CT 06002
Tel: 860-692-7100 Fax: 860-692-7159

Project: **SPRINT MONOPOLE**
Address: 15 Kluge Road
Prospect, CT 06712

SAC: Mark Finley
R.F. ENG.: Haider Syed
CONSTR: Thomas Cifrino

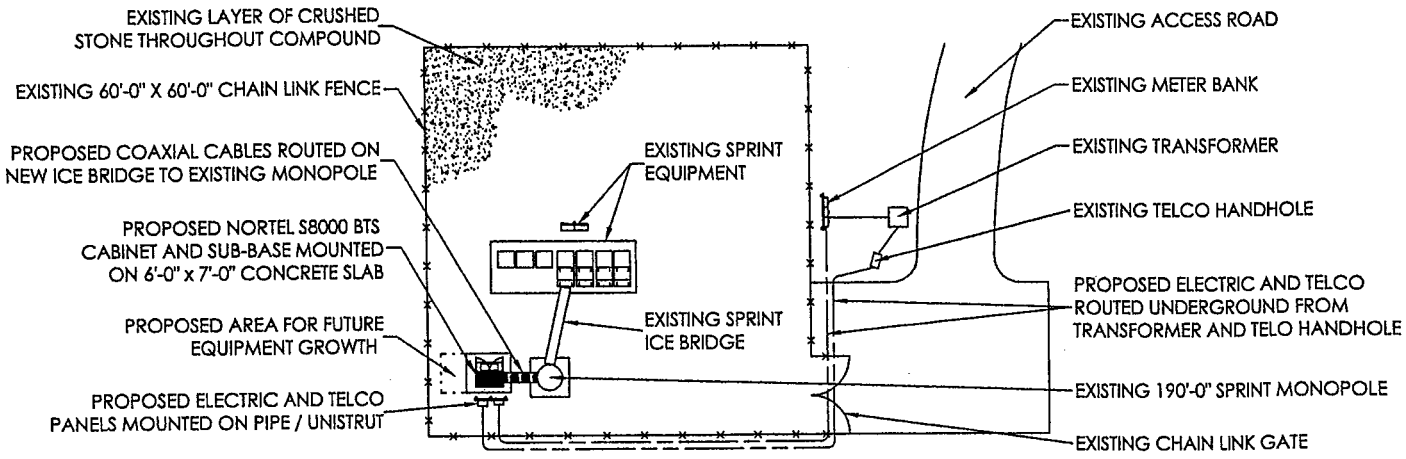
Drawing Title: ELEVATION

Revision:	Date:
ADDED EXISTING ANTENNA TO BE REMOUNTED ON OCS MONOPOLE	01-20-00

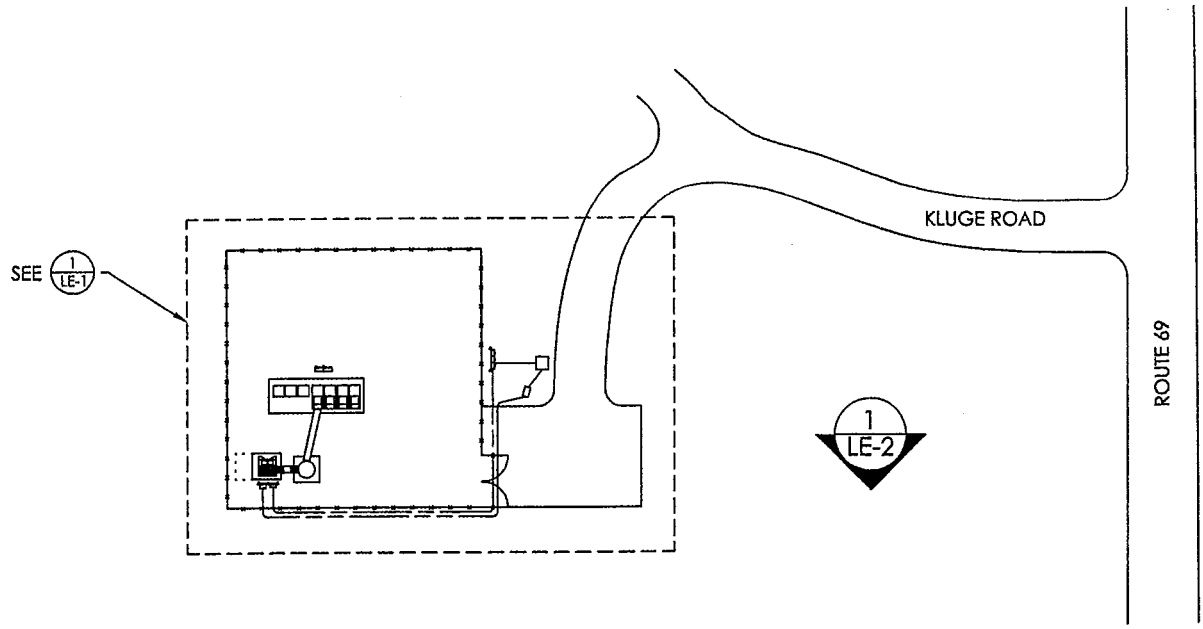
Drawn: DEO
Date: 02-07-00

OCI Search Area: PROSPECT
OCI Site I.D. No.: CT - 11 - 122B

Drawing No.: **LE - 2**



1 / LE-1 SITE LAYOUT
SCALE: 1" = 30'



2 / LE-1 KEY MAP
NO SCALE

LEGEND:
UNDERGROUND POWER LINES
UNDERGROUND TELCO LINES

N

TRUE NORTH TO BE DETERMINED BY RF ENGINEER AT A&E

NOTE:
THIS EXHIBIT REPRESENTS A CONCEPTUAL PLAN BASED ON THE DEVELOPMENT/LEASE AGREEMENT REQUIREMENTS. ACTUAL CONSTRUCTION DOCUMENTS MAY VARY FROM THIS EXHIBIT TO COMPLY WITH ALL APPLICABLE CODES.

OMNIPOINT COMMUNICATIONS INC.
100 Filley Street, Bloomfield, CT 06002
Tel: 860-692-7100 Fax: 860-692-7159

Project: **SPRINT MONOPOLE**
Address: 15 Kluge Road
Prospect, CT 06712

SAC: Mark Finley
R.F. ENG.: Halder Syed
CONSTR: Thomas Cifrino

Drawing Title: SITE LAYOUT

Revision:	Date:

Drawn: DEO
Date: 02-07-00

Drawing No.: **LE - 1**

OCI Search Area: PROSPECT
OCI Site I.D. No.: CT - 11 - 122B

Exhibit B

Equipment Specifications

Kluge Road

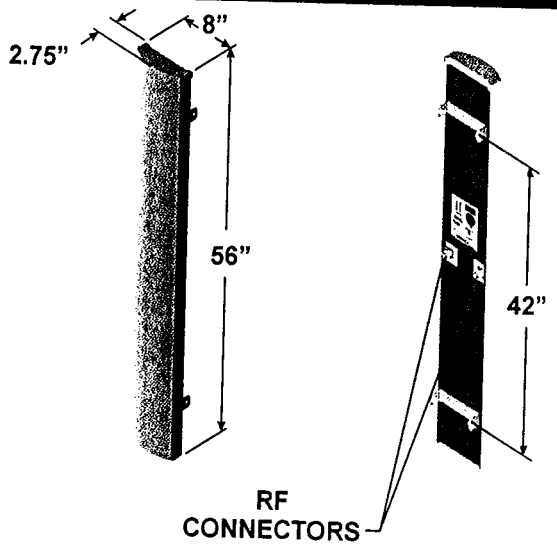
Prospect, CT

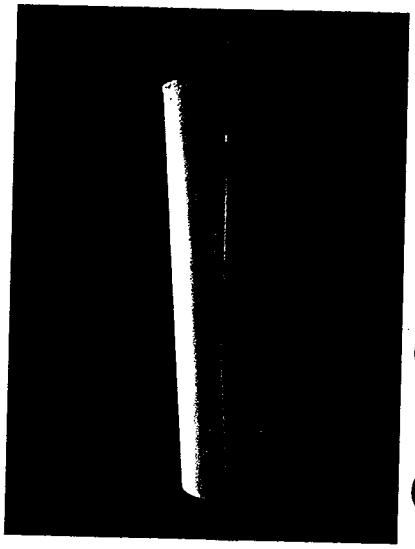
EMS WIRELESS

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	3.1ft (.29 m)
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)

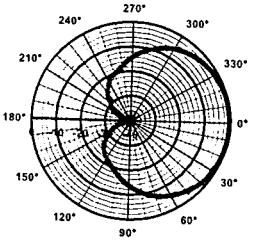
Note: Patent Pending and US Patent number 5, 757, 246.

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.

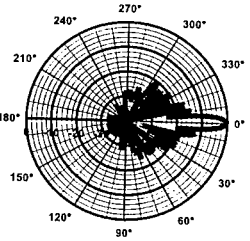
MOUNTING OPTIONS

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"

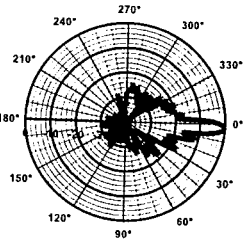
* Model number shown represents a series of products. See mounting options section for specific model number.



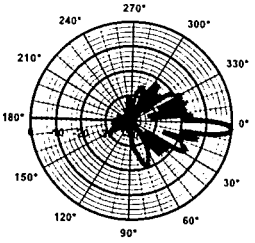
Azimuth



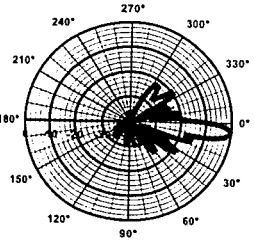
Elevation
0° Downtilt



Elevation
2° Downtilt



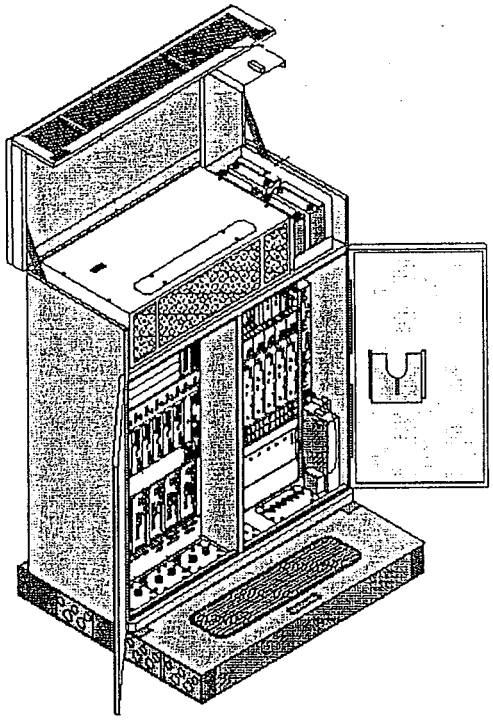
Elevation
4° Downtilt

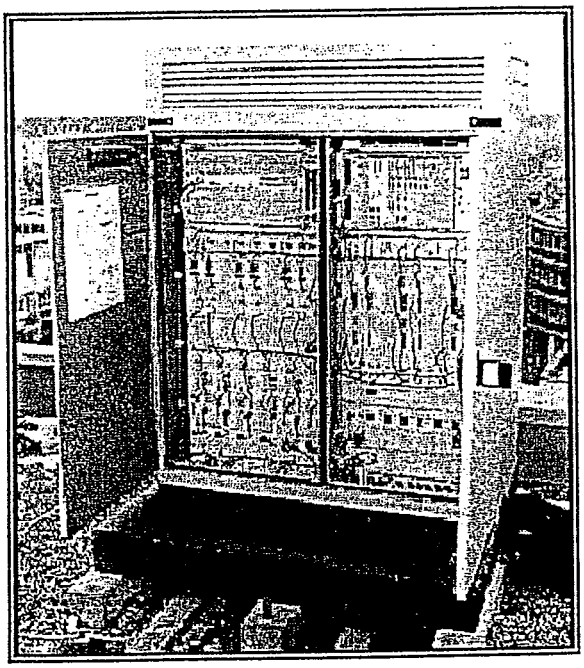


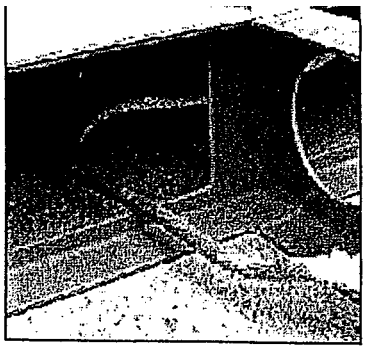
Elevation
6° Downtilt

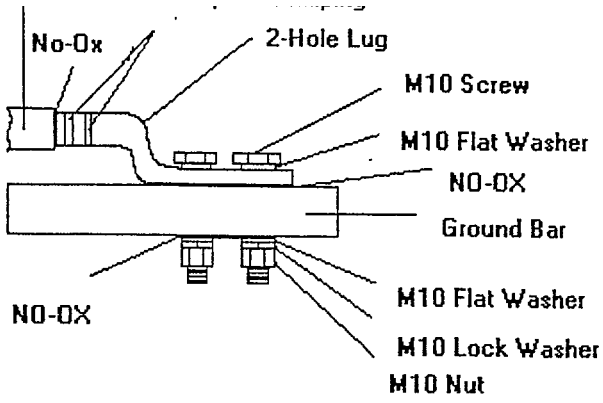
NORTEL NETWORKS™

S8000 BTS
Site Specifications









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

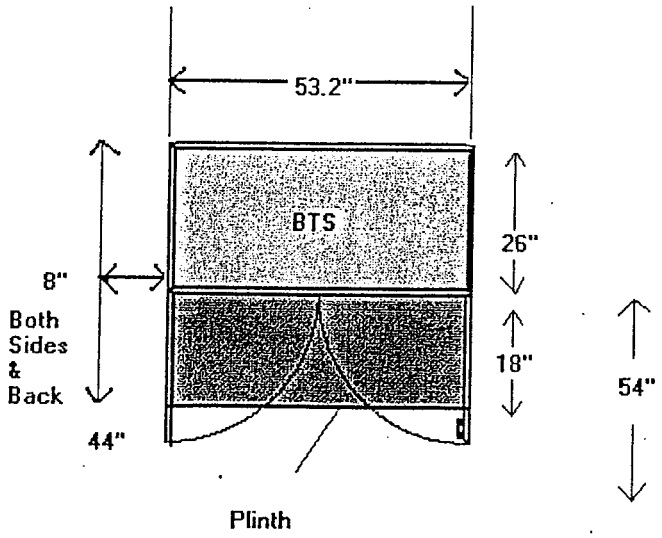
Clearances while transporting in building:
- Door Access:
  - Height: 6.6 feet
  - Width 3 feet
- Corridor Access:
  - Height: 6.6 feet
  - Width: 3.6 feet (straight), 6.6 feet (right angle)

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



Plinth

Floor Characteristics

Minimum Floor Resistance:
123 pounds/foot^2

Flatness:
¼ inch over 78 inches

Electrical Specifications

Split Single-Phase

3 wires plus ground

L1: Black 6 gauge

L2: Red 6 gauge

Neutral: White 6 gauge

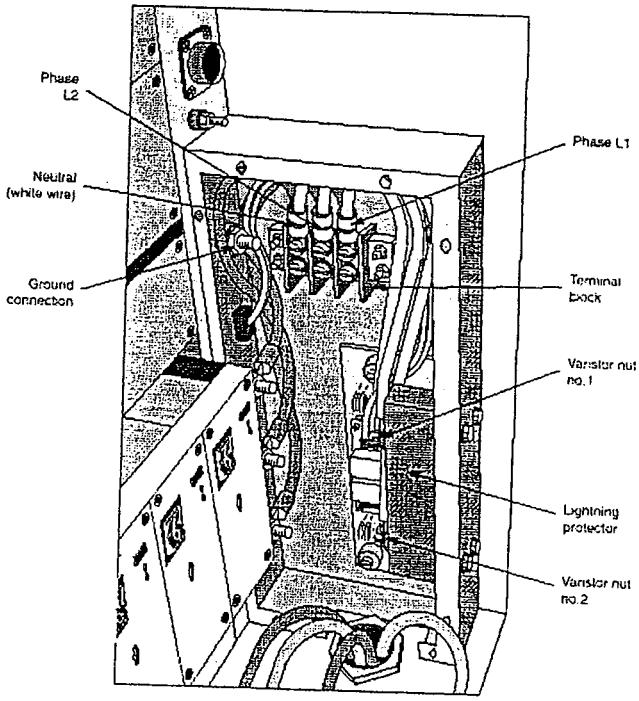
Ground: Yellow/Green 6 gauge

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

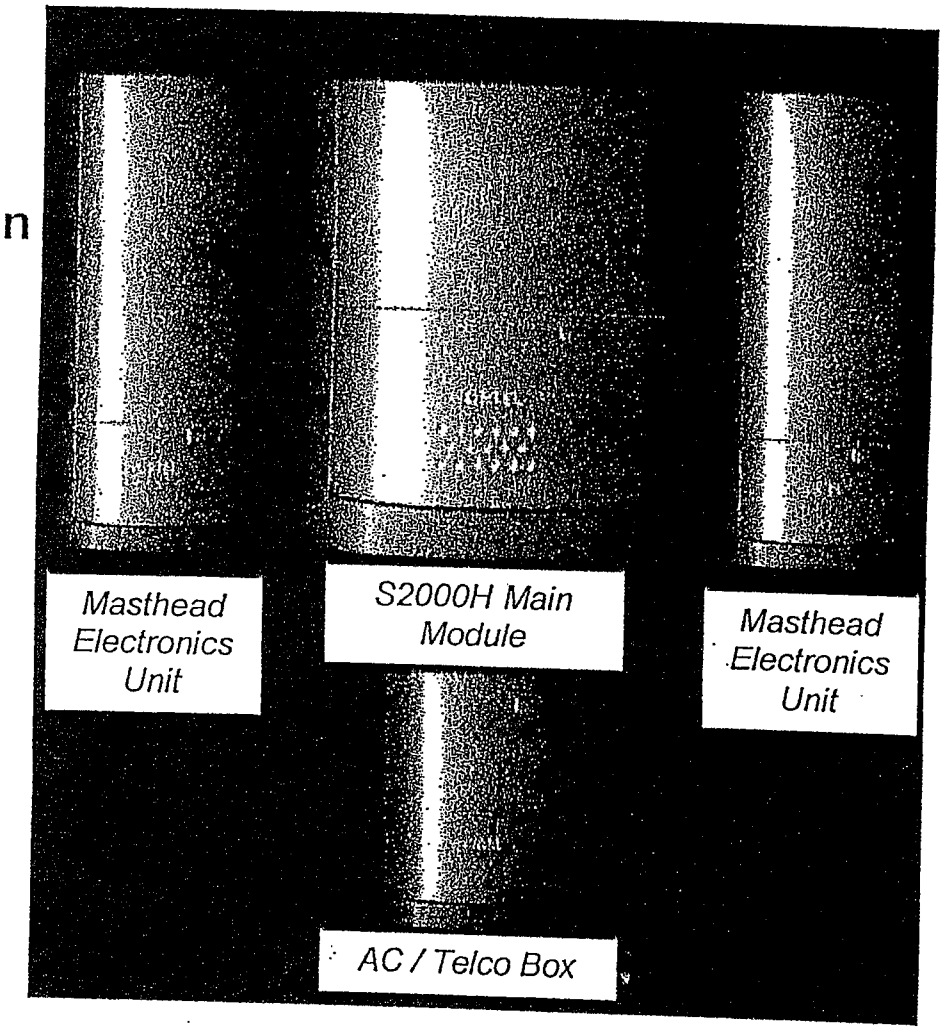
40A, bipolar, C curve

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.

S2000H

- **O1, O2 and S11**
- **S2000H Main Module**
  - 29.1" x 21.3" x 7.8" - 100 lbs
  - 2 installable modules - less than 50 lbs each
- **Masthead Electronics Units (MEU)**
  - HPA, 2 LNAs and a duplexor
  - Remoteable from Main Module: up to 230 feet
  - 29.1" x 10.7" x 13.0" - 60 lbs
- **AC/Telco Termination box**
  - breaker, battery backup and lightning protection
  - 16" x 12" x 8" - 40 lbs



5/27/97

VoiceStream WIRELESS

Exhibit C

Structural Analysis

Kluge Road

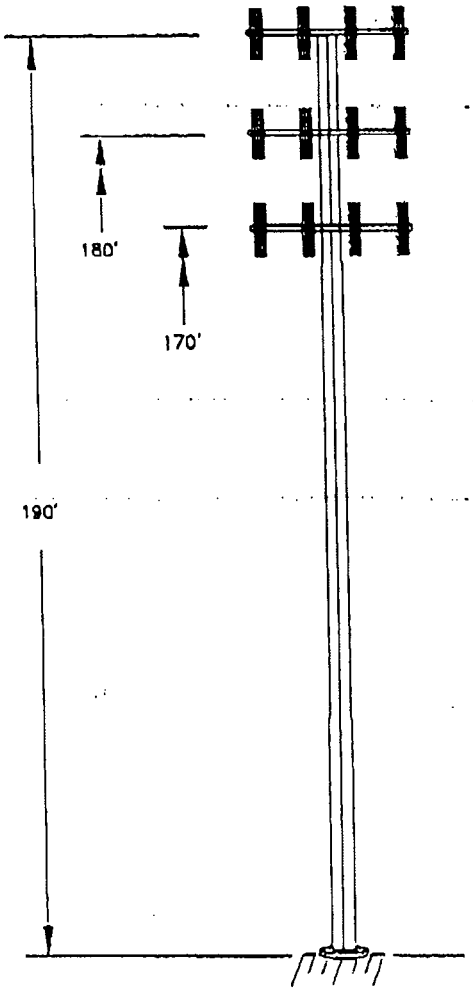
Prospect, CT

ENGINEERED ENDEAVORS INCORPORATED

Customer SPRINT PCS/NJ By L. PADGETT 7/9/99 (Date)

Structure 190' MONOPOLE Checked ____ 5266 (Job/Quote No.)

SITE LOCATION – NEW HAVEN COUNTY, CT
SITE NAME – NORTH BETHANY, CT33XC514



ANTENNA LOADING:

(12) DB 980 DIRECTIONAL ANTENNAS
LOW PROFILE PLATFORM

(12) DB 980 DIRECTIONAL ANTENNAS
LOW PROFILE PLATFORM @ 180' (FUTURE)

(12) DB 980 DIRECTIONAL ANTENNAS
LOW PROFILE PLATFORM @ 170' (FUTURE)

DESIGN NOTES:

DESIGNED IN ACCORDANCE WITH TIA/EIA 222 F
89 MPH BASIC WIND SPEED
1/2" RADIAL ICE

CASE I – 50 MPH OPERATIONAL WIND SPEED
ALLOWABLE ROTATION = 3.0° @ TOP

CASE II – 89 MPH BASIC WIND SPEED

CASE III – 75% OF 89 MPH BASIC WIND
WITH 1/2" SIMULTANEOUS ICE

NOTE: DESIGN IS IN COMPLIANCE WITH
SPRINT SPECIFICATION SSEO 3.001.06.001

NOTE: IT IS THE RESPONSIBILITY OF THE PURCHASER TO VERIFY THAT THE WIND LOADS AND DESIGN CRITERIA SPECIFIED MEET THE REQUIREMENTS OF ALL LOCAL BUILDING CODES

STATE OF CONNECTICUT
TIMOTHY JAMES GOODING
LICENSED PROFESSIONAL ENGINEER

ENGINEERED ENDEAVORS, INC.

7610 Jenther Drive * Mentor, Ohio 44060
Telephone: (440) 918-1101 * Telefax: (440) 918-1108

VoiceStream WIRELESS

Exhibit D

Power Density Calculations

Kluge Road

Prospect, CT

100 Filley St., Bloomfield, CT 06002
Phone: (860) 692 - 7129
Fax: (860) 692 - 7159

Technical Memo

To: Brendan Sharkey
From: Chetan Dhaduk (Radio Engineering Consultant)
cc: Mike Fulton
Subject: Power Density Report for CT11122B
Date: 3/20/00

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 Power Density Calculation for Sprint Tower @ Klu ge Road, Prospect, 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 OCI transmitters are in the 1930-1950 MHz frequency band.
2) The antenna cluster consists of three sectors. All three sectors consist with 2 antenna EMS RR-90-17-02DP per sector.
3) The antenna height is 180 feet centerline.
4) The maximum transmit power from each sector is 1502.76 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 the tower is 0.010176 mw/cm^2. This value represents only 1.0176% of the Maximum Permissible Emission (MPE) set forth in the FCC/ANSI/IEEE C95.1-1991 standard of 1000 microwatts per square centimeter (μw/cm^2). The combined power density for VoiceStream & Sprint will remain well below the FCC Standard. Details are shown in the attachment. Furthermore, the proposed antenna location for VoiceStream Wireless at Power Density Calculation for Sprint Tower @ Klu ge Road, Prospect, 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 installation on Sprint Tower @ Klu ge Road, Prospect, CT

Region 11 - Connecticut Power Density Calculation - Worst Case			
Base Station TX output	20 W	43.01	
Number of channels	4		
Antenna Model	EMS: RR-90-17/ RV-90-17		
Antanna Gain	16.5 dBi		
Cable Size	1 5/8"		
Cable Length	195 ft		
Jumper & Connector loss	1.5 dB		
Cable Loss per foot	0.0116		
Total Cable Loss	2.262 dB		
Total Attenuation	3.762 dB		
Total EIRP per channel	55.75 dB	375.69	W
Total EIRP per sector	61.77 dB	1502.76	W
Ground Reflection	1.6		
Frequency	1930 MHz		
Antenna Height	180 ft	5486.4	cm
nsg	12.738		
Power Density (S) =	0.010176 mW / cm^2		
% MPE =	1.0176%		

Combined Power Density With Sprint	*0.025087 mW/cm^2*
Combined %MPE With Sprint	*2.5087%*

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

Power Density Calculation for Sprint Tower @ Klu ge Road, Prospect, CT

Inputted Parameters

Antenna Type: EMS_RR901702DP

Antenna Centerline Height (Feet): 180

Mechanical Downtilt (Degrees): 0

Base Station TX Power (dBm): 43.01

Coax and Connector Loss (dB): 3.762

Number of Channels per Sector (TXs): 4

Power per Sector (EiRP Watts)	Distance from Base to Location (ft)	Height at Location, Relative to Base (ft)	Number of Times Below Federal Safety Limit of 1.0 mW/cm²
1502.76	1	5	185,000
1502.76	10	5	29,300
1502.76	100	5	23,400
1502.76	500	5	8,100
1502.76	1000	5	14,900
1502.76	5000	5	19,000

Notes: Equations given in "FCC OET Bulletin 65, Edition 97-01", in conjunction with manufactures specific antenna data were used in the field strength calculations. The resultant values represent worst case levels for field strength intensity.