

EM-NEXTEL-078-030211

Nextel Communications

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January 29, 2003

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

RECEIVED

FEB 11 2003

CONNECTICUT
SITING COUNCIL

Dear Chairman Gelston:

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 off North Eagleville Road, Storrs, Connecticut. The facility is owned and operated by the University of Connecticut for its radio station.

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,

A handwritten signature in dark ink, appearing to read "Thomas F. Flynn III".

Thomas F. Flynn III
Zoning Manager
Nextel Communications

Enclosure

Cc:

Town Storrs

**EXEMPT MODIFICATION
NORTH EAGLEVILLE ROAD
STORRS, CONNECTICUT**

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 off North Eagleville Road in Storrs, Connecticut.

BACKGROUND

This existing facility, located off North Eagleville Road, adjacent to the campus of the University of Connecticut, Storrs, Connecticut consists of a 323 foot tall guyed lattice tower that is owned by the University. The tower is used by Nextel and T-Mobile to provide wireless service to the University and the surrounding areas of Storrs, and as the broadcast facility for the University's radio station

Nextel desires to modify its use of this facility, improve the antennas and equipment located at the site 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 240-foot level of the tower (see Attachment A) and install a 10-foot by 20-foot equipment shelter inside the southern end 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).

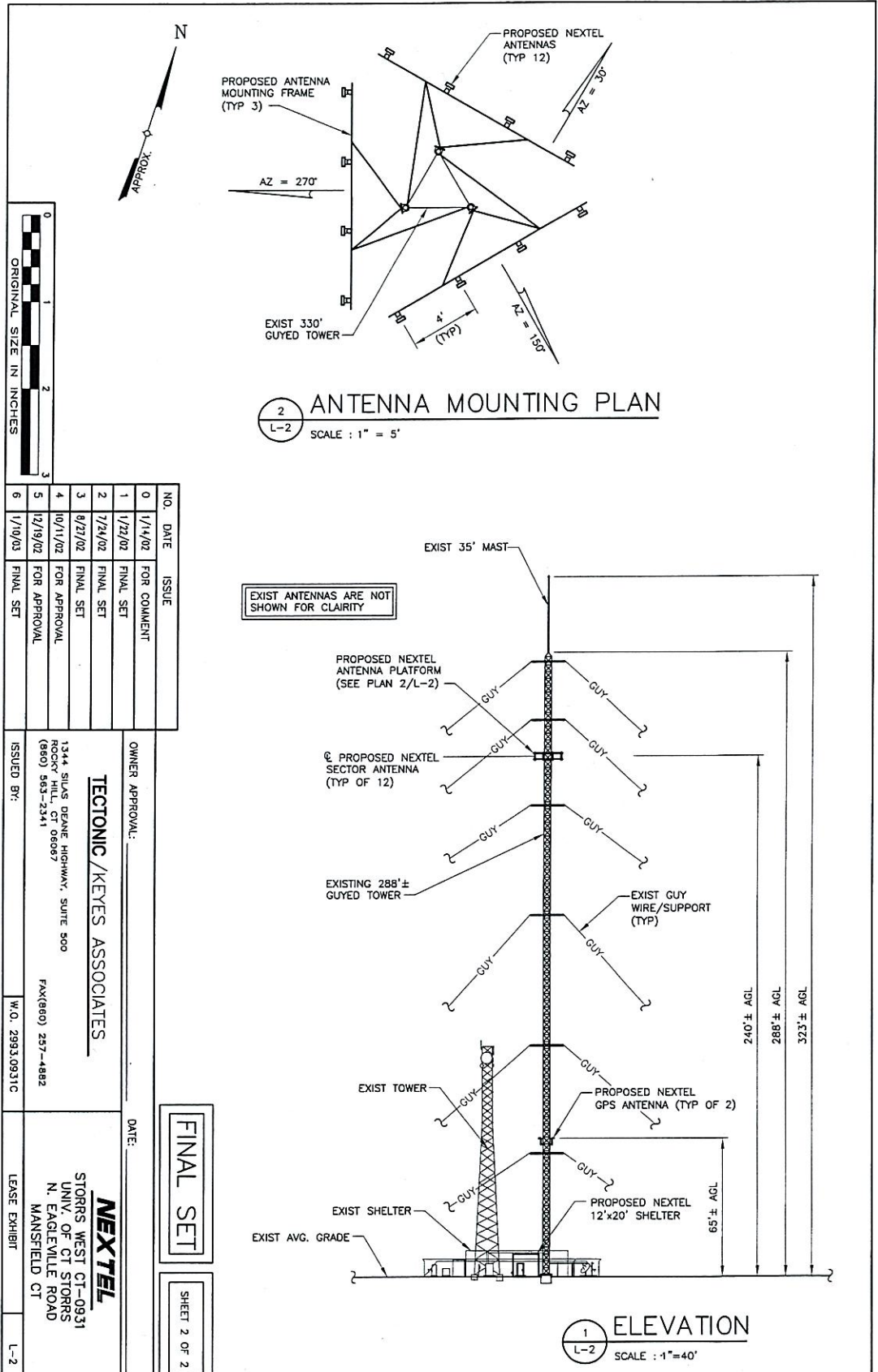
POWER DENSITY INFORMATION

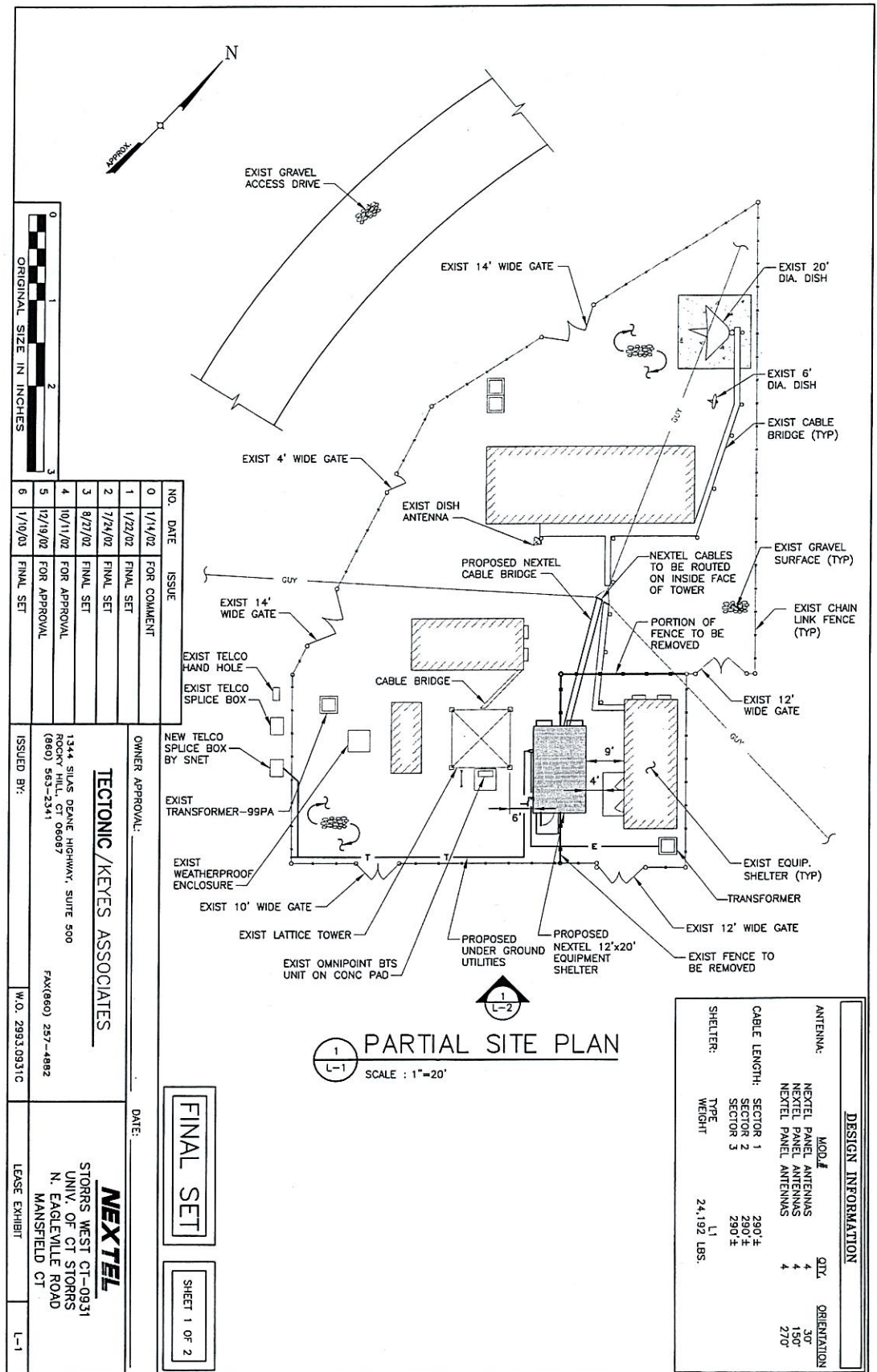
The operation of Nextel's antennas will not increase the total radio frequency electromagnetic power density level to a level at (or even near) existing State and Federal Standards. "Worst case" calculations, measured to a point at the base of the tower, show the combined power levels for the existing T-Mobile, University and proposed Nextel antennas reach just 38.0898 % 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.





**NEXTEL COMMUNICATIONS: STORRS
W.O. 2993.0931C
EXISTING GUYED TOWER
MANSFIELD, CT
STRUCTURAL ANALYSIS REPORT
JANUARY 20, 2003**

1.0 INTRODUCTION

The existing guyed tower, located off North Eagleville Road in Mansfield, CT, is owned by The University of Connecticut, and currently serves the needs of several carriers. Nextel Communications anticipates installing its antennas on this tower in the near future.

Tectonic Engineering & Surveying Consultants, P.C. has performed a structural inspection and analysis of the tower to verify its adequacy for supporting the proposed installation in accordance with current code requirements.

1.1 Information Provided

For the purpose of analysis, Tectonic obtained or was provided with the following information:

1. "Criteria for Structural Analysis", by University of Connecticut, undated.
2. "Structural Analysis Report" of Existing 327' Sabre Communications Corporation 4400SRW Guyed Tower, by Sabre Communications Corporation, job no. 02-01020, Revision A, dated 4/5/02 (22 pages).
3. Email from Nextel Communications to Tectonic, subject: "RE: UConn CT-0931", dated 12/23/02.

2.0 STRUCTURE DESCRIPTION

2.1 Tower Structure

The tower is a three-legged, guyed mast that was manufactured by Sabre Communications Corporation. The tower consists of fourteen (14) 20' long sections and an 8' long top section, for a total height of 288'. It supports an approximately 35' tall mast at the top, for an overall height of approximately 323'. The tower has a uniform width of 3'-8" (center-center of legs) from the 6'-8" level to the top, and a 6'-8" long tapered portion at the base of the bottom section.

All sections are constructed of solid steel rod leg and bracing members. The bracing layout consists of alternating single diagonals, with horizontals between adjacent diagonals and at the ends of each section. Additional horizontal members bisect each of the diagonal bracing members on one (1) face for

climbing purposes. Bracing member connections are welded, and the tower section splice connections are bolted. Waveguide brackets are factory-welded to each horizontal on all faces.

The tower is supported by a total of thirty-six (36) guys at six (6) levels. Double guys are attached to torque arms mounted at the 57', 107', 167', 217', 257', and 284' levels. The guys are 7/16" and 5/8" diameter, 7-wire strand at the 57' and 107' levels, respectively, and 3/4" diameter, 19-wire strand at the four (4) upper levels.

A diagram of the tower is presented in Figure 1, attached.

2.2 Foundation and Guy Anchors

For identification purposes, the southeast guys and anchors are designated as A, while the southwest and north guys and anchors are designated as B and C, respectively. The legs are designated the same as the guys to which they are connected.

The original design of the tower foundation has not been determined. The tower base is supported on a 3'-0" diameter concrete pier. The top of the pier extends approximately 6" above the adjacent gravel surfacing.

The guys extend to a common anchor point in each direction. The anchor points A, B, and C are approximately 240', 234', and 225', respectively, from the centerline of the tower, forming angles between them of approximately 120°. The elevations of anchor points A, B, and C are approximately 28' below, 22' below, and 9' above the base of the tower.

2.3 Loading Criteria

No original drawings of the tower or its foundation were made available to Tectonic. Furthermore, no information regarding the original antenna loading, original foundation design reactions, or soil information was made available.

However, the tower geometry and foundation reactions are listed in the analysis report by Sabre Communications Corporation, provided.

3.0 EXISTING CONDITION

3.1 Field Inspection

Tectonic Engineering & Surveying Consultants, P.C. performed a limited inspection of the tower on November 8, 2002 to document the existing inventory of antennas, cables, and other appurtenances, and to verify the existing configuration and conditions.

Based on our inspection, the tower legs and bracing appeared to be in good condition. No damage or significant deformation of the tower was observed.

The exposed portion of the tower foundation was in good condition.

All guys were installed with dead end cable grips, and appeared to be in good condition. All turnbuckles, equalizer plates and the exposed portion of the anchors were found to be in good condition, with the galvanizing intact. Safety wires are present on all turnbuckles. However, none of the safety wires are properly threaded in accordance with standard guyed tower construction practice.

Ground wires are clamped to each guy near the anchor points, to the equalizer plates, and to the base of the tower. The grounding system appears to be properly installed.

Guy tensions were estimated in the field. We note that access was only available for guy anchor A. Our measurements indicate that only four (4) of the twelve (12) guys at anchor A are adequately tensioned within the recommended pretension range of 8-15% of their breaking strength, as recommended by TIA/EIA. The remaining guys were found to have less than the minimum recommended pretension.

We note that the measured member sizes of the installed tower components were confirmed to match those listed in the report by Sabre Communications Corporation. In addition, the relative elevations and radii of the guy anchors with respect to the tower base were verified to approximately match those reported by Sabre.

The inspection was limited in the following respects:

1. Only the lower portion of the tower was inspected in detail.
2. A detailed inspection of welds, bolts, and appurtenances was not performed.

3. The adequacy of the existing ground system was not assessed.
4. No investigation of the existing soil conditions or foundation system was performed.
5. The orientation of the tower with respect to true north was not confirmed.
6. The tower was not measured for plumbness.

3.2 Existing Antennas

At the time of our inspection, the tower was found to be supporting the items listed in Table 1, attached.

4.0 PROPOSED INSTALLATIONS

It is our understanding that the Nextel is proposing to install the following items on the tower:

- 12 Decibel DB844H90 panel antennas at the 240' level (centerline), pipe mounted four (4) per sector on three (3) 12' wide T-frames
- 12 1-5/8" diameter coaxial cables to the 240' level, mounted on the inside of the tower on face B-C

We further understand that Cingular is proposing to install the following items on the tower in the near future:

- 3 Additional CSS DUO1417-8670 panel antennas at the 186' level (centerline), pipe mounted one (1) per sector on the existing T-frames
- 5 Additional 1-5/8" diameter coaxial cables to the 186' level, mounted on the inside of the tower on face A-B

We note there are numerous existing coaxial cables on the tower, resulting in face A-B and B-C being essentially solid with cable. Because of this, it might be difficult to install the additional proposed coaxial cables on the interior of the structure.

5.0 STRUCTURAL ANALYSIS

5.1 Loading Criteria

In accordance with the provisions of ANSI/TIA/EIA-222-F-1996 "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures", a basic wind speed of 85 mph applies to Tolland County, CT, where the tower is located. This is the same wind speed required by the 1999 Connecticut supplement to the BOCA National Building Code / 1996 for the Town of

Mansfield. However, the criteria established by The University of Connecticut conservatively requires that a basic wind speed of 90 mph be used for analysis of this structure. Therefore, the 90 mph wind speed was used in our analysis.

Ice loads have been established based on a 0.5" radial ice thickness in accordance with industry standard practice. A reduced wind speed is generally allowed by the TIA/EIA standard in conjunction with ice load. As per The University of Connecticut's criteria, however, no reduction in wind speed is permitted in conjunction with ice load, and the full 90 mph wind speed was therefore used simultaneously with 0.5" radial ice.

5.2 Procedure

The tower has been analyzed with PLS-Tower, a specialized three-dimensional structural analysis program. Guy tension forces accounted for pretensioning, wind, and ice loading. Six (6) directions of wind incidence were considered in our analysis.

The analysis included the tower with the existing appurtenances, the proposed Nextel antennas, and future Cingular antennas and all related cables, using the above loading criteria.

5.3 Assumptions

Several assumptions were made in order to perform the analysis. Each of these is considered by Tectonic to be both reasonable and consistent with current standards of practice.

1. The tower has been constructed in accordance with the original Sabre design drawings, which we expect are consistent with their analysis report.
2. The connection of the tower to its foundation is assumed to be pinned.
3. Guy pretension is assumed to be equal to 10% of the breaking strength.
4. Wind loads are based on the full projected area of all antennas and mounts in all loading conditions.
5. The tower and guy anchor foundations were designed based on site-specific geotechnical information, and were constructed in accordance with the approved plans.

5.4 Results

The tower member forces have been calculated and the member capacities

have been determined. The results of the analysis are as follows:

- The critical leg members are between the base and 20' levels, and are stressed to 76% of their capacity.
- The critical bracing members are between the 180' and 200' levels, and are stressed to 63% of their capacity.
- The critical guys are at the 107' level, and are stressed to 90% of their capacity (with safety factor = 2.0 as per TIA/EIA-222-F requirements).

The foundation reactions from the analysis are summarized as follows:

Tower Base			
	Sabre Analysis	Current Analysis	%
Max Compression (kips)	351.7	341.6	97
Max. Shear (kips)	4.0	3.9	98

Guy Anchors			
	Sabre Analysis	Current Analysis	%
Uplift (kips)	144.4	138.9	96
Shear (kips)	174.9	169.7	97

We note that the uplift reaction shown on the figure in the Sabre report is 123.2 kips, which is less than the 144.4 kips listed in their analysis output. Because this larger reaction is listed in two separate places, it is believed to be the correct value.

6.0 CONCLUSIONS AND RECOMMENDATIONS

As a result of our analysis, we find that the existing tower and its foundation have sufficient capacity to permit the installation of the proposed antennas and cables, in accordance with the requirements of the current code and The University of Connecticut criteria. No structural problems for the tower or its foundation are anticipated, and no modifications are necessary.

We note that if the proposed cables are to be installed on cable brackets extending off a tower leg, the stresses in the tower will increase dramatically. The proposed cables must be installed inside the tower face.

Regardless of whether or not Nextel continues to pursue this site for their proposed installation, we recommend the following:

W.O. 2993.0931C
Nextel Communications / Storrs
Structural Analysis Report

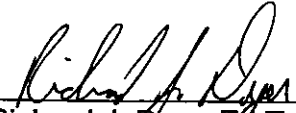
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January 20, 2003

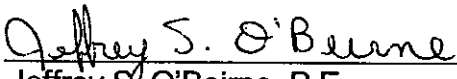
1. All guys shall be properly retensioned to 10% of their breaking strength with a 1% tolerance, in accordance with TIA/EIA requirements.
2. The safety wires should be properly rethreaded at each anchor point, in accordance with the manufacturer's specifications.

Any further changes to the proposed antenna configuration should be reviewed with respect to their effect on structural loads prior to implementation.

Prepared by:


Richard J. Dyer, E.I.T.
Staff Structural Engineer

Reviewed by:

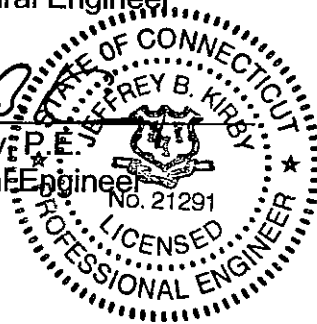

Jeffrey S. O'Beirne, P.E.
Senior Structural Engineer

Approved by:


Jeffrey B. Kirby, P.E.
Chief Structural Engineer

Date:

1/20/03



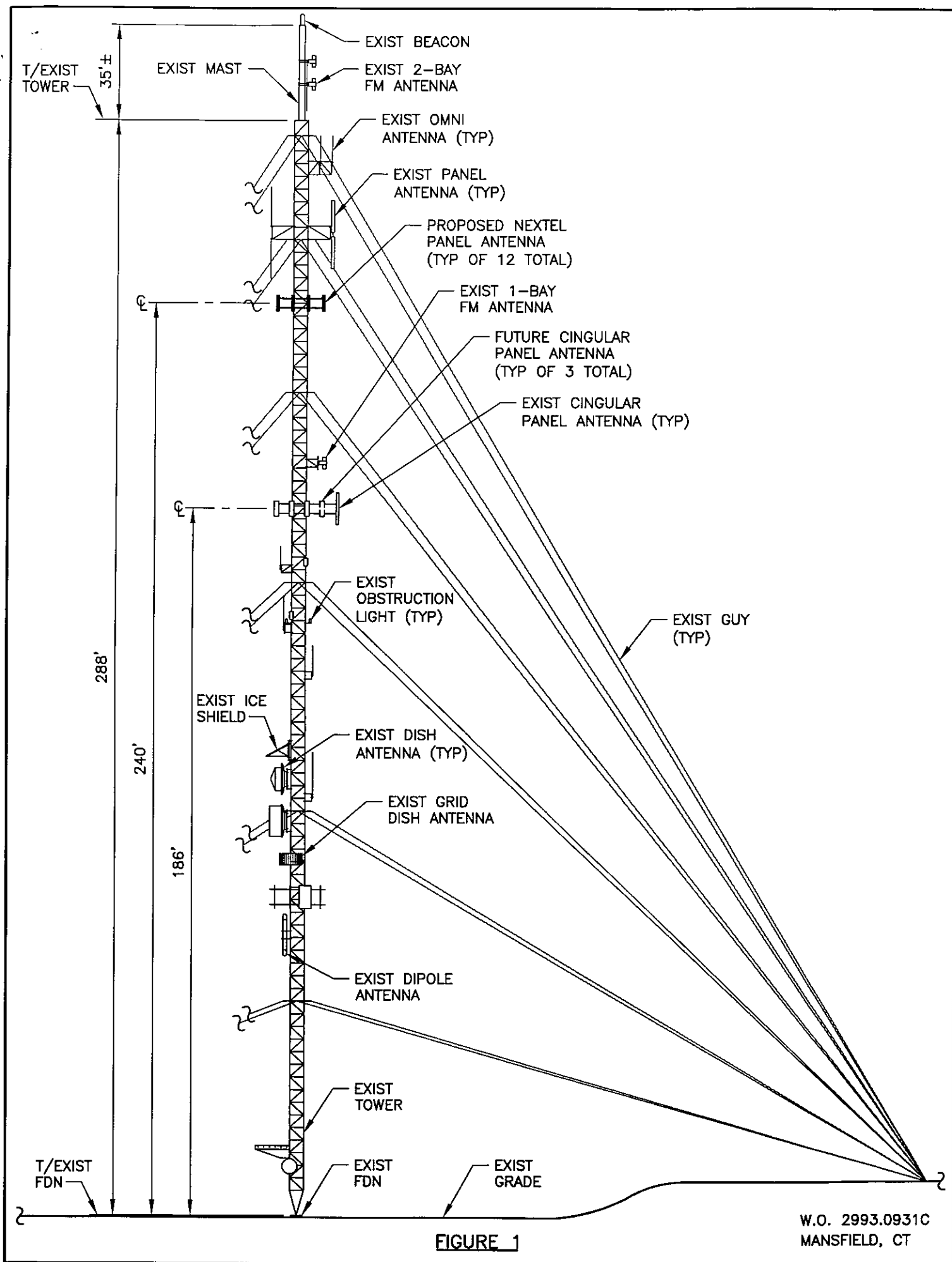


FIGURE 1

TABLE 1
EXISTING APPURTENANCES

Qty	Manufacturer and Model (or similar)	Type	Mount	Level (Ft)	Leg/Face	Coax/Face
1	4' Lightning Rod	-	35' Mast	323 (Base)	-	-
1	Beacon	-	35' Mast	323 (Base)	-	1" conduit/A-C
1	Shively 2-Bay 6813 w/ Radome	FM	35' Mast	305 (CL)	-	(1) 7/8"/B-C
-	Guy Attachment	-	Torque Arm	284 (CL)	A, B, C	-
1	Celwave PD1150	Omni	6' Sidearm	276 (Base)	B	(1) 1-5/8"/B-C
1	8' Long	Omni	Same 6' Sidearm	276 (Base)	B	(1) 1-5/8"/B-C
1	Scala AP-16-850/065	Panel	3' Sidearm	262 (CL)	A	(1) 7/8"/A-C
1	Scala OGC9-825	Omni	3' Sidearm	260 (Base)	C	(1) 1-5/8"/B-C
1	Decibel DB810K	Omni	3' Sidearm	260 (Base)	B	(1) 1-5/8"/B-C
1	TMA	-	Same 3' Sidearm	259 (CL)	B	-
1	TMA	-	Same 3' Sidearm	259 (CL)	A-B	-
1	Decibel DB810K (inverted)	Omni	Same 3' Sidearm	258 (Base)	B	(1) 1-5/8"/B-C
1	Scala OGC9-825 (inverted)	Omni	Same 3' Sidearm	257 (Base)	C	(1) 1-5/8"/B-C
-	Guy Attachment	-	Torque Arm	257 (CL)	A, B, C	-
1	Scala AP-16-850/065	Panel	Same 3' Sidearm	254 (CL)	A	(1) 7/8"/A-C
-	Guy Attachment	-	Torque Arm	217 (CL)	A, B, C	-
1	Shively 1-Bay (unknown) w/o radome	FM	2' Sidearm	209 (CL)	B	(1) 7/8"/B-C
1	Shively 1-Bay 6813 w/radome	FM	3' Sidearm	198 (CL)	A	(1) 7/8"/B-C
9	CSS DUO1417-8670 (Circular)	Panel	12' Frame	186 (CL)	A, B, C	(9) 1-5/8"/A-B
9	TMA	-	Same 12' Frame	186 (CL)	A, B, C	-
1	EMS MB100RR650200PAL	Panel	12' Frame Extension	186 (CL)	Near A	(2) 1-5/8"/A-B
1	Decibel DB872	Panel	Direct	172 (CL)	A	(1) 7/8"/A-B
1	Decibel DB806	Omni	3' Sidearm	170 (Base)	B	(1) 1-1/4"/B-C
-	Guy Attachment	-	Torque Arm	167 (CL)	A, B, C	-
1	TMA	-	Direct	166 (CL)	A	-
1	Decibel DB872	Panel	Direct	158 (CL)	B	(1) 7/8"/B-C
2	Obstruction Lights	-	Conduit	156 (Base)	A-C	same conduit
1	Decibel DB589	Omni	1' Sidearm	154 (Base)	B	(1) 7/8"/B-C
1	7' Long	Omni	Direct	142 (Base)	B	(1) 1/2"/A-B
1	Celwave PD1108	Omni	2' Sidearm	124 (Base)	A	(1) 1/2"/A-B
2	Ice Shields	-	Pipe	121 (CL)	A, B	-
1	RFS 6" dia std w/ radome	Dish	Pipe	115 (CL)	B	(1) EW63 WG/B-C
1	RFS 6" dia std w/ radome	Dish	Pipe	112 (CL)	C	(1) EW63 WG/B-C
1	Celwave PD1110	Omni	2' Sidearm	110 (Base)	A	(1) 1/2"/A-B
-	Guy Attachment	-	Torque Arm	107 (CL)	A, B, C	-
1	RFS 8" dia HP w/ shroud	Dish	Pipe	104 (CL)	B	(1) EW63 WG/B-C
1	Scala PR-850	Grid Dish	Direct	94 (CL)	B	(1) 1/2"/A-B
1	Decibel ASP-962	Yagi	Direct	94 (CL)	A	(1) 1/2"/A-B
3	Decibel DB876QNLH120XC	Panel	14'-6" Standard Platform	84 (CL)	A, B, C	(12) 1-5/8"/A-B
1	Decibel DB212-C	Dipole	Direct	74 (CL)	C	(1) 1/2"/B-C
-	Guy Attachment	-	Torque Arm	57 (CL)	A, B, C	-
1	Scala CL-24	Yagi	Direct	18 (CL)	B	(1) 1/4"/A-C
1	ChannelMaster 1.2M	Dish	2' Sidearm	13 (CL)	B	(1) 1/4"/A-C

Mansfield, CT (University of CT - Storrs, North Eagle Road) - CT Siting Council Power Density Calculations

Nextel Directional Antennas ESMR - 851 MHz at centerline 240' AGL

Note: Power densities are in mW/ cm²							
Transmitters:	Frequency in MHz	CT Standard mW/ cm²	Number of Channels	ERP (W) per channel	Centerline of Tx antennas AGL (ft.)	Power density calculated at base of tower	% of CT Standard
Prior filing referenced by SNET - Cingular Wireless RCC Consultants, February 2001 On-site measurements							
SNET - Cingular Wireless from prior filing dated April 20, 2001							
	SNET 880-894	0.5867	19	100	145	0.032500	5.5000%
Nextel Digital ESMR - Proposed	851	0.5673	9	100	240	0.005615625	0.9898%
Total % of CT Standard							
							38.0898%