STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

Internet: ct.gov/csc

Daniel F. Caruso
Chairman

August 30, 2010

Jennifer Young Gaudet
Project Manager
HPC Development LLC
46 Mill Plain Road, 2nd floor
Danbury, CT 06811

RE: **EM-T-MOBILE-034-100809** - Omnipoint Communications, as subsidiary of T-Mobile USA, Inc., notice of intent to modify an existing telecommunications facility located at 303 Boxwood Lane, Danbury, Connecticut.

Dear Mrs. Gaudet:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

a) the tower be reinforced and all coax cables be routed in accordance with the structural analysis prepared by Centek Engineering dated July 22, 2010 and stamped by Carlo Centore; and

b) The tower shall not exceed 100 percent of its post-construction structural rating; and

c) Not more than 45 days after completion of construction, a signed letter from a Professional Engineer duly licensed in the State of Connecticut shall be submitted to the Council to certify that the reinforcements have been properly completed and the tower does not exceed 100 percent of its post-construction structural rating.

The proposed modifications are to be implemented as specified here and in your notice dated August 6, 2010, including the placement of all necessary equipment and shelters within the tower compound. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of 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.

Thank you for your attention and cooperation.

Very truly yours,

Linda Roberts
Executive Director

LR/CDM/laf

c: The Honorable Mark D. Boughton, Mayor, City of Danbury
Dennis Elpern, City Planner, City of Danbury
Western Connecticut State University

HPC DEVELOPMENT LLC

ORIGINAL

EM-T-MOBILE-034-100910

August 6, 2010

RECEIVED
AUG - 9 2010
CONNECTICUT
SITING COUNCIL

Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051
Attn: Mr. S. Derek Phelps, Executive Director

Re: T-Mobile Northeast, LLC – exempt modification
303 Boxwood Lane, Danbury, Connecticut

Dear Mr. Phelps:

This letter and attachments are submitted on behalf of T-Mobile Northeast, LLC ("T-Mobile"). T-Mobile plans to install antennas and related equipment at the Western Connecticut State University tower site at 303 Boxwood Lane in Danbury (coordinates 41°23'41.93" N, -73°29'12.27" W). Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). It should be noted that this proposal was previously the subject of an exempt modification dated November 12, 2008 and acknowledged by the Council on December 10, 2008. In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the Mayor of Danbury.

T-Mobile will install three panel antennas at the 83' level of the tower. The antennas will be installed flush to the legs of the tower; two twin TMAs will be mounted behind each antenna. Twelve coaxial cables will also be installed. T-Mobile's equipment cabinets will be placed on a concrete pad near the base of the tower. Attached are a compound plan and elevation depicting the planned changes. Also attached are a structural analysis and associated reinforcement modification plan, which will be implemented at the time of construction to achieve structural sufficiency for T-Mobile's installation. Consistent with T-Mobile's lease rights, the elevation depicts a total of nine antennas; only three are proposed, in conformance with the structural analysis.

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. The height of the overall structure will be unaffected. The top of the tower extends to approximately 100'; T-Mobile's proposed antennas will be located with a center line of 83' AGL.

2. The addition of T-Mobile's equipment will not require any extension of the site boundaries. All equipment will be located within the existing fenced compound.

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more. The incremental effect of the additional cabinets will be negligible.

4. The changes to the facility will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site. As indicated on the attached power density calculation, T-Mobile's operations at the site will result in a power density of 18.116%; the combined site operations will result in a total power density of 36.626%.

Please feel free to call me at (860) 798-7454 with questions concerning this matter. Thank you for your consideration.

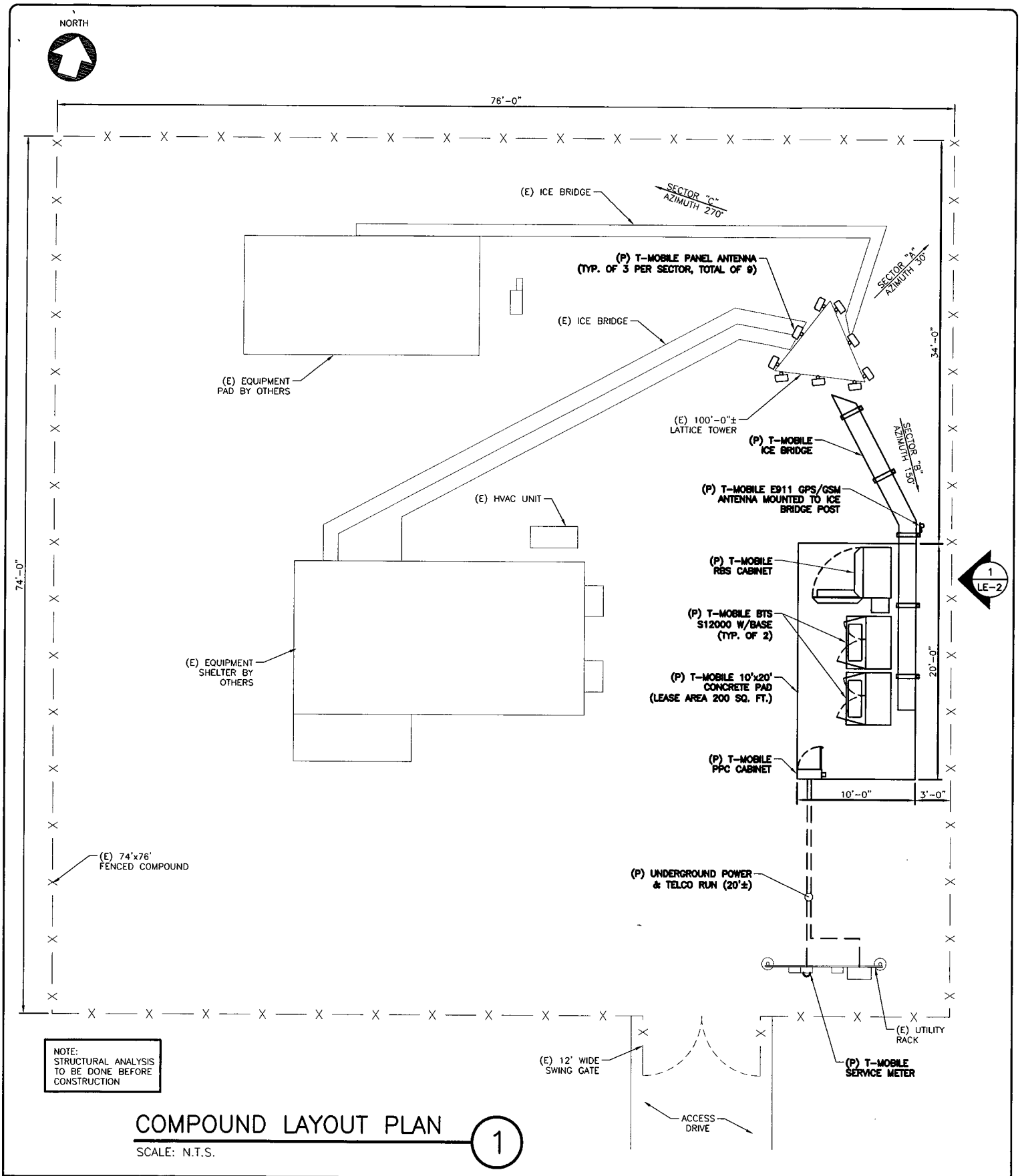
Respectfully yours,

Jennifer Young Gaudet

Jennifer Young Gaudet

cc: Honorable Mark Boughton, Mayor, City of Danbury
Western Connecticut State University (underlying property owner)

Attachments



NOTE:
STRUCTURAL ANALYSIS
TO BE DONE BEFORE
CONSTRUCTION

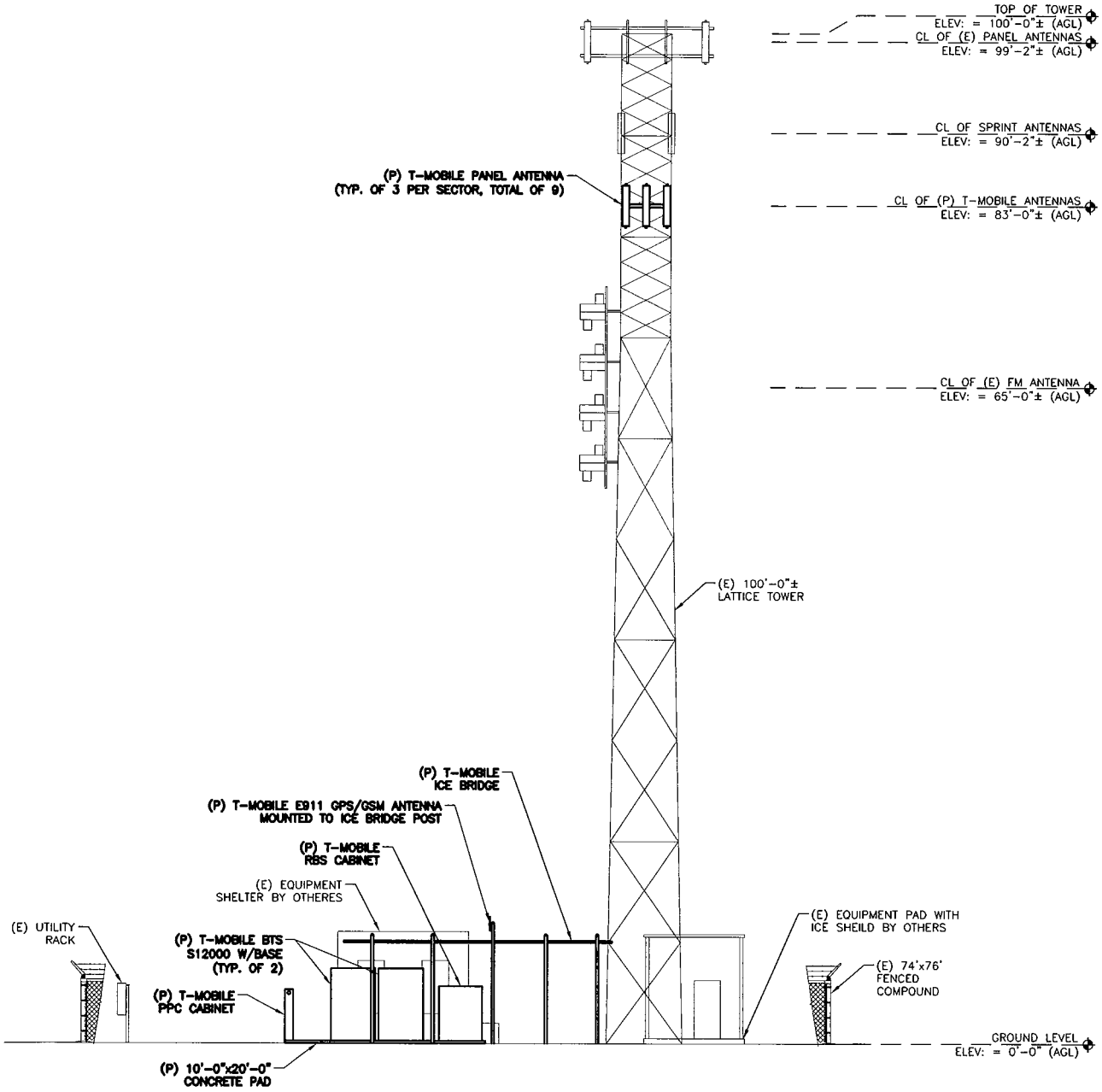
COMPOUND LAYOUT PLAN 1

SCALE: N.T.S.

MAXTON
50 Eastman St.
South Easton, MA 02375
Phone: (508) 936-6393
Fax: (508) 936-6395

OMNIPOINT COMMUNICATIONS INC.
A WHOLLY-OWNED SUBSIDIARY
OF T-MOBILE USA, INC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860)-692-7100
FAX: (860)-692-7159

PROJECT LOCATION: WCSU **CTFF703A** 303 BOXWOOD LN DANBURY, CT. 06810	SITE TYPE: LATTICE TOWER		BSDA PROJ. #: 2806.122
	PROJECT MANAGER: JT	DRAWN BY: PN	SHEET: LE-1
APPROVED BY:	DATE: 11/03/08	REVISION: 3	



ELEVATION 1

SCALE: N.T.S.

MAXTON
50 Eastman St.
South Easton, MA 02375
Phone: (508) 936-6393
Fax: (508) 936-6395

OMNIPOINT COMMUNICATIONS INC.
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PROJECT LOCATION: WCSU CTFF703A 303 BOXWOOD LN DANBURY, CT. 06810	SITE TYPE: LATTICE TOWER		BSDA PROJ. #: 2806.122
	PROJECT MANAGER: JT	DRAWN BY: PN	SHEET: LE-2
APPROVED BY:	DATE: 11/03/08	REVISION: 3	

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

100' Existing Self Support Lattice Tower

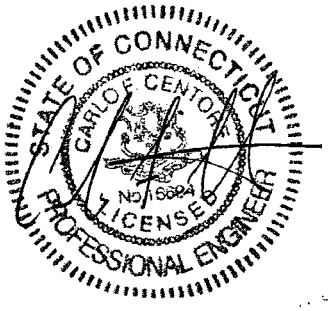
Proposed T-Mobile Antenna Installation

T-Mobile Site Ref: CTFF703

303 Boxwood Lane,
Danbury, CT

CENTEK Project No. 10106

Date: July 22, 2010



Prepared for:

T-Mobile Towers
4 Sylvan Way
Parsippany, NJ 07054

63-2 North Branford Road, Branford, CT 06405 203.488.0580 Fax 203.488.8587 www.CentekEng.com

Introduction

The purpose of this report is to summarize the results of the non-linear, P-Δ structural analysis of the antenna installation proposed by T-Mobile on the existing self supporting lattice tower located in Danbury, Connecticut.

The host tower is a 100-ft, three-legged self-support lattice tower originally designed and manufactured by Fred A. Nudd Corporation; file no: 96-4992 signed and sealed January 21, 1997. Subsequent reinforcement and partial member replacement was designed by Centek (formerly Natcomm LLC); job no. 361A and is depicted in design drawing S-1, Revision #4, dated November 28, 2001. The tower geometry, structure member sizes and the foundation system information were taken from the aforementioned design documents. Antenna and appurtenance information were obtained from a comparison of the design documents and field documentation conducted by Centek during June 2010.

The tower is made up of five (5) steel sections consisting of A500-42, A500-50, and A500-61ksi pipe legs. Diagonal lateral support bracing consists of A36 single angle and steel rod construction. The vertical tower sections are connected by bolted flange plates while the pipe legs and bracing are connected by welded (0'-40'), bolted and welded gusset connections (40'-100'). The tower face width is 7.5-ft at the bottom tapering to 3.5-ft at the top.

The aforementioned design report prepared by Fred A. Nudd Corporation and subsequent reinforcement by Natcomm LLC; together with an RF data sheet provided by T-Mobile is available for reference in Section 4 of this report.

T-Mobile proposes the installation of three (3) RFS APX16DWV-16DWV panel antennas and six (6) TMA's mounted to the existing tower. Refer to the Antenna and Appurtenance Summary below for a detailed description of the proposed antenna configuration

Antenna and Appurtenance Summary

The existing tower was designed to support several communication antennas. The existing, proposed and future loads considered in this analysis consist of the following:

- Sprint/Nextel (Existing):
  Antennas: (8) DB844H90, (2) 5' Unknown Panels, and (2) 6' Unknown Panel antennas mounted to (3) 12' Nudd Starmount Sector Frames with a RAD center elevation of 98-ft above the existing tower base.
  Coax Cables: Sixteen (16) 7/8" ∅ coax cables and six (6) 1 5/8" ∅ coax cables.

- Unknown (Existing):
  Antennas: (1) 3' parabolic grid antenna with a RAD center elevation of 96-ft above the existing tower base.
  Coax Cables: One (1) 1/2" ∅ coax cable.

- Sprint/Nextel (Existing):
  Antennas: (2) 4' Unknown Panels and (1) 6' Panel antennas flush mounted to the tower legs with a RAD center elevation of 89-ft above the existing tower base.
  Coax Cables: Six (6) 1 5/8" ∅ coax cables.

- WCSU FM (Existing):
  Antennas: (1) 4-Bay Shively Labs 6810 FM Antenna w/Radomes with a RAD center elevation of 65-ft above the existing tower base.
  Coax Cables: One (1) 1 5/8" ∅ coax cable.

- Sprint/Nextel (Existing):
  Antennas: (1) GPS antenna mounted to a 2' standoff mount with a RAD center elevation of 30-ft above the existing tower base.
  Coax Cables: One (1) 1/2" ∅ coax cable.

- **T-Mobile: (Proposed):**
  Antennas: Three (3) RFS APX16DWV-16DWVS panel antennas and six (6) RFS Twin TMA's flush mounted to the tower legs with a RAD center elevation of 83-ft above the existing tower base.
  Coax Cables: Twelve (12) 1 5/8" ∅ coax cables.

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.
- **All coax cables shall be routed as specified on in Section 3 of this report.**

Analysis

The existing tower was analyzed using a comprehensive computer program entitled RISATower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower legs, and the model assumes that the leg members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for 85 mph basic wind speed (fastest mile) with no ice and 74mph with ½ inch accumulative ice to determine stresses in members as per guidelines of the TIA/EIA-222-F-96 entitled "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures", the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Allowable Stress Design (ASD).

Tower Loading

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA/EIA-222-F, gravity loads of the tower structure and its components, and the application of ½" radial ice tower structure and its components.

Basic Wind Speed:	Fairfield County; v = 85 mph (fastest mile)	*[Section 16 of TIA/EIA-222-F-96]*
	Danbury; v = 95 mph (3 second gust) equivalent to v = 77.5 mph (fastest mile)	*[Appendix K of the 2005 CT Building Code Supplement]*
	TIA/EIA-222-F wind speed controls	
Load Cases:	Load Case 1; 85 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation. This load case typically controls the design of monopole towers.	*[Section 2.3.16 of TIA/EIA-222-F-96]*
	Load Case 2; 74 mph wind speed w/ ½" radial ice plus gravity load – used in calculation of tower stresses. This load case typically controls the design of lattice towers.	*[Section 2.3.16 of TIA/EIA-222-F-96]*
	Load Case 3; Seismic – not checked	*[Section 1614.5 of State Bldg. Code 2005] does not control in the design of this structure type*

Tower Capacity

Tower stresses were calculated utilizing the structural analysis software RISATower. Allowable stresses were determined based on Table 5 of the TIA/EIA code with a 1/3 increase per Section 3.1.1.1 of the same code.

- With the reinforcements outlined in section 3 of this report the calculated stresses **were found** to be within allowable limits. In Load Case 2, per RISATower "Section Capacity Table", this tower was found to be at **97.7%** of its total capacity.

Tower Section	Elevation	Stress Ratio (percentage of capacity)	Result
Leg (T4)	**40'-53.33'**	**96.7%**	**PASS**
Diagonal (T2)	**60'-80'**	**94.5%**	**PASS**
Horizontal (T1)	**80'-100'**	**97.7%**	**PASS**

Foundation and Anchors

The existing foundation consists of three (3) 2.0-ft ∅ x 4.25-ft long reinforced concrete piers on a 14.5-ft square x 3-ft thick reinforced concrete pad bearing directly on existing sub grade. The existing foundation dimensions and sub-grade conditions used in the analysis of the existing foundation were obtained from the aforementioned manufacturers original design documents; Fred A. Nudd Corporation; file no: 96-4992. Tower legs are connected to the foundation by means of (4) 1.5" ∅, ASTM A36 anchor bolts per leg, embedded into the concrete foundation structure.

Review of the foundation and anchor design consisted of verification of applied loads obtained from the tower design calculations and code checks of allowable stresses:

- The tower leg reactions developed from the governing Load Case 2 of the proposed reinforced tower condition were used in the verification of the foundation and anchor bolts:

Leg Reactions	Vector	Proposed Load (kips/ft-kips)
Leg	Shear	**12.1**
	Compression	**171.2**
	Uplift	**141.3**
Tower Base	Overturning Moment	**1058.3**

- The anchor bolts were found to be within allowable limits.

Tower Section	Component	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Tension	77.0%	**PASS**

- The foundation was **NOT** found to be within allowable limits.

Foundation	Design Limit	IBC 2003/2005 CT State Building Code Section 3108.4.2 (FS)[2]	Proposed Loading (FS)[2]	Result
Reinf. Conc. Pad and Pier	OM[1]	2.00	1.76	**FAIL**

Note 1: OM denotes Overturning Moment
Note 2: FS denotes Factor of Safety

- The foundation resists over one and a half times the calculated wind load, but not two times per the requirements of Section 3108.4.2 of the 2009 CT State Building Code Supplement to the 2003 International Building Code (IBC).

Conclusion

This analysis indicates that the subject self support steel tower **is adequate** to support the proposed antenna installation, with the proposed reinforcements outlined on drawings S-1 thru S-2, within section 3 of this report, with the exception of the existing foundation (see below).

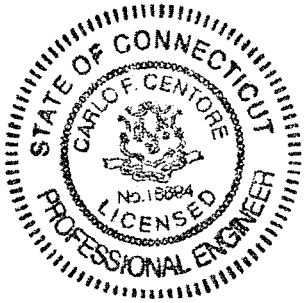
Exceptions: - Existing Foundation:

- It is recommended that T-Mobile apply for a code modification from the office of the Connecticut State Building Inspector requesting a modification to the factor of safety to resist overturning from 2.0x as stipulated by Section 3108.4.2 of the 2009 CT State Building Code Supplement to the 2003 International Building Code (IBC) to 1.5x; as applicable at the time of the original design of the tower structure. Should a modification not be approved by the local official, foundation reinforcements involving a geo-technical study and anchorage design for the existing foundation will be necessary in addition to the tower reinforcements proposed herein.

The analysis is based, in part, on the information provided to this office by T-Mobile. If the existing conditions are different than the information in this report, CENTEK Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Carlo F. Centore, PE
Principal ~ Structural Engineer

Prepared by:

Jason R. Mead

Jason R. Mead
Structural Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

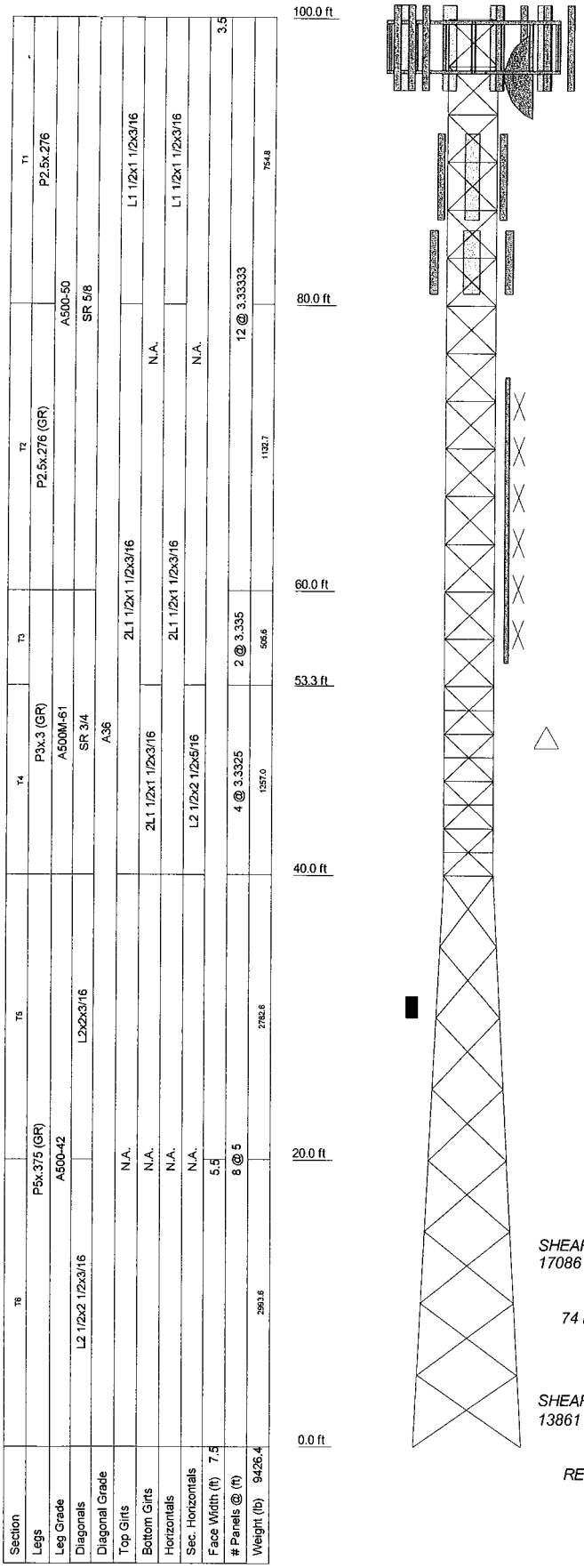
- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of CENTEK engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provide to CENTEK engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. CENTEK engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

General Description of Structural Analysis Program

RISATower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, RISATower, formerly ERITower, automates much of the tower analysis and design required by the TIA/EIA 222 Standard.

RISATower Features:

- RISATower can analyze and design 3- and 4-sided guyed towers, 3- and 4-sided self-supporting towers and either round or tapered ground mounted poles with or without guys.
- The program analyzes towers using the TIA-222-G (2005) standard or any of the previous TIA/EIA standards back to RS-222 (1959). Steel design is checked using the AISC ASD 9th Edition or the AISC LRFD specifications.
- Linear and non-linear (P-delta) analyses can be used in determining displacements and forces in the structure. Wind pressures and forces are automatically calculated.
- Extensive graphics plots include material take-off, shear-moment, leg compression, displacement, twist, feed line, guy anchor and stress plots.
- RISATower contains unique features such as True Cable behavior, hog rod take-up, foundation stiffness and much more.



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
12' Boom Starmount (Sprint Nextel)	98	APX16PV-16PVL-X w/mount pipe (T-Mobile - proposed)	83
12' Boom Starmount (Sprint Nextel)	98	APX16PV-16PVL-X w/mount pipe (T-Mobile - proposed)	83
12' Boom Starmount (Sprint Nextel)	98	(2) ATMAA1412D-1A20 Twin TMA (T-Mobile - proposed)	80
(4) DB844H90 (Sprint Nextel)	98	(2) ATMAA1412D-1A20 Twin TMA (T-Mobile - proposed)	80
(4) DB844H90 (Sprint Nextel)	98	(2) ATMAA1412D-1A20 Twin TMA (T-Mobile - proposed)	80
(2) 60"x12"x4" Panel (Sprint Nextel)	98	4-Bay 6810 w/Radome	65
72" x 10" x 5" Panel (Sprint Nextel)	98	2.5" Tube x 2' Standoff (Sprint)	30
72" x 10" x 5" Panel (Sprint Nextel)	98	GPS (Sprint)	30
Parabolic Grid	96		
72" x 10" x 5" Panel w/mount pipe (Sprint)	89		
48"x6.5"x3" Panel w/mount pipe (Sprint)	89		
48"x6.5"x3" Panel w/mount pipe (Sprint)	89		
APX16PV-16PVL-X w/mount pipe (T-Mobile - proposed)	83		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A500-50	50 ksi	62 ksi	A500M-61	61 ksi	75 ksi
A36	36 ksi	58 ksi	A500-42	42 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 50 mph wind.
4. Grouted pipe f'c is 8 ksi
5. TOWER RATING: 97.7%

MAX. CORNER REACTIONS AT BASE:
DOWN: 171165 lb
UPLIFT: -141345 lb
SHEAR: 12062 lb

AXIAL
24683 lb

SHEAR
17086 lb

MOMENT
1058313 lb-ft

TORQUE 1331 lb-ft
74 mph WIND - 0.5000 in ICE

AXIAL
15064 lb

SHEAR
13861 lb

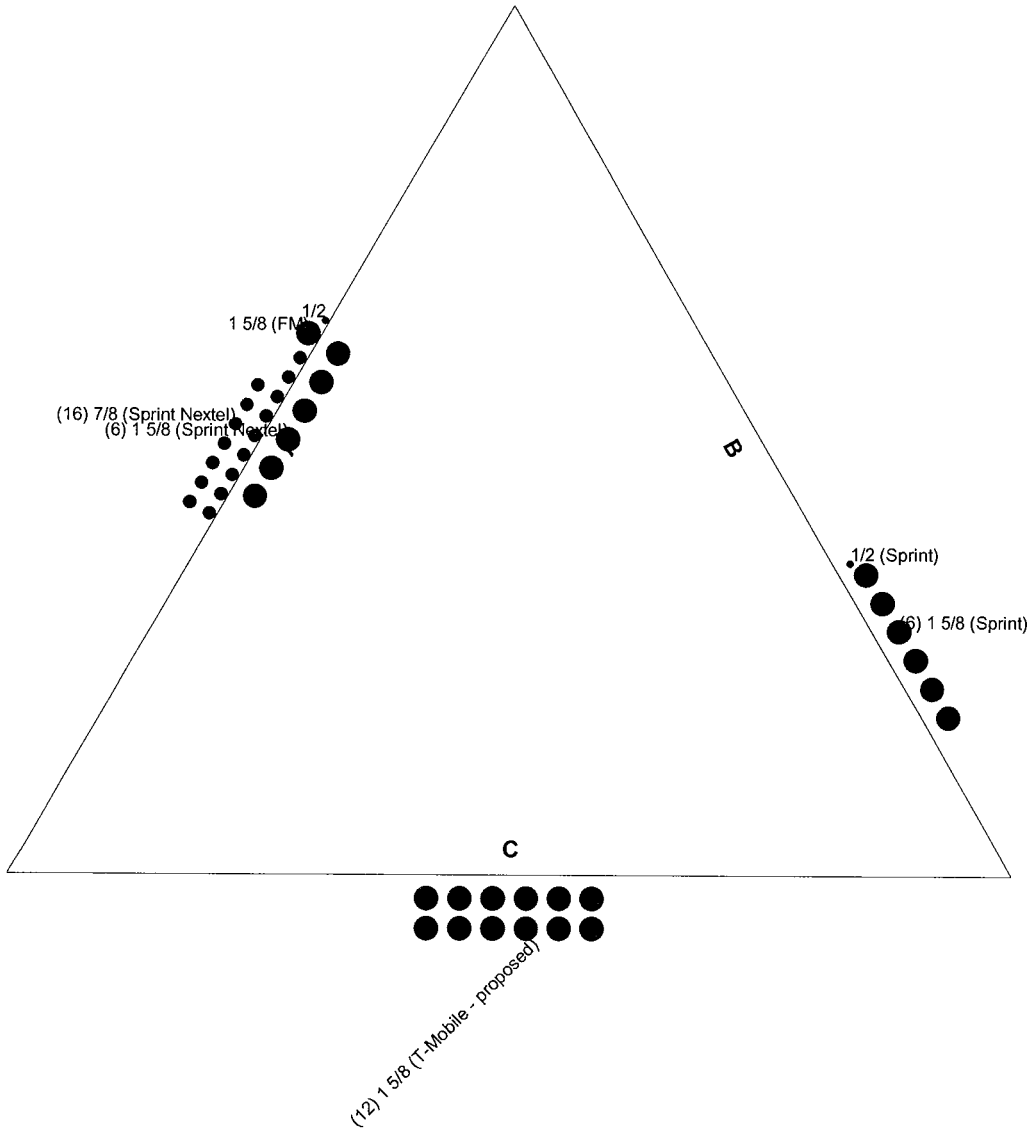
MOMENT
874874 lb-ft

TORQUE 2063 lb-ft
REACTIONS - 85 mph WIND

CENTEK Engineering, Inc.
63-2 N Branford Rd
Branford, CT 06405
Phone: (203) 488-0580
FAX: (203) 488-8587

Job:	***100' Nudd Self-Support Lattice ~ w/ Reinf.***		
Project:	***303 Boxwood Lane, Danbury, CT***		
Client: T-Mobile - CTFF703A	Drawn by: Staff	App'd:	
Code: TIA/EIA-222-F	Date: 07/22/10	Scale: NTS	
Path:		Dwg No. E-1	

Feedline Plan

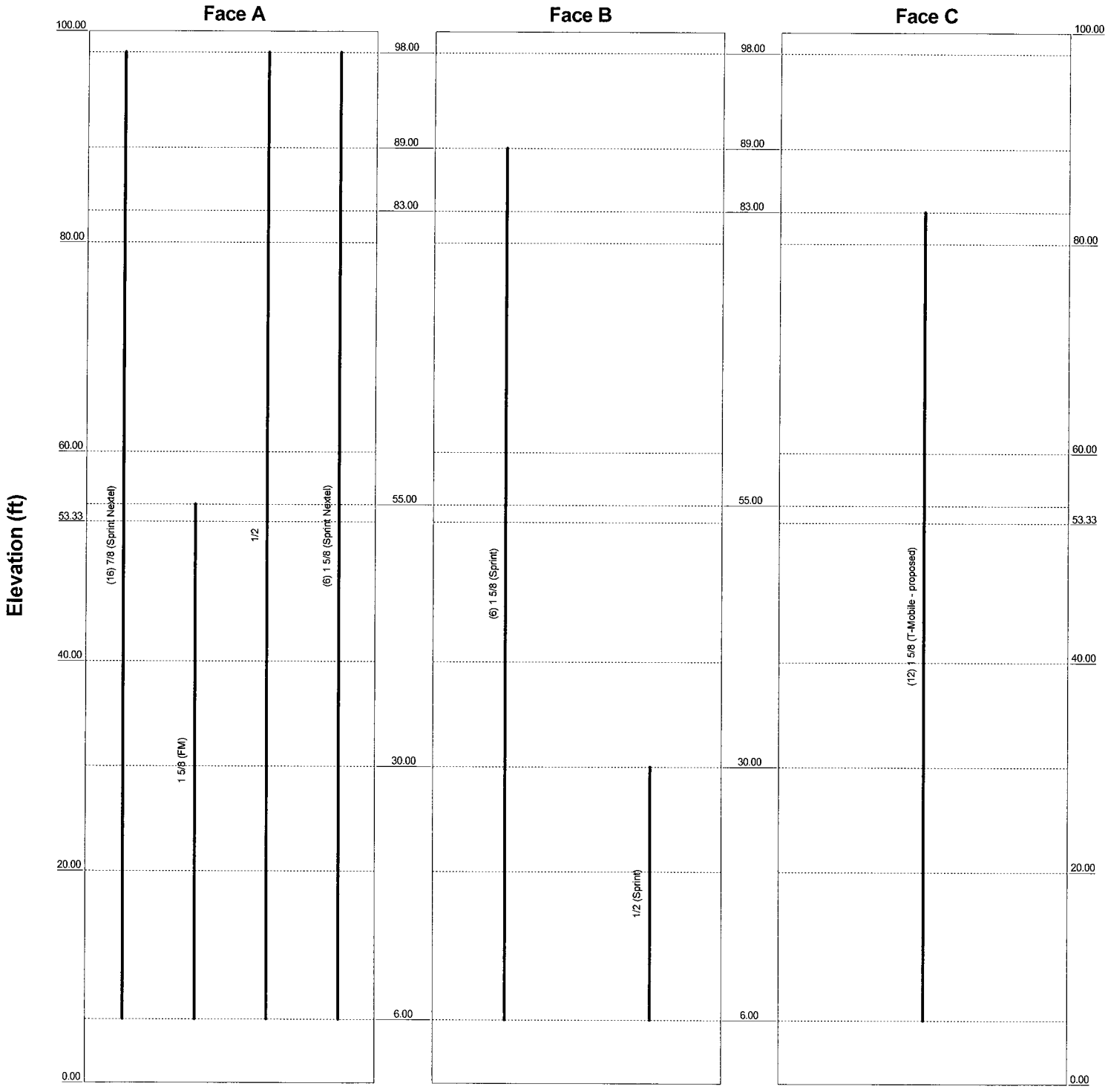


CENTEK Engineering, Inc.
63-2 N Branford Rd
Branford, CT 06405
Phone: (203) 488-0580
FAX: (203) 488-8587

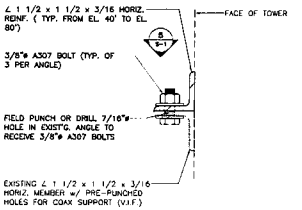
Job: ***100' Nudd Self-Support Lattice ~ w/ Reinf.***			
Project: ***303 Boxwood Lane, Danbury, CT***			
Client: T-Mobile - CTFF703A	Drawn by: Staff	App'd:	
Code: TIA/EIA-222-F	Date: 07/22/10	Scale: NTS	
Path:		Dwg No. E-7	

Feedline Distribution Chart
0' - 100'

Round — Flat — App In Face — App Out Face — Truss Leg



CENTEK Engineering, Inc. 63-2 N Branford Rd Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job: ***100' Nudd Self-Support Lattice ~ w/ Reinf.***		
	Project: ***303 Boxwood Lane, Danbury, CT***		
	Client: T-Mobile - CTFF703A	Drawn by: Staff	App'd:
	Code: TIA/EIA-222-F	Date: 07/22/10	Scale: NTS
	Path:		Dwg No. E-7

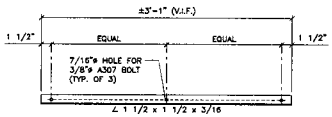


4/S-1 CONNECTION DETAIL

SCALE: 6" = 1'-0"

GRAPHIC SCALE

(IN FEET)
6 inch = 1 ft.

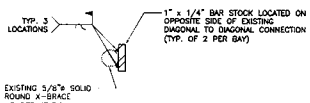


5/S-1 PLAN DETAIL

SCALE: 1 1/2" = 1'-0"

GRAPHIC SCALE

(IN FEET)
1 1/2 inch = 1 ft.

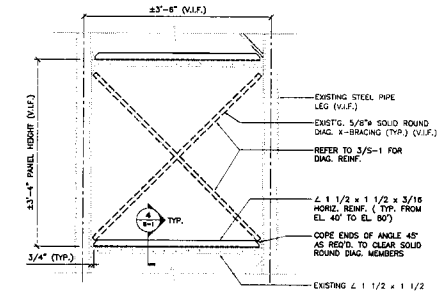


A/S-1 CONNECTION DETAIL

SCALE: 6" = 1'-0"

GRAPHIC SCALE

(IN FEET)
6 inch = 1 ft.

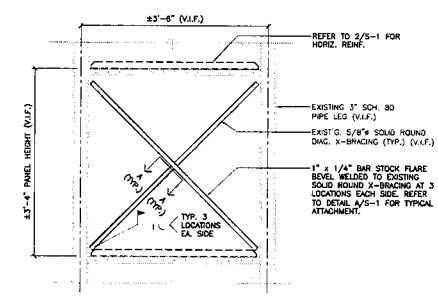


2/S-1 HORIZ. ANGLE REINF. DETAIL (EL. 40' TO EL 80')

SCALE: 1" = 1'-0"

GRAPHIC SCALE

(IN FEET)
1 inch = 1 ft.



3/S-1 DIAG. REINF. DETAIL (EL. 40' TO EL. 60')

SCALE: 1" = 1'-0"

GRAPHIC SCALE

(IN FEET)
1 inch = 1 ft.

SPECIAL INSPECTIONS

1. SPECIAL INSPECTIONS ARE TO BE PROVIDED BY AN APPROVED AGENCY HIRED BY THE OWNER. SPECIAL INSPECTIONS TO BE REQUIRED FOR THE FOLLOWING TYPES OF WORK:
   - A. STRUCTURAL STEEL
   - B. HIGH STRENGTH BOLTING
   - C. FIELD WELDING
   - D. NON-SHRINK GROUT TESTING

HORIZONTALS:	L1.5X1.5X3/16	WELDED	5/8" ROD	2 1/2" SCH 80	5
BRACING BOLTS:	(1) 5/8" A325 BOLT	L2X2X3/16	3" SCH 80	4	
DIAGONALS:	L2.5X2.5X3/16	5" SCH 80	3		
LEGS:			2		
SECTION #:			1		

EXISTING TOWER MEMBER TABLE

DIAGONALS:	EXISTING TO REMAIN	EXISTING TO REMAIN	5
LEGS:	EXISTING TOWER PIPE LEGS TO BE FILLED SOLID w/ 8 KSI GROUT FROM 0' TO 80'. REFER TO DETAIL 1/S-2	REINFORCE AS DETAIL 2/S-1 & 3/S-1	REINFORCE AS DETAIL 2/S-1	4
SECTION #:				3
				2
				1

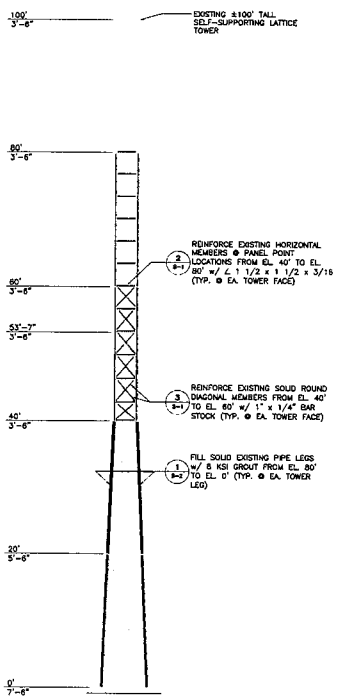
REINFORCING TABLE

1/S-1 TOWER REINF. KEY ELEVATION

SCALE: 1/8" = 1'-0"

GRAPHIC SCALE

(IN FEET)
1/8 inch = 1 ft.



ELEVATION:
FACE WIDTH:

PAINTING NOTE

ALL REINFORCEMENT STEEL TO BE PAINTED TO MATCH THE EXISTING TOWER COLOR SCHEME. COORDINATE WITH OWNER.

DESIGNED BY:	CFC
DRAWN BY:	DEB
CHK'D BY:	CFC

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
00	7/22/10	DEB	CFC	ISSUED FOR CONSTRUCTION

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WIRELESS COMMUNICATIONS FACILITY
CTFF703A
DANBURY
303 BOXWOOD LANE
DANBURY, CT 06810

DATE:	7/21/10
SCALE:	AS NOTED
JOB NO.	10108

STRUCTURAL REINFORCEMENT DETAILS

S-1

Sheet No. 1 of 2

STRUCTURAL SPECIFICATIONS

DESIGN BASIS

GOVERNING CODE: 2003 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2005 CONNECTICUT SUPPLEMENT AND 2009 AMENDMENTS.

1. DESIGN CRITERIA:
   - WIND LOAD: PER EIA/TIA 222 F-96: 85 MPH (FASTEST MILE), EQUIVALENT TO 105 MPH (3 SECOND GUST) & 75% WIND LOAD w/ 1/2" RADIAL ICE.
   - SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7-85 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH TIA/EIA-222 REVISION "F" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES".
2. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH TOWER OWNER.
3. 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 WORSRK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
4. EXISTING COAXIAL CABLES AND ALL ACCESSORIES SHALL BE RELOCATED AS NECESSARY AND REINSTALLED BY THE CONTRACTOR WITHOUT INTERRUPTION IN SERVICE WHERE THEY ARE IN CONFLICT WITH TOWER REINFORCEMENT.
5. CONTRACTOR TO SUBMIT SHOP DRAWINGS PRIOR TO FABRICATION TO ENGINEER FOR REVIEW.
6. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS SHOWN. REPORT ANY DISCREPANCIES TO ENGINEER PRIOR TO COMMENCEMENT OF WORK.

TOWER REINFORCING NOTES

MATERIAL SPECIFICATIONS (FOR EXISTING TOWER) PER ORIGINAL DRAWING:

TOWER LEGS:	ASTM A500, SECTION 3 Fy > 61 KSI
TOWER LEGS:	ASTM A500, ALL OTHER SECTIONS Fy > 50 KSI
ALL OTHER STEEL:	ASTM A36, Fy > 36 KSI
HARDWARE:	A325 HOT DIPPED GALVANIZED BOLTS WITH ANCO NUTS
GALVANIZING:	ASTM A123
ANCHOR BOLTS:	ASTM A36, Fy > 36 KSI

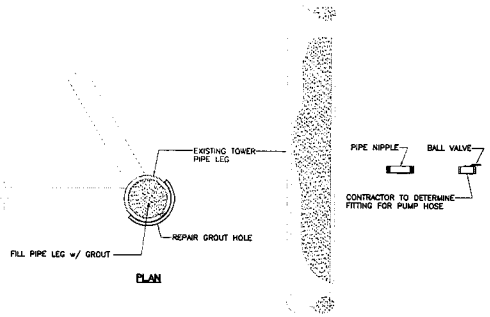
MATERIAL SPECIFICATIONS (FOR PROPOSED REINFORCEMENT OF TOWER):

MISC. STEEL:	ASTM A36, Fy > 36 KSI
HARDWARE:	ASTM A307 HOT DIPPED GALVANIZED BOLTS WITH PAL NUTS
GROUT:	NON-SHRINK THIXOTROPIC 8,000 PSI GROUT

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.
2. CONTRACTOR SHALL TAKE EXTREME CARE NOT TO DAMAGE THE EXISTING TOWER, THE EXISTING COMMUNICATION EQUIPMENT, COAXIAL CABLE AND THEIR COMPONENTS. IN THE EVENT THAT THE EXISTING COMMUNICATION EQUIPMENT IS DAMAGED DURING CONSTRUCTION THE CONTRACTOR SHALL REPAIR THE DAMAGE IMMEDIATELY (WITH THE APPROVAL OF THE COMMUNICATION CARRIER) AT NO ADDITIONAL COST TO THE CONTRACT.
3. EXISTING TOWER STRUCTURE, SHALL BE REINFORCED PER CONTRACT DRAWINGS.
4. ALL NEW ANTENNAS AND COAX LINES SHALL BE INSTALLED PER CONTRACT DRAWINGS.
5. STRUCTURAL STEEL SHALL CONFORM TO THE CURRENT "AISC SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS", AND THE "AISC CODE OF STANDARDS PRACTICE FOR STEEL".
6. ALL WELDING SHALL BE DONE BY A CERTIFIED WELDER IN ACCORDANCE WITH A.W.S. STANDARDS.
7. CONNECTIONS SHALL CONFORM TO ALL REQUIREMENTS OF THE "AISC SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS", LATEST EDITION, AND THE "SPECIFICATION FOR STRUCTURAL STEEL JOINTS USING ASTM A325 OR A490 BOLTS" APPROVED.
8. SHOP AND ERECTION DRAWINGS SHALL BE SUBMITTED FOR ALL STRUCTURAL STEEL WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. SUBMIT 6 SETS OF PRINTS TO THE ENGINEER FOR REVIEW.
9. CONTRACTOR SHALL VISIT THE SITE PRIOR TO THE START OF WORK WITH SUFFICIENT RIGGING EQUIPMENT AND PERSONNEL TO OBTAIN DETAILED FABRICATION MEASUREMENTS OF EXISTING TOWER STEEL MEMBERS TO BE REPLACED OR REINFORCED. SHOP DRAWINGS FOR ALL TOWER STEEL MEMBERS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION, GALVANIZATION AND INSTALLATION.
10. THE INSTALLATION OF THE TOWER REINFORCEMENT SHALL BE CONDUCTED ONLY ON DAYS WHEN THE EXPECTED WEATHER CONDITION INDICATES LESS THAN 15 MPH WIND SPEED.
11. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE WORK IS FULLY COMPLETED.
12. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACE TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
13. EXISTING TOWER STRUCTURE DIMENSIONS WERE TAKEN FROM DRAWING NO. 96-4992-1 DATED 1/21/97 BY FRED A. NUDD CORPORATION, AND ARE NOT GUARANTEED. CONTRACTOR SHALL TAKE FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF ALL FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY WHEN PREPARING SHOP DRAWING . THE FIELD MEASUREMENT SHALL BE SUBMITTED FOR REFERENCE TO THE ENGINEER.
14. TOWER REINFORCING SHALL BE CONDUCTED BY CERTIFIED WELDERS AND FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF RADIO ANTENNAS, TRANSMISSION LINES AND SUPPORT STRUCTURES. ALL SAFETY PROCEDURES, RIGGING AND ERECTION METHODS SHALL BE STANDARD TO THE INDUSTRY AND IN COMPLIANCE WITH OSHA.
15. CONTRACTOR SHALL SUBMIT THE METHOD OF CONSTRUCTION AND ERECTION FOR REVIEW BY THE ENGINEER PRIOR TO FABRICATION.
16. THE PROPOSED HORIZONTAL AND DIAGONAL BRACING MEMBER SHALL CLEAR THE EXISTING TOWER CONNECTORS.
17. ALL REINFORCEMENT SHOWN FOR DIAGONALS AND HORIZONTALS APPLY TO ALL SIDES OF THE TOWER.
18. ALL A-307 BOLTS ARE TO BE TIGHTENED TO SNUG TIGHT CONDITION AS DEFINED BY AISC SPECIFICATION UNLESS OTHERWISE NOTED.
19. BOLTS SHALL BE 3/8" TYPE A-307 HOT DIP GALVANIZED UNLESS SPECIFICALLY NOTED.
20. BOLT HOLES SHALL BE PUNCHED OR DRILLED. FLAME CUT HOLES ARE NOT ACCEPTABLE.
21. INSPECTION AND TESTING OF WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY, TO BE APPROVED BY THE ENGINEER AND PAID FOR BY THE CONTRACTOR.
22. ALL WELDING SHALL BE DONE USING E70XX ELECTRODES. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION", 9TH EDITION. AT THE COMPLETION ALL WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED.
23. TOUCH-UP ALL DAMAGED GALVANIZED STEEL WITH COLD ZINC, "GALVANOX", "DRY GALV", "ZINC-IT", OR APPROVED EQUIVALENT, IN ACCORDANCE WITH MANUFACTURERS GUIDELINES. TOUCH-UP DAMAGED NON GALVANIZED STEEL WITH SAME PAINT APPLIED IN SHOP OR FIELD.
24. USE PRECAUTIONS & PROCEDURES PER AWS D1.1 WHEN WELDING GALVANIZED METALS.
25. ALL STEEL WORK SHALL BE GALVANIZED IN ACCORDANCE WITH THE SPECIFICATION ASTM A123 UNLESS OTHERWISE NOTED.

PAINTING:

1. SHERWIN WILLIAM PAINTING SCHEDULE
   - A. STEEL-GALVANIZED
     1. TWO COATS OF LATEX ENAMEL, SEMI-GLOSS,
     2. DTM ACRYLIC COATING.
     3. COLOR TO BE FIELD MATCHED WITH EXISTING STRUCTURE.
2. EXAMINATION AND PREPARATION
   - A. DO NOT APPLY PAINT IN SNOW, RAIN FOG OR MIST OR WHEN RELATIVE HUMIDITY EXCEEDS 85%. DO NOT APPLY PAINT TO DAMP OR WET SURFACES.
   - B. VERIFY THAT SUBSTRATE CONDITIONS ARE READY TO RECEIVE WORK. EXAMINE SURFACE SCHEDULED TO BE FINISHED PRIOR TO COMMENCEMENT OF WORK. REPORT ANY CONDITION THAT MAY POTENTIALLY AFFECT PROPER APPLICATION.
   - C. PERFORM PREPARATION AND CLEANING PROCEDURE IN STRICT ACCORDANCE WITH COATING MANUFACTURER'S INSTRUCTIONS FOR EACH SUBSTRATE CONDITION.
   - E. CORRECT DEFECTS AND CLEAN SURFACES WHICH AFFECT WORK OF THIS SECTION. REMOVE EXISTING COATINGS THAT EXHIBIT LOOSE SURFACE DEFECTS.
   - H. GALVANIZED SURFACES: REMOVE SURFACE CONTAMINATION AND OILS AND WASH WITH SOLVENT. APPLY COAT OF ETCHING AND PRIMER.
3. CLEANING
   - A. COLLECT WASTE MATERIAL WHICH MAY CONSTITUTE A FIRE HAZARD, PLACE IN CLOSED METAL CONTAINERS AND REMOVE DAILY FROM SITE.
4. APPLICATION
   - A. APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTION.



PLAN ELEVATION

NOTES:

1. THE NON-SHRINK THIXOTROPIC GROUT SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 8,000 PSI IN 28 DAYS.
2. THE PUMP SHALL BE CAPABLE OF HANDLING A PRESSURE ADEQUATE TO PUMP THE GROUT TO THE ELEVATION SHOWN. IT MUST BE ABLE TO MAINTAIN A CONTINUOUS FLOW OF MATERIAL. THE PUMP SHALL HAVE A SCREEN BETWEEN THE MIXER AND THE PUMP HOPPER TO PREVENT LUMPS FROM ENTERING THE PUMP.
3. ATTACH THE NIPPLE TO THE TOWER LEG.
4. SEAL JOINTS AT SPLICES.
5. DRILL A WEEP HOLE AT THE TOP OF THE GROUT COLUMN.
6. THE GROUT SHALL BE PUMPED FROM THE BOTTOM FILL HOLE TO THE ELEVATION SPECIFIED.
7. GROUTING OF TOWER LEGS SHALL BE EXECUTED BY A QUALIFIED CONTRACTOR EXPERIENCED IN PRESSURE INJECTION GROUTING.

1 / S-2 **GROUTED PIPE LEG DETAIL**

SCALE: 3" = 1'-0"

GRAPHIC SCALE

(IN FEET)
3 inch = 1 ft.

DESIGNED BY: CFC
DRAWN BY: DEB
CHK'D BY: CFC

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
00	7/22/10	DEB	CFC	ISSUED FOR CONSTRUCTION

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CTFF703A
DANBURY
303 ROWOOD LANE
DANBURY, CT 06810

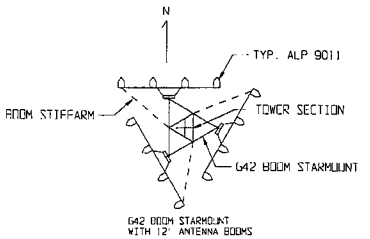
DATE: 7/21/10
SCALE: AS NOTED
JOB NO. 10108

STRUCTURAL SPECIFICATIONS AND DETAIL

S-2

Sheet No. 2 of 2

361A



G42 BOOM STARMOUNT
WITH 12' ANTENNA BOOMS

TOWER DESIGN CONDITIONS
This tower was designed to resist 85 mph wind speed with 1/2" radial ice per ANSI/EIA/TIA 222-E recommended standard.
Worst case load condition is wind without ice.
Allowable steel stresses per AISC ASD 9th Edition
Allowable concrete stresses per ACI 318-89

MATERIAL SPECIFICATIONS
Tower Legs: ASTM A500, Section 3 Fy = 61 ksi
ASTM A500, All Other Sections Fy > 50 ksi
All other steel: ASTM A36, Fy > 46 ksi
Hardware: A325 Hot Dipped Galvanized Bolts with Arco Nuts
Galvanizing: ASTM A123
Anchor Bolts: ASTM A36, Fy > 36 ksi

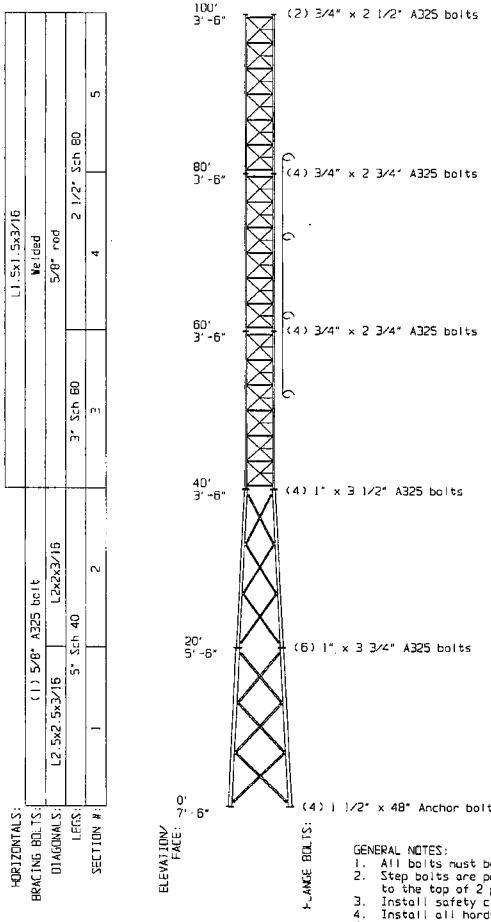
ANTENNA INSTALLATION NOTES:
1. Azimuth locations per Herbst/Muciano
2. Initial antenna installation: (9) ALP 9011
(1) Shively 6810

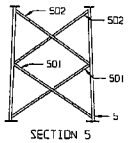
Tower Loading Conditions

QTY	Antenna	Elevation	Windload	Deadload
1	G42 Starmount	100	1026	513
3	12' Boom	100	411	142
12	ALP9011	100	71	53
1	Shively 6810 without radom	67	426	405

QTY	Type	Elevation Start	Elevation Stop	#/ft Windload	#/ft Deadload
12	1-5/8" Heliax	10	100	4.20	2.400
1	1-5/8" Heliax	10	67	4.20	2.400

NOTE: Any deviation from the proposed design antenna loading will require a tower analysis for verification of structural integrity.

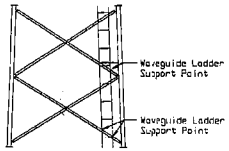


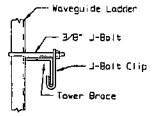


SECTION 5

PART NO. DESIGNATION
501
PANEL #
(D)IAGONAL
SECTION #

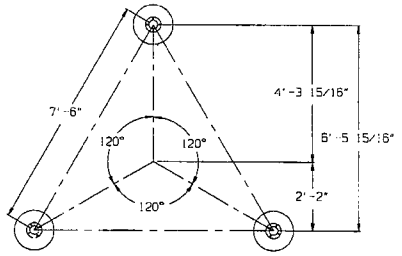
Note location of part no.





WAVEGUIDE LADDER CONNECTION

APPROX. TOWER SECTION WEIGHTS (lb):
Section 5 : 802 +/-
Section 4 : 802 +/-
Section 3 : 962 +/-
Section 2 : 1251 +/-
Section 1 : 1411 +/-
Total Tower Weight: 5229 +/-



FOUNDATION LAYOUT

CT43XC836

GENERAL NOTES:
1. All bolts must be tightened to AISC "snug fit" specifications.
2. Step bolts are provided on one leg to the top of the tower and on each leg to the top of 2 panel sections.
3. Install safety climb equipment per manufacturer's specifications.
4. Install all hardware to facilitate in-place visual inspection.
5. Install hardened washers against all slotted connections.

STATE OF CONNECTICUT GEORGE R. UNDERHILL No. 15005 LICENSED PROFESSIONAL ENGINEER

FRED A. NUDD CORPORATION
Route 104-Ontario, New York 14519-315/524-2531

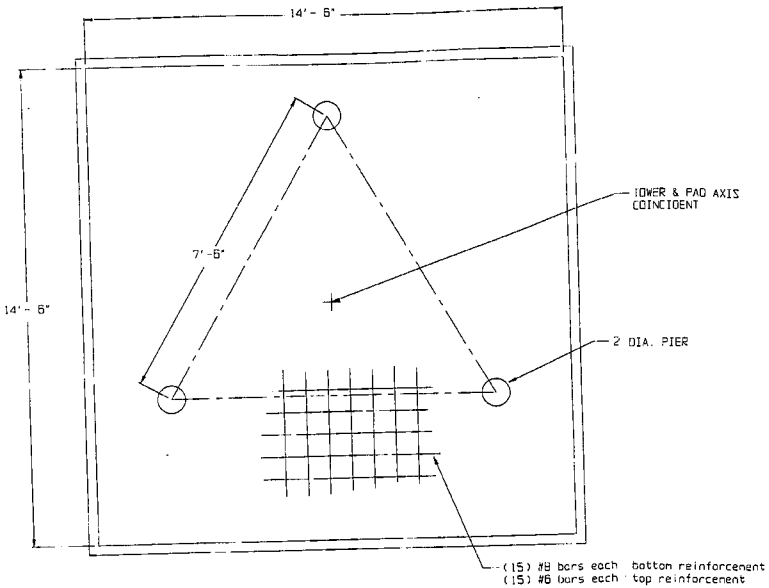
SCALE:	N/S	DRAWN BY:	PEB
DATE:	1/21/97		

APPROVED BY:

100' S12BPA CELLULAR TOWER

NEXTEL
WEST CONNECTICUT STATE UNIV.

DRAWING NUMBER:
96-4992-1



CONCRETE SPECIFICATIONS

1. Concrete shall have a minimum compressive strength of at least 4000 psi at 28 days. It is our recommendation that 4000 psi concrete be installed to account for any unknown installation variables that could degrade the concrete. Certified compression test results must be submitted to Bechtel prior to site acceptance.
2. Concrete installation shall meet ACI 318-89 installation requirements for reinforced concrete.
3. All concrete shall be placed against undisturbed soil free of free standing water and all foreign objects and materials. If this is not possible, special pouring procedures will be required.
4. Minimum concrete cover shall be 3" over all reinforcing bars.
6. Reinforcing bars shall be ASTM A-615 Grade 60 deformed bars.
7. Assemble bars with tie wires.
8. Proportion pouring: 80% 1's and 2's, 20% 1's only for finishing

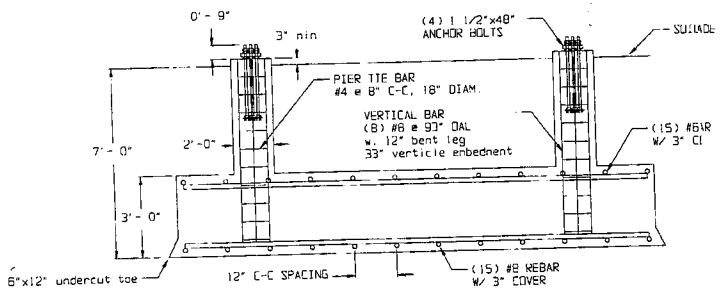
SOIL SPECIFICATIONS

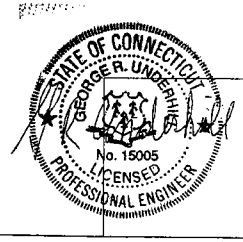
Soil is assumed to be per Vector Eng. boring logs dated 9/9/94.

1. Per observation of the boring logs, undrillable rock occurs at 7' below grade.
2. Allowable soil bearing capacity to be a minimum 10,000 psf (glacial till layer), with subgrade reaction of 2,000 kips/cu. ft at bottom of concrete pad.
3. All foundations shall be free of free standing water as far as possible prior to pouring concrete and shall be kept thus until backfill is in place. If not possible, special pouring procedures must be followed.
4. Rock, non-cohesive, saturated or submerged soils are not to be considered as normal soil. See EIA 7.2.2.
5. Backfill shall be compacted to 100 pcf in 6" lifts using excavated material.
6. Backfill shall be placed so as to prevent accumulation of water around foundations or anchors.

Total Concrete: 25 cuyd

Tenplate Flange: SOCI





FRED A. NUDD CORPORATION
Route 104-Ontario, New York 14519-315/524-2531

SCALE: N/S	DRAWN BY: PEB	APPROVED BY:
DATE: 1/21/97		

FOUNDATION DETAILS

NEXTEL
WEST CONNECTICUT ST., CT

DRAWING NUMBER: 96-4992-2

TOWER STRUCTURAL NOTES

TOWER DESIGN CRITERIA
THIS TOWER IS DESIGNED AND REINFORCED TO RESIST 85 MPH WIND SPEED AND 1/2" RADIAL ICE AND 75% WIND LOAD PER ANSI/EIA/TIA 22-F RECOMMENDED STANDARD. ALLOWABLE STEEL STRESS PER AISC ASD 9TH EDITION. CONCRETE PER ACI 318-95.

MATERIAL SPECIFICATIONS (FOR EXISTING TOWER) PER ORIGINAL DRAWING

TOWER LEGS:	ASTM A500, SECTION B Fy > 61 KSI
TOWER LEGS:	ASTM A500, ALL OTHER SECTIONS Fy > 50 KSI
ALL OTHER STEEL:	ASTM A36, Fy > 36 KSI
HARDWARE:	A325 HOT DIPPED GALVANIZED BOLTS WITH ANCO NUTS
GALVANIZING (FOR STRUCTURAL STEEL):	ASTM A123
ANCHOR BOLTS:	ASTM A36, Fy > 36 KSI

MATERIAL SPECIFICATIONS (FOR PROPOSED REINFORCEMENT OF TOWER)

TOWER LEGS:	ASTM A500 GRADE B GALVANIZED FY= 42 KSI
ALL OTHER STEEL:	ASTM A36 FY = 36 KSI
HARDWARE:	A325 HOT DIPPED GALVANIZED BOLTS WITH ANCO NUTS
GALVANIZING:	ASTM A123
ANCHOR BOLTS:	ASTM A307 GALVANIZED

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.
2. CONTRACTOR SHALL TAKE EXTREME CARE NOT TO DAMAGE THE EXISTING TOWER, THE EXISTING COMMUNICATION EQUIPMENT, COAXIAL CABLE AND THEIR COMPONENTS. IN THE EVENT THAT THE EXISTING COMMUNICATION EQUIPMENT IS DAMAGED DURING CONSTRUCTION THE CONTRACTOR SHALL REPAIR THE DAMAGE IMMEDIATELY (WITH THE APPROVAL OF THE COMMUNICATION CARRIER) AT NO ADDITIONAL COST TO THE CONTRACT.
3. EXISTING TOWER STRUCTURE, SHALL BE REINFORCED PER CONTRACT DRAWINGS.
4. ALL NEW ANTENNAS AND COAX LINES SHALL BE INSTALLED PER CONTRACT DRAWINGS.
5. STRUCTURAL STEEL SHALL CONFORM TO THE CURRENT "AISC SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS", AND THE "AISC CODE OF STANDARDS PRACTICE FOR STEEL".
6. ALL WELDING SHALL BE DONE BY A CERTIFIED WELDER IN ACCORDANCE WITH A.W.S. STANDARDS.
7. CONNECTIONS SHALL CONFORM TO ALL REQUIREMENTS OF THE "AISC SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS", LATEST EDITION, AND THE "SPECIFICATION FOR STRUCTURAL STEEL JOINTS USING ASTM A325 OR A490 BOLTS" APPROVED.
8. SHOP AND ERECTION DRAWINGS SHALL BE SUBMITTED FOR ALL STRUCTURAL STEEL WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. SUBMIT 6 SETS OF PRINTS TO THE ENGINEER FOR REVIEW.
9. CONTRACTOR SHALL VISIT THE SITE PRIOR TO THE START OF WORK WITH SUFFICIENT RIGGING EQUIPMENT AND PERSONNEL TO OBTAIN DETAILED FABRICATION MEASUREMENTS OF EXISTING TOWER STEEL MEMBERS TO BE REPLACED OR REINFORCED. SHOP DRAWINGS FOR ALL TOWER STEEL MEMBERS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION, GALVANIZATION AND INSTALLATION.
10. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE WORK IS FULLY COMPLETED.
11. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACE TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
12. EXISTING TOWER STRUCTURE DIMENSIONS WERE TAKEN FROM DRAWING NO. 96-4982-1 DATED 1/21/97 BY FREQ A. NUDO CORPORATION, AND ARE NOT GUARANTEED. CONTRACTOR SHALL TAKE FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF ALL FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY WHEN PREPARING SHOP DRAWING . THE FIELD MEASUREMENT SHALL BE SUBMITTED FOR REFERENCE TO THE ENGINEER.
13. TOWER REINFORCING SHALL BE CONDUCTED BY CERTIFIED WELDERS AND FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF RADIO ANTENNAS, TRANSMISSION LINES AND SUPPORT STRUCTURES. ALL SAFETY PROCEDURES, RIGGING AND ERECTION METHODS SHALL BE STANDARD TO THE INDUSTRY AND IN COMPLIANCE WITH OSHA.
14. CONTRACTOR SHALL SUBMIT THE METHOD OF CONSTRUCTION AND ERECTION FOR REVIEW BY THE ENGINEER PRIOR TO FABRICATION.
15. THE PROPOSED HORIZONTAL AND DIAGONAL BRACING MEMBER SHALL CLEAR THE EXISTING TOWER LEGS SPLICE CONNECTORS.
16. ALL PROPOSED HORIZONTAL, DIAGONAL BRACING AND GUSSET PLATES MAY BE FIELD MEASURED AND FIELD FABRICATED, EXCEPT AS NOTED.
17. ALL REINFORCEMENT SHOWN FOR LEGS, DIAGONALS, AND HORIZONTALS APPLY TO ALL SIDES OF THE TOWER.
18. ALL A-325 BOLTS ARE TO BE TIGHTENED TO SNUG TIGHT CONDITION AS DEFINED BY AISC SPECIFICATION UNLESS OTHERWISE NOTED.
19. GUSSET PLATES SHALL HAVE A MINIMUM THICKNESS OF 5/16" INCHES. CONNECTIONS SHALL MATCH EXISTING. BOLTS SHALL BE 5/8" TYPE A 325-N. UNLESS SPECIFICALLY NOTED.
20. BOLT HOLES SHALL BE PUNCHED OR DRILLED. FLAME CUT HOLES ARE NOT ACCEPTABLE.
21. INSPECTION AND TESTING OF WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY, TO BE APPROVED BY THE ENGINEER AND PAID FOR BY THE CONTRACTOR.
22. ALL WELDING SHALL BE DONE USING E70XX ELECTRODES. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION", 9TH EDITION, AT THE COMPLETION ALL WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED.
23. TOUCH-UP ALL DAMAGED GALVANIZED STEEL WITH COLD ZINC, "GALVANOX", "DRY GALV", "ZINC-IT", OR APPROVED EQUIVALENT, IN ACCORDANCE WITH MANUFACTURERS GUIDELINES. TOUCH-UP DAMAGED NON GALVANIZED STEEL WITH SAME PAINT APPLIED IN SHOP OR FIELD.
24. A SMALL PORTION OF THE GALVANIZATION MAY BE OMITTED TO FACILITATE THE WELDING OF THE GUSSET PLATE, IN THE AREA EFFECTED BY THE WELD, TO THE EXISTING TOWER LEG. PAINT THE AREA AFTER CONNECTIONS ARE COMPLETED, REFER TO PAINTING NOTES.
25. USE PRECAUTIONS & PROCEDURES PER AWS D1.1 WHEN WELDING GALVANIZED METALS.
26. ALL STEEL WORK SHALL BE GALVANIZED IN ACCORDANCE WITH THE SPECIFICATION ASTM A123 UNLESS OTHERWISE NOTED.
27. EXISTING COAXIAL CABLE AND APERTURES IN CONFLICT WITH TOWER REINFORCEMENT MEASURES SHALL BE RELOCATED AND REINSTALLED BY THE CONTRACTOR WITHOUT INTERRUPTION IN SERVICE.

PAINTING:

1- SHERWIN WILLIAM PAINTING SCHEDULE

A. STEEL-GALVANIZED
1. TWO COATS OF LATEX ENAMEL, SEMI-GLOSS,
2. DTM ACRYLIC COATING.
3. COLOR TO BE FIELD MATCHED WITH EXISTING STRUCTURE.

2- EXAMINATION AND PREPARATION

A. DO NOT APPLY PAINT IN SNOW, RAIN FOG OR MIST OR WHEN RELATIVE HUMIDITY EXCEEDS 85%. DO NOT APPLY PAINT TO DAMP OR WET SURFACES.

B. VERIFY THAT SUBSTRATE CONDITIONS ARE READY TO RECEIVE WORK. EXAMINE SURFACE SCHEDULED TO BE FINISHED PRIOR TO COMMENCEMENT OF WORK. REPORT ANY CONDITION THAT MAY POTENTIALLY AFFECT PROPER APPLICATION.

C. PERFORM PREPARATION AND CLEANING PROCEDURE IN STRICT ACCORDANCE WITH COATING MANUFACTURER'S INSTRUCTIONS FOR EACH SUBSTRATE CONDITION.

E. CORRECT DEFECTS AND CLEAN SURFACES WHICH AFFECT WORK OF THIS SECTION. REMOVE EXISTING COATINGS THAT EXHIBIT LOOSE SURFACE DEFECTS.

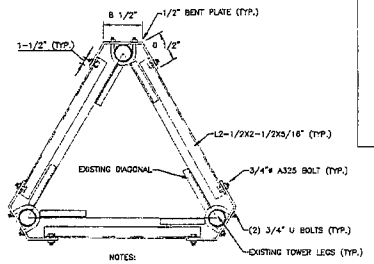
F. GALVANIZED SURFACES: REMOVE SURFACE CONTAMINATION AND OILS AND WASH WITH SOLVENT. APPLY COAT OF ETCHING AND PRIMER.

3. CLEANING

A. COLLECT WASTE MATERIAL, WHICH MAY CONSTITUTE A FIRE HAZARD, PLACE IN CLOSED METAL CONTAINERS AND REMOVE DAILY FROM SITE.

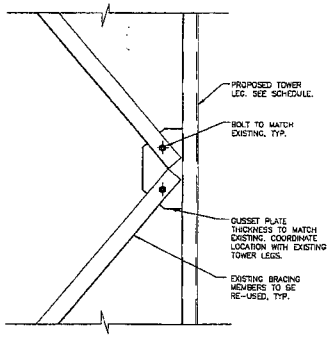
4. APPLICATION

A. APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTION.

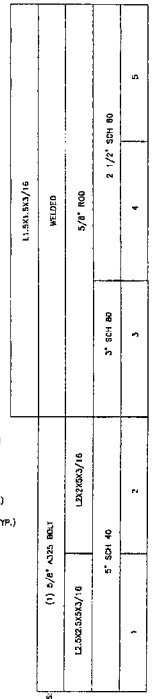


NOTES:
1. U BOLT CONNECTION SHALL CLEAR EXISTING GUSSET PLATE AND FLANGED SPLICE
2. COAX CABLE SHALL CLEAR THE PROPOSED ANGLE
3. LEG BRACING BETWEEN EL. 40'-00" & EL. 53'-7"

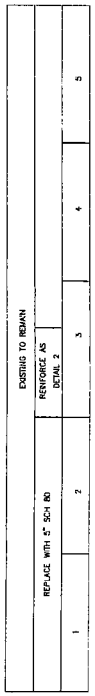
2 S-1 DETAIL
NOT TO SCALE



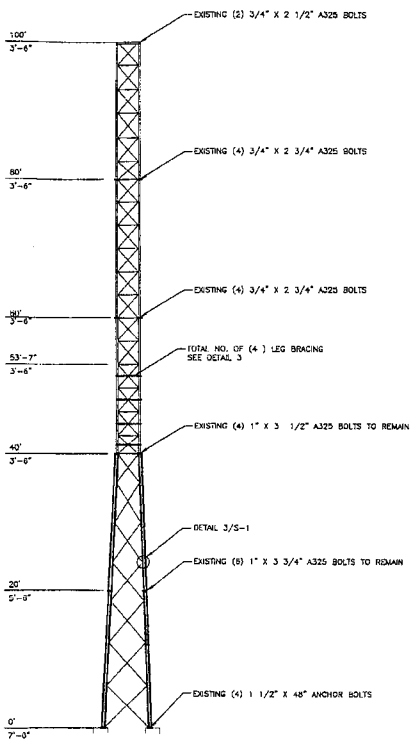
3 S-1 DETAIL
NOT TO SCALE



EXISTING TOWER MEMBER TABLE



REINFORCING TABLE



1 S-1 EXISTING TOWER ELEVATION
NOT TO SCALE

Natcomm, L.L.C.
63-2 North Branford Road
Branford, Connecticut 06405
Tel: (203) 488-0580
Fax: (203) 488-8587
Consulting Engineers - Project Management
Civil - Structural - Antenna - Electrical

WCSU TOWER
303 BOXWOOD LANE
DANBURY, CONNECTICUT
SITE NO.: CT43XC836

Sprint Spectrum LP
1 International Blvd.~Suite 300
Mahwah, NJ 07495

NO.	DATE	REVISIONS	BY	CHK	APPV.
4	11/28/01	REVISED REINFORCEMENT	DFB	FJT	CFC
3	11/02/01	REVISED ANTENNAS	DFB	FJT	CFC
2	09/07/01	ISSUED FOR CONSTRUCTION	JBA	JJP	CFC
1	09/06/01	ISSUED FOR REVIEW	DFB	FJT	CFC
A	08/14/01	ISSUED FOR PRELIMINARY CONSTRUCTION REVIEW	JBA	JJP	CFC

DRAWN BY: P.A.M. | CHECKED BY: EH | SCALE: AS NOTED | DATE: 04/03/01 | PROFESSIONAL ENGINEER SEAL

Sprint Spectrum LP

STRUCTURAL REINFORCEMENT AND STRUCTURAL NOTES

JOB NO.	DRAWING NUMBER	REV.
361A	S-1	4

361ACS1.dwg 11-28-01 807:26 am EST

T-Mobile

T-Mobile USA Inc.
35 Griffin Rd South, Bloomfield, CT 06002-1853
Phone: (860) 692-7100
Fax: (860) 692-7159

Technical Memo

To: Transcend
From: Amir Uzzaman - Radio Frequency Engineer
cc: Jason Overbey
Subject: Power Density Report for CTFF703A
Date: June 11, 2010

1. Introduction:

This report is the result of an Electromagnetic Field Intensities (EMF - Power Densities) study for the T-Mobile antenna installation on a Self Support Tower at 303 Boxwood Lane, Danbury, CT. This study incorporates the most conservative consideration for determining the practical combined worst case power density levels that would be theoretically encountered from locations surrounding the transmitting location.

2. Discussion:

The following assumptions were used in the calculations:

1) The emissions from T-Mobile transmitters are in the (1940-1949.8), (2140-2145), (2110-2120)MHz frequency Band.
2) The antenna array consists of three sectors, with 1 antenna per sector.
3) The model number of the antennas are APX16DWV-16DWV, APXV18-209014-C, APXV18-209014-C
3) The model number for UMTS antenna is APX16DWV-16DWV.
4) GSM antenna center line height is 83 ft.
4) UMTS antenna center line height is 83 ft.
5) The maximum transmit power from any GSM sector is 2565.19 Watts Effective Radiated Power (EiRP) assuming 8 channels per sector.
5) The maximum transmit power from any UMTS sector is 2330.72 Watts Effective Radiated Power (EiRP) assuming 2 channels per sector.
6) All the antennas are simultaneously transmitting and receiving, 24 hours a day.
7) 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.
8) The average ground level of the studied area does not change significantly 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 calculation from the T-Mobile antenna installation on a Self Support Tower at 303 Boxwood Lane, Danbury, CT, is 0.18116 mW/cm^2. This value represents 18.116% of the Maximum Permissible Exposure (MPE) standard of 1 milliwatt per square centimeter (mW/cm^2) set forth in the FCC/ANSI/IEEE C95.1-1991. Furthermore, the proposed antenna location for T-Mobile will not interfere with existing public safety communications, AM or FM radio broadcasts, TV, Police Communications, HAM Radio communications or any other signals in the area.
The combined Power Density from other carriers is 18.51%. The combined Power Density for the site is 36.626% of the M.P.E. standard.

Connecticut Market

T-Mobile

Worst Case Power Density

Site:	**CTFF703A**
Site Address:	**303 Boxwood Lane**
Town:	**Danbury**
Tower Height:	**100 ft.**
Tower Style:	**Self Support Tower**

GSM Data		**UMTS Data**	
Base Station TX output	20 W	**Base Station TX output**	40 W
Number of channels	8	**Number of channels**	2
Antenna Model	APX16DWV-16DWV	**Antenna Model**	[redacted]
Cable Size	1 5/8	**Cable Size**	1 5/8
Cable Length	[redacted]	**Cable Length**	[redacted]
Antenna Height	[redacted]	**Antenna Height**	[redacted]
Ground Reflection	1.6	**Ground Reflection**	1.6
Frequency	1945.0 MHz	**Frequency**	2.1 GHz
Jumper & Connector loss	4.50 dB	**Jumper & Connector loss**	1.50 dB
Antenna Gain	18.0 dBi	**Antenna Gain**	18.0 dBi
Cable Loss per foot	0.0116 dB	**Cable Loss per foot**	0.0116 dB
Total Cable Loss	1.4500 dB	**Total Cable Loss**	1.8560 dB
Total Attenuation	5.9500 dB	**Total Attenuation**	3.3560 dB
Total EIRP per Channel	55.06 dBm	**Total EIRP per Channel**	60.66 dBm
(In Watts)	320.65 W	**(In Watts)**	1165.36 W
Total EIRP per Sector	64.09 dBm	**Total EIRP per Sector**	63.67 dBm
(In Watts)	2565.19 W	**(In Watts)**	2330.72 W
nsg	12.0500	**nsg**	14.6440
Power Density (S) =	**0.094920 mW/cm^2**	**Power Density (S) =**	**0.086244 mW/cm^2**
T-Mobile Worst Case % MPE =		**18.1164%**	

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

Co-Location Total

Carrier	**% of Standard**
Sprint/Nextel WiMax	6.1900 %
Cingular	
Sprint CDMA	0.0300 %
AT&T Wireless	
Pocket	
MetroPCS	
Nextel iDen	12.2900 %
Other Antenna Systems	
Total Excluding T-Mobile	**18.5100 %**
T-Mobile	18.1164
Total % MPE for Site	**36.6264%**