



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

July 13, 2001

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

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

RE: **TS-VOICESTREAM-116-010530** - VoiceStream Wireless request for an order to approve tower sharing at an existing telecommunications facility located at 154 Sayle Avenue, Putnam, Connecticut.

Dear Attorney Humes:

At a public meeting held July 11, 2001, 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 with the condition that the tower is strengthened with replacement bolts, as specified by a Professional Engineer.

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 letters dated May 30, 2001, June 18, 2001, and June 19, 2001.

Thank you for your attention and cooperation.

Very truly yours,


Mortimer A. Gelston
Chairman

MAG/RKE/laf

c: Honorable Daniel S. Rovero, Mayor, Town of Putnam
Gerard Cotnoir, Planning Chairman, Town of Putnam
Esther McNany, SBA, Inc.
Sandy M. Carter, Verizon Wireless
Peter W. van Wilgen, SNET Mobility LLC
Dawn Holmes, SNET
Christopher B. Fisher, Esq., Cuddy & Feder & Worby LLP
Julie M. Donaldson, Esq., Hurwitz & Sagarin LLC
Ronald C. Clark, Nextel Communications
Kenneth C. Baldwin, Esq., Robinson & Cole

ROBINSON & COLE^{LLP}

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Date: July 11, 2001

No. of Pages (including cover): 3

Recipient(s) List

Name	Company	Fax Number	Phone Number
Joel M. Rinebold	Connecticut Siting Council	860-827-2950	860-827-2935
Sandy M. Carter	Verizon Wireless	203-294-7424	203-294-8519
Stephen J. Humes, Esq.	LeBoeuf, Lamb, Greene & MacRae L.L.P.	860-293-3555	860-293-3744
Esther McNany	SBA, Inc.	860-659-9140	860-659-9101

Additional Message:

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July 11, 2001

Via Facsimile

Mr. Joel M. Rinebold
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051



Re: Existing Tower Facility at 154 Sayle Avenue in Putnam, Connecticut

Dear Mr. Rinebold:

Sandy Carter at Verizon Wireless asked me to respond to your request for additional information regarding the shared use of the existing SBA, Inc. tower at 154 Sayle Avenue in Putnam, Connecticut. As you know, the Siting Council approved the shared use of this tower by Verizon Wireless on July 15, 1999. As a part of that filing, Verizon Wireless identified two existing carriers sharing the tower; Sprint PCS at the 177-foot level and Nextel Communications at the 167-foot level. Verizon Wireless antennas were to be located 10 feet below the Nextel antennas, at the 157-foot level.

According to representatives at SBA, at the time of installation, the Nextel Communications' antennas were mistakenly installed at the 161'6" level rather than the 167' level and Verizon Wireless antennas were then installed at the 149'3" level rather than the 157' level. Sprint antennas were properly installed at the 178'5" level.

As you requested, included below are revised power density calculations for Sprint, Nextel and Verizon Wireless. These calculations are intended to correct those calculations submitted as part of Verizon Wireless' June 30, 1999 filing.

ROBINSON & COLE LLP

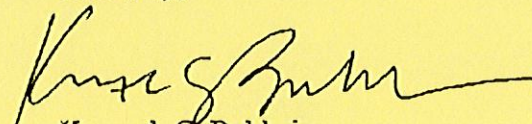
Mr. Joel M. Rinebold
July 11, 2001
Page 2

	<u>Applicable Standard</u>	<u>Calculated "Worst Case"</u>	<u>% of Standard</u>
Verizon Wireless	0.583 mW/cm ²	0.0307	5.26
Sprint	1.00 mW/cm ²	0.0151	1.51
Nextel	0.572 mW/cm ²	0.0124	<u>2.17</u>
			8.94

As indicated in its May 30, 2001 filing, VoiceStream antennas will add 1.1419% of the standard for a total of 10.0819% of the standard.

On behalf of Verizon Wireless, I apologize for the confusion resulting from the changes in antenna locations on the SBA tower. If you have any additional questions or need any additional information regarding the shared use of this tower please do not hesitate to contact me.

Sincerely,



Kenneth C. Baldwin

KCB/kmd

Attachments

cc: Sandy M. Carter
Stephen J. Humes, Esq.
Esther K. McNany



July 10, 2001

Joel M. Reinbold
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051



RE: SBA Telecommunications Facility
154 Sayle Avenue, Putnam CT

Dear Mr. Reinbold:

It has recently come to my attention that there has been some discrepancy in the information that has been filed with the Siting Council on the above referenced site. It appears one of our tenants did not mount their equipment on their assigned rad center, thus misaligning the carriers that followed.

In order for us to correct this situation and obtain the most accurate information, SBA personnel was sent to conduct an on site-investigation. A tape drop was conducted utilizing a Lufkin calibrated steel reinforced engineering tape measure specially designed for this type of application. Our field investigation yielded the following information:

Sprint - mounted at a 178'5" rad center
Nextel - mounted at a 161'6" rad center
Verizon - mounted at a 149'3" rad center

In addition, there are three (3) additional carriers who have leased tower space but are not yet on air. They are: AT&T at 167', Cingular at 137', and Voicestream at 185'.

We apologize for any confusion and misinformation that has occurred. SBA is now taking corrective measures to prevent a reoccurrence of this incident. Details outlining these measures will be forwarded to you shortly.

We hope this clarifies any misunderstandings/misinformation that has occurred. Thank you for your understanding in this matter. If you have any questions, please call.

Sincerely,

Esther K. McNany
Territory Manager

Cc: Sandy Carter, Verizon
Sherry Sukow, Voicestream



FACSIMILE TRANSMITTAL

TO: Joel Rinebold

FROM: Esther McNany

FAX: (860) 827-2950

DATE: July 11, 2001

RE: 8772/Putnam

NO. OF PAGES INCLUDING COVER: 2

URGENT ☐

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80 Eastern Blvd, Glastonbury, CT 06033
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33A

TESTIMONY TRANSMITTAL

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TO: [illegible]

DATE: JUL 11 2001

FILE: [illegible]

NO. OF PAGES: [illegible]

RE: [illegible]

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Hartford, CT 06103-4000
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July 10, 2001

Joel M. Reinbold
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: SBA Telecommunications Facility
154 Sayle Avenue, Putnam CT



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Sincerely,

Esther K. McNany
Territory Manager

Cc: Sandy Carter, Verizon
Sherry Sukow, Voicestream

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June 18, 2001

VIA HAND DELIVERY

Joel M. Rinebold
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051



Re: VoiceStream - Supplemental Power Density Information

Dear Mr. Rinebold:

On May 30, 2001, VoiceStream Wireless Corporation ("VoiceStream") submitted two Notices of Exempt Modification and a Tower Share Application to the Connecticut Siting Council ("The Council") with respect to three tower sites: Rockland Road, Norwalk, Rockdale Road, West Haven and Sayle Avenue, Putnam. Subsequent to these filings, your intern Robert Curry brought the Council's need for additional power density information to VoiceStream's attention. In response to these discussions, VoiceStream has updated the power densities for these towers and now submits them for the Council's review. Attached to this letter, I have provided 23 copies of these updates for distribution to the Council as well as your staff. Please feel free to contact me should you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Kurt Sheathelm'.

Kurt Sheathelm
Paralegal

cc: Frank J. Esposito, Mayor, City of Norwalk
H. Richard Borer, Jr., Mayor, City of West Haven,
Daniel S. Rovero, Mayor, Town of Putnam
Attorney Stephen J. Humes

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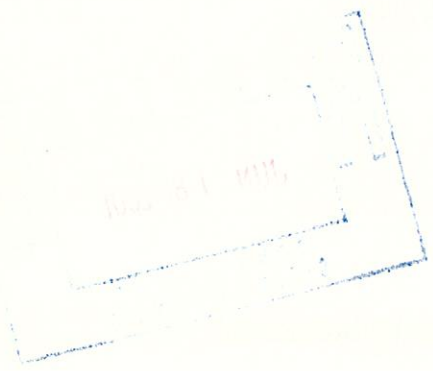
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VOICESTREAM WIRELESS CORPORATION

100 Filley St, Bloomfield, CT 06002-1853

Phone: (860) 692-7100

Fax: (860) 692-7159

Technical Memo

To: Karina Hansen
From: Solomon Berhe Radio Engineering Consultant
cc: Mike Fulton
Subject: Power Density Report for CT-11-114D
Date: 13-Jun-01

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 50 Rockland Road, Norwalk, CT. This study incorporates the most conservative consideration 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 Voicestream Wireless transmitters are in the 1930-1950 MHz frequency band.
- 2) The antenna cluster consists of three sectors, with 4 antennas per sector. The model number for each antenna is Allgon EMS-RR90-17-02DPL2.
- 3) The antenna height is 170 Feet center line.
- 4) The maximum transmit power from each sector is 2417.24 Watts Effective Isotropic Radiated Power (EIRP) assuming 8 channels per sector.
- 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 VoiceStream Wireless Corporation PCS antenna installation on an Existing Lattice Tower at 50 Rockland Road, Norwalk, CT, is 0.018350 mw/cm². This value represents only 1.8351 % of the maximum Permissible Emission (MPE) standard of 1000 microwatts per square centimeter (uw/cm²) set forth in the FCC/ANSI/IEEE C95.1-1991. The combined Power Density with other carriers will be 20.0350 % of the standard. Details are shown in the attachment.

Furthermore, the proposed antenna location for VoiceStream Wireless 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

Region 11 - Connecticut	
Power Density Calculation	
Site: CT-11-114D	
Site Address: 50 Rockland Road	
Town: Norwalk	
Pole Height: 180FT	
Tower Style: Existing Lattice Tower	
Base Station TX output	20 W
Number of channels	8
Antenna Model	EMS-RR90-17-02DPL2
Cable Size	1-5/8 "
Cable Length	180.0 ft
Antenna Height	170.0 ft
Ground Reflection	1
Frequency	1930.00 MHz
Jumper & Connector loss	2.62 dB
Antenna Gain	16.5 dBi
Cable Loss per foot	0.0116 Loss per/ft
Total Cable Loss	2.088 dB
Total Attenuation	4.708 dB
Total EIRP per channel	54.80 dB
(In Watts)	302.16 W
Total EIRP per sector	63.83 dB
(In Watts)	2417.24 W
msg	11.792
Power Density (S) =	0.018350 mW / cm ²
% MPE =	1.8350%
Equation Used :	
$S = \frac{(1000(grf)^2(Power)^{10} \text{ (msg/10)})}{4\pi (R)^2}$	
Office of Engineering and Technology (OET) Bulletin 65, Edition 97-01, August 1997	

Total % MPE for other carriers = 18.2%
Combined % MPE with BAM, Nextel, SNET = 20.0350%



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

Technical Memo

To: Karina Hansen
From: Haider Syed (Radio Engineering Consultant)
cc: Mike Fulton
Subject: Power Density Report for CT-11-193A
Date: 06/13/01

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 a 182 Ft. existing lattice tower at 24 Rockdale Road, West Haven, 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 Voicestream transmitters are in the 1930-1945 MHz frequency band.
- 2) The antenna cluster consists of 3 sectors, with 4 antennas per sector. The model number for antennas is EMS-RR90-17-0DPL2.
- 3) The antenna height is 136 feet centerline.
- 4) The maximum transmit power from each sector is 2577.27 Watts Effective Isotropic Radiated Power (EiRP) assuming 8 channels per sector.
- 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 on an existing lattice tower at 24 Rockdale Road, West Haven, CT is 0.030571 mw/cm². This value represents only 3.0571% of the Maximum Permissible Emission (MPE) standard of 1000 microwatts per square centimeter (uw/cm²) set forth in the FCC/ANSI/IEE C95.1-1991.



Page 2 of the Technical Memo
Power Density Report for CT-11-193A
05/22/01

Two methods were used in calculating the combined Power Density with other carriers. Based on the data provided to Voicestream, power density calculations were made both using worst-case situation and with -10dB correction factor to account for the antenna off-angle attenuation with respect to ground level. In the absence of complete details used by other carriers, this correction factor is deemed reasonable. The combined power density calculations with other carriers are as follows:

Tower Occupants	Calculation Method	Worst-case	With -10 dB Correction Factor
Other Carriers % MPE	Worst-case	65.4047%	
	With -10 dB Correction Factor		6.5405%
Voicestream % MPE		3.0571%	3.0571%
Total % MPE		68.4618%	9.5976%

Please refer to the attachments for more details.

Furthermore, the proposed antenna location for VoiceStream Wireless, 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

Region 11 - Connecticut Power Density Calculation Site: CT-11-193A Site Address: 24 Rockdale Road Town: West Haven Pole Height: 182FT Tower Style: Existing Lattice Tower	
Base Station TX output	20 W
Number of channels	8
Antenna Model	EMS-RR90-17-02DPL2
Cable Size	1-5/8 "
Cable Length	156.0 ft
Antenna Height	136.0 ft
Ground Reflection	1.6
Frequency	1930.00 MHz
Jumper & Connector loss	2.62 dB
Antenna Gain	16.5 dBi
Cable Loss per foot	0.0116 Loss per/ft
Total Cable Loss	1.8096 dB
Total Attenuation	4.4296 dB
Total EIRP per channel	55.08 dB
(In Watts)	322.16 W
Total EIRP per sector	64.11 dB
(In Watts)	2577.27 W
nsg	12.0704
Power Density (S) =	0.030571 mW / cm ²
% MPE =	3.0571%
Equation Used : $S = \frac{(1000(grf))^2 (Power)^{10} \text{ (nsg/10)}}{4\pi (R)^2}$	
Office of Engineering and Technology (OET) Bulletin 65, Edition 97-01, August 1997	

Total % MPE for other carriers = 65.4047%
Total % MPE for Voicestream=3.0571%
Total % MPE = 68.4618%

Region 11 - Connecticut Power Density Calculation Site: CT-11-193A Site Address: 24 Rockdale Road Town: West Haven Pole Height: 182FT Tower Style: Existing Lattice Tower	
Base Station TX output Number of channels Antenna Model Cable Size Cable Length Antenna Height Ground Reflection Frequency Jumper & Connector loss	20 W 8 EMS-RR90-17-02DPL2 1-5/8 " 156.0 ft 136.0 ft 1.6 1930.00 MHz 2.62 dB 16.5 dBi 0.0116 Loss per/ft 1.8096 dB 4.4296 dB 55.08 dB 322.16 W 64.11 dB 2577.27 W 12.0704 nsg
Power Density (S) = 0.030571 mW / cm²	
% MPE = 3.0571%	
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	

Total % MPE for other carriers = 6.5405%
Total % MPE for Voicemail=3.0571%
Total % MPE = 9.5976%

**Power Density for Existing Installations on Tower at 24 Rockdale Rd., West Haven CT 06516
(Using -10dB Correction Factor)**

451.175 MHz				
Power Density Calculation - Worst Case				
Total ERP	500 W	56.99	dBm	
Corrected ERP	50.00 W	46.99	dBm	
Total EIRP	82.03 W	49.14	dBm	
Ground Reflection	1.6			
Frequency	451.175 MHz			
Antenna Height	199 ft	6065.52	cm	
%MPE Standard	0.300783333			
Power Density (S) =	0.000454 mW / cm²			
% MPE =	0.1511 %			

451.9750 MHz				
Power Density Calculation - Worst Case				
Total ERP	500 W	56.99	dBm	
Corrected ERP	50.00 W	46.99	dBm	
Total EIRP	82.03 W	49.14	dBm	
Ground Reflection	1.6			
Frequency	451.975 MHz			
Antenna Height	199 ft	6065.52	cm	
%MPE Standard	0.301316667			
Power Density (S) =	0.000454 mW / cm²			
% MPE =	0.1508 %			

452.2750 MHz				
Power Density Calculation - Worst Case				
Total ERP	500 W	56.99	dBm	
Corrected ERP	50.00 W	46.99	dBm	
Total EIRP	82.03 W	49.14	dBm	
Ground Reflection	1.6			
Frequency	452.275 MHz			
Antenna Height	199 ft	6065.52	cm	
%MPE Standard	0.301516667			
Power Density (S) =	0.000454 mW / cm²			
% MPE =	0.1507 %			

452.8000 MHz				
Power Density Calculation - Worst Case				
Total ERP	500 W	56.99	dBm	
Corrected ERP	50.00 W	46.99	dBm	
Total EIRP	82.03 W	49.14	dBm	
Ground Reflection	1.6			
Frequency	452.8 MHz			
Antenna Height	199 ft	6065.52	cm	
%MPE Standard	0.301866667			
Power Density (S) =	0.000454 mW / cm²			
% MPE =	0.1505 %			

461.0750 MHz				
Power Density Calculation - Worst Case				
Total ERP	500 W	56.99	dBm	
Corrected ERP	50.00 W	46.99	dBm	
Total EIRP	82.03 W	49.14	dBm	
Ground Reflection	1.6			
Frequency	461.075 MHz			
Antenna Height	199 ft	6065.52	cm	
%MPE Standard	0.307383333			
Power Density (S) =	0.000454 mW / cm²			
% MPE =	0.1478 %			

CO-LOCATION MPE TABLE	
1	451.175 MHz @199 ft. = 0.1511%
2	451.9750 MHz @199 ft. = 0.1508%
3	452.2750 MHz @199 ft. = 0.1507%
4	452.8000 MHz @199 ft. = 0.1505%
5	461.0750 MHz @199 ft. = 0.1478%
6	462.4750 MHz @199 ft. = 0.1474%
7	463.5000 MHz @199 ft. = 0.1471%
8	463.8750 MHz @199 ft. = 0.1470%
9	464.7000 MHz @199 ft. = 0.1467%
10	452.9750 MHz @199 ft. = 0.1505%
11	462.0500 MHz @199 ft. = 0.1475%
12	459.0750 MHz @199 ft. = 0.1485%
13	454.0750 MHz @180 ft. = 0.5138%
14	929.6625 MHz @199 ft. = 0.5133%
15	929.7625 MHz @199 ft. = 0.5132%
16	929.7125 MHz @199 ft. = 0.5132%
17	940.2250 MHz @199 ft. = 0.5075%
18	940.0000 MHz @102 ft. = 0.8281%
19	162.0000 MHz @199 ft. = 0.2272%
20	13.6 GHz @175 ft. = 0.0588%
21	TV Ch. 28 @178 ft. = 1.0765%
22	Verizon @146 ft. = 0.5500%
Total % MPE for Co-location = 6.5405%	

Note: Based on data provided by tower owner.

**Power Density for Existing Installations on Tower at 24 Rockdale Rd., West Haven CT 06516
(Using -10dB Correction Factor)**

462.4750 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Corrected ERP	50.00 W	46.99	dBm
Total EIRP	82.03 W	49.14	dBm
Ground Reflection	1.6		
Frequency	462.475 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.308316667		
Power Density (S) =		0.000454 mW / cm²	
% MPE =		0.1474 %	

463.5000 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Corrected ERP	50.00 W	46.99	dBm
Total EIRP	82.03 W	49.14	dBm
Ground Reflection	1.6		
Frequency	463.5 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.309		
Power Density (S) =		0.000454 mW / cm²	
% MPE =		0.1471 %	

463.8750 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Corrected ERP	50.00 W	46.99	dBm
Total EIRP	82.03 W	49.14	dBm
Ground Reflection	1.6		
Frequency	463.875 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.30925		
Power Density (S) =		0.000454 mW / cm²	
% MPE =		0.1470 %	

464.7000 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Corrected ERP	50.00 W	46.99	dBm
Total EIRP	82.03 W	49.14	dBm
Ground Reflection	1.6		
Frequency	464.7 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.3098		
Power Density (S) =		0.000454 mW / cm²	
% MPE =		0.1467 %	

452.9750 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Corrected ERP	50.00 W	46.99	dBm
Total EIRP	82.03 W	49.14	dBm
Ground Reflection	1.6		
Frequency	452.975 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.301983333		
Power Density (S) =		0.000454 mW / cm²	
% MPE =		0.1505 %	

**Power Density for Existing Installations on Tower at 24 Rockdale Rd., West Haven CT 06516
(Using -10dB Correction Factor)**

462.0500 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Corrected ERP	50.00 W	46.99	dBm
Total EIRP	82.03 W	49.14	dBm
Ground Reflection	1.6		
Frequency	462.05 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.308033333		
Power Density (S) =	0.000454 mW / cm²		
% MPE =	0.1475 %		

459.0750 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Corrected ERP	50.00 W	46.99	dBm
Total EIRP	82.03 W	49.14	dBm
Ground Reflection	1.6		
Frequency	459.075 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.30605		
Power Density (S) =	0.000454 mW / cm²		
% MPE =	0.1485 %		

454.0750 MHz			
Power Density Calculation - Worst Case			
Total ERP	1400 W	61.46	dBm
Corrected ERP	140.00 W	51.46	dBm
Total EIRP	229.68 W	53.61	dBm
Ground Reflection	1.6		
Frequency	454.075 MHz		
Antenna Height	180 ft	5486.4	cm
%MPE Standard	0.302716667		
Power Density (S) =	0.001555 mW / cm²		
% MPE =	0.5138 %		

929.6625 MHz			
Power Density Calculation - Worst Case			
Total ERP	3500 W	65.44	dBm
Corrected ERP	350.00 W	55.44	dBm
Total EIRP	574.21 W	57.59	dBm
Ground Reflection	1.6		
Frequency	929.6625 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.619775		
Power Density (S) =	0.003181 mW / cm²		
% MPE =	0.5133 %		

929.7625 MHz			
Power Density Calculation - Worst Case			
Total ERP	3500 W	65.44	dBm
Corrected ERP	350.00 W	55.44	dBm
Total EIRP	574.21 W	57.59	dBm
Ground Reflection	1.6		
Frequency	929.7625 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.619841667		
Power Density (S) =	0.003181 mW / cm²		
% MPE =	0.5132 %		

**Power Density for Existing Installations on Tower at 24 Rockdale Rd., West Haven CT 06516
(Using -10dB Correction Factor)**

929.7125 MHz			
Power Density Calculation - Worst Case			
Total ERP	3500 W	65.44	dBm
Corrected ERP	350.00 W	55.44	dBm
Total EIRP	574.21 W	57.59	dBm
Ground Reflection	1.6		
Frequency	929.7125 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.619808333		
Power Density (S) =	0.003181 mW / cm ²		
% MPE =	0.5132 %		

940.2250 MHz			
Power Density Calculation - Worst Case			
Total ERP	3500 W	65.44	dBm
Corrected ERP	350.00 W	55.44	dBm
Total EIRP	574.21 W	57.59	dBm
Ground Reflection	1.6		
Frequency	940.225 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.626816667		
Power Density (S) =	0.003181 mW / cm ²		
% MPE =	0.5075 %		

940.0000 MHz			
Power Density Calculation - Worst Case			
Total ERP	1500 W	61.76	dBm
Corrected ERP	150.00 W	51.76	dBm
Total EIRP	246.09 W	53.91	dBm
Ground Reflection	1.6		
Frequency	940 MHz		
Antenna Height	102 ft	3108.96	cm
%MPE Standard	0.626666667		
Power Density (S) =	0.005189 mW / cm ²		
% MPE =	0.8281 %		

162.0000 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Corrected ERP	50.00 W	46.99	dBm
Total EIRP	82.03 W	49.14	dBm
Ground Reflection	1.6		
Frequency	162 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.2		
Power Density (S) =	0.000454 mW / cm ²		
% MPE =	0.2272 %		

13.6 GHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Corrected ERP	50.00 W	46.99	dBm
Total EIRP	82.03 W	49.14	dBm
Ground Reflection	1.6		
Frequency	13600 MHz		
Antenna Height	175 ft	5334	cm
%MPE Standard	1		
Power Density (S) =	0.000588 mW / cm ²		
% MPE =	0.0588 %		

**Power Density for Existing Installations on Tower at 24 Rockdale Rd., West Haven CT 06516
(Using -10dB Correction Factor)**

TV Ch. 28				
Power Density Calculation - Worst Case				
Total ERP	3500 W	65.44	dBm	
Corrected ERP	350.00 W	55.44	dBm	
Total EIRP	574.21 W	57.59	dBm	
Ground Reflection	1.6			
Frequency	554 MHz			
Antenna Height	178 ft	5425.44	cm	
%MPE Standard	0.369333333			
Power Density (S) =	0.003976 mW / cm ²			
% MPE =	1.0765 %			

Verizon				
Power Density Calculation - Worst Case				
Total ERP	1900 W	62.79	dBm	
Corrected ERP	190.00 W	52.79	dBm	
Total EIRP	311.71 W	54.94	dBm	
Ground Reflection	1.6			
Frequency	875 MHz			
Antenna Height	146 ft	4450.08	cm	
%MPE Standard	0.583333333			
Power Density (S) =	0.003208 mW / cm ²			
% MPE =	0.5500 %			

Combined existing % MP 6.5405

Equation Used :

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

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

Worst Case Power Density for Existing Installations on Tower at 24 Rockdale Rd., West Haven CT 06516

451.175 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Total EIRP	820.29 W	59.14	dBm
Ground Reflection	1.6		
Frequency	451.175 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.300783333		
Power Density (S) =	0.004544 mW / cm ²		
% MPE =	1.5109 %		

451.9750 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Total EIRP	820.29 W	59.14	dBm
Ground Reflection	1.6		
Frequency	451.975 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.301316667		
Power Density (S) =	0.004544 mW / cm ²		
% MPE =	1.5082 %		

452.2750 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Total EIRP	820.29 W	59.14	dBm
Ground Reflection	1.6		
Frequency	452.275 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.301516667		
Power Density (S) =	0.004544 mW / cm ²		
% MPE =	1.5072 %		

452.8000 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Total EIRP	820.29 W	59.14	dBm
Ground Reflection	1.6		
Frequency	452.8 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.301866667		
Power Density (S) =	0.004544 mW / cm ²		
% MPE =	1.5055 %		

461.0750 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Total EIRP	820.29 W	59.14	dBm
Ground Reflection	1.6		
Frequency	461.075 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.307383333		
Power Density (S) =	0.004544 mW / cm ²		
% MPE =	1.4784 %		

CO-LOCATION MPE TABLE	
1	451.175 MHz @199 ft. = 1.5109%
2	451.9750 MHz @199 ft. = 1.5082%
3	452.2750 MHz @199 ft. = 1.5072%
4	452.8000 MHz @199 ft. = 1.5055%
5	461.0750 MHz @199 ft. = 1.4784%
6	462.4750 MHz @199 ft. = 1.4740%
7	463.5000 MHz @199 ft. = 1.4707%
8	463.8750 MHz @199 ft. = 1.4695%
9	464.7000 MHz @199 ft. = 1.4669%
10	452.9750 MHz @199 ft. = 1.5049%
11	462.0500 MHz @199 ft. = 1.4753%
12	459.0750 MHz @199 ft. = 1.4849%
13	454.0750 MHz @180 ft. = 5.1377%
14	929.6625 MHz @199 ft. = 5.1327%
15	929.7625 MHz @199 ft. = 5.1322%
16	929.7125 MHz @199 ft. = 5.1325%
17	940.2250 MHz @199 ft. = 5.0751%
18	940.0000 MHz @102 ft. = 8.2808%
19	162.0000 MHz @199 ft. = 2.2722%
20	13.6 GHz @175 ft. = 0.5876%
21	TV Ch. 28 @178 ft. = 10.7654%
22	Verizon @146 ft. = 5.4999%
Total % MPE for Co-location = 65.4047%	

Note: Based on data provided by tower owner.

Worst Case Power Density for Existing Installations on Tower at 24 Rockdale Rd., West Haven CT 06516

462.4750 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Total EIRP	820.29 W	59.14	dBm
Ground Reflection	1.6		
Frequency	462.475 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.308316667		
Power Density (S) =	0.004544 mW / cm ²		
% MPE =	1.4740 %		

463.5000 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Total EIRP	820.29 W	59.14	dBm
Ground Reflection	1.6		
Frequency	463.5 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.309		
Power Density (S) =	0.004544 mW / cm ²		
% MPE =	1.4707 %		

463.8750 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Total EIRP	820.29 W	59.14	dBm
Ground Reflection	1.6		
Frequency	463.875 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.30925		
Power Density (S) =	0.004544 mW / cm ²		
% MPE =	1.4695 %		

464.7000 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Total EIRP	820.29 W	59.14	dBm
Ground Reflection	1.6		
Frequency	464.7 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.3098		
Power Density (S) =	0.004544 mW / cm ²		
% MPE =	1.4669 %		

452.9750 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Total EIRP	820.29 W	59.14	dBm
Ground Reflection	1.6		
Frequency	452.975 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.301983333		
Power Density (S) =	0.004544 mW / cm ²		
% MPE =	1.5049 %		

Worst Case Power Density for Existing Installations on Tower at 24 Rockdale Rd., West Haven CT 06516

462.0500 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Total EIRP	820.29 W	59.14	dBm
Ground Reflection	1.6		
Frequency	462.05 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.308033333		
Power Density (S) =	0.004544 mW / cm²		
% MPE =	1.4753 %		

459.0750 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Total EIRP	820.29 W	59.14	dBm
Ground Reflection	1.6		
Frequency	459.075 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.30605		
Power Density (S) =	0.004544 mW / cm²		
% MPE =	1.4849 %		

454.0750 MHz			
Power Density Calculation - Worst Case			
Total ERP	1400 W	61.46	dBm
Total EIRP	2296.83 W	63.61	dBm
Ground Reflection	1.6		
Frequency	454.075 MHz		
Antenna Height	180 ft	5486.4	cm
%MPE Standard	0.302716667		
Power Density (S) =	0.015553 mW / cm²		
% MPE =	5.1377 %		

929.6625 MHz			
Power Density Calculation - Worst Case			
Total ERP	3500 W	65.44	dBm
Total EIRP	5742.06 W	67.59	dBm
Ground Reflection	1.6		
Frequency	929.6625 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.619775		
Power Density (S) =	0.031811 mW / cm²		
% MPE =	5.1327 %		

929.7625 MHz			
Power Density Calculation - Worst Case			
Total ERP	3500 W	65.44	dBm
Total EIRP	5742.06 W	67.59	dBm
Ground Reflection	1.6		
Frequency	929.7625 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.619841667		
Power Density (S) =	0.031811 mW / cm²		
% MPE =	5.1322 %		

Worst Case Power Density for Existing Installations on Tower at 24 Rockdale Rd., West Haven CT 06516

929.7125 MHz			
Power Density Calculation - Worst Case			
Total ERP	3500 W	65.44	dBm
Total EIRP	5742.06 W	67.59	dBm
Ground Reflection	1.6		
Frequency	929.7125 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.619808333		
Power Density (S) =	0.031811 mW / cm²		
% MPE =	5.1325 %		

940.2250 MHz			
Power Density Calculation - Worst Case			
Total ERP	3500 W	65.44	dBm
Total EIRP	5742.06 W	67.59	dBm
Ground Reflection	1.6		
Frequency	940.225 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.626816667		
Power Density (S) =	0.031811 mW / cm²		
% MPE =	5.0751 %		

940.0000 MHz			
Power Density Calculation - Worst Case			
Total ERP	1500 W	61.76	dBm
Total EIRP	2460.88 W	63.91	dBm
Ground Reflection	1.6		
Frequency	940 MHz		
Antenna Height	102 ft	3108.96	cm
%MPE Standard	0.626666667		
Power Density (S) =	0.051893 mW / cm²		
% MPE =	8.2808 %		

162.0000 MHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Total EIRP	820.29 W	59.14	dBm
Ground Reflection	1.6		
Frequency	162 MHz		
Antenna Height	199 ft	6065.52	cm
%MPE Standard	0.2		
Power Density (S) =	0.004544 mW / cm²		
% MPE =	2.2722 %		

13.6 GHz			
Power Density Calculation - Worst Case			
Total ERP	500 W	56.99	dBm
Total EIRP	820.29 W	59.14	dBm
Ground Reflection	1.6		
Frequency	13600 MHz		
Antenna Height	175 ft	5334	cm
%MPE Standard	1		
Power Density (S) =	0.005876 mW / cm²		
% MPE =	0.5876 %		

Worst Case Power Density for Existing Installations on Tower at 24 Rockdale Rd., West Haven CT 06516

TV Ch. 28			
Power Density Calculation - Worst Case			
Total ERP	3500 W	65.44	dBm
Total EIRP	5742.06 W	67.59	dBm
Ground Reflection	1.6		
Frequency	554 MHz		
Antenna Height	178 ft	5425.44	cm
%MPE Standard	0.369333333		
Power Density (S) =	0.039760 mW / cm ²		
% MPE =	10.7654 %		

Verizon			
Power Density Calculation - Worst Case			
Total ERP	1900 W	62.79	dBm
Total EIRP	3117.12 W	64.94	dBm
Ground Reflection	1.6		
Frequency	875 MHz		
Antenna Height	146 ft	4450.08	cm
%MPE Standard	0.583333333		
Power Density (S) =	0.032083 mW / cm ²		
% MPE =	5.4999 %		

Combined existing % MP 65.4047

Equation Used :

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

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

Technical Memo

To: Karina Hansen
From: Enrique Ramos, Jr. Radio Engineering Consultant
cc: Mike Fulton
Subject: Power Density Report for CT-11-159D
Date: 14-Jun-01

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 Monopole at 154 Sayle Avenue, Putnam, CT. This study incorporates the most conservative consideration for determining the practical combined worst case power density level 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 Voicestream Wireless transmitters are in the 1930-1950 MHz frequency band.
- 2) The antenna cluster consists of three sectors, with 1 antenna per sector. The model number for each antenna is Racal 8265T-RO.
- 3) The antenna height is 187 Feet center line.
- 4) The maximum transmit power from each sector is 1820.08 Watts Effective Isotropic Radiated Power (EIRP) assuming 4 channels per sector.
- 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 worst case assumptions, the power density calculations from the VoiceStream Wireless Corporation PCS antenna installation on a Monopole at 154 Sayle Avenue, Putnam, CT, is 0.011419 mw/cm². This value represents only 1.1419% of the Maximum Permissible Emission (MPE) standard of 1000 microwatts per square centimeter (uw/cm²) set forth in the FCC/ANSI/IEEE C95.1-1991. The combined Power Density with other carriers will be 15.86190% of the standard. Details are shown in the attachment.

Furthermore, the proposed antenna location for VoiceStream Wireless 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

Region 11 - Connecticut Power Density Calculation Site: CT-11-159D Site Address: 154 Sayle Avenue Town: Putnam Pole Height: 180FT Tower Style: Monopole	
Base Station TX output	20 W
Number of channels	4
Antenna Model	Racal 8265T-RO
Cable Size	1-5/8 "
Cable Length	225.0 ft
Antenna Height	187.0 ft
Ground Reflection	1
Frequency	1930.00 MHz
Jumper & Connector loss	2.62 dB
Antenna Gain	18.8 dBi
Cable Loss per foot	0.0116 Loss per/ft
Total Cable Loss	2.61 dB
Total Attenuation	5.23 dB
Total EIRP per channel (In Watts)	56.58 dB
Total EIRP per sector (In Watts)	455.02 W
	62.60 dB
	1820.08 W
	13.57
Power Density (S) =	0.011419 mW / cm ²
% MPE =	1.1419%
Equation Used : $S = \frac{(1000)(grf)^2 (Power)^{10} \text{ (nsg/10)}}{4\pi (R)^2}$	
Office of Engineering and Technology (OET) Bulletin 65, Edition 97-01, August 1997	

Total % MPE for SNET=6.40%
 Total % MPE for Nextel=2.03%
 Total % MPE for Sprint=1.54%
 Total % MPE for BAM=4.75%
 Total % MPE for Voicestream=1.141898%
Total % MPE = 15.86190%



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

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

June 26, 2001

Sandy M. Carter
Verizon Wireless
20 Alexander Drive
P.O. Box 5029
Wallingford, CT 06492

RE: **TS-VOICESTREAM-116-010530** - VoiceStream Wireless request for an order to approve tower sharing at an existing telecommunications facility located at 154 Sayle Avenue, Putnam, Connecticut.

Dear Ms. Carter:

The Connecticut Siting Council has received information that identifies Verizon antennas at a 146-foot level of this tower, inconsistent with a decision by the Council on July 15, 1999, which approved the location of Verizon antennas at the 157 foot level.

The Council requests that you confirm the location of Verizon antennas on this tower and resolve any inconsistencies of the record. Please respond on or before July 3, 2001. Thank you for your attention and cooperation.

Yours very truly,


Joel M. Rinebold
Executive Director

JMR/rcc

c: Steven J. Humes, Esq., LeBoeuf, Lamb, Greene & MacRae

LEBOEUF, LAMB, GREENE & MACRAE, L.L.P.**FAX TRANSMISSION**

A LIMITED LIABILITY PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS

GOODWIN SQUARE
225 ASYLUM STREET
HARTFORD, CT 06103

TELEPHONE: (860) 293-3500

FAX: (860) 293-3555

IF ANY TRANSMISSION PROBLEMS: (860) 293-3500

From: Steve Humes

Date: June 19, 2001

ID#: 4720

Page: 1 of 22

If you have any questions regarding this transmission, please contact:
Beverly Ripple at 860-293-3558.

To:	Fax Number	Confirming Telephone Number	Client/Matter Number
Bob Curry/Joel Rinebold	860-827-2950	860-827-2935	07687-153

Comments/Message:

Joel and Bob:

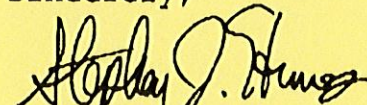
In response to your call this morning, attached please the Construction Drawings for the proposed co-location of VoiceStream Wireless facilities on a tower at 154 Sayle Avenue, Putnam, Connecticut. Please note that sheets C-2 and E-6 show some of what you are looking for, but we do not have a drawing yet that shows the pipe mount and clamp detail separately.

While we are trying to obtain a separate drawing to show the pipe mounts and clamps, and we will forward that to you promptly upon receipt, I can represent to you the following concerning the plans. The Company intends to use a clamp ring near the top of the existing tower (at about the 174-foot level) to attach each of three pipes that will each extend upward about 10 feet about the 175-foot height of the tower (each pipe will be about 12 feet long and 4.5 inches O.D.).

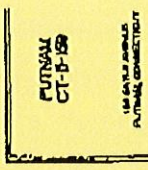
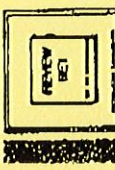
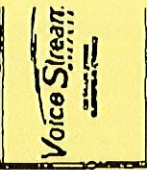
If you have any other questions or concerns, please let me know.

Thank you for your assistance with this matter.

Sincerely,


Stephen J. Humes

REVISIONS	
NO.	DATE



PROJECT NO.	
DATE	
PROJECT BY	
PROJECT NO.	
PROJECT NO.	
PROJECT NO.	

TITLE SHEET

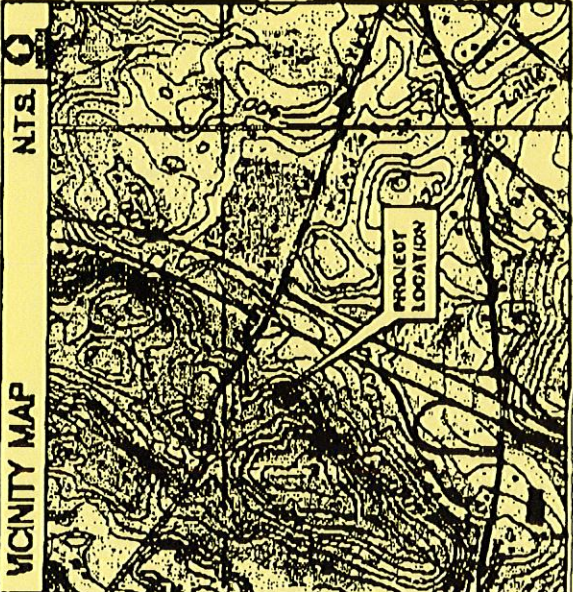
T-1

VoiceStream

WIRELESS

WIRELESS COMMUNICATIONS FACILITY

CT-11-159
154 SAYLE AVENUE
PUTNAM, CONNECTICUT 06260



SITE DIRECTIONS

FROM: VOICESTREAM
100 FILLEY STREET
BLOOMFIELD, CT

TO: 154 SAYLE AVE.
PUTNAM, CT.

TAKE 91 SOUTH TO 84 EAST. TAKE EXIT #69 (US 44) TOWARDS PROVIDENCE. CONTINUE TILL RT. 395. PASS UNDER RT. 395. CONTINUE TO ROUTE CT #21. TURN LEFT ONTO CT #21. TAKE FIRST LEFT ONTO SAYLE AVE.

PROJECT SUMMARY

SITE NUMBER: CT11-159
SITE NAME: PUTNAM
SITE ADDRESS: 154 SAYLE AVE.
PUTNAM, CONNECTICUT 06260

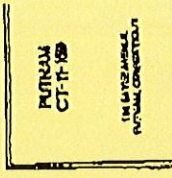
SITE OWNER: SBA, INC.
PHONE: (860) 858-9101

SUB-LESSOR: VOICESTREAM
100 FILLEY ST.
BLOOMFIELD, CONNECTICUT 06002
(860)

VOICESTREAM CM: DAVE WEINPAHL
(860) 692-7149

APPROVED BY	SIGNATURE	DATE
CONSTRUCTION PROJECT MANAGER		
ZONING REP.		
SAC REP.		
RF ENGINEER		

REV	DATE	DESCRIPTION



PROJECT NO.	
DRAWN BY	
CHECKED BY	
SCALE	AS NOTED
DATE	

SHEET INDEX & NOTES
T-2

SHEET INDEX

DRAWING NUMBER	DESCRIPTION	REVISION NUMBER
T-1	TITLE SHEET	00
T-2	SHEET INDEX AND NOTES	00
N-1	GENERAL NOTES	00
N-2	STRUCTURAL SPECIFICATIONS	00
N-3	ELECTRICAL SPECIFICATIONS	00
N-4	ELECTRICAL SPECIFICATIONS	00
N-5	BILL OF MATERIALS	00
C-1	SITE PLAN	00
C-2	TOWER ELEVATION AND DETAILS	00
C-3	DETAILS AND SCHEDULES	00
C-4	DETAILS	00
S-1	STRUCTURAL DETAILS	00
S-2	STRUCTURAL DETAILS	00
E-1	ELECTRICAL LEGEND AND SYMBOLS	00
E-2	UTILITY SITE AND GROUNDING PLANS	00
E-3	ELECTRICAL DETAILS	00
E-4	ELECTRICAL DETAILS	00
E-5	ELECTRICAL DETAILS	00
E-6	ELECTRICAL DETAILS	00
E-7	ELECTRICAL DETAILS	00
E-8	ELECTRICAL DETAILS	00
E-9	ELECTRICAL DETAILS	00

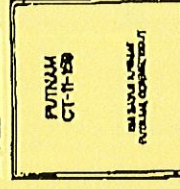
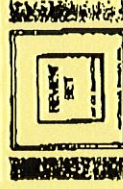
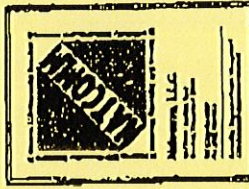
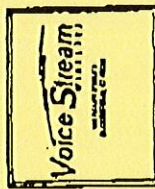
SITE INFORMATION

1. THE SCOPE OF WORK IS TO INCLUDE THE CONSTRUCTION OF A 6'x12' WIRELESS EQUIPMENT CONCRETE PAD, THE MOUNTING OF (3) DIRECTIONAL PANEL ANTENNAS TO AN EXISTING 175' MONOPOLE.
2. THIS WIRELESS COMMUNICATIONS FACILITY IS NOT INTENDED FOR PERMANENT OCCUPANCY AND THEREFORE DOES NOT REQUIRE POTABLE WATER, SANITARY SEWERS AND ADDITIONAL SITE PARKING.
3. THIS FACILITY SHALL BE VISITED ON THE AVERAGE OF ONCE A MONTH FOR PERIODIC MAINTENANCE.
4. ELECTRICAL AND TELLOR SERVICES ARE PROVIDED BY SBA, INC..
5. NO SIGNS OR LIGHTING SHALL BE ADDED UNLESS REQUIRED BY FAA AND FCC.

GENERAL NOTES

1. ALL MATERIAL SHALL BE FURNISHED AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF VORCESTREAM "STANDARD CONSTRUCTION SPECIFICATIONS" IN CASE OF A CONFLICT BETWEEN THE CONSTRUCTION SPECIFICATIONS AND THE DRAWINGS, THE DRAWINGS SHALL GOVERN. IN CASE OF A CONFLICT BETWEEN VORCESTREAM STANDARD PRACTICES AND EITHER THE CONSTRUCTION SPECIFICATIONS OR THE DRAWINGS, THE VORCESTREAM STANDARD PRACTICES SHALL GOVERN.
2. FOR ADDITIONAL NOTES AND DETAILS REFER TO THE ACCOMPANYING DRAWINGS.
3. SITE LAYOUT INFORMATION TAKEN FROM DRAWING TITLED "COMPREHENSIVE SITE PLAN, REV. 1" PREPARED BY SBA, INC., DATED 08/17/98.

REVISIONS	
NO.	DESCRIPTION



PROJECT NO.	00A
CONTRACT NO.	00A
DATE	00A
BY	00A
DATE	00A

GENERAL NOTES
N-1
NO. 1 OF 1

GENERAL NOTES

GENERAL CONSTRUCTION NOTES

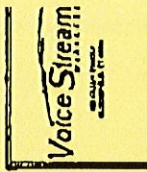
1. ALL WORK SHALL COMPLY WITH THE LATEST ACCEPTED EDITION OF THE CONNECTICUT STATE BUILDING AND LIFE SAFETY CODES AND SUPPLEMENTS.
2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY THE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CONSTRUCTION MANAGER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUB-CONTRACTORS AND ALL RELATED PARTIES. THE SUB-CONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL STRUCTURAL, ELECTRICAL AND PCS COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON DRAWINGS OR WRITTEN IN SPECIFICATIONS.
5. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE THE DISTRIBUTION OF NEW DRAWINGS TO SUB-CONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. CONTRACTOR SHALL FURNISH "AS-BUILT" SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUB-CONTRACTORS.
8. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.

9. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
11. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT TO CONSTRUCTION MANAGER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTAL TO THE CONSTRUCTION MANAGER FOR REVIEW.
12. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
13. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING BUILDING AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
14. ANY DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ANY REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.

SITE NOTES

1. THE CONTRACTOR SHALL CALL BEFORE YOU DIG (1-800-922-4455)
2. ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE CONSTRUCTION MANAGER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. ALL RUBBISH, STRIPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED OFF SITE AND BE LEGALLY DISPOSED.
4. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE PCS EQUIPMENT AND TOWER AREAS.
5. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
6. THE SUBGRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
7. THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
8. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

REVISIONS	DATE	BY	DESCRIPTION



PROJECT NO.	100
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SCALE	AS SHOWN
DATE	

STRUCTURAL SPECIFICATION

N-2

STRUCTURAL SPECIFICATIONS

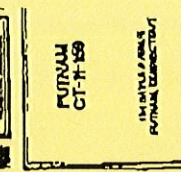
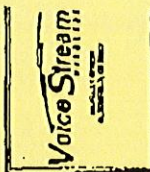
ANTENNA SUPPORT BRACKET NOTES

- DESIGN RESPONSIBILITY OF ANTENNA MOUNTING BRACKETS AND POLES AND ALL ATTACHMENT SHALL BE THE RESPONSIBILITY OF THE MANUFACTURER. THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER FOR REVIEW DRAWINGS DETAILING ALL COMPONENTS OF THE ASSEMBLY, INCLUDING PERTINENT LOADS AND DESIGN DATA. ALL SUBMISSIONS SHALL BEAR THE STAMP OF A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT.
- BRACKETS SHALL BE DESIGNED TO SUPPORT CURRENT AND FUTURE PANEL ANTENNA COAXIAL CABLES SHOWN.

CONCRETE AND REINFORCING STEEL NOTES

- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318 AND THE SPECIFICATION CAST-IN-PLACE CONCRETE.
- ALL CONCRETE SHALL BE NORMAL WEIGHT, 8% AIR ENTRAINED WITH A MAXIMUM SLUMP OF 4", AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.
- REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60, REFORMED BARS. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 WELDED STEEL WIRE FABRIC. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD.
- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS OTHERWISE NOTED ON THE DRAWINGS:
 CONCRETE CAST AGAINST EARTH.....3 IN.
 CONCRETE EXPOSED TO EARTH OR WEATHER:
 #8 AND LARGER.....2 IN.
 #5 AND SMALLER & WWT.....1 1/2 IN.
 CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
 SLAB AND WALL.....3/4 IN.
 BEAMS AND COLUMNS.....1 1/2 IN.
 ALL EXPOSED EDGES OF CONCRETE TO RECEIVE A 3/4" CHAMFER IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
- CONCRETE EQUIPMENT PAD TO RECEIVE A FLOAT FINISH
- INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT DURING DRILLING WITHOUT PRIOR REVIEW BY THE ENGINEER.

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PROJECT NO.	1000
DATE	06/01/01
BY	AT
CHECKED BY	AT
SCALE	AS SHOWN
DATE	06/01/01

ELECTRICAL SPECIFICATIONS

N-3
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ELECTRICAL SPECIFICATIONS

1. GENERAL REQUIREMENTS

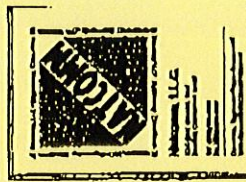
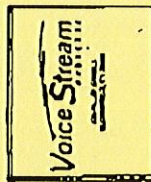
- A. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY. NOTHING ON THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT ON SUCH CODES OR REGULATIONS.
- B. THE CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH THE CONSTRUCTION MANAGER AND OTHER AUTHORITIES HAVING JURISDICTION OVER TRADES.
- C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAYMENT OF APPLICABLE FEES AS MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS AS MAY BE REQUIRED BY THE LOCAL AUTHORITY.
- D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE OWNER OF ANY NEW AND/OR DEMOLITION WORK ASSOCIATED WITH THE EXISTING COMMUNICATIONS FACILITY, AND ITS LESSORS.
- E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE LOCAL TELEPHONE COMPANY AS MAY BE REQUIRED FOR INSTALLATION OF TELEPHONE SERVICE TO THE PROPOSED SITE.
- F. NO MATERIAL, OTHER THAN THAT CONTAINED IN THE MOST CURRENT LIST OF ELECTRICAL FITTINGS APPROVED BY THE UNDERWRITERS LABORATORIES, SHALL BE USED IN ANY PART OF THE WORK. ALL MATERIAL FOR WHICH LABEL SERVICE HAS BEEN ESTABLISHED SHALL BEAR THE U.L. LABEL.
- G. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE (1) YEAR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE CARRIER.
- H. THE DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. THE CONTRACTOR, WITHOUT ADDITIONAL CHARGE, MAKE REASONABLE MODIFICATIONS TO THE LAYOUT WORK TO PREVENT CONFLICT WITH THE WORK OF OTHER TRADES AND FOR A PROPER INSTALLATION OF THE WORK. PRIOR TO SUBMITTAL OF THE BID THE CONTRACTOR SHALL CHECK ALL DRAWINGS AND VISIT THE JOB SITE TO VERIFY THE CONDITIONS UNDER WHICH THE WORK WILL BE DONE.
- I. ALL WORK SHALL BE INSTALLED IN A NEAT WORKMANLIKE MANNER AND WILL BE SUBJECT TO THE APPROVAL OF THE CONSTRUCTION MANAGER.
- J. ALL EQUIPMENT AND MATERIALS TO BE INSTALLED SHALL BE NEW UNLESS OTHERWISE NOTED.
- K. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF PRINTS, LEGIBLY MARKED IN RED PENCIL, SHOWING ALL CHANGES FROM THE ORIGINAL PLANS.
- L. PROVIDE TEMPORARY POWER AND LIGHTING AS REQUIRED BY THE WORK.

2. SCOPE OF WORK

- A. THE WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND SERVICES REQUIRED TO COMPLETE (MAKE READY FOR OPERATION) ALL THE ELECTRICAL WORK, BUT NOT LIMITED TO THE FOLLOWING:
 1. TIE-IN FEEDER TO EXISTING 200 AMP, 120/240V SINGLE PHASE, 3-WIRE SERVICE METER SOCKET.
 2. FEEDERS AND BRANCH WIRING TO PANELS, EQUIPMENT, ETC, AS NOTED ON THE PLANS.

3. TELEPHONE SERVICE CONDUIT AND CABLE.
4. CELLULAR GROUNDING SYSTEM CONSISTING OF THE GROUND RING, TIE-IN TO THE EXISTING GROUNDING RING, GROUND BARS, ETC.
- B. LOCAL UTILITY COMPANIES SHALL PROVIDE THE FOLLOWING:
 1. REVENUE METER.
 2. TELEPHONE SERVICE TIE-IN.
- C. THE CONTRACTOR SHALL COOPER WITH THE LOCAL UTILITY COMPANIES TO ASCERTAIN THE LIMITS OF THEIR WORK AND SHALL INCLUDE IN THE BID ANY CHARGES OR FEES MADE BY THE UTILITY COMPANIES FOR THEIR PORTION OF THE WORK.
3. GROUNDING
 - A. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO EQUIPMENT GROUNDING SOURCES.
 - B. THE GROUNDING SYSTEM SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND THE LOCAL AUTHORITIES HAVING JURISDICTION.
 - C. GROUNDING OF PANELBOARDS:
 1. PANEL EDOARDS SHALL BE GROUNDED BY TERMINATING THE PANELBOARD FEEDERS' EQUIPMENT GROUND CONDUCTOR TO THE EQUIPMENT GROUND BAR KIT(S) LOCATED TO THE CABINET. ENSURE THAT THE SURFACE BETWEEN THE KIT AND CABINET ARE BARE METAL TO BARE METAL. PRIME AND PAINT OVER TO PREVENT CORROSION.
 2. CONDUIT(S) TERMINATING INTO THE PANELBOARD SHALL HAVE GROUNDING TYPE BUSHINGS. THE BUSHINGS SHALL BE BONDED TOGETHER WITH BARE COPPER CONDUCTOR WHICH IS IN TURN TERMINATED INTO THE PANELBOARD'S EQUIPMENT GROUND BAR KIT(S).
 - D. EQUIPMENT GROUNDING CONDUCTOR:
 1. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH N.E.C. ARTICLE 250-122.
 2. THE MINIMUM SIZE OF EQUIPMENT GROUND CONDUCTOR SHALL BE NO. 12 AWG COPPER.
 3. EACH FEEDER OR BRANCH CIRCUIT SHALL HAVE EQUIPMENT GROUND CONDUCTOR(S) INSTALLED IN THE SAME RACEWAY(S).
- D. CELLULAR GROUNDING SYSTEM:
 1. THE CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 5 OHMS BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY A THREE POINT GROUND TEST.
 2. PROVIDE THE CELLULAR GROUNDING SYSTEM AS SPECIFIED ON THE DRAWINGS; INCLUDING, BUT NOT LIMITED TO:
 - PROTECTION OF THE EXISTING GROUNDING SYSTEM DURING CONSTRUCTION.
 - EXTERIOR GROUNDING RING.
 - GROUND BARS.
 - GROUNDING CONNECTIONS.

REVISIONS	
NO.	DESCRIPTION
1	ISSUED FOR CONSTRUCTION



PROJECT NO.	2004
DESIGN BY	BAK
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DATE	AS NOTED
SCALE	AS SHOWN

ELECTRICAL SPECIFICATIONS

N-4
OF 1 OF 2

ELECTRICAL SPECIFICATIONS (CONTINUED)

4. VISUAL INSPECTION OF EXTERIOR/INTERIOR GROUNDING GRID SYSTEMS

A. UPON COMPLETION OF THE GROUNDING SYSTEM, BUT PRIOR TO CONCEALMENT AND/OR BURIAL, THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER. THE CONSTRUCTION MANAGER WILL ARRANGE FOR A VISUAL INSPECTION OF THE GROUNDING GRID, RODS AND CONNECTIONS.

5. TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

A. THE CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM HAVING A MINIMUM OF 5 YEARS EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY. THE FOLLOWING TESTS SHALL BE PERFORMED AS OUTLINED ON THE DRAWINGS AND SPECIFICATIONS:

1. RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM AS MEASURED BY THE THREE POINT GROUND TEST.

B. THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF THE TESTING EQUIPMENT.

2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.

3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.

C. THESE TESTS SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF THE CONSTRUCTION MANAGER. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION MANAGER AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

D. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT TESTING FIRM REPORT/ANALYSIS TO THE ENGINEER A MINIMUM OF 10 WORKING DAYS PRIOR TO THE PROJECT TURNOVER.

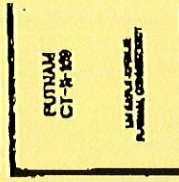
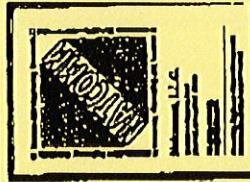
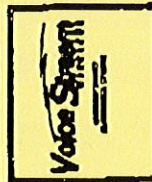
E. THE CONTRACTOR SHALL PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO CONSTRUCTION MANAGER FOR ALL TESTS REQUIRING WITNESSING.

ANTENNA SCHEDULE

SECTOR	RADIATION CENTER (FT AGL)	MECHANICAL DOWNTILT (DEG.)	ORIENTATION (DEG. TN)	ANTENNAS PER SECTOR
Alpha	187'	2'	20'	1
Beta	187'	2'	100'	1
Gamma	187'	2'	180'	1

CABLE SCHEDULE

ANTICIPATED COAXIAL CABLE RUN (X) IN FEET	CABLE DIAMETER SIZE
0 < X < 6'	1/2"
6 < X < 100'	7/8"
100 < X < 125'	1 1/4"
125 < X < 200'	1 5/8"

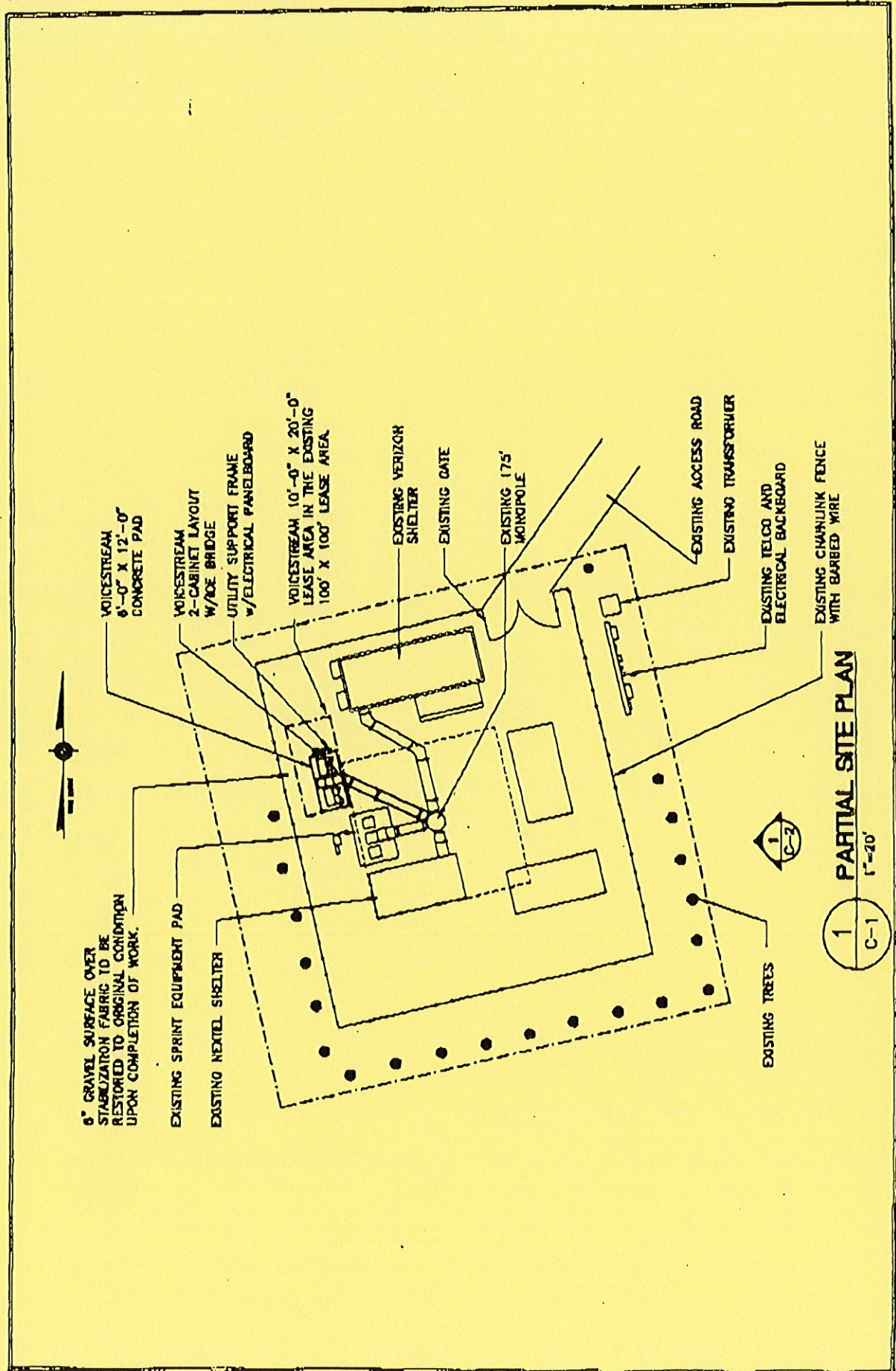


BILL OF MATERIALS				
SITE NAME: PUTNAM		SITE NO: CT-11-159		
ITEM NO.	DESCRIPTION	QUANTITY (EACH)	LENGTH (FEET EACH)	TOTAL LENGTH
1	ANTENNAS: SECTORS Alpha RACAL DUAL POL TWIN BEAM #8285T72-RO W/MECH. DOWNMILT KIT (2) Beta RACAL DUAL POL TWIN BEAM #8285T72-RO W/MECH. DOWNMILT KIT (2) Gamma RACAL DUAL POL TWIN BEAM #8285T72-RO W/MECH. DOWNMILT KIT (2)	1 1 1	N/A N/A N/A	N/A N/A N/A
2	JUMPER CABLES: 8'-0" X 1/2" HELIX COAXIAL TOP JUMPER W/CONNECTORS (ANTENNA) 3'-0" X 1/2" HELIX COAXIAL TOP JUMPER W/CONNECTORS (A/A) 8'-0" X 1/2" HELIX COAXIAL BOTTOM JUMPER W/ CONNECTORS (SUPERFLEX)	12 12 12	- - -	N/A N/A N/A
3	MAIN CABLES: 1-5/8" DMC HELIX COAXIAL	12	CUT TO LENGTH IN FIELD	2,940 FT
4	GROUNDING RDS & 2-ROD LUGS FOR: 1 5/8" CABLE	16	N/A	N/A
5	CONNECTORS - UNATTACHED FOR MAIN CABLES: FEMALE DIN 1-5/8"	24	N/A	N/A
6	NORTEL 58000 CABINETS	1	N/A	N/A
7	AMPLIFIERS (A/A)	12	N/A	N/A
8	TELEPHONE CABLE: DEMARCATION TO BTS - 6 PAIR, 22 AWG INDIVIDUALLY SHIELDED SOLID CABLE	2	FIELD CUT TO LENGTH	270
9	ANTENNA MOUNTING FRAME AND ACCESSORIES: ENGINEERED AND MANUFACTURED BY FRED HUDD CORP.	1	N/A	N/A

NOTES:

- ITEMS LISTED ABOVE ARE TO BE SUPPLIED BY VOICESTREAM AND INSTALLED BY CONTRACTOR

REVISIONS NO. DESCRIPTION 1.	Voice Stream 100% COMPLETE	PROVIDE 100% COMPLETE	PREVIEW 100% COMPLETE	PUTNAM CT-1159	100% COMPLETE 100% COMPLETE	PROJECT NO. 100% COMPLETE	DATE 100% COMPLETE	PARTIAL SITE PLAN	C-1 100% COMPLETE
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REVISIONS NO. DATE BY DESCRIPTION	
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Voice Stream A COMMUNICATIONS COMPANY	
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TELECOM TELECOMMUNICATIONS	
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REVIEW SET	
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PUTNAM CT-4-159	
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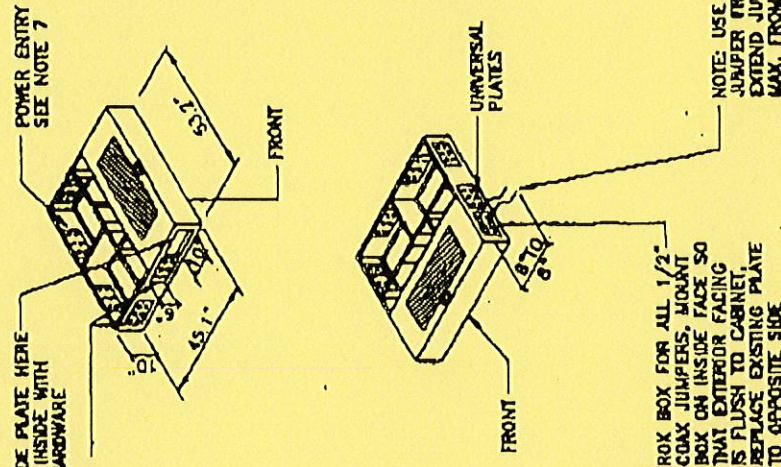
ALL DATA IS SUBJECT TO FUTURE REVISIONS	
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CHECKED BY J. J.	SCALE AS SHOWN
DRAWN BY J. J.	DATE 1/1

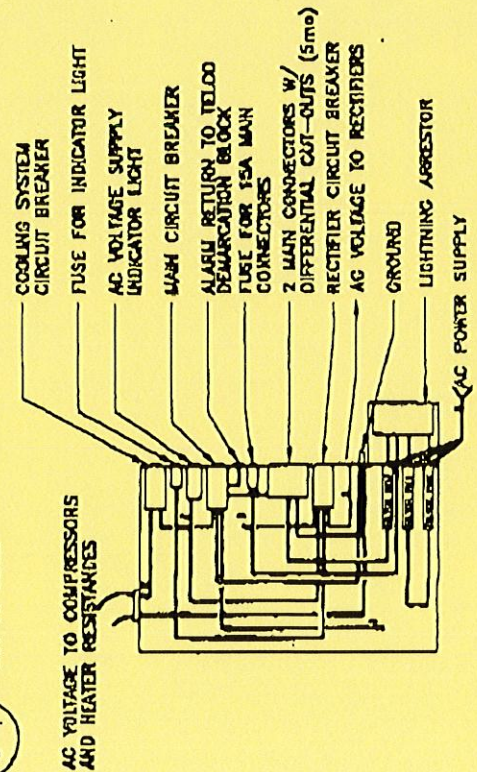
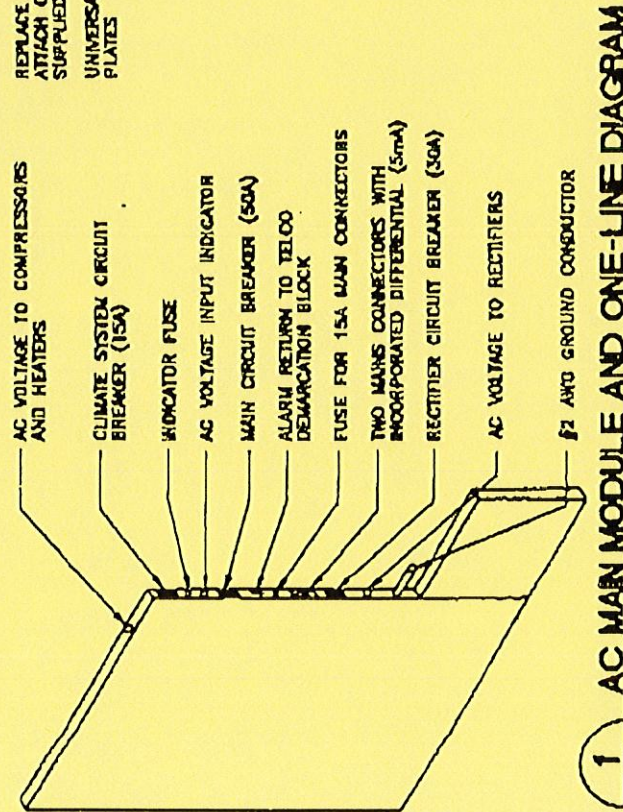
DETAILS	
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C-4 DRAW. 11 OF 21	
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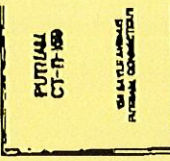
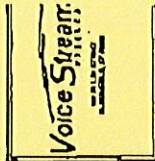
1. CONTRACTOR RESPONSIBLE FOR OFF LOADING THE CABINET UPON DELIVERY.
2. CONTRACTOR RESPONSIBLE FOR CABLEING TO THE COMPRESSORS. IF CABLE SHALL BE COLORED CODED AT THE COMPRESSOR, OUTSIDE OF CABINET, AT TOWER (OR AT CABLE TRAY CONVERGENCE) AND AT ANTENNA.
3. CONTRACTOR IS RESPONSIBLE FOR MOUNTING THE TELCO AND ALARM DEMARCATION BLOCKS AFTER COAX IS PULLED AND CORRECTING PHONE LINE FROM THE SMART JACK.
4. CONTRACTOR IS RESPONSIBLE FOR SUPPLYING ALL BOOT-CUSHION ASSEMBLIES FOR THE COAXIAL CABLE ENTRY INTO THE BASE UNIT.
5. THE CONTRACTOR SHALL MOUNT THE CABINET TO THE BASE UNIT WITH HARDWARE SUPPLIED WITH NORTTEL COMPLETION KIT (HT070700A) AND SUPPLY THE HARDWARE NEEDED TO ATTACH THE BASE TEMPLATE AND BASE TO THE MOUNTING PLATFORM.
6. SPECIAL CARE WILL BE TAKEN TO ENSURE AN 8" VERTICAL CLEARANCE ABOVE MOUNTING PLATFORM TO ALLOW FOR MAINTENANCE OF THE BATTERIES AND HVAC UNIT.
7. CONTRACTOR SHALL DETERMINE THE BEST-FIT LOCATION FOR THE POWER AND TELCO ENTRANCES INTO THE BASE UNIT.



1. CONTRACTOR TO SUPPLY ALL HARDWARE AND CONDUCTORS NECESSARY TO BRING A 120/240V, 1Ø, 3W, 60 AMP SERVICE INTO THE CABINET AND CONNECT THE MAIN FEEDER.
2. CONTRACTOR IS RESPONSIBLE FOR BONDING THE GROUNDING CONDUCTOR FROM THE CABINET TERMINAL TO THE MASTER GROUND BAR.
3. THE CONTRACTOR SHALL VERIFY THE ARRANGEMENT OF THE AC MAIN PRIOR TO INSTALLATION OF SERVICE IN THE EVENT THE MODULE IS RECONFIGURED.
4. THE ENTRY PORT USED FOR THE INSTALLATION OF THE POWER AND TELEPHONE ENTRANCE WILL BE SEALED WITH A SILICONE SEALANT AFTER INSTALLATION.



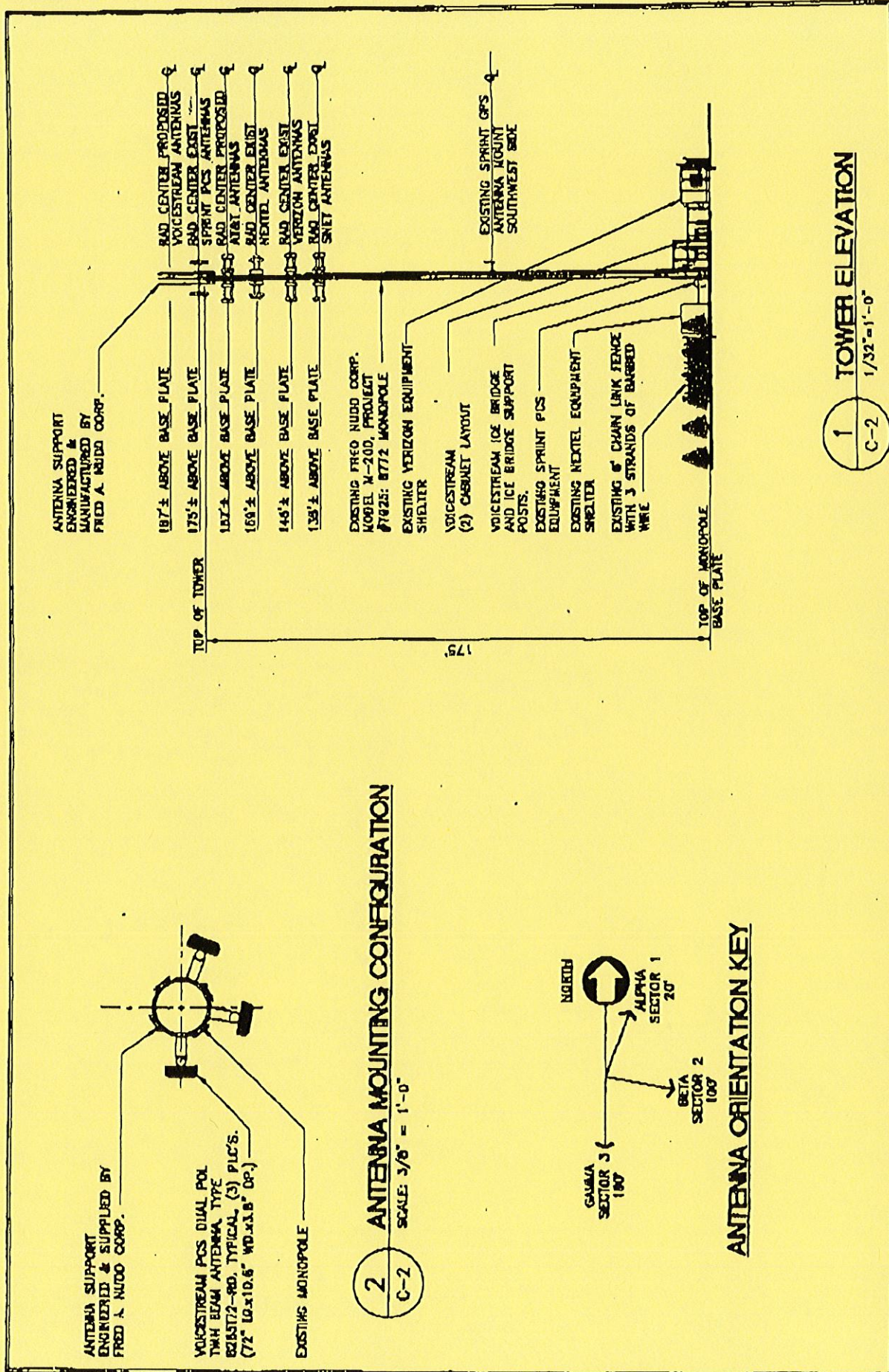
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1	ISSUED FOR PERMIT	06/19/01



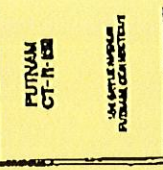
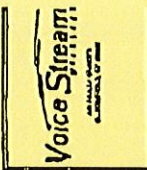
PROJECT NO.	01
DATE	06/19/01
DESIGNED BY	01
SCALE	AS SHOWN
DATE	06/19/01

TOWER ELEVATION & DETAILS

C-2
P. 10 OF 22



REVISED	BY	DATE



PROJECT NO.	
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CHECKED BY	
SCALE	
DATE	

DETAIL & SCHEDULE

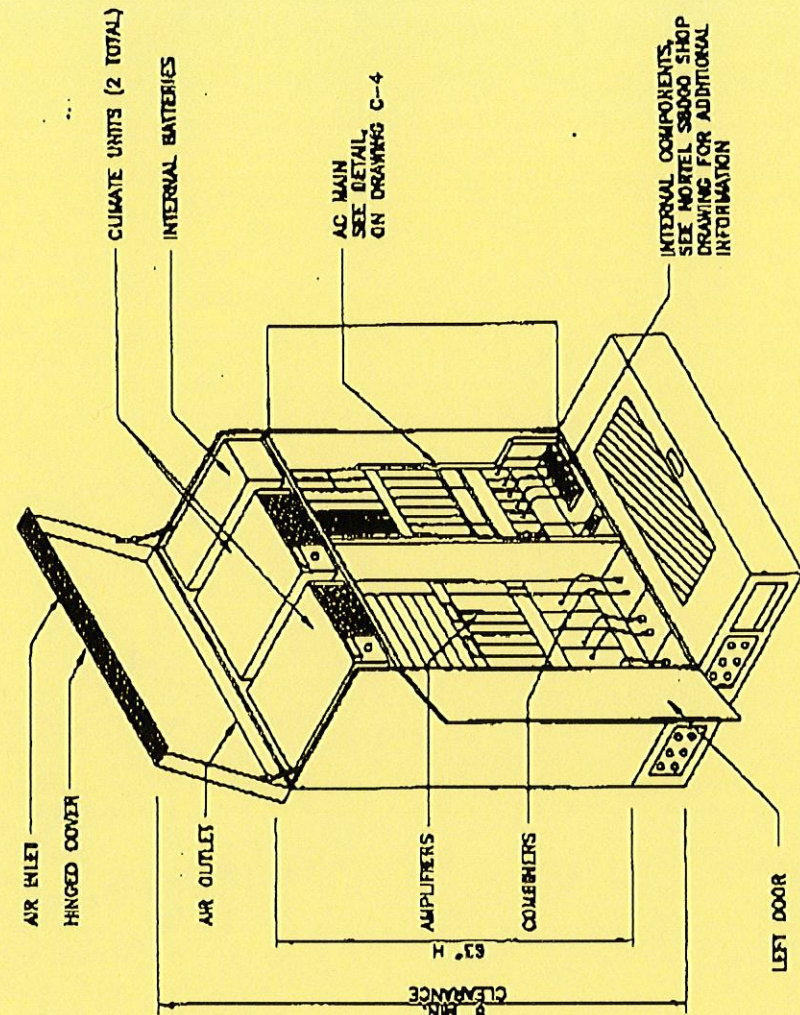
C-3

S8000 SPECIFICATION TABLE

HEIGHT	63 IN. (1.6 M)
WIDTH	53 IN. (1.35M)
DEPTH	25 IN. (63CM)
MAXIMUM WEIGHT	1058 LB (1358 LB INCL BASE UNIT)
FOOTPRINT	58 M ²
EMPTY WEIGHT	316.2 LB (148 KG)
VOLTAGE	240 V ± 10%
MAX. POWER (240V)	6500 W
NORMAL POWER	3238 W
MAIN CIRCUIT PROTECTION	50 A
MAX. HEAT DISSIPATION	22100 BTU/HOUR
NORMAL HEAT DISSIPATION	11008 BTU/HOUR
OPERATING TEMPERATURE	-40° TO 112° F (-40° TO 50° C)
MAXIMUM OPERATING HUMIDITY	100%
MAX LEVEL OF ACOUSTIC NOISE	85 DB
GROUND CABLE	#2 AWG
ANTENNA CONNECTORS	-
CABINET OUTPUT	40.3 DBM
RECEIVE SENSITIVITY	-108 DBM
OUTPUT POWER AT CABINET CONNECTOR (N2D)	38.0 DBM

NOTES:

- 1.5 HOURS OF BATTERY BACKUP IS PROVIDED FOR FULL TRX OPERATION. AN ADDITIONAL 0.5 HOURS IS PROVIDED FOR THE BCF WITHOUT TRX OPERATION.
- MAXIMUM IS DEFINED AS BATTERIES CHARGING AND HEATERS ACTIVE. AUXILIARY BOW OUTLET POWER MUST BE ADDED TO THIS FIGURE.
- NORMAL IS DEFINED AS BATTERIES NOT CHARGING AND HEATERS NOT ACTIVE.



1 CABINET AND BASE LAYOUT DETAIL

NOT TO SCALE

C-3

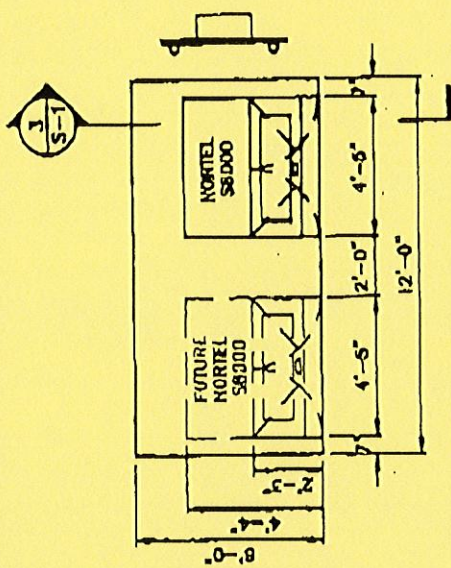
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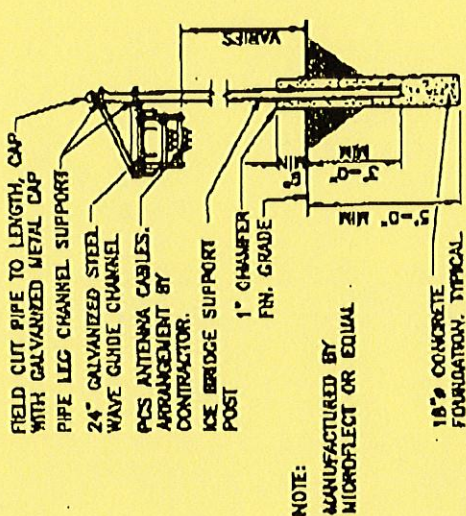
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PROJECT NO.	NO. 13/22

STRUCTURAL
DETAILS

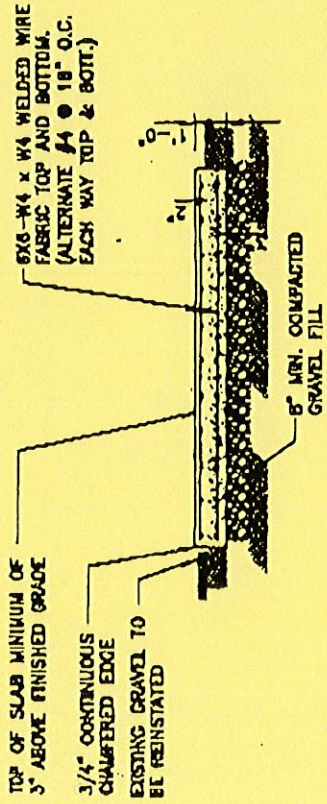
S-1
PAGE 13 OF 15



2 EQUIPMENT PAD PLAN
SCALE: 1/4" = 1'-0"

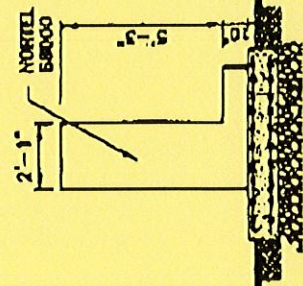


4 SUPPORT DETAIL
SCALE: 1/4" = 1'-0"



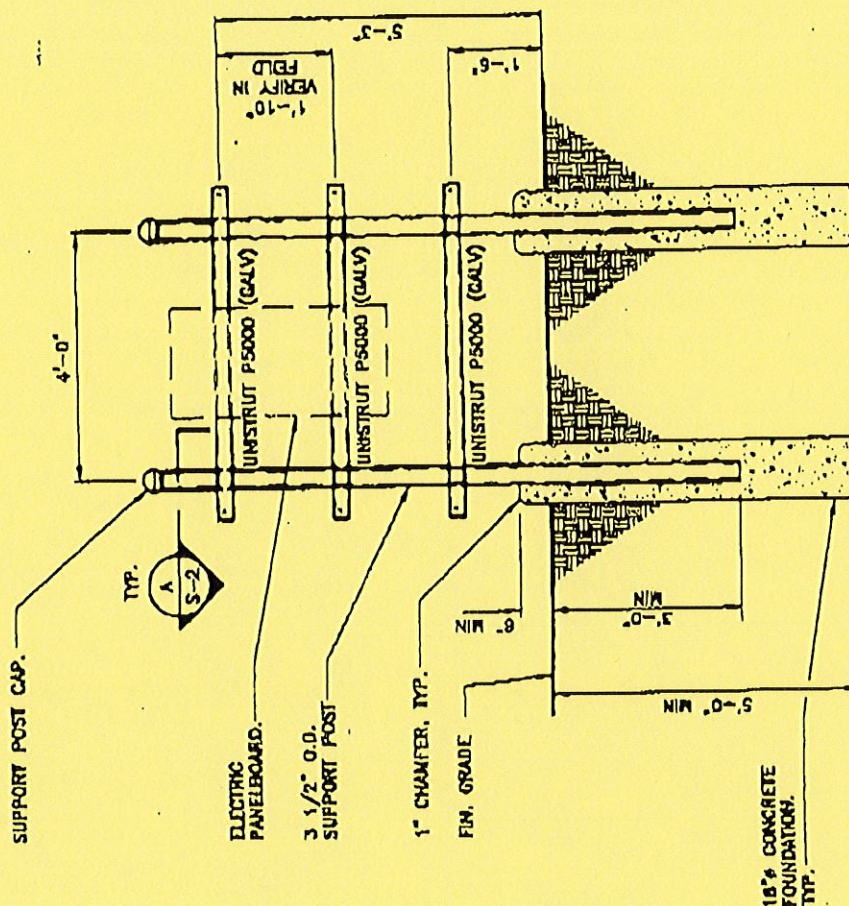
- NOTE:
1. GRAVEL SHALL BE NATURAL OR CRUSHED GRAVEL WITH 100 PERCENT PASSING 1 INCH SIEVE.
 2. CONCRETE WORK SHALL BE IN ACCORDANCE WITH ACI 301 AND ACI 318 AND THE SPECIFICATION FOR CAST IN PLACE CONCRETE. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS.
 3. EXISTING SUB BASE TO HAVE A MINIMUM BEARING CAPACITY OF 2,000 PSF.

1 CAST IN PLACE SLAB DETAIL
SCALE: 1/4" = 1'-0"



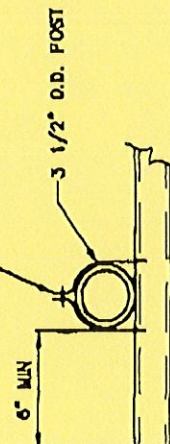
3 SECTION AT BTS
SCALE: 1/4" = 1'-0"

REVISIONS NO. DATE DESCRIPTION 1 06/19/01 15:13	Voice Stream A COMMUNICATIONS COMPANY	MTCOM MTCOM, LLC 10000 N. 10th Ave. Suite 100 Denver, CO 80231	REVIEW SET	PUTNAM CT-10-88 10000 N. 10th Ave. Suite 100 Denver, CO 80231	PROJECT NO. 1000 DRAWING NO. 1000 CHECKED BY P/A DESIGNED BY ALP/1000 DATE 06/19/01	STRUCTURAL DETAILS	S-2 SHEET 11 OF 12
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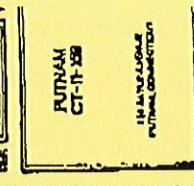
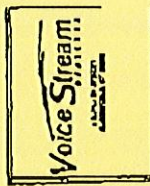
1 MOUNTING RACK
SCALE: 1/2" = 1'-0"
S-2

UNISTRUT PIPE/CONDUIT CLAMP
P119 OR P2538-36 (GALV.)
(TYPICAL) FOLLOW MANUF.
RECOMMENDATIONS FOR BOLT
TORQUE



A SECTION AT POST
SCALE: 1 1/2" = 1'-0"
S-2

REVISIONS	
NO.	DESCRIPTION



PROJECT NO.	
DATE	
DESIGNED BY	
CHECKED BY	
DATE	
SCALE	

ELECTRICAL LEGENDA SYMBOLS

E-1

ELECTRICAL LEGEND

---	NEW GROUND RING
-T-	UNDERGROUND COMMUNICATION CONDUIT AS INDICATED
-E-	UNDERGROUND ELECTRICAL CONDUIT AS INDICATED
⊗	GROUND BAR
⊙	EXISTING CHAIN LINK FENCE
⊗	5/8" DIAMETER x 10'-0" COPPER GROUND ROD
⊗	5/8" DIAMETER x 10'-0" COPPER GROUND ROD WITH ACCESS
■	CATHODE CONNECTION
●	COMPRESSION TYPE CONNECTION
○	UTILITY POLE

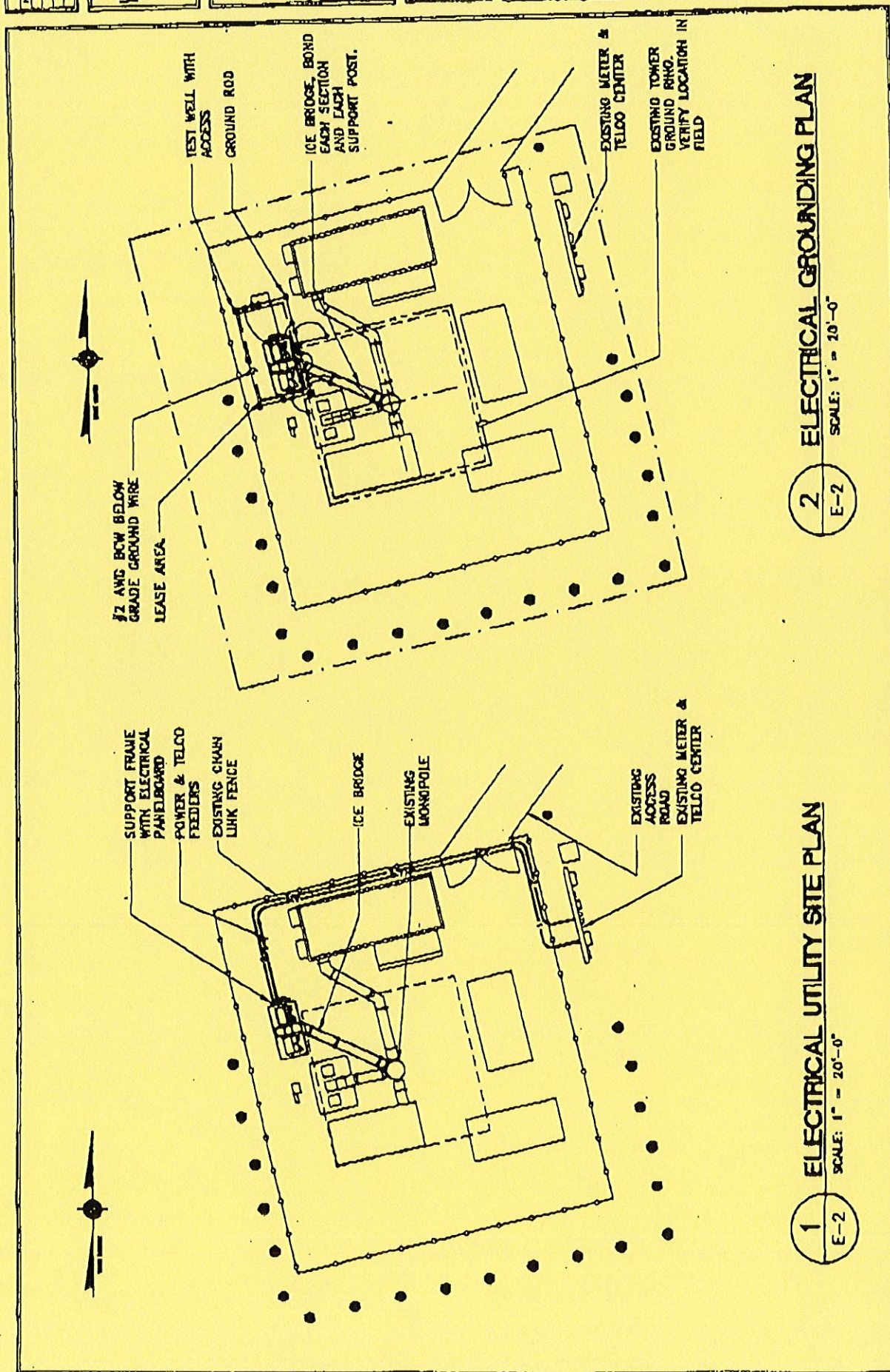
ELECTRICAL ABBREVIATIONS

AKC	AMPS INTERRUPTING CAPACITY
AWG	AMERICAN WIRE GAUGE
BCW	BARE COPPER WIRE
BTB	BASE TRANSMISSION SYSTEM
C	CABLE
CAB	CABINET
DSC	DISCONNECT SWITCH
DWD	DRAWING
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
GEN	GENERATOR
GPS	GLOBAL POSITIONING SYSTEM
GSD	GROUND
O/H	OVERHEAD
PCS	PERSONAL COMMUNICATION SYSTEM
RGS	RIGID GALVANIZED STEEL
SN	SOLID NEUTRAL
TYP	TYPICAL
U/G	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE

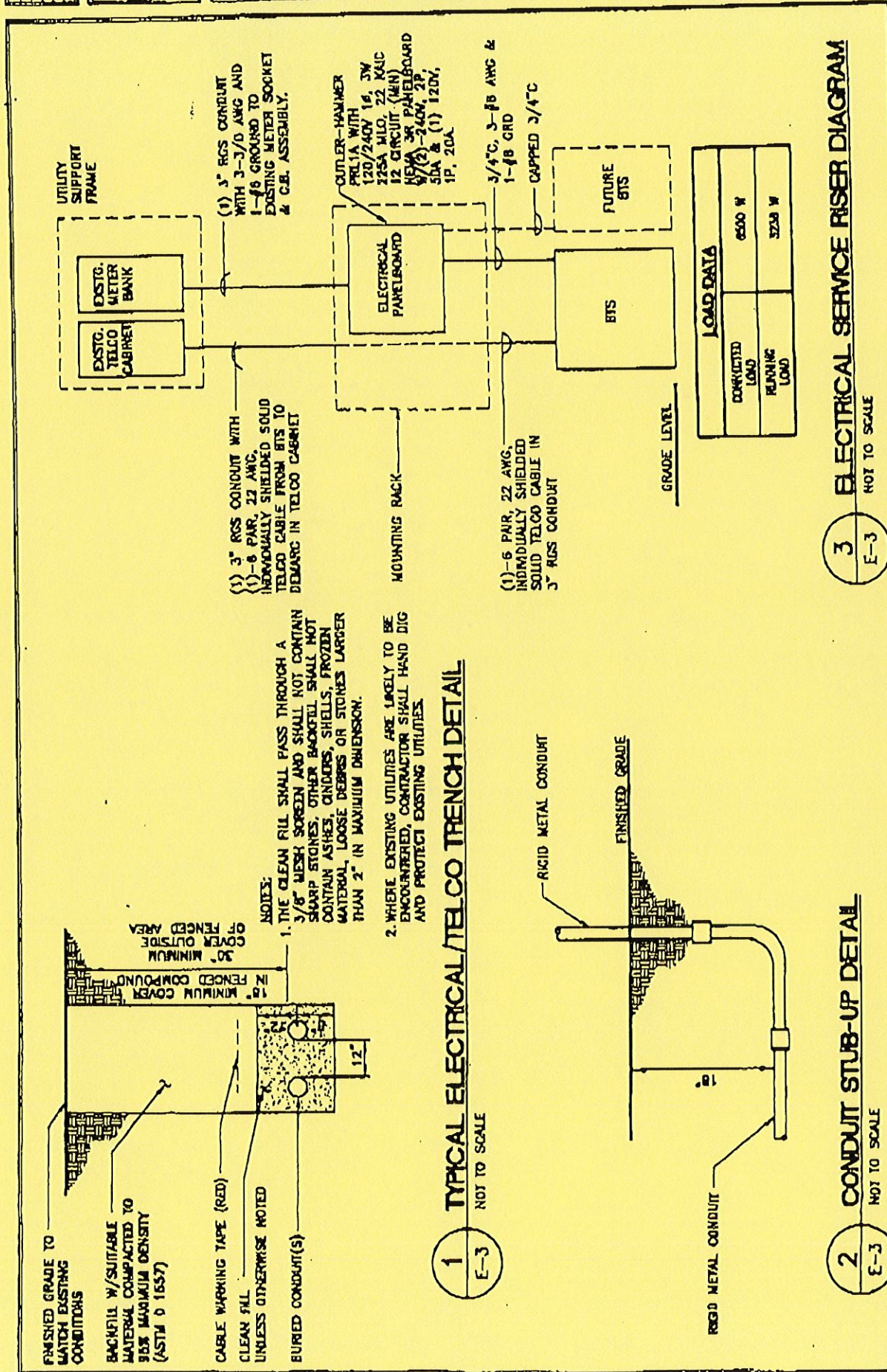
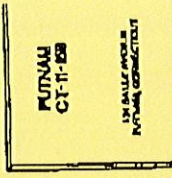
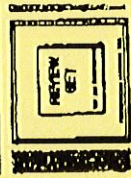
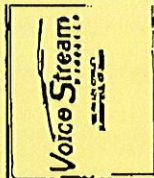
ELECTRICAL NOTES

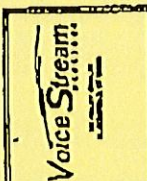
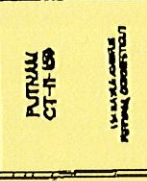
1. REFER TO DRAWING C-1 FOR ACTUAL LOCATIONS OF STRUCTURES ON SITE.
2. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
3. CONTRACTOR TO VERIFY EXACT LOCATION OF EXISTING GROUND RING IN FIELD.
4. ALL GROUNDING CONNECTIONS MADE THROUGHOUT THESE DRAWINGS SHALL BE MADE WITH THOMAS AND BETTS KOPR-SHELD, OR EQUIVALENT ANTI-OXIDATION COMPOUND. COAT ALL WIRES BEFORE LUGGING. COAT ALL SURFACES BEFORE CONNECTING.
5. BOND ICE BRIDGE AND ICE BRIDGE POSTS TO GROUND RING.
6. THE CONTRACTOR SHALL PROVIDE GROUND RESISTANCE TESTING PER THE SPECIFICATION FOR THE CARRIER EQUIPMENT AND TOWER GROUND RINGS.

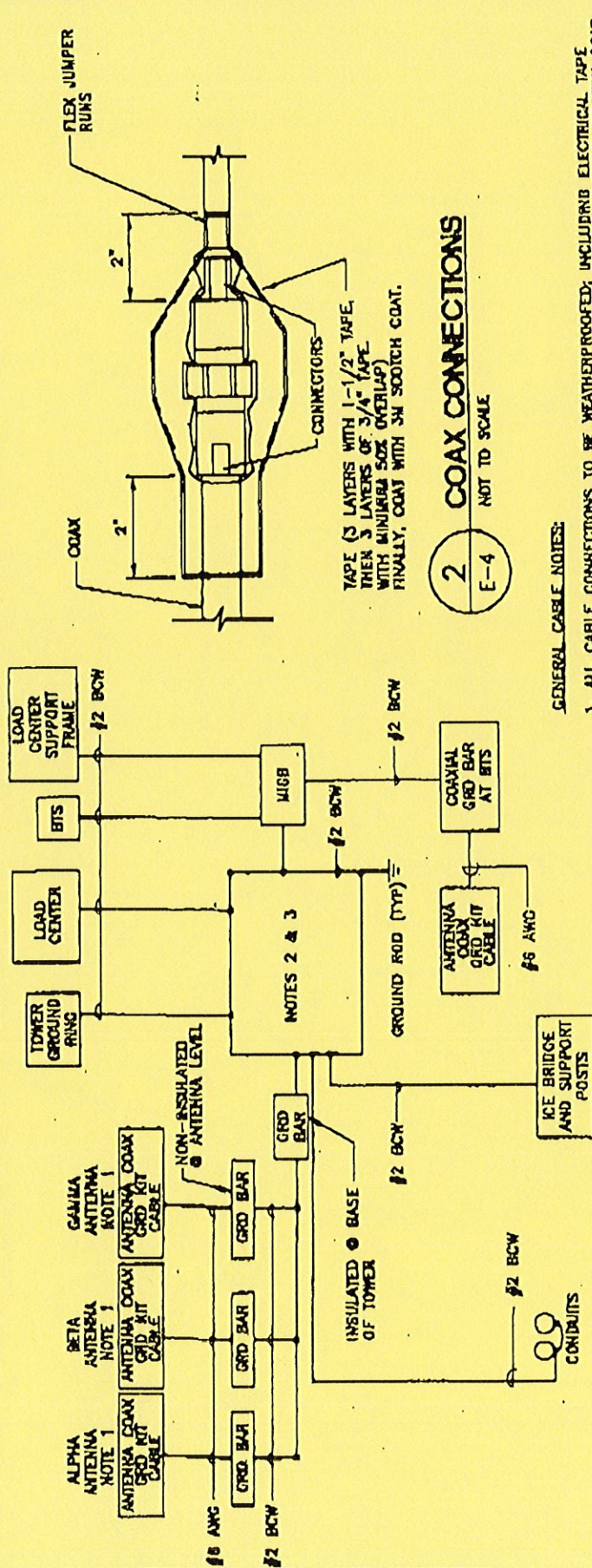
NEW/ISSUE NO. 1 DATE 06/19/01 BY [Signature] CHECKED [Signature]		VoiceStream A Division of Verizon Wireless	MODUL Modems, LLC 10000 N. 10th Ave. Suite 100 Phoenix, AZ 85020 Phone: (602) 998-1000 Fax: (602) 998-1001 Email: info@modems.com	PERMIT SET [Stamp]	POTENTIAL CT-11-58	1.0000000000 POTENTIAL CONSTRUCTION	PROJECT NO. DRAWING NO. DATE CHECKED BY SCALE DATE	UTILITY SITE & GROUNDING PLANS	E-2 OF 2
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REV	DATE	DESCRIPTION
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PROJECT NO.	104												
DRAWING BY	ONE												
CHECKED BY	FT												
SCALE	1/4" = 1'-0"												
DATE													
ELECTRIC DETAILS		E-4											



2 COAX CONNECTIONS

E-4 NOT TO SCALE

GENERAL CABLE NOTES:

1. ALL CABLE CONNECTIONS TO BE WEATHERPROOFED; INCLUDING ELECTRICAL TAPE, VAPOR SEAL (BUTYL TAPE), THREE LAYERS OF ELECTRICAL TAPE AND SCOTCH COAT. SHOWN ABOVE.)
2. CONTRACTOR TO PROVIDE DRIP LOOPS IN CABLES AND JUMPERS WHERE NECESSARY.
3. ANTENNA TAGGING:
 - A. ALL MARKINGS TO BE DONE AS PER SCHEMATIC DRAWING LOCATED ON ELECTRICAL DRAWINGS.
 - B. COLORED ELECTRICAL TAPE SHALL MARK EACH END OF CABLE AND EACH END OF JUMPERS AS CLOSE TO EACH END AS POSSIBLE. (NOT TO INTERFERE WITH WEATHERPROOFING)
 - C. ALL TAPE MARKINGS TO BE DONE IN SEQUENCE FROM TRUE NORTH, WORKING CLOCKWISE. PER SECTOR RED, WHITE, BLUE MARKINGS (SEQUENCE DENOTED ON MATERIAL LIST)
 - D. IN ADDITION TO TAPE MARKINGS, EACH END OF EVERY CABLE SHALL ALSO BE FITTED WITH BRASS LABEL TAGS (SUPPLIED BY VOICESTREAM) INSCRIBED WITH NUMBER AND COLOR OF TAPE MARKINGS AS INDICATED.
4. ADDITIONAL COAXIAL CABLE SUPPORT MAY BE REQUIRED TO MEET COAXIAL CABLE SUPPORT SPECIFICATIONS (MINIMUM 3'-0" ON CENTER). CONTRACTOR SHALL SUPPLY AND INSTALL SUPPORTS AS REQUIRED.

1 SCHEMATIC DIAGRAM - GROUNDING SYSTEM

E-4 NOT TO SCALE

- NOTES:**
1. BOND ANTENNA GROUNDING KIT CABLE TO GROUND BAR
 2. RING GROUND FOR EQUIPMENT.
 3. FOR GROUNDING CONNECTION & DETAILS, SEE LAYOUT DRAWINGS.
 4. GROUND WIRE TO BE THINNED COPPER, SIZE IN ACCORDANCE WITH DRAWINGS.

REVISED DOWNS

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13	1	1
14	1	1

VoiceStream

COMMUNICATIONS

MOBILE

COMMUNICATIONS

PERVIEW

SET

PURVIEW

CT-H-50

144 INTEL AVAILAR

PURVIEW COMMUNICATIONS

PROJECT NO. 100

DESIGNED BY. 100

CHECKED BY. 100

SCALE. AS SHOWN

DATE. 10/1/00

ELECTRIC

DETAILS

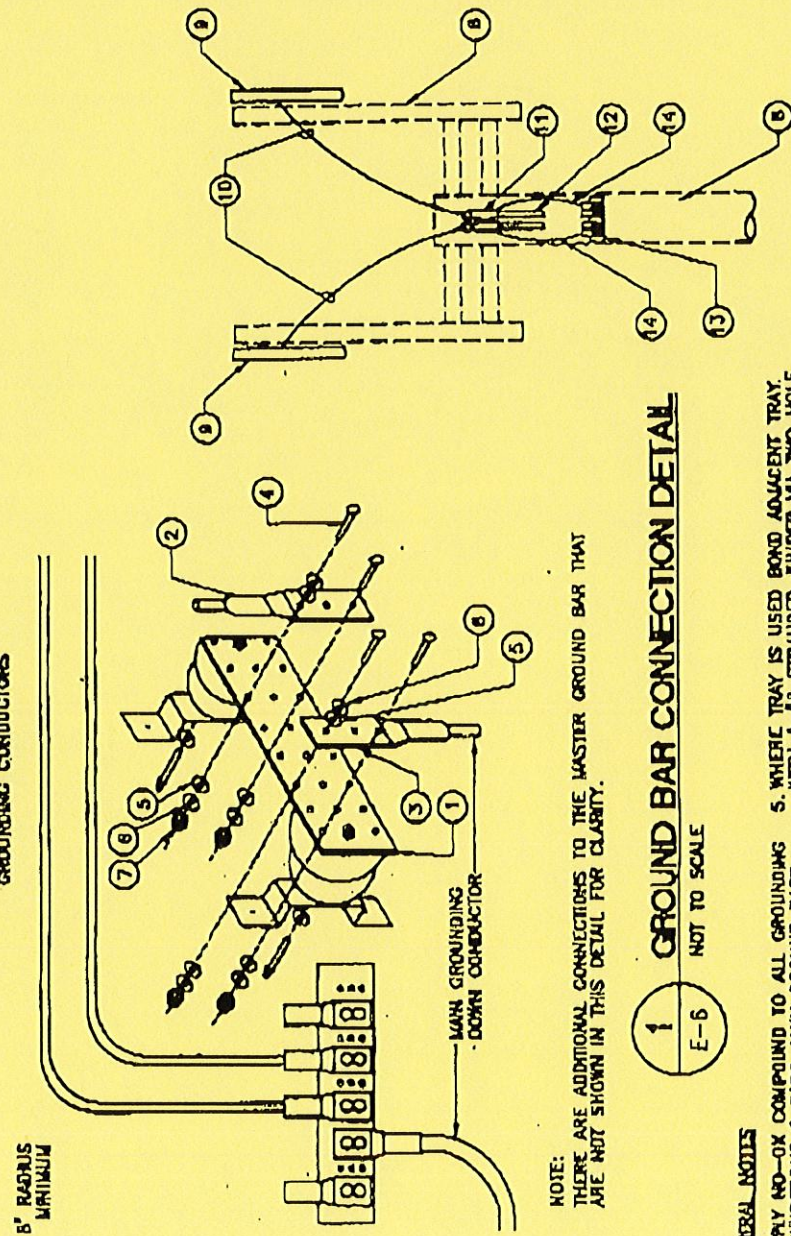
E-6

END 15 00 00

NOTES:

- 1 ALL COAXIAL CABLES LEAVING THE COMMUNICATION CABINET SHALL BE GROUNDED AT THIS POINT VIA CABLE GROUND KITS. NEWTON INSTRUMENT COMPANY OR EQUAL. #8-8142 (GROUNDED BAR 20"x4"x1/4") #3081-4 (INSULATORS) #3015-8 (5/8" LOCK WASHERS) #A-0008 (WALL MOUNTING BRACKETS) AND #3012-1 (5/8" - 11x1" H.H.C.S. BOLTS).
- 2 HYDRAULICALLY COMPRESSED LONG BARREL 2-HOLE GROUNDING LUG FOR GROUNDING CONDUCTOR BETWEEN CABLE AND THE MASTER GROUND BAR TERMINAL THOMAS & BETTS #34852 BE OR EQUAL
- 3 HYDRAULICALLY COMPRESSED LONG BARREL 2-HOLE GROUNDING LUG FOR THE MAIN GROUNDING DOWN CONDUCTOR BETWEEN THE MASTER GROUND BAR TERMINAL AND THE MAIN GROUNDING ELECTRODE THOMAS & BETTS #34852 BE OR EQUAL
- 4 3/8" STAINLESS STEEL DIAMETER BOLTS TO CONNECT GROUNDING LUG TO THE GROUND BAR (TYPICAL).
- 5 3/8" STAINLESS STEEL QUARTER FLAT WASHER (TYPICAL).
- 6 3/8" STAINLESS STEEL DIAMETER LOCK WASHER (TYPICAL).
- 7 3/8" HEX HEAD STAINLESS STEEL NUT (TYPICAL).
- 8 TOWER STRUCTURE/ANTENNA MOUNT
- 9 ANTENNA
- 10 JUMPER CABLE
- 11 GROUNDING KIT. AVOID INSTALLING GROUNDS ON BENDS IN CABLE
- 12 COAXIAL CABLE FROM ANTENNA TO BTS. REFER TO DETAIL
- 13 UNINSULATED GROUND BAR, INSIDE OF TOWER AT HANDHOLE. NEWTON INSTRUMENTS OR EQUAL. CONNECT GROUND BAR DIRECTLY TO THE TOWER AT HANDHOLE RIM. DO NOT USE INSULATORS.
- 14 #8 INTEGRAL GROUND CONDUCTOR FROM GROUNDING KIT TO UNINSULATED GROUND BAR.

SOLID #2 TINNED COPPER GROUNDING CONDUCTORS



NOTE: THERE ARE ADDITIONAL CONNECTIONS TO THE MASTER GROUND BAR THAT ARE NOT SHOWN IN THIS DETAIL FOR CLARITY.

1 GROUND BAR CONNECTION DETAIL

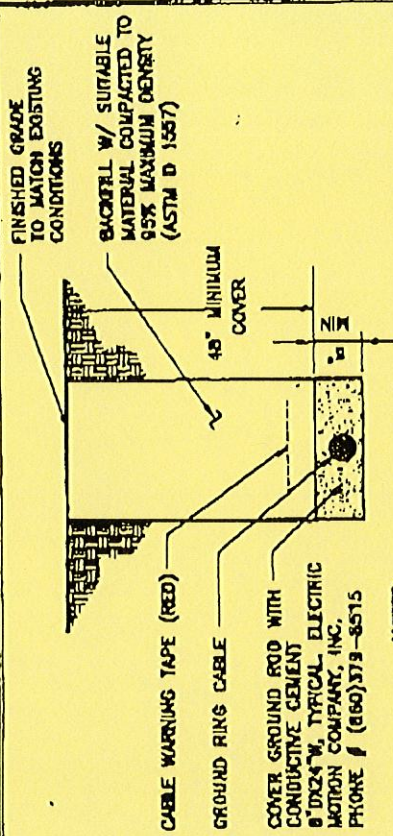
E-6 NOT TO SCALE

GENERAL NOTES

1. APPLY NO-OX COMPOUND TO ALL GROUNDING CONNECTIONS C-TAPS, MAIN GROUND BARS, ETC.
2. THE GROUND RIM SHALL FOLLOW A DOWNWARD PATH FROM THE ANTENNAS TO THE MASTER GROUND BAR.
3. MAKE ALL CONNECTIONS WITH AN 8" RADIUS MINIMUM.
4. ANY GROUND WIRES, SOLID OR STRANDED, THAT PASS THROUGH CONDUIT, METALLIC SLEEVE/OR CABLE COVER, SHALL BE BONDED AT BOTH ENDS.
5. WHERE TRAY IS USED BOND ADJACENT TRAY WITH A #8 STRANDED JUMPER VIA TWO HOLE LUGS. BOND BOTH ENDS TO THE #2 SOLID TINNED WIRE.
6. EXISTING SITE WITH EXISTING GROUNDING PROVISIONS. LOCATE COMMON POINT OF ATTACHMENT.
7. ANTENNA GROUNDING IS TYPICAL OR SCHEMATIC REPRESENTATION ONLY; REFER TO DRAWING FOR MOUNTING & LOCATIONS.

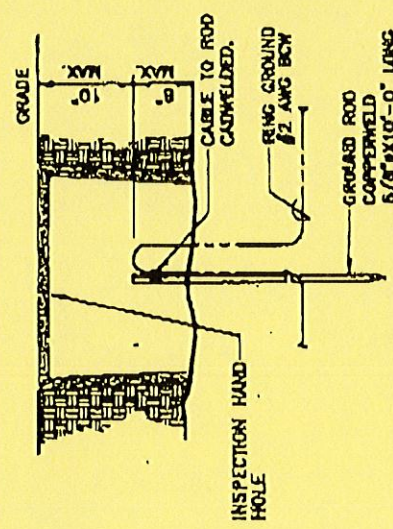
2 DETAIL
E-6 NOT TO SCALE

REVISIONS NO. DATE BY 1 10/1/01 JLM 2 10/1/01 JLM	Voice Stream COMMUNICATIONS, LLC 10000 N. 10TH AVE. SUITE 100 DENVER, CO 80231 (303) 751-1000 FAX (303) 751-1001 WWW.VOICESTREAM.COM	REVIEW CHECKED BY: JLM DATE: 10/1/01 SCALE: AS SHOWN DRAWN BY: JLM DATE: 10/1/01 PROJECT NO: 01-11-159 1/4" SCALE 1/4" = 1'-0"	ELECTRIC DETAILS E-7 CHG. NO. OF 01
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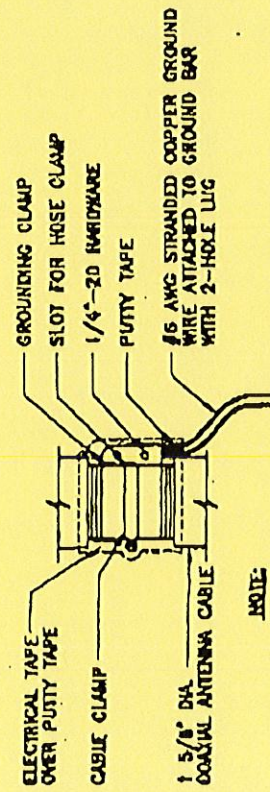
- NOTES:
1. BACKFILL SHALL NOT CONTAIN ASHES, ORDERS, SHELLS, FROZEN MATERIAL, LOOSE DEBRIS OR STONES LARGER THAN 2" IN MAXIMUM DIMENSION.
 2. WHERE EXISTING UTILITIES ARE LIKELY TO BE ENCOUNTERED, CONTRACTOR SHALL HAND DIG AND PROTECT EXISTING UTILITIES.

1 GROUND ROD DETAIL
E-7 NOT TO SCALE

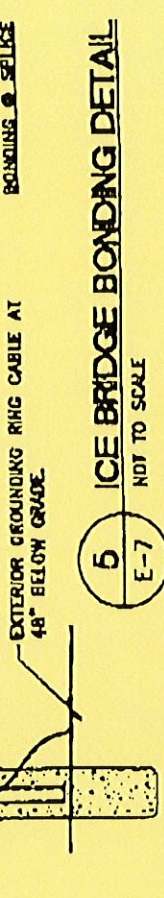


NOTE: INSPECTION HAND HOLE MAY BE CONCRETE OR PVC AND SHALL BE A MINIMUM OF 12" DIA X 18" DEEP.

2 WITH ACCESS DETAIL
E-7 NOT TO SCALE



3 DIRECT BURIAL CABLE DETAIL
E-7 NOT TO SCALE



4 COAXIAL GROUNDING DETAIL
E-7 NOT TO SCALE

5 ICE BRIDGE BONDING DETAIL
E-7 NOT TO SCALE

REVISED

VOICE Stream

THEORY

RECEIVED

PUTNAM CT-11-159

UNIVERSITY OF CALIFORNIA

PRODUCT NO. 30

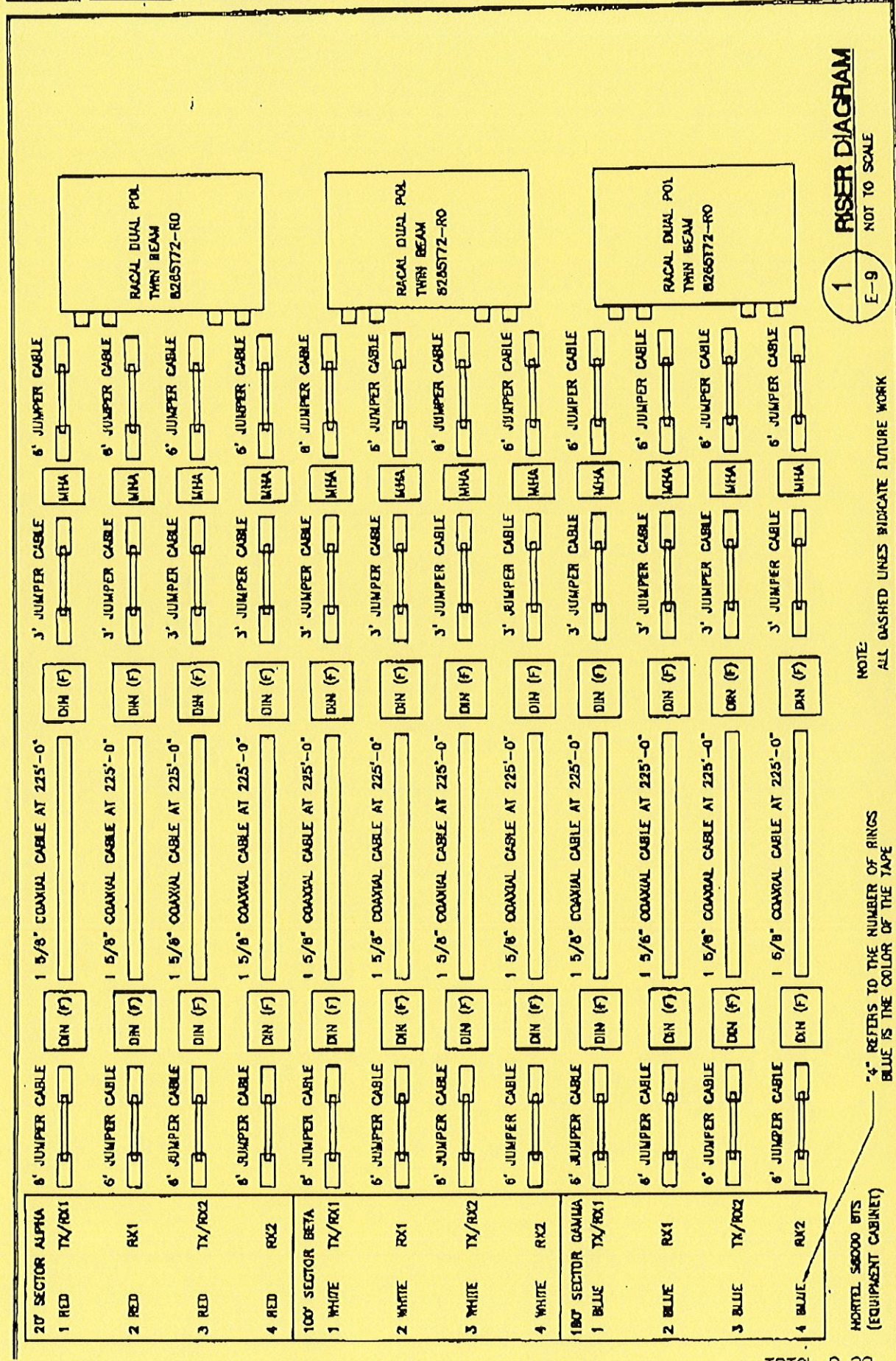
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PACKED BY

DATE

ELECTRIC DETAILS

E-9



Town of Old Lyme, Connecticut 06371



Planning Commission (ext. 234)

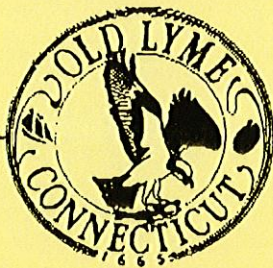
Zoning Commission (ext. 225)

52 Lyme Street

(860) 434-1605

fax (860) 434-5636

*facsimile transmittal*To: Joel RieboldFax Number: (860) 827-2950From: Harry SmithDate: 6/19/01Number of Pages (including this page): 4
Re Docket #202MEMO: Joel,Hard copy will be hand deliveredat public hearing on Thurs. 6/21H Smith



TOWN OF OLD LYME

PLANNING COMMISSION

52 Lyme Street
Old Lyme, CT 06371
Tel. (860) 434-1605
Fax (860) 434-5636



June 19, 2001

Joel Rinebold, Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Crown Atlantic Telecommunication Tower Application Docket # 202.

Dear Mr. Rinebold,

I am writing on behalf of the Town of Old Lyme Zoning Commission regarding an application for a proposed telecommunications tower facility (Siting Council Docket No. 202). The Commission has the following concerns/questions with the proposal and information presented by the applicant.

Cell Site Information

- The application states that Crown Atlantic needs an installation height of 150'. The tower is proposed for a height of 192' for the stated purpose of accommodating additional carriers at higher levels. No documentation is included to indicate that these carriers need this height - only that they would be willing to use it. This suggests that the 40 additional feet of height is proposed only to provide an opportunity for commercial gain by Crown Atlantic and not to address the needs of other carriers. The Commission certainly supports co-location by other carriers, however, additional information should be supplied regarding how many would carriers would actually need to locate on this tower and the minimum possible separation distance between the antennae. Our goal in raising this issue is to have the shortest possible tower built that would address the real needs of the carriers that would realistically need to locate on it.
- Although the application indicates the need for antennae at a height of 150', the drawings submitted with application indicate antennae only at 160', 170', 180' and 190'.
- The application indicates that there will be "an associated equipment building capable of accommodating all carriers interested in sharing the tower." However, the drawings show multiple equipment shelters inside a chain link fence. The Commission would prefer a single building with suitable architectural treatment and landscaping as necessary if it is visible from private or public roads or abutting properties.

Joel Rinebold

June 19, 2001

Page 2

Public Need

- It is strongly suggested that the question of whether the need can be met by multiple lower level, less obtrusive antenna rather than one very tall tower be much more thoroughly investigated. Possibilities to investigate include existing radio antennae at either the alternate site on the Machnik property or the Pfeiffer property on Whippoorwill Road. Other locations that should have been investigated include the CL&P tower at I-95 and Connecticut River, use of potential flagpole antenna at Firehouse and Little League field on Cross Road, or multiple lower antenna at Congregational Church steeple and multiple water towers on Shore and Cross Roads

Environmental Impacts

- **Visual Impact** – The line of sight studies that are provided seem in general to not address locations of more dense development, but rather convenient intersections - where people are watching traffic, not appreciating views. For example, the line of sight studies provided for the prime site do not appear to address the significant viewshed across the Black Hall River and associated tidal marsh areas between the proposed site and the most densely populated locations to the west of the Black Hall.
- **Wetland/waterbodies** – The Black Hall Club site is proposed on an area of filled over wetland. Also the pond directly to the southeast of the proposed site is much larger than is shown on the application drawing
- **Biodiversity** - The Black Hall river as an estuary of the Long Island Sound has an unusual variety of birds and other species. It is home to osprey, American bittern, and various species of rails. The portion of the river between Route 156 and the Amtrack railroad line is reportedly a bird sanctuary designated by the State of Conn. The mouth of the river is a nesting site for the piping plover. The potential impacts of this proposed tower location on these and other species, their migratory patterns as well as the general ecology of the river should be more thoroughly investigated. The limitation of the investigation to species present onsite is insufficient.

Scenic, Historic or Recreational Impacts

- No information is provided to address scenic or natural viewsheds or visual impacts on historic or recreational sites.
- The possible use of camouflage to lessen the adverse visual impact should be considered.
- With respect to the Black Hall Club site, it should be noted that recreational small boats (kayaks and canoes) use the Black Hall River. A vacant piece of state property on the river within 1000 feet of this proposed site is also being considered for a kayak/canoe launch.

Site Selection Process

With respect to the statement made by the applicant that they were unable to locate any existing towers or other tall structures in and around the Old Lyme area that would satisfy their needs; there is no indication that they explored the sites noted under "Public Need" above.

Joel Rinebold

June 19, 2001

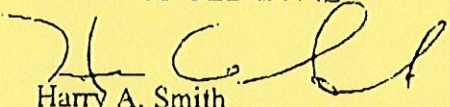
Page 3

Some specific comments on the description of the investigated sites provided on page 2 of Section 2 of application materials dated April 13, 2001 include:

- Black Hall Club, 49 Buttonball Road (prime site)
 - This is the principal address of the property owner, not the site indicated on the accompanying maps
 - The actual site indicated is in an existing gravel pit, but is very close to residential properties
- Machnik, 125 Mile Creek Road (alternate site)
 - The site contains an existing radio antenna which could potentially be rebuilt and extended 15 feet in compliance with local zoning regulations
- Swaney, 61-1 Buttonball Road (site no.3)
 - The site is *not* next to a truck repair facility - it is next to a landscaping business and an exclusive golf course and club
- Buttonball Road (site no.4)
 - The initial April 13, 2001 application indicates that M. Ozols in Zoning Office stated that the town was not interested - this is not true - indication was that this was not a location permitted under the Zoning Regulations (as is true of any of the locations listed) and that it was deeded open space and the applicant would need to investigate the terms of the open space restrictions.
- 95 Buttonball Road (site no.5)
 - No additional comment.
- 103 Buttonball Road (site no.6)
 - No additional comment.
- McCurdy Road (site no.7)
 - No additional comment.

Sincerely,

TOWN OF OLD LYME



Harry A. Smith

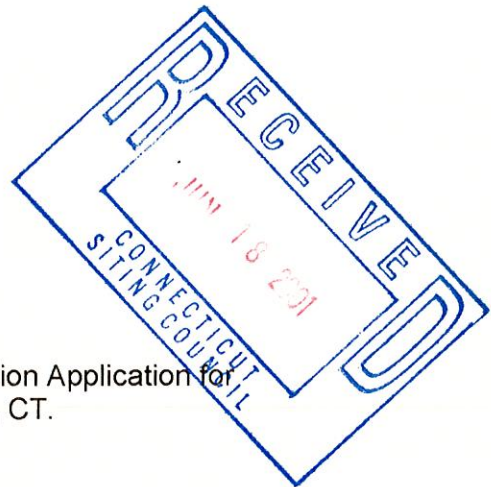
Planning Director

cc: Timothy Griswold, First Selectman
Joan Bozek, Zoning Commission Chair
Eric Knapp, Zoning Commission Counsel
Kenneth Baldwin, Robinson and Cole



June 15, 2001

Joel M. Rinebold
Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051



RE: VoiceStream Wireless Connecticut Siting Council Collocation Application for
SBA Tower facility located at 154 Sayle Avenue, Putnam, CT.
Lat. N 44-55'-47.24"
Long. W 071-53'-09.84"

Dear Mr. Rinebold:

I am responding by request of VoiceStream Wireless to explain discrepancies in antenna platform elevations presented on collocation applications by Cingular Wireless and VoiceStream Wireless.

Existing and proposed tower conditions presented by SBA to Cingular Wireless were based on existing and pending tenant lease information in our files.

Following the Cingular Wireless application, VoiceStream Wireless requested changes to their antenna scheme, which required detailed observation of the existing tower loading. Upon a tower inspection, it was discovered that antenna platforms belonging to Nextel Communications and Verizon Wireless were ten feet lower in elevation than on SBA's lease records. By this discovery, proposed AT&T Wireless antenna platform level was moved to a position above existing Nextel Communications antenna platform level. It is my understanding that this is reflected on the VoiceStream application.

Data presented to VoiceStream Wireless for their application reflects corrected existing and proposed tower loading conditions certified by the tower manufacture to meet design specifications.

If there are any additional questions, please call.

Regards,

Erik Pearson
Construction Project Manager

Cc: Esther McNany, SBA, Inc.
Bendan Sharkey, VoiceStream Wireless



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

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

June 1, 2001

Honorable Daniel S. Rovero
Mayor
Town of Putnam
Town Hall
126 Church Street
Putnam, CT 06260

RE: **TS-VOICESTREAM-116-010530** - VoiceStream Wireless request for an order to approve tower sharing at an existing telecommunications facility located at 154 Sayle Avenue, Putnam, Connecticut.

Dear Mayor Rovero:

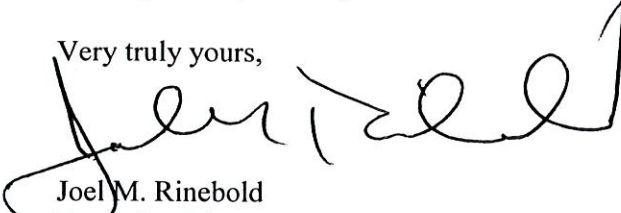
The Connecticut Siting Council (Council) received this request for tower sharing, pursuant to Connecticut General Statutes § 16-50aa.

The Council will consider this item at the next meeting scheduled for Wednesday, June 20, 2001, at 1:30 p.m. in Hearing Room Two, 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/grg

Enclosure: Notice of Tower Sharing

c: Planning and Zoning Department

LEBOEUF, LAMB, GREENE & MACRAE L.L.P.

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(AFFILIATED OFFICE)

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ALMATY

BEIJING

May 30, 2001

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



**Re: Request by VoiceStream Wireless Corp. for an Order
to Approve the Shared Use of a Tower Facility
Sayle Avenue, Putnam, Connecticut**

Dear Chairman Gelston and Members of the Council:

Please be advised that LeBoeuf, Lamb, Greene & MacRae, L.L.P. represents VoiceStream Wireless Corporation ("VoiceStream") in the above-referenced matter. Pursuant to Connecticut General Statutes §16-50aa, 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 Sayle Avenue, in Putnam, Connecticut. VoiceStream 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 "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

In February 2000, VoiceStream acquired from Omnipoint Communications, Inc. the "A block" "Wideband PCS" license for the 2-GHz PCS frequencies for the greater New York City area, including the entire State of Connecticut. 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 tower at Sayle Avenue is an SBA 175 foot monopole. The coordinates for the site are 41°-55'-46" N and 71°-53'-11" W. The tower is owned by SBA, Inc. and the surrounding land is owed by William F. Moser of Thompson, Connecticut and Ronald R. Blain of North Grosvenor Dale, Connecticut. An existing access road on the northeast side of the compound enters at an existing gate. VoiceStream and the owner have agreed to mutually acceptable terms and conditions for the proposed shared use of this tower,

RECEIVED

1960

U.S. DEPARTMENT OF AGRICULTURE

WASHINGTON, D.C.

OFFICE OF THE SECRETARY

WASHINGTON, D.C.

1960

1960

1960

1960



and the owner 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.

SBA has created a one hundred foot by one hundred foot (100'-0" x 100'-0") leased parcel compound with room for existing and future equipment. The compound layout is shown in the attached Exhibit A. Verizon, Nextel and Sprint currently have leased equipment areas within the compound. AT&T and SNET have proposed equipment for the same site. Details regarding the planned elevations and types of future antennas are supplied in the structural analysis attached as Exhibit C. VoiceStream proposes to install an antenna cluster comprised of three sectors, with one antenna per sector. The model number for each sector is Racal 8265T72-RO. The proposed antennas are Dual Pole Twin Beam antennas and will be mounted on 4.5" mounting pipes that will extend ten feet above the top of the monopole structure to a 185 foot centerline above the base plate. To accommodate the VoiceStream antennas and those proposed by other carriers, the structural analysis calls for eighteen (18) 3/4" gusset plates to be evenly distributed around the perimeter of the base flange. The radio transmission equipment associated with these antennas, two Nortel S8000 cabinets, would be located near the base of the existing tower on a proposed eight foot six inch by twelve foot (8'-6" x 12'-0") concrete pad within a ten foot by twenty foot (10'-0" x 20'-0") leased equipment area within the larger SBA compound. Exhibit B contains specifications for the proposed antennas and equipment cabinet.

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 was designed to accommodate multiple carriers. A structural analysis of the tower with the proposed VoiceStream installation has been performed and is attached as Exhibit C. As mentioned above, minor reinforcements to the base flange of the tower will be installed to insure the tower's structural integrity. 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 Sayle Avenue in Putnam. 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 sectors with one antenna 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. While the proposed antennas will extend slightly higher than the existing tower, the proposed installation would not increase the height of the actual tower structure, 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) will be 0.011419 mW/cm², which is 1.1419% of the Maximum Permissible Emission (MPE). The combined power density with other carriers will be 9.46190% of the 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 bodies or sanitary facilities. 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, if any, and is environmentally feasible.

D. Economic Feasibility As previously mentioned, the owner 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.

E. 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 Sayle Avenue. 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 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 Sayle Avenue, in Putnam, 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 respectfully requests that the Council issue an order approving the proposed shared use of this tower.

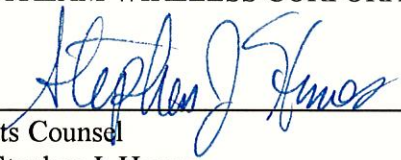
Sayle Avenue, Putnam, CT
Page 4

Thank you for your consideration of this matter.

Respectfully submitted,

VOICESTREAM WIRELESS CORPORATION

By: _____


Its Counsel

Stephen J. Humes

Diane W. Whitney

Attachments

cc: Daniel S. Rovero, Mayor, Town of Putnam

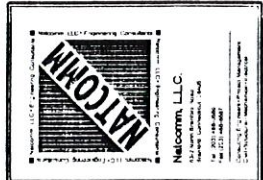
Exhibit A

Design Drawings

Site Location

Sayle Avenue, Putnam, CT

REVISIONS	DATE	BY	DESCRIPTION
1	01/11/01	W. J. HARRIS	COMPLETE LAYOUT
2	01/11/01	W. J. HARRIS	COMPLETE LAYOUT



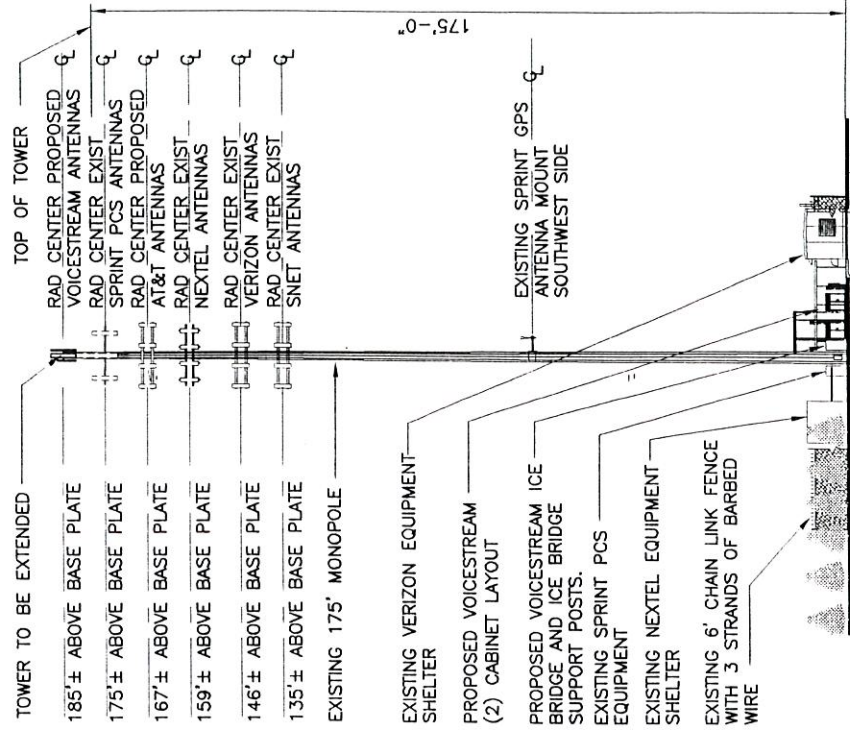
PROJECT NO.	332
DRAWN BY	P.A.N.
CHECKED BY	
SCALE	NONE
DATE	10/22/01

LEASE EXHIBIT
SITE PLAN
AND ELEVATION

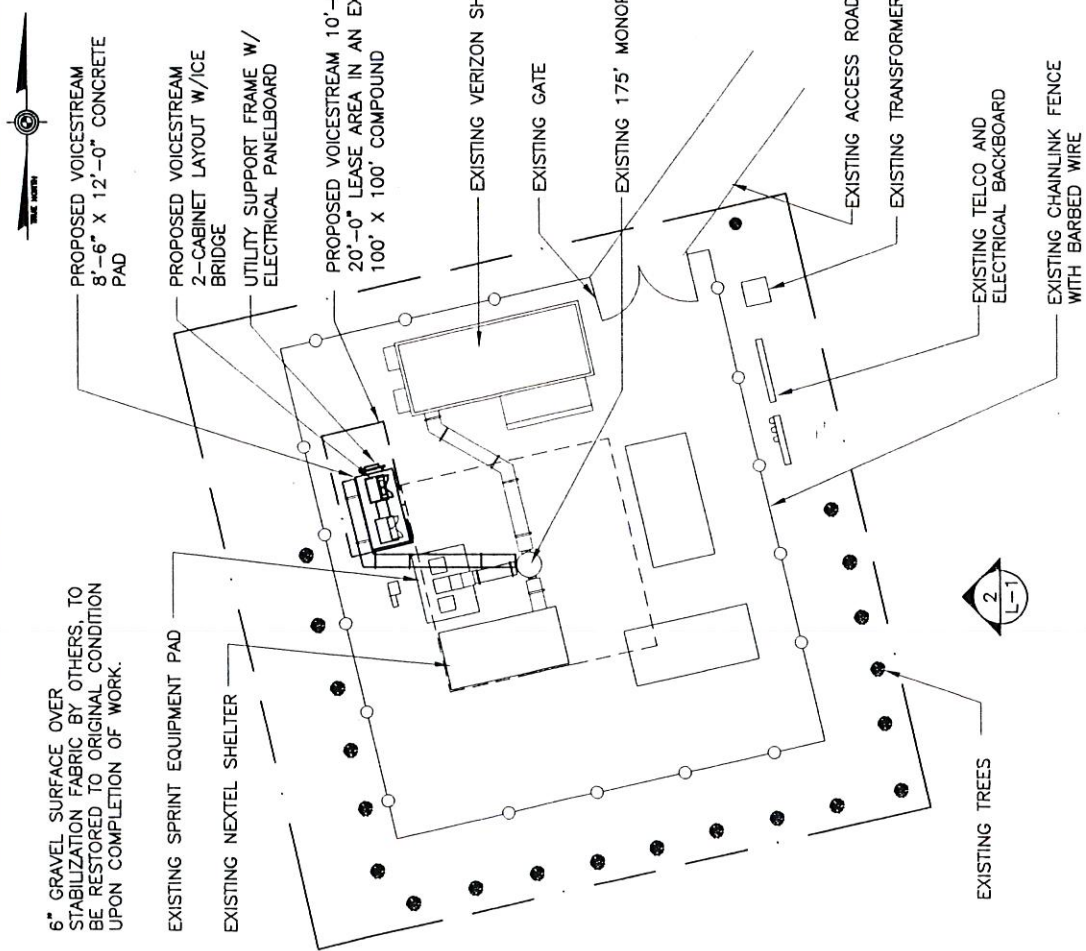
L-1
DWG. 1 OF 3

LEASE EXHIBIT

THE LEASE PLAN IS DIAGRAMATIC IN NATURE AND IS INTENDED TO PROVIDE GENERAL INFORMATION REGARDING THE LOCATION AND SIZE OF THE PROPOSED WIRELESS COMMUNICATION EQUIPMENT AND ANTENNA MOUNTS WITHIN THE EXISTING COMPOUND. ACTUAL LOCATION OF LEASE AREA WILL BE FINALIZED UPON COMPLETION OF DESIGN.



2 TOWER ELEVATION
L-1
NOT TO SCALE

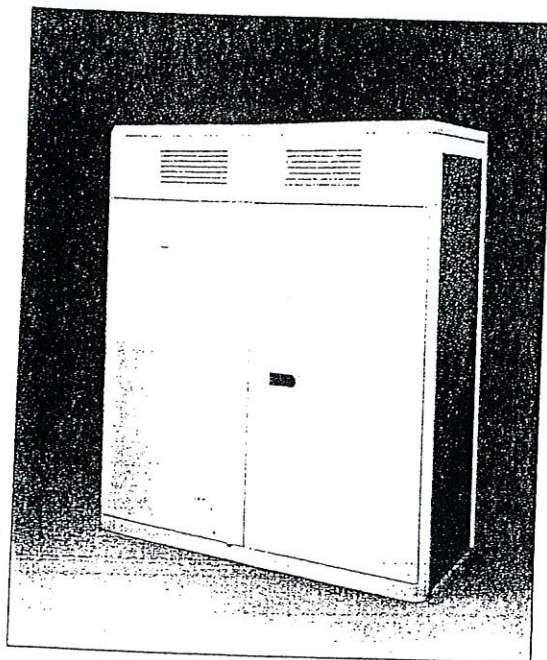


1 PARTIAL SITE PLAN
L-1
NOT TO SCALE

Exhibit B

Equipment Specifications **Sayle Avenue, Putnam, CT**

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.

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Publication Reference S80.INS.0696
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design as engineering or manufacturing
methods warrant.

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1-800-466-7838 or (214) 684-5935 --
<http://www.nortel.com/wireless>

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Mississauga ON L4W 4M7
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In the Caribbean and Latin America:
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Northern Telecom (Asia) Limited
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Singapore 1955
Telephone: (65) 287-2877

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18 Harbour Road, Wanchai
Hong Kong
Telephone (852) 2585 2888

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Maidenhead
Berkshire SL6 1AY
England
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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 $+50^{\circ}\text{C}$ ($+122^{\circ}\text{F}$).

Consumption

BTS input voltage:

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

NON - PREMIUM
BTS ONLY

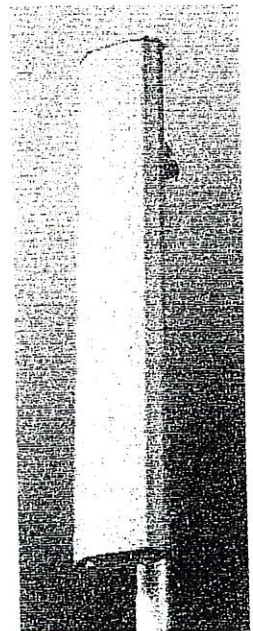
PCS
DUAL POL TWIN BEAM
PANEL ANTENNA

TYPE 8265T-R0
XP/65/19 & XP/65/19

- Gain 19 dBi on 4 ports
- 65° Azimuth
Twin Beam Coverage
- 5 Year Warranty
- Microstrip Design

ELECTRICAL PERFORMANCE

Frequency Range	:	1850-1990 MHz
Gain	:	18.8 dBi $\pm$ 0.5 dBi
VSWR	:	1.4:1 maximum
Polarization	:	Dual Slant, +45° and -45°
Horizontal Beamwidth	:	65° $\pm$ 5° Twin Beam
Vertical Beamwidth	:	5° $\pm$ 0.25°
Downtilt	:	0°
Sidelobe Suppression	:	Elevation, better than 18dB
Front to Back Ratio	:	Better than 25 dB
Isolation between Ports	:	Better than 30 dB
Power Rating	:	250W
Intermodulation	:	-147 dBc
Impedance	:	50 Ω
Lightning Protection	:	DC Ground
Connector	:	7/16 DIN Female Bulkhead



Racal Antennas, Inc.

501 Tradeway
Mineral Wells, TX 76067
Tel: (940) 325-2341
Fax: (940) 325-4377
Website: www.racal-antennas.com
Email: sales@racalantennas.com

Exhibit C

Structural Analysis **Sayle Avenue, Putnam, CT**



FRED A. NUDD CORPORATION

1743 ROUTE 104, BOX 577
 ONTARIO, NY 14519
 (315) 524-2531 FAX (315) 524-4249
www.nuddtowers.com



May 10, 2001

Frank Tomcak
 NatComm
 63-2 North Branford Road
 Branford, CT 06405

Dear Frank:

We have completed the analysis of the Putnam monopole located at 154 Sayle Avenue in Putnam, CT (SBA Site#: 8772) and have found it to be adequate to support the proposed antenna loading with proposed structural modifications implemented. The analysis was performed using 85 mph wind speed and 1/2" radial ice per EIA/TIA 222-F recommended standard for Windham County, CT.

The tower we analyzed is a 175' Fred A. Nudd M-200 monopole consisting of five slip-jointed sections. The plate thickness of the pole sections ranges from 7/16" to 1/4". Foundation capacities were based on the original design parameters.

The antenna loading used in the analysis consisted of the following existing & proposed antennas:

QTY	Antenna	Elev.	Status	Owner
3	Dual Pole Twin Beam 8265T72	187'	Proposed	VoiceStream
9	DB980H90E-M	175'	Existing	Sprint
12	Allgon 7184.14	167'	Proposed	AT&T
12	ALP 9212	159'	Existing	Nextel
12	DB844H80D	146'	Existing	Verizon
12	Allgon 7120.16	135'	Proposed	SNET

Note: all the antennas were assumed to be supported with Nudd 14' Low-Profile Platforms. Any deviation from the antenna loading listed above will require a tower analysis for verification of structural integrity. VoiceStream antennas will be supported by 4.5" OD mounting pipes that will be extended about 10' above the top of the monopole (175' elevation).

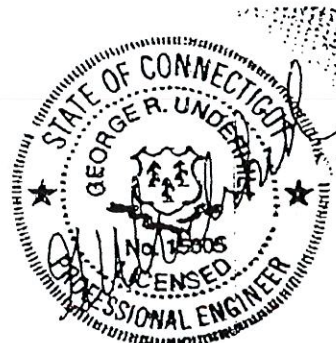
The results of the analysis showed that the base flange is overloaded and is pending reinforcement with (18) 3/4" x 6" x 12" (one per bolt) gusset plates that should be distributed evenly around the perimeter of the base flange.

This reinforcement must be done prior to any proposed carrier installation.

If you have any questions concerning this analysis, please feel free to contact me.

Sincerely,
 FRED A. NUDD CORPORATION

Ed Rosenbloom
 Design Engineer



TOTAL P.02

Exhibit D

Power Density Calculations **Sayle Avenue, Putnam, CT**



VOICESTREAM WIRELESS CORPORATION

100 Filley St, Bloomfield, CT 06002-1853

Phone: (860) 692-7100

Fax: (860) 692-7159

Technical Memo

To: Karina Hansen

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cc: Mike Fulton

Subject: Power Density Report for CT-11-159D

Date: 2-May-01

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 Monopole at 154 Sayle Avenue, Putnam, CT. This study incorporates the most conservative consideration for determining the practical combined worst case power density level 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 Voicestream Wireless transmitters are in the 1930-1950 MHz frequency band.
- 2) The antenna cluster consists of three sectors, with 1 antenna per sector. The model number for each antenna is Racal 8265T-RO.
- 3) The antenna height is 187 Feet center line.
- 4) The maximum transmit power from each sector is 1820.08 Watts Effective Isotropic Radiated Power (EIRP) assuming 4 channels per sector.
- 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 VoiceStream Wireless Corporation PCS antenna installation on a Monopole at 154 Sayle Avenue, Putnam, CT, is 0.011419 mw/cm^2 . This value represents only 1.1419% of the Maximum Permissible Emission (MPE) standard of 1000 microwatts per square centimeter (uw/cm^2) set forth in the FCC/ANSI/IEEE C95.1-1991. The combined Power Density with other carriers will be 9.46190% of the standard. Details are shown in the attachment.

Furthermore, the proposed antenna location for VoiceStream Wireless 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

Region 11 - Connecticut Power Density Calculation Site: CT-11-159D Site Address: 154 Sayle Avenue Town: Putnam Pole Height: 180FT Tower Style: Monopole	
Base Station TX output	20 W
Number of channels	4
Antenna Model	Racal 8265T-RO
Cable Size	1-5/8 "
Cable Length	225.0 ft
Antenna Height	187.0 ft
Ground Reflection	1
Frequency	1930.00 MHz
Jumper & Connector loss	2.62 dB
Antenna Gain	18.8 dBi
Cable Loss per foot	0.0116 Loss per/ft
Total Cable Loss	2.61 dB
Total Attenuation	5.23 dB
Total EIRP per channel (In Watts)	56.58 dB
Total EIRP per sector (In Watts)	455.02 W
	62.60 dB
	1820.08 W
	nsg
	13.57
Power Density (S) =	0.011419 mW / cm²
% MPE =	1.1419%
Equation Used : $S = \frac{(1000(grf)^2 (Power)^{10} (nsg/10)}{4\pi (R)^2}$	
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Total % MPE for Nextel=2.03%
 Total % MPE for Sprint=1.54%
 Total % MPE for BAM=4.75%
 Total % MPE for Voicestream=1.141898%
Total % MPE = 9.46190%