



**Nextel Communications**

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OCT 10 2003  
CONNECTICUT  
SITING COUNCIL

**EM-NEXTEL-066-031010**

October 9, 2003

Ms. Pamela Katz, Chairman  
Connecticut Siting Council  
10 Franklin Square  
New Britain, Connecticut 06051

Dear Chairman Katz:

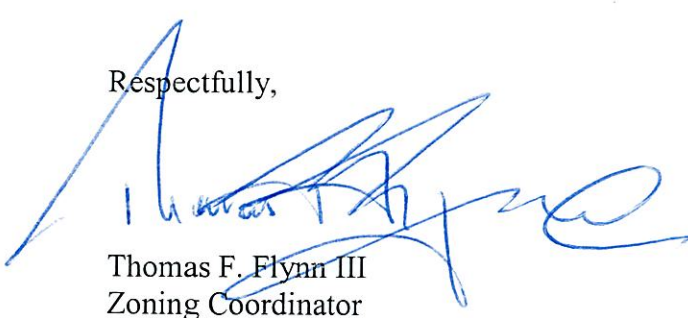
Please find enclosed and respectfully submitted, a request from Nextel Communications Inc. ("Nextel") to Modify an Exempt Tower and Associated Equipment at an existing telecommunications facility located on 133 Clearview Avenue, Harwinton, Connecticut. This facility is located on property owned by Clearview Industrial Park LLC. The tower is owned by SBA Communications Inc.

Nextel wishes to share use of this facility in order to improve/expand wireless its system coverage and to avoid the possibility of constructing another telecommunications tower in the general area.

The attached information details how the addition of the proposed antennas and associated equipment at the tower site meet the criteria set forth in Section 16-50j-72(b)(2) of the Regulations of Connecticut State Agencies and therefore is an Exempt Modification pursuant to Section 16-50j-73 of the Regulation.

Thank you for your consideration in this matter.

Respectfully,



Thomas F. Flynn III  
Zoning Coordinator  
Nextel Communications

Enclosure

Cc: Marie M. Knudsen, First Selectman

EXEMPT MODIFICATION  
133 CLEARVIEW AVENUE  
HARWINTON, CONNECTICUT 06111

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OCT 10 2003

CONNECTICUT  
SITING COUNCIL

Pursuant to Section 16-50i(a)(5) of the Connecticut General Statutes and Section 16-50j-72(b)(2), as amended, of the Regulations of Connecticut State Agencies, Nextel Communications Inc., ("Nextel") hereby notifies the Connecticut Siting Council of its intent to modify an existing telecommunications facility located at 133 Clearview Avenue, Harwinton, Connecticut.

### **BACKGROUND**

This existing facility, located at 133 Clearview Avenue in Harwinton, Connecticut consists of a 195-foot tall monopole that is owned by SBA Communications Inc. and is located on property of Clearview Industrial Park LLC. The site will provide wireless service coverage for Nextel to this section of Harwinton, Routes 8, 4 and 118.

Nextel desires to share use of this facility and thus avoid the potential need to construct an additional tower in the general area.

### **DISCUSSION**

Nextel plans to install twelve (12) panel antennas center-lined at the 173-foot level of the tower (see Attachment A) and place a 12-foot by 20-foot equipment shelter inside the northeastern side of the existing fenced compound (see Attachment B). The tower has been structurally analyzed and found to be fully capable of supporting Nextel's antennas and its tower mounted hardware (Attachment C). The tower is located at latitude 41 46 32.5 and longitude 73 05 56.4 and a ground elevation of 987'.

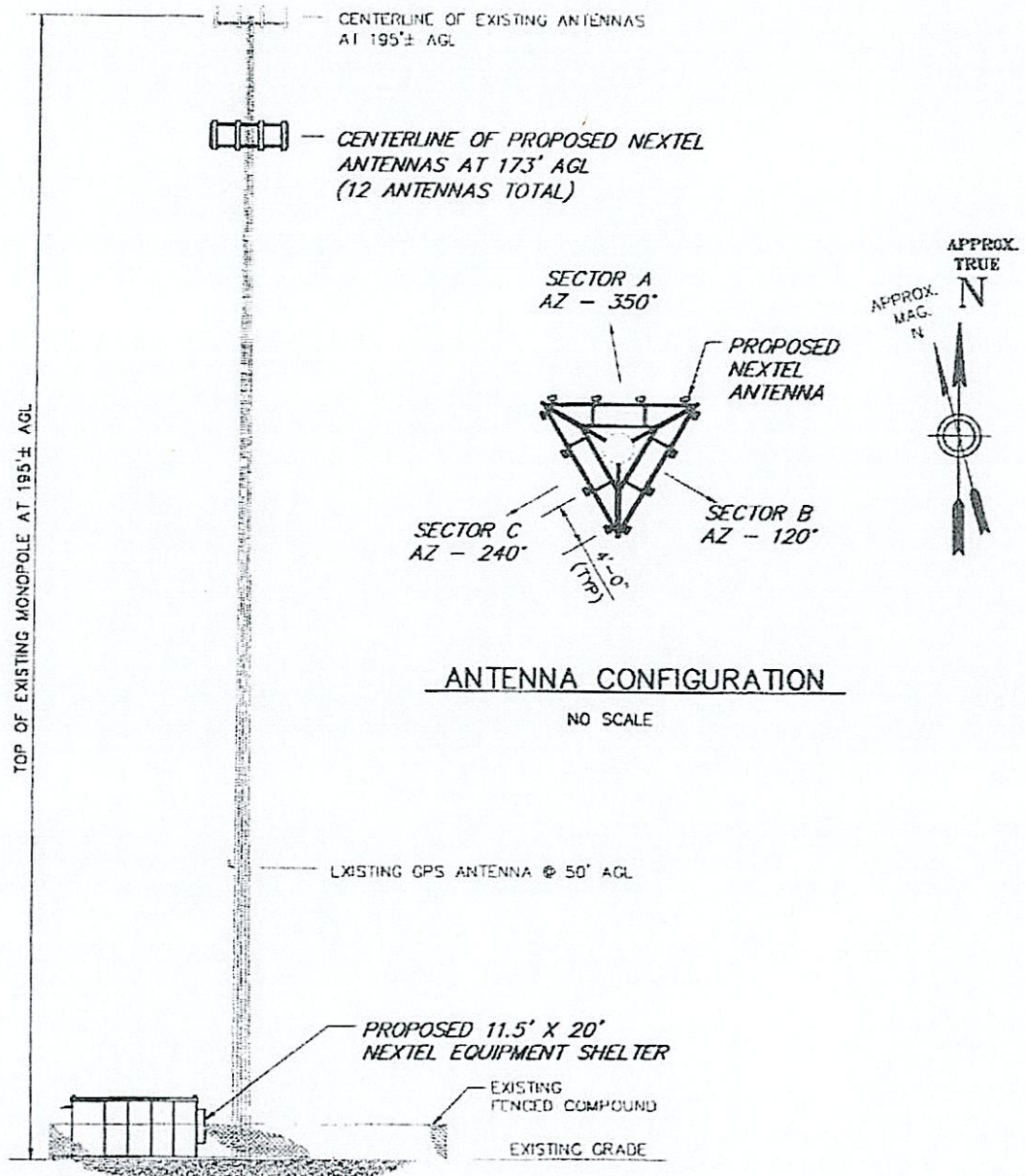
### **POWER DENSITY INFORMATION**

The operation of Nextel's antennas will not increase the total radio frequency electromagnetic power density level to a level at (or even near) existing State and Federal Standards. "Worst case" calculations, measured to a point at the base of the tower, show the power levels for the proposed Nextel antennas reach just 1.8617 % of the State/Federal standard in an uncontrolled access environment. (See Attachment D).

## **CONCLUSION**

The proposed additions do not constitute a “modification” of an existing facility as defined in Connecticut General Statutes Section 16-50i(d) and are consistent with the exception criteria found in Section 16-50j-72(b)(2) of the Regulations of Connecticut State Agencies in that the addition of Nextel’s antennas and equipment will not increase the existing tower height or extend the boundaries of the site; will not increase noise levels by six (6) decibels or more at the site’s boundaries; and will not increase the total radio frequency electromagnetic radiation above the Standard set forth in Section 22(a)–162 of the Connecticut General Statutes. In summary, this proposed addition would not have a substantial adverse environmental effect.

For the reasons discussed above, Nextel respectfully requests that the Council acknowledge that this Notice of Modification meets the Council’s exemption criteria, and permit Nextel to share use of this facility.



### ANTENNA CONFIGURATION

NO SCALE

### SITE ELEVATION

NO SCALE

#### SPECIAL DESIGN NOTES:

WIRELESS CARRIER PROPOSES A TOTAL OF 12 ANTENNAS AND 2 GPS ANTENNAS WITH THIS INSTALLATION.

THE DESIGN OF THE COMPOUND AS SHOWN IS PRELIMINARY AND MUST COMPLY WITH A STANDARD SET FORTH BY ALL STATE AND MUNICIPAL BUILDING CODES AND ZONING REGULATIONS INCLUDING VARIANCES.



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& ASSOCIATES LLP**

ENGINEERS, SURVEYORS, PLANNERS  
& LANDSCAPE ARCHITECTS  
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**NEXTEL  
COMMUNICATIONS**

GENERAL DYNAMICS  
Wireless Services  
77 "A" STREET  
NEEDHAM HEIGHTS, MA 02494-2806

CT3653  
HARWINTON NORTH  
133 CLEARVIEW AVENUE  
HARWINTON, CT 06791

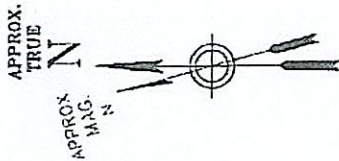
CHA PROJ. NO. - 12604-1003

2 OF 2

REV 1

LE-2





PROPOSED NEXTEL 11.5'x20' EQUIPMENT SHELTER ON 4 CONCRETE PIERS AND TOWER FOUNDATION PAD

PROPOSED NEXTEL GPS ANTENNA  
PROPOSED NEXTEL 15'x26' LEASE AREA

PROPOSED UNDERGROUND POWER & TELCO ROUTING

EXISTING TEST WELL

TRANSFORMER

PROPOSED NEXTEL GPS ANTENNA

EXISTING POWER/TELCO BACKBOARD

APPROXIMATE LOCATION OF UNDERGROUND POWER

APPROXIMATE LOCATION OF UNDERGROUND TELEPHONE

EXISTING CRUSHED STONE SURFACE

PROPOSED NEXTEL ICE BRIDGE

EXISTING 195' MONOPOLE

EXISTING EQUIPMENT

EXISTING 20' WIDE ACCESS EASEMENT

NEXTEL TO USE EXISTING ACCESS & PARKING

EXISTING 12' WIDE SWING GATE

PROPOSED POWER & TELCO SOURCE

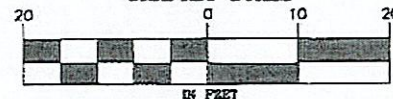
35'-4" X 35'-4" CONCRETE FOUNDATION

100' X 100' LEASE AREA

RF 9/14

## SITE PLAN

### GRAPHIC SCALE



### SPECIAL DESIGN NOTES:

WIRELESS CARRIER PROPOSES A TOTAL OF 12 ANTENNAS AND 2 GPS ANTENNAS WITH THIS INSTALLATION.

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ROCKY HILL, CT 06667

**NEXTEL COMMUNICATIONS**

GENERAL DYNAMICS  
Wireless Services  
77 "A" STREET  
NEEDHAM HEIGHTS, MA. 02494-2806

CT3653

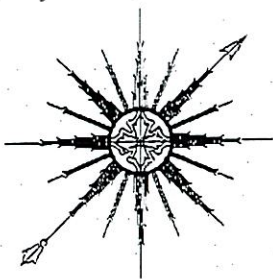
HARWINTON NORTH  
133 CLEARVIEW AVENUE  
HARWINTON, CT 06791

CHA PROJ. NO. - 12604-1003

1 OF 2

REV 1

LE-1



# ALL-POINTS TECHNOLOGY CORPORATION, P.C.

## STRUCTURAL ANALYSIS REPORT 195' MONOPOLE TOWER HARWINTON, CONNECTICUT

Prepared for  
General Dynamics Network Systems, Inc.

Nextel Site #CT-3653; Harwinton North

October 7, 2003



APT Project #CT133160

— ATTACHMENT C —

**STRUCTURAL ANALYSIS REPORT  
195' MONOPOLE TOWER  
HARWINTON, CONNECTICUT  
prepared for  
General Dynamics Network Systems, Inc.**

**EXECUTIVE SUMMARY:**

All-Points Technology Corporation, P.C. (APT) performed an inspection and structural analysis of this 195-foot monopole tower located in Harwinton, Connecticut. The analysis was performed for Nextel Communications' proposed installation of twelve DB844H90 panel antennas on a low-profile platform at 173'. Waveguide cables are to be twelve 1-5/8" cables installed inside the pole.

Our analysis indicates the tower requires modifications to support Nextel's proposed antennas. Fine cracks observed in the mat foundation should be sealed to prevent water entry.

**INTRODUCTION:**

A structural analysis of this communications tower was performed by APT for General Dynamics Network Systems, Inc.. The tower is located at 133 Clearview Avenue in Harwinton, Connecticut.

APT visited the tower site on October 1, 2003. Robert E. Adair, P.E. climbed the tower in its entirety to compile data necessary to perform the structural analysis. The analysis also relied on tower information and proposed antennas provided by SBA, Inc., the tower owner.

The structure is a 195-foot galvanized steel, five section monopole manufactured by F.A. Nudd, Inc. The analysis was conducted using the following antenna inventory:

<b>Antenna</b>	<b>Elev.</b>	<b>Mount</b>	<b>Coax.</b>
(12) RR90-17 panels & (24) TMAs (T-Mobile)	195'	14' low-profile platform	(24) 1-5/8"
<i>(12) DB844H80 panels (Verizon)</i>	<i>183'</i>	<i>14' low-profile platform</i>	<i>(12) 1-5/8"</i>
<b>(12) DB844H90 panels (Nextel)</b>	<b>173'</b>	<b>14' low-profile platform</b>	<b>(12) 1-5/8"</b>

Future antennas to be installed are shown in *italic* text.

Proposed antennas shown in **bold** text.

**CONDITION INSPECTION:**

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**All-Points Technology Corporation**

150 Old Westside Road  
North Conway, NH 03860  
(603) 356-5214

3 Saddlebrook Drive  
Killingworth, CT 06419  
(860) 663-1697

- **General Observations:** The tower, a galvanized steel structure, appeared to be in very good condition. No signs of movement or overstress of the tower were observed. The tower base foundation concrete was observed to have a number of hairline cracks in its surface. We recommend these be sealed to prevent further damage.
- **Antenna Connections:** Antenna mounting hardware was in very good condition, with corrosion resistant hardware and galvanized members prevalent.
- **Splice & Anchor Connections:** Observed splice and anchor bolts appeared to be in good condition. The top section of tower is installed using a bolted flange connection. No loose or missing bolts or nuts were observed.

## STRUCTURAL ANALYSIS:

### Methodology:

The structural analysis was done in accordance with TIA/EIA-222-F (EIA), Structural Standards for Steel Antenna Towers and Antenna Supporting Structures; and the American Institute of Steel Construction (AISC), Manual of Steel Construction, Allowable Stress Design, Ninth Edition. The analysis was conducted using a wind speed of 80 miles per hour and one-half inch of radial ice over the entire structure and all appurtenances. The TIA/EIA Standard requires a minimum of 80-mph wind load for Litchfield County, Connecticut.

Two analytical methods were used to evaluate the structure: a two-dimensional linear computer model developed by APT, and a P-delta analysis using CSTRAD finite element software distributed by Digital Canal Software. The 2-D model was used to generate dead loads of the tower and all of its appurtenances, radial ice loads and the resultant wind loading. The maximum bending moments and axial loads were used to calculate combined axial and bending stresses on each section of the monopole, which were compared to allowable stresses according to AISC and TIA/EIA.

Loads generated in the 2-D model were input into the CSTRAD program to evaluate secondary bending moments induced during deflection of the structure under load and to independently evaluate stresses. Evaluation of secondary bending moments is required by EIA paragraph 3.1.15. Our analysis indicates that the secondary moments exceed those of the linear analysis, and therefore govern in determining the capacity of the structure.

EIA requires two loading conditions to be evaluated to determine the tower's capacity. The higher stresses resulting from the two cases is used to calculate the tower capacity:

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

EIA permits a one-third increase in allowable stresses for towers less than 700-feet tall. Allowable stresses of tower members were increased by one-third in computing the load capacity values indicated herein.

### ANALYSIS RESULTS:

Our analysis determined the tower will support the proposed antenna array, however baseplate modifications are required. The following table summarizes the capacity of the tower based on combined axial and bending stresses:

Elevation	Capacity
0'-41'	66%
41'-85'	60%
85'-130'	65%
130'-180'	65%
180'-195'	27%

The capability of the existing foundation to support the proposed load was evaluated by comparing design reactions with those imposed by the proposed loading. We calculated reactions to be less than design reactions, indicating the existing foundation is adequate to support the proposed loads.

Base reactions imposed with the proposed antennas were calculated to be as follows:

Compression:	43.0 kips
Total Shear:	25.4 kips
Overturing Moment:	3277 ft-kips

### CONCLUSIONS AND SUGGESTIONS:

As detailed above, our analysis indicates that baseplate modifications are required for the existing 195' F.A. Nudd monopole tower in Harwinton, Connecticut to be capable of supporting Nextel Communications' proposed antennas. Design and detailing of these

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modifications is beyond the scope of this analysis, but we would be happy to provide this service to you.

We recommend that the base foundation be sealed with a quality concrete sealer, such as Thoroseal.

#### **LIMITATIONS:**

This report is based on the following:

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

All-Points Technology Corporation, P.C. (APT) is not responsible for any modifications completed prior to or hereafter which APT is not or was not directly involved. Modifications include but are not limited to:

1. Adding or relocating antennas.
2. Installing antenna mounting gates or side arms.
3. Extending tower.

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

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# ***Appendix A***

## *Tower Schematic*

All-Points Technology Corp., P.C.

150 OLD WESTSIDE ROAD  
NORTH CONWAY, NH 03860  
PHONE/FAX: (603) 356-5214  
MOBILE: (603) 496-5853  
www.allpointstech.com



## Tower Schematic

SHEET: 1 OF 1

SCALE: AS NOTED

DRAWN BY: REA

DATE: 7 OCT 03

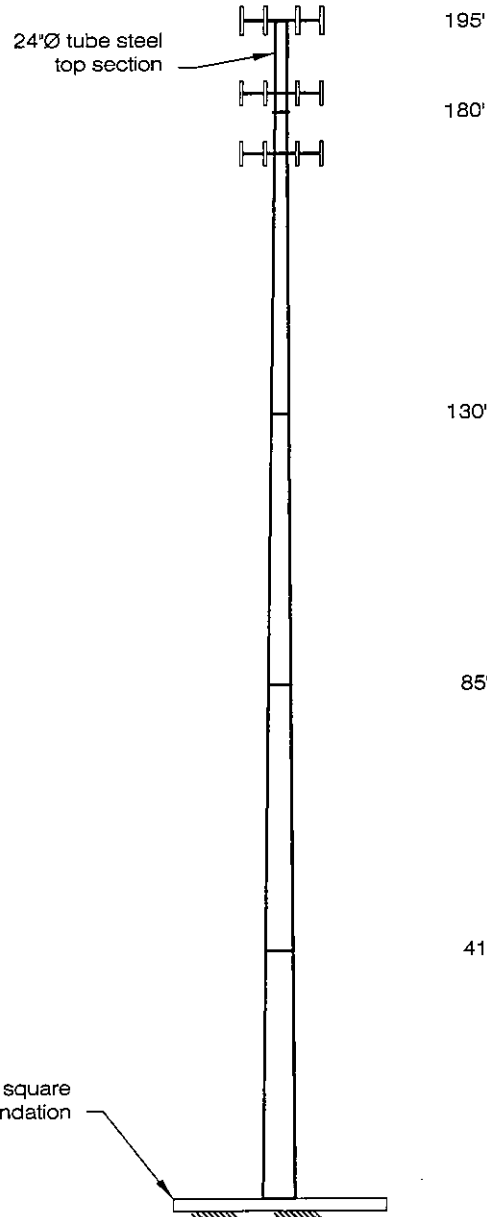
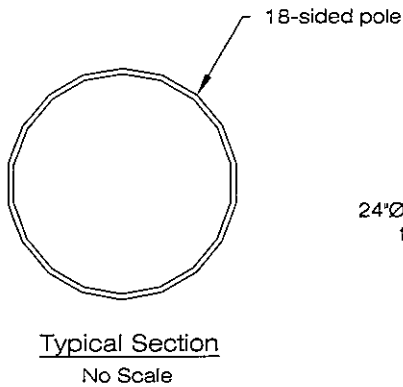
APT JOB #CT133160

**NEXTEL**

GENERAL DYNAMICS  
77 "A" STREET  
NEEDHAM HEIGHTS, MA  
02494-2806

195' MONOPOLE TOWER  
HARWINTON, CONNECTICUT

NEXTEL #CT-3653;  
HARWINTON NORTH



Tower Elevation  
Scale: 1"=30'

Bottom Dia.	64.5"	55.28"	45.38"	35.25"	24"
Thickness	0.375"	0.375"	0.3125"	0.250"	0.281"



Harwinton, CT (133 Clearview Ave.) - CT Siting Council Power Density Calculations						
Nextel Directional Antennas ESMR - 851 MHz at centerline 175' AGL						
Transmitters:	Frequency in MHz	CT Standard mW/ cm <sup>2</sup>	Number of Channels	ERP (W) per channel	Centerline of Tx antennas AGL (ft.)	Note: Power densities are in mW/ cm <sup>2</sup>
Nextel Digital ESMR - Proposed	851	0.5673	9	100	175	Power density calculated at base of tower % of CT Standard 0.010561959 1.8617%
Total % of CT Standard						1.8617%