

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

www.ct.gov/csc

June 29, 2012

Douglas Talmadge
Real Estate Consultant
New Cingular Wireless PCS, LLC
147 Austin Ryer Lane
Branford, CT 06405

RE: **EM-CING-156-120615** – New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 1 Burwell Road, West Haven, Connecticut.

Dear Mr. Talmadge:

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:

- The required modifications be completed in accordance with the recommendations made in the Structural Analysis Report prepared by American Tower Engineering Services dated April 24, 2012, and stamped by Raphael Mohamed; and
- Prior to antenna installation, a signed letter from a Professional Engineer duly licensed in the State of Connecticut shall be submitted to the Council to certify that the recommended modifications have been completed and the tower and foundation will not exceed 100 percent of the post-construction structural rating.
- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not less than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

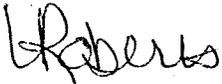
The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated June 15, 2012. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations 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. Thank you for your attention and cooperation.

Very truly yours,



Linda Roberts
Executive Director

LR/CDM/cm

c: The Honorable John M. Picard, Mayor, City of West Haven
Edwin Selden, City Planner, City of West Haven

gular Wireless PCS, LLC
147 Austin Ryer In
Branford, CT 06405
Phone: (203)-410-4531
Douglas Talmadge
Real Estate Consultant

June 15, 2012

Hand Delivered

Ms. Linda Roberts
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RECEIVED
JUN 15 2012

CONNECTICUT
SITING COUNCIL

ORIGINAL

RE: New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 1 Burwell Rd, West Haven, CT 06516.

Dear Ms. Roberts:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") and/or Long Term Evolution ("LTE") capabilities, and enhance system performance in the state of Connecticut, New Cingular Wireless PCS, LLC ("AT&T") plans to modify the equipment configurations at many of its existing cell sites. 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). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and its attachments is being sent to the chief elected official of the municipality in which affected cell site is located.

UMTS offers services to mobile computer and phone users anywhere in the world. Based on the Global System for Mobile ("GSM") communication standard, UMTS is the planned worldwide standard for mobile users. UMTS, fully implemented, gives computer and phone users high-speed access to the internet as they travel. They have the same capabilities even when they roam, through both terrestrial wireless and satellite transmissions.

LTE is a new high-performance air interface for cellular mobile communications. It is designed to increase the capacity and speed of mobile telephone networks.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in AT&T's operations at the site. Also included is documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration based on the supplied structural modification plan dated 4/26/2012 requiring the restacking of the existing coaxial cables.

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

1. The height of the overall structure will not be affected.
2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound as all proposed equipment will be located in the existing AT&T equipment shelter.
3. The proposed changes will not increase the noise level at the existing facility by 6 decibels or more.
4. Radio Frequency power density may increase due to the use of one or more GSM channels for UMTS transmissions. Moreover, LTE will utilize additional radio frequencies newly licensed by the FCC for cellular mobile communications. However, the changes 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.

For the foregoing reasons New Cingular Wireless PCS, LLC respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at (203)-410-4531 or email DTalmadge@Transcendwireless.com with questions concerning this matter.
Thank you for your consideration.

Sincerely,



Douglas Talmadge
Real Estate Consultant



C Squared Systems, LLC
65 Dartmouth Drive, Unit A3
Auburn, NH 03032
(603) 644-2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions



CT2064

(W. Haven)

1 Burwell Road, West Haven, CT

(aka: Burwell Hill Rd, West Haven)

April 4, 2012

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modifications to the existing AT&T antenna arrays mounted on the lattice tower located at 1 Burwell Road in West Haven, CT. The coordinates of the tower are 41-17-43.17 N, 72-58-23.90 W.

AT&T is proposing the following modifications:

- 1) Install three 700 MHz LTE antennas (one per sector).

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{1.6^2 \times EIRP}{4\pi \times R^2} \right) \times \text{Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{H^2 + V^2}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the finished modifications.

4. Calculation Results

Table 1 below outlines the power density information for the site. Because the proposed AT&T antennas are directional in nature, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical pattern of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm ²)	Limit	%MPE
<i>Cingular GSM</i>	158	880	2	296	0.0085	0.5867	1.45%
<i>Cingular GSM</i>	158	1930	2	427	0.0123	1.0000	1.23%
<i>Cingular UMTS</i>	152	1935	1	500	0.0078	1.0000	0.78%
SoCT Gas	N/A	N/A	N/A	N/A	0.0142	0.2000	7.10%
SoCT Gas	N/A	N/A	N/A	N/A	0.0104	0.3010	3.46%
WHvn Police	88	460	1	150	0.0080	0.3067	0.26%
Sprint Nextel iDEN	140	851	12	100	0.0220	0.5673	3.88%
Sprint Nextel WiMAX	140	2657	3	562	0.0309	1.0000	3.09%
AT&T UMTS	154	880	2	565	0.0017	0.5867	0.29%
AT&T UMTS	154	1900	2	875	0.0027	1.0000	0.27%
AT&T LTE	154	734	1	1313	0.0020	0.4893	0.41%
AT&T GSM	154	880	1	283	0.0004	0.5867	0.07%
AT&T GSM	154	1900	4	525	0.0032	1.0000	0.32%
Total							19.14%

Table 1: Carrier Information¹²

¹ The existing CSC filing for Cingular should be removed and replaced with the updated AT&T technologies and values provided in Table 1. The power density information for carriers other than AT&T was taken directly from the CSC database dated 3/29/2012.

² In the case where antenna models are not uniform across all 3 sectors for the same frequency band, the antenna model with the highest gain was used for the calculations to present a worse-case scenario.

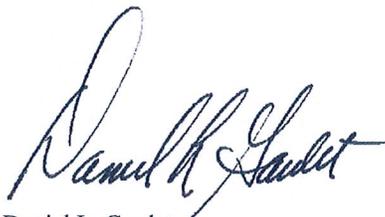
5. Conclusion

The above analysis verifies that emissions from the existing site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed transmit antennas at the existing facility is well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at ground level is **19.14% of the FCC limit**.

As noted previously, obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.

A handwritten signature in black ink, appearing to read 'Daniel L. Goulet'.

Daniel L. Goulet
C Squared Systems, LLC

April 4, 2012

Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

ANSI C95.1-1982, American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz. IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave. IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure³

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure⁴

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

³ Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure

⁴ General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure

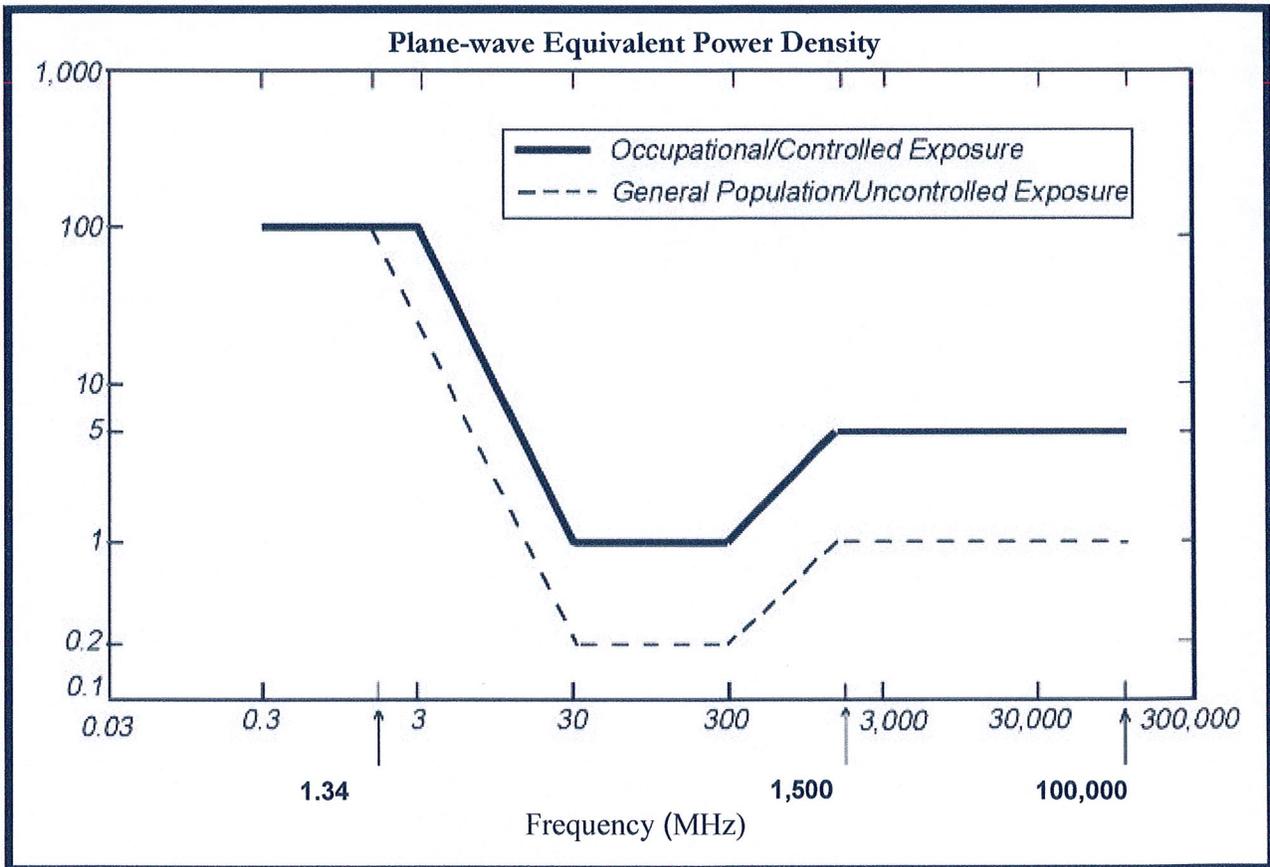
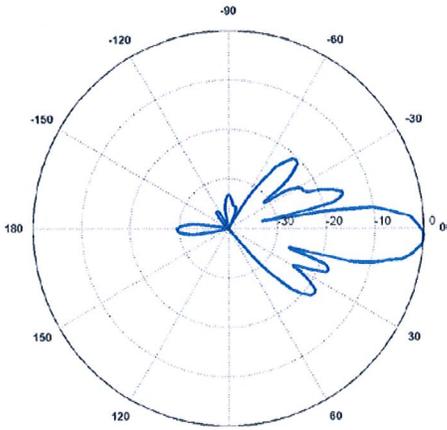
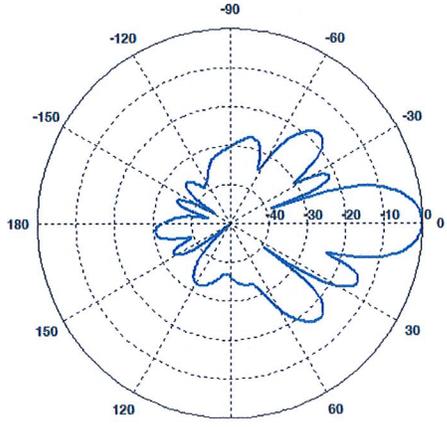
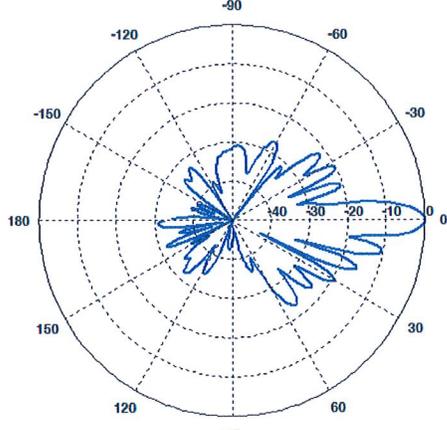


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T Antenna Data Sheets and Electrical Patterns

<p>700 MHz</p> <p>Manufacturer: KMW Communications Model #: AM-X-CD-16-65-00T Frequency Band: 698-806 MHz Gain: 13.4 dBd Vertical Beamwidth: 12.3° Horizontal Beamwidth: 65° Polarization: Dual Slant ± 45° Size L x W x D: 72.0" x 11.8" x 5.9"</p>	
<p>850 MHz</p> <p>Manufacturer: Powerwave Model #: 7770.00 Frequency Band: 824-896 MHz Gain: 11.4 dBd Vertical Beamwidth: 15° Horizontal Beamwidth: 85° Polarization: Dual Linear ±45° Size L x W x D: 55.4" x 11.0" x 5.0"</p>	
<p>1900 MHz</p> <p>Manufacturer: Powerwave Model #: 7770.00 Frequency Band: 1850-1990 MHz Gain: 13.4 dBd Vertical Beamwidth: 7° Horizontal Beamwidth: 90° Polarization: Dual Linear ±45° Size L x W x D: 55.4" x 11.0" x 5.0"</p>	



AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 155 ft. Self-Supporting Tower
ATC Site Name : Wshn - West Haven, CT
ATC Site Number : 302505
Proposed Carrier : AT&T Mobility
Carrier Site Name : W. Haven
Carrier Site Number : 10035024 / CT2064
County : New Haven
Eng. Number : 49165821
Date : April 24, 2012
Usage : 105% Legs, 95% Diagonals,
and 64% Horizontals

Submitted by:
Adam Ponder
Project Engineer

American Tower Engineering Services
8505 Freeport Parkway
Suite 135
Irving, TX 75063
Phone: 972-999-8900



5/21/12

Introduction

The purpose of this report is to summarize results of the structural analysis performed on the 155 ft. self-supporting tower named Wshn - West Haven, CT, located in New Haven County (ATC site #302505). The tower was originally designed and manufactured by Stainless, Inc. (Drawing #E4-2940-3 dated August 27, 1981). Foundation modifications per SpectraSite drawing CT-0041-E2 dated August 08, 2003 are included in the results of the current analysis.

Analysis

The existing tower was analyzed using Semaan Engineering Solutions, Inc., Software.

Basic Wind Speed: 90 mph (Fastest Mile) / 110.0 mph (3-Second Gust)
 Radial Ice: 78 mph (Fastest Mile) with ½” radial ice concurrent
 Standard/Code: TIA/EIA-222-F / 2003 IBC Section 1609.1.1, Exception (4) and Section 3108.4 / 2005 & 2008 CT Supplements

Antenna Loads

The following antenna loads were used in the tower analysis.

Existing Antennas

Elev. (ft)	Qty	Antennas	Mount	Coax	Carrier
155.0	1	11' Omni	(3) Sector Frames	(1) 1-5/8"	USA Mobility
154.0	12	KMW AWS Twin Dual 700 Bypass		(12) 1-5/8"	AT&T Mobility
	6	Allgon 7770.00	(3) Sector Frames	(12) 1-5/8"	Sprint Nextel
140.0	3	72" x 12" Panel			
	9	48" x 12" Panel			
119.0	1	Antel BCD-87010	Side Arm	(1) 7/8"	USA Mobility
103.0	1	Decibel DB636	Side Arm	(1) 1-1/4"	City of West Haven
80.0	1	Yagi	Side Arm	(1) 1/2"	USA Mobility
80.0	1	Decibel DB224	Side Arm	(1) 1/2"	S. Connecticut Gas
70.0	2	5' Yagi	Side Arm	(2) 1/2"	

Antenna Loads

Proposed Antennas

Elev. (ft)	Qty	Antennas	Mount	Coax	Carrier
154.0	1	Raycap DC6-48-60-18-8F	(3) Existing Sector Frames	(2) 19.7mm (1) 10mm	AT&T Mobility
	3	KMW AM-X-CD-16-65-00T-RET			
	6	Ericsson RRUS 11 (Band 12)			

The proposed (2) 19.7mm and (1) 10mm transmission lines were considered to be installed on the same tower face as the existing AT&T Mobility coax.

Results

The existing 155 ft. Stainless, Inc. self-supporting tower with the existing and the proposed antennas is structurally not acceptable per TIA/EIA-222-F and the 2005 & 2008 CT Supplements to the 2003 IBC.

The maximum structure usages are: 105% legs, 95% diagonals, and 64% horizontals.

Leg Forces	Design Reactions	Current Analysis Reactions	% Of Design
Uplift (Kips)	200.6	249.1	124.2
Axial (Kips)	230.6	284.6	123.4
Shear (Kips)	23.6	27.4	116.1

The structure foundation reactions resulting from this analysis exceed the ones shown on the original structural drawings. Upon reviewing the foundation and the soil documents, the existing foundation was found to be inadequate. Therefore, modification of the foundation or tower load reduction will be required.

Modifications

We recommend the following modifications to the existing tower structure:

- Re-stack the existing (12) 1-5/8" AT&T coax from 5'-154' in two rows (6-on-6).
- Re-stack the existing (12) 1-5/8" Sprint coax from 5' – 140' in two rows (6-on-6).

The final design and details for the required modifications will be a separate scope of work under a subsequent project.

Conclusion

The existing tower structure was found to be inadequate to support the existing and proposed antennas with the transmission lines distributed as described above. However, if the modifications recommended above are completed, the tower and its foundations can safely support the existing and proposed antennas under the code or standard as specified in this report. Re-stacking the existing coax will reduce the load on the tower so that no structural member capacity will exceed 100%, and the foundation and connections to the tower will have factors of safety exceeding 2.0 with respect to wind.

If you have any questions or require additional information, please call (972) 999-8900.

Standard Conditions

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

- Information supplied by the client regarding the structure itself, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to ATC Engineering Services 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 that their 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 relevant revision of ANSI/EIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. ATC Engineering Services is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

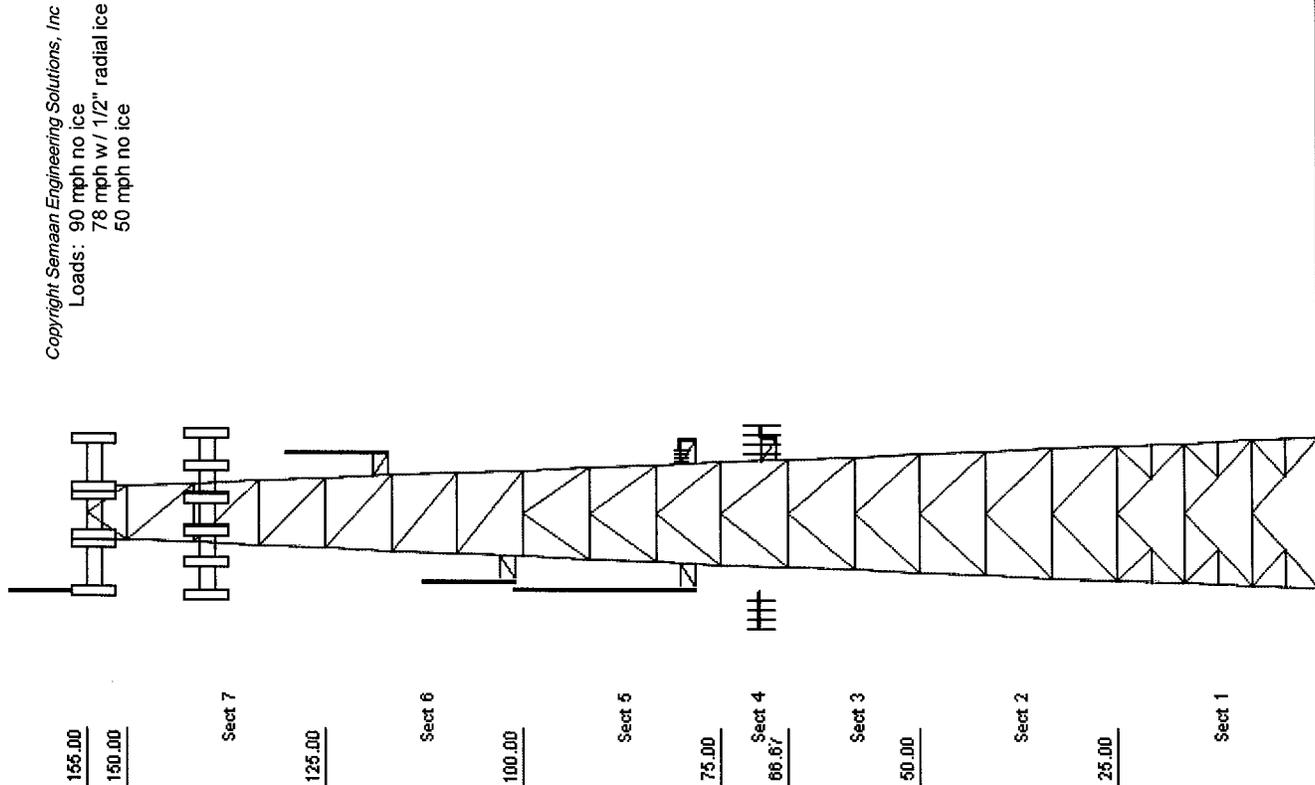
Job Information	
Tower : 302505	Location : Wshn - West Haven, CT
Code : TIA/EIA-222 Rev F	Shape : Triangle
Client : AT&T Mobility	Base Width : 19.00 ft
	Top Width : 7.00 ft

Copyright Semaan Engineering Solutions, Inc
 Loads: 90 mph no ice
 78 mph w/ 1/2" radial ice
 50 mph no ice

Section	Leg Members	Diagonal Members	Horizontal Members
1 - 2	PSP 50 ksi 5" OD x .500"	PSP 35 ksi STLSS 3" OD X0.25"	DAL 35 ksi 3X2.5X0.25
3	PSP 50 ksi 5" OD x .500"	PSP 36 ksi STLSS 2.75" OD	SAE 36 ksi 3X3X0.25
4	PSP 50 ksi 5" OD x .500"	PSP 35 ksi STLSS 2.75" OD	DAL 36 ksi 3X2.5X0.25
5	PSP 50 ksi 5" OD x .300"	PSP 36 ksi STLSS 2.75" OD	DAL 36 ksi 3X2.5X0.25
6	PSP 50 ksi STLSS 5" OD	PSP 35 ksi STLSS 3" OD X0.25"	DAL 36 ksi 3X2.5X0.25
7	PSP 50 ksi STLSS 5" OD	PSP 36 ksi STLSS 2.75" OD	SAE 36 ksi 3X3X0.25
8	PSP 50 ksi STLSS 5" OD	DAL 36 ksi 2.5X2X0.1875	CHN 36 ksi C4 x 5.4

Elev (ft)	Type	Qty	Description
154.00	Whip	1	Raycap DC6-48-60-18-8F
154.00	Whip	1	11' Omni
154.00	Panel	12	KMW AWS Twin Dual 700 Bypass
154.00	Panel	6	Aligon 7770.00
154.00	Panel	3	KMW AW-X-CD-16-65-00T-RET
154.00	Panel	6	Ericsson RRUS 11 (Band 12)
154.00	Mounting Frame	3	Sector Frame
140.00	Panel	3	72" x 12" Panel
140.00	Panel	9	48" x 12" Panel
140.00	Mounting Frame	3	Sector Frame
125.00	Mounting Frame	3	Sector Frame
119.00	Straight Arm	1	Round Side Arm
119.00	Whip	1	Antel BCD-87010
103.00	Straight Arm	1	Round Side Arm
103.00	Whip	1	Decibel DB636
80.00	Straight Arm	1	Round Side Arm
80.00	Yagi	1	Yagi
80.00	Straight Arm	1	Round Side Arm
80.00	Whip	1	Decibel DB224
70.00	Straight Arm	1	Side Arm
70.00	Yagi	2	5' Yagi

Linear Appearance			
Elev (ft)	From	To	Qty Description
5.000	155.00	1	TX Line Ladder
5.000	155.00	1	1 5/8" Coax
5.000	154.00	2	19.7 mm Cable
5.000	154.00	1	10 mm Cable
5.000	154.00	12	1 5/8" Coax
100.000	140.00	1	TX Line Ladder
100.000	140.00	12	1 5/8" Coax
5.000	119.00	1	7/8" Coax
5.000	103.00	1	1 1/4" Coax
5.000	100.00	1	TX Line Ladder
5.000	100.00	12	1 5/8" Coax
5.000	80.000	1	7/8" Coax
5.000	80.000	1	1/2" Coax
5.000	70.000	2	1/2" Coax

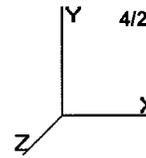


Uplift 248.10 k Moment 4,413.15 ft-k
 Vert 284.60 k Total Down 48.20 k
 Horiz 27.33 k Total Shear 46.75 k

Site Number: 302505
 Location: Wshn - West Haven, CT

4/24/2012 2:46:00 PM

Code: TIA/EIA-222 Rev F



Gh : 1.13

Section Forces

LoadCase Normal No Ice

90.00 mph Wind Normal To Face with No Ice

Allow Stress Inc: 1.333
 Dead LF: 1.000
 Wind LF: 1.000

Sect Seq	Height (ft)	Wind qz (psf)	Total Flat	Total Round	Ice Round	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice		Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face	
			Area (sqft)	Area (sqft)	Area (sqft)								Total Weight (lb)	Weight Ice (lb)					
8	152.5	32.11	4.54	10.72	0.00	0.44	2.00	1.00	1.00	0.67	11.69	0.00	0.00	521.4	0.0	847.83	0.00	847.83	3
7	137.5	31.18	5.44	100.28	0.00	0.53	1.87	1.00	1.00	0.71	76.89	0.00	0.00	2,184.8	0.0	5,057.71	0.00	5,057.71	3
6	112.5	29.44	6.94	123.51	0.00	0.52	1.87	1.00	1.00	0.71	94.49	0.00	0.00	3,137.6	0.0	5,893.41	0.00	5,893.41	3
5	87.50	27.40	8.27	78.80	0.00	0.29	2.32	1.00	1.00	0.61	56.57	52.63	0.00	4,366.7	0.0	4,071.03	1,956.9	6,027.95	3
4	70.83	25.79	3.09	27.76	0.00	0.28	2.36	1.00	1.00	0.61	20.00	17.54	0.00	1,746.0	0.0	1,375.53	614.08	1,989.61	3
3	58.33	24.40	6.68	56.87	0.00	0.27	2.39	1.00	1.00	0.61	41.14	35.08	0.00	3,078.8	0.0	2,714.32	1,161.9	3,876.23	3
2	37.50	21.51	11.25	87.49	0.00	0.25	2.45	1.00	1.00	0.60	63.84	52.63	0.00	6,140.5	0.0	3,799.84	1,536.1	5,336.00	3
1	12.50	20.74	12.75	91.60	0.00	0.23	2.49	1.00	1.00	0.60	67.48	42.10	0.00	6,870.6	0.0	3,945.16	1,184.8	5,130.02	3
													28,046.4	0.0			34,158.76		

LoadCase 60 deg No Ice

90.00 mph Wind at 60 deg From Face with No Ice

Allow Stress Inc: 1.333
 Dead LF: 1.000
 Wind LF: 1.000

Sect Seq	Height (ft)	Wind qz (psf)	Total Flat	Total Round	Ice Round	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice		Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face	
			Area (sqft)	Area (sqft)	Area (sqft)								Total Weight (lb)	Weight Ice (lb)					
8	152.5	32.11	4.54	10.72	0.00	0.44	2.00	0.80	1.00	0.67	10.78	0.00	0.00	521.4	0.0	782.00	0.00	782.00	3
7	137.5	31.18	5.44	100.28	0.00	0.53	1.87	0.80	1.00	0.71	75.80	0.00	0.00	2,184.8	0.0	4,986.17	0.00	4,986.17	3
6	112.5	29.44	6.94	123.51	0.00	0.52	1.87	0.80	1.00	0.71	93.10	0.00	0.00	3,137.6	0.0	5,806.87	0.00	5,806.87	3
5	87.50	27.40	8.27	78.80	0.00	0.29	2.32	0.80	1.00	0.61	54.92	52.63	0.00	4,366.7	0.0	3,952.06	1,956.9	5,908.98	3
4	70.83	25.79	3.09	27.76	0.00	0.28	2.36	0.80	1.00	0.61	19.39	17.54	0.00	1,746.0	0.0	1,333.05	614.08	1,947.13	3
3	58.33	24.40	6.68	56.87	0.00	0.27	2.39	0.80	1.00	0.61	39.81	35.08	0.00	3,078.8	0.0	2,626.23	1,161.9	3,788.13	3
2	37.50	21.51	11.25	87.49	0.00	0.25	2.45	0.80	1.00	0.60	61.59	52.63	0.00	6,140.5	0.0	3,665.91	1,536.1	5,202.07	3
1	12.50	20.74	12.75	91.60	0.00	0.23	2.49	0.80	1.00	0.60	64.93	42.10	0.00	6,870.6	0.0	3,796.07	1,184.8	4,980.93	3
													28,046.4	0.0			33,402.29		

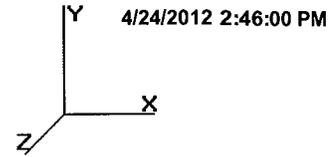
LoadCase 90 deg No Ice

90.00 mph Wind at 90 deg From Face with No Ice

Allow Stress Inc: 1.333
 Dead LF: 1.000
 Wind LF: 1.000

Sect Seq	Height (ft)	Wind qz (psf)	Total Flat	Total Round	Ice Round	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice		Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face	
			Area (sqft)	Area (sqft)	Area (sqft)								Total Weight (lb)	Weight Ice (lb)					
8	152.5	32.11	4.54	10.72	0.00	0.44	2.00	0.85	1.00	0.67	11.01	0.00	0.00	521.4	0.0	798.46	0.00	798.46	3
7	137.5	31.18	5.44	100.28	0.00	0.53	1.87	0.85	1.00	0.71	76.07	0.00	0.00	2,184.8	0.0	5,004.06	0.00	5,004.06	3
6	112.5	29.44	6.94	123.51	0.00	0.52	1.87	0.85	1.00	0.71	93.45	0.00	0.00	3,137.6	0.0	5,828.50	0.00	5,828.50	3
5	87.50	27.40	8.27	78.80	0.00	0.29	2.32	0.85	1.00	0.61	55.33	52.63	0.00	4,366.7	0.0	3,981.81	1,956.9	5,938.73	3
4	70.83	25.79	3.09	27.76	0.00	0.28	2.36	0.85	1.00	0.61	19.54	17.54	0.00	1,746.0	0.0	1,343.67	614.08	1,957.75	3

Site Number: 302505
 Location: Wshn - West Haven, CT
 Code: TIA/EIA-222 Rev F



Gh : 1.13

Section Forces

3	58.33	24.40	6.68	56.87	0.00	0.27	2.39	0.85	1.00	0.61	40.14	35.08	0.00	3,078.8	0.0	2,648.25	1,161.9	3,810.16	3
2	37.50	21.51	11.25	87.49	0.00	0.25	2.45	0.85	1.00	0.60	62.15	52.63	0.00	6,140.5	0.0	3,699.39	1,536.1	5,235.56	3
1	12.50	20.74	12.75	91.60	0.00	0.23	2.49	0.85	1.00	0.60	65.56	42.10	0.00	6,870.6	0.0	3,833.35	1,184.8	5,018.20	3
														28,046.4	0.0			33,591.40	

LoadCase Normal Ice

77.94 mph Wind Normal To Face with Ice

Allow Stress Inc: 1.333
 Dead LF: 1.000
 Wind LF: 1.000

Sect Seq	Height (ft)	Wind qz (psf)	Total			Sol Ratio	Cf	Df	Dr	Rr	Ice			Total Weight (lb)	Ice Weight (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face
			Flat Area (sqft)	Round Area (sqft)	Round Area (sqft)						Eff Area (sqft)	Linear Area (sqft)	Linear Area (sqft)						
8	152.5	24.08	4.54	17.24	6.52	0.62	1.79	1.00	1.00	0.77	17.77	0.00	0.00	839.1	317.7	867.19	0.00	867.19	3
7	137.5	23.38	5.44	150.51	50.23	0.78	1.80	1.00	1.00	0.88	137.89	0.00	0.00	3,684.6	1,499.8	6,572.17	0.00	6,572.17	3
6	112.5	22.08	6.94	185.69	62.18	0.77	1.80	1.00	1.00	0.87	169.00	0.00	0.00	5,044.6	1,907.1	7,583.69	0.00	7,583.69	3
5	87.50	20.55	8.27	118.99	40.19	0.42	2.02	1.00	1.00	0.66	87.01	52.63	27.08	6,696.0	2,329.3	4,080.92	2,222.9	6,303.82	3
4	70.83	19.34	3.09	43.00	15.24	0.41	2.04	1.00	1.00	0.66	31.37	17.54	9.03	2,565.1	819.1	1,397.11	697.54	2,094.65	3
3	58.33	18.30	6.68	89.29	32.43	0.40	2.06	1.00	1.00	0.65	64.93	35.08	18.06	4,624.9	1,546.0	2,769.00	1,319.8	4,088.83	3
2	37.50	16.13	11.25	136.83	49.34	0.37	2.13	1.00	1.00	0.64	98.80	52.63	27.08	8,815.5	2,675.0	3,832.19	1,744.9	5,577.14	3
1	12.50	15.55	12.75	134.72	43.12	0.33	2.22	1.00	1.00	0.62	96.92	42.10	21.67	9,776.7	2,906.1	3,792.80	1,345.9	5,138.70	3
														42,046.5	14,000.2			38,226.21	

LoadCase 60 deg Ice

77.94 mph Wind at 60 deg From Face with Ice

Allow Stress Inc: 1.333
 Dead LF: 1.000
 Wind LF: 1.000

Sect Seq	Height (ft)	Wind qz (psf)	Total			Sol Ratio	Cf	Df	Dr	Rr	Ice			Total Weight (lb)	Ice Weight (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face
			Flat Area (sqft)	Round Area (sqft)	Round Area (sqft)						Eff Area (sqft)	Linear Area (sqft)	Linear Area (sqft)						
8	152.5	24.08	4.54	17.24	6.52	0.62	1.79	0.80	1.00	0.77	16.86	0.00	0.00	839.1	317.7	822.90	0.00	822.90	3
7	137.5	23.38	5.44	150.51	50.23	0.78	1.80	0.80	1.00	0.88	136.81	0.00	0.00	3,684.6	1,499.8	6,520.34	0.00	6,520.34	3
6	112.5	22.08	6.94	185.69	62.18	0.77	1.80	0.80	1.00	0.87	167.61	0.00	0.00	5,044.6	1,907.1	7,521.43	0.00	7,521.43	3
5	87.50	20.55	8.27	118.99	40.19	0.42	2.02	0.80	1.00	0.66	85.36	52.63	27.08	6,696.0	2,329.3	4,003.39	2,222.9	6,226.29	3
4	70.83	19.34	3.09	43.00	15.24	0.41	2.04	0.80	1.00	0.66	30.76	17.54	9.03	2,565.1	819.1	1,369.60	697.54	2,067.15	3
3	58.33	18.30	6.68	89.29	32.43	0.40	2.06	0.80	1.00	0.65	63.59	35.08	18.06	4,624.9	1,546.0	2,712.04	1,319.8	4,031.88	3
2	37.50	16.13	11.25	136.83	49.34	0.37	2.13	0.80	1.00	0.64	96.55	52.63	27.08	8,815.5	2,675.0	3,744.92	1,744.9	5,489.88	3
1	12.50	15.55	12.75	134.72	43.12	0.33	2.22	0.80	1.00	0.62	94.37	42.10	21.67	9,776.7	2,906.1	3,693.01	1,345.9	5,038.91	3
														42,046.5	14,000.2			37,718.76	

LoadCase 90 deg Ice

77.94 mph Wind at 90 deg From Face with Ice

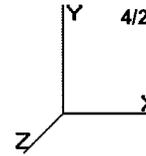
Allow Stress Inc: 1.333
 Dead LF: 1.000
 Wind LF: 1.000

Sect Seq	Height (ft)	Wind qz (psf)	Total			Sol Ratio	Cf	Df	Dr	Rr	Ice			Total Weight (lb)	Ice Weight (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face
			Flat Area (sqft)	Round Area (sqft)	Round Area (sqft)						Eff Area (sqft)	Linear Area (sqft)	Linear Area (sqft)						

Site Number: 302505
 Location: Wshn - West Haven, CT

4/24/2012 2:46:00 PM

Code: TIA/EIA-222 Rev F



Gh : 1.13

Section Forces

8	152.5	24.08	4.54	17.24	6.52	0.62	1.79	0.85	1.00	0.77	17.09	0.00	0.00	839.1	317.7	833.97	0.00	833.97	3			
7	137.5	23.38	5.44	150.51	50.23	0.78	1.80	0.85	1.00	0.88	137.08	0.00	0.00	3,684.6	1,499.8	6,533.30	0.00	6,533.30	3			
6	112.5	22.08	6.94	185.69	62.18	0.77	1.80	0.85	1.00	0.87	167.96	0.00	0.00	5,044.6	1,907.1	7,537.00	0.00	7,537.00	3			
5	87.50	20.55	8.27	118.99	40.19	0.42	2.02	0.85	1.00	0.66	85.77	52.63	27.08	6,696.0	2,329.3	4,022.77	2,222.9	6,245.67	3			
4	70.83	19.34	3.09	43.00	15.24	0.41	2.04	0.85	1.00	0.66	30.91	17.54	9.03	2,565.1	819.1	1,376.48	697.54	2,074.02	3			
3	58.33	18.30	6.68	89.29	32.43	0.40	2.06	0.85	1.00	0.65	63.92	35.08	18.06	4,624.9	1,546.0	2,726.28	1,319.8	4,046.11	3			
2	37.50	16.13	11.25	136.83	49.34	0.37	2.13	0.85	1.00	0.64	97.12	52.63	27.08	8,815.5	2,675.0	3,766.74	1,744.9	5,511.69	3			
1	12.50	15.55	12.75	134.72	43.12	0.33	2.22	0.85	1.00	0.62	95.01	42.10	21.67	9,776.7	2,906.1	3,717.96	1,345.9	5,063.86	3			
														42,046.5	14,000.2			37,845.62				

LoadCase Normal

50.00 mph Wind Normal To Face with No Ice

Allow Stress Inc: 1.333
 Dead LF: 1.000
 Wind LF: 1.000

Wind Sect Seq	Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face			
8	152.5	9.91	4.54	10.72	0.00	0.44	2.00	1.00	1.00	0.67	11.69	0.00	0.00	521.4	0.0	261.68	0.00	261.68	3			
7	137.5	9.62	5.44	100.28	0.00	0.53	1.87	1.00	1.00	0.71	76.89	0.00	0.00	2,184.8	0.0	1,561.02	0.00	1,561.02	3			
6	112.5	9.09	6.94	123.51	0.00	0.52	1.87	1.00	1.00	0.71	94.49	0.00	0.00	3,137.6	0.0	1,818.95	0.00	1,818.95	3			
5	87.50	8.46	8.27	78.80	0.00	0.29	2.32	1.00	1.00	0.61	56.57	52.63	0.00	4,366.7	0.0	1,256.49	603.99	1,860.48	3			
4	70.83	7.96	3.09	27.76	0.00	0.28	2.36	1.00	1.00	0.61	20.00	17.54	0.00	1,746.0	0.0	424.55	189.53	614.08	3			
3	58.33	7.53	6.68	56.87	0.00	0.27	2.39	1.00	1.00	0.61	41.14	35.08	0.00	3,078.8	0.0	837.75	358.61	1,196.37	3			
2	37.50	6.64	11.25	87.49	0.00	0.25	2.45	1.00	1.00	0.60	63.84	52.63	0.00	6,140.5	0.0	1,172.79	474.12	1,646.91	3			
1	12.50	6.40	12.75	91.60	0.00	0.23	2.49	1.00	1.00	0.60	67.48	42.10	0.00	6,870.6	0.0	1,217.64	365.70	1,583.34	3			
														28,046.4	0.0			10,542.83				

LoadCase 60 deg

50.00 mph Wind at 60 deg From Face with No Ice

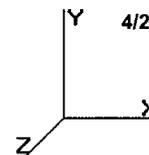
Allow Stress Inc: 1.333
 Dead LF: 1.000
 Wind LF: 1.000

Wind Sect Seq	Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face			
8	152.5	9.91	4.54	10.72	0.00	0.44	2.00	0.80	1.00	0.67	10.78	0.00	0.00	521.4	0.0	241.36	0.00	241.36	3			
7	137.5	9.62	5.44	100.28	0.00	0.53	1.87	0.80	1.00	0.71	75.80	0.00	0.00	2,184.8	0.0	1,538.94	0.00	1,538.94	3			
6	112.5	9.09	6.94	123.51	0.00	0.52	1.87	0.80	1.00	0.71	93.10	0.00	0.00	3,137.6	0.0	1,792.24	0.00	1,792.24	3			
5	87.50	8.46	8.27	78.80	0.00	0.29	2.32	0.80	1.00	0.61	54.92	52.63	0.00	4,366.7	0.0	1,219.77	603.99	1,823.76	3			
4	70.83	7.96	3.09	27.76	0.00	0.28	2.36	0.80	1.00	0.61	19.39	17.54	0.00	1,746.0	0.0	411.44	189.53	600.97	3			
3	58.33	7.53	6.68	56.87	0.00	0.27	2.39	0.80	1.00	0.61	39.81	35.08	0.00	3,078.8	0.0	810.56	358.61	1,169.18	3			
2	37.50	6.64	11.25	87.49	0.00	0.25	2.45	0.80	1.00	0.60	61.59	52.63	0.00	6,140.5	0.0	1,131.45	474.12	1,605.58	3			
1	12.50	6.40	12.75	91.60	0.00	0.23	2.49	0.80	1.00	0.60	64.93	42.10	0.00	6,870.6	0.0	1,171.63	365.70	1,537.32	3			
														28,046.4	0.0			10,309.35				

Site Number: 302505
 Location: Wshn - West Haven, CT
 Code: TIA/EIA-222 Rev F

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4/24/2012 2:46:00 PM



Gh: 1.13

Section Forces

LoadCase 90 deg

50.00 mph Wind at 90 deg From Face with No Ice

Allow Stress Inc: 1.333
 Dead LF: 1.000
 Wind LF: 1.000

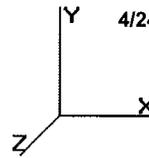
Sect Seq	Wind Height (ft)	qz (psf)	Total		Ice		Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face
			Flat Area (sqft)	Round Area (sqft)	Round Area (sqft)	Linear Area (sqft)							Linear Area (sqft)							
8	152.5	9.91	4.54	10.72	0.00	0.44	2.00	0.85	1.00	0.67	11.01	0.00	0.00	521.4	0.0	246.44	0.00	246.44	3	
7	137.5	9.62	5.44	100.28	0.00	0.53	1.87	0.85	1.00	0.71	76.07	0.00	0.00	2,184.8	0.0	1,544.46	0.00	1,544.46	3	
6	112.5	9.09	6.94	123.51	0.00	0.52	1.87	0.85	1.00	0.71	93.45	0.00	0.00	3,137.6	0.0	1,798.92	0.00	1,798.92	3	
5	87.50	8.46	8.27	78.80	0.00	0.29	2.32	0.85	1.00	0.61	55.33	52.63	0.00	4,366.7	0.0	1,228.95	603.99	1,832.94	3	
4	70.83	7.96	3.09	27.76	0.00	0.28	2.36	0.85	1.00	0.61	19.54	17.54	0.00	1,746.0	0.0	414.71	189.53	604.24	3	
3	58.33	7.53	6.68	56.87	0.00	0.27	2.39	0.85	1.00	0.61	40.14	35.08	0.00	3,078.8	0.0	817.36	358.61	1,175.97	3	
2	37.50	6.64	11.25	87.49	0.00	0.25	2.45	0.85	1.00	0.60	62.15	52.63	0.00	6,140.5	0.0	1,141.79	474.12	1,615.91	3	
1	12.50	6.40	12.75	91.60	0.00	0.23	2.49	0.85	1.00	0.60	65.56	42.10	0.00	6,870.6	0.0	1,183.13	365.70	1,548.83	3	
															28,046.4	0.0			10,367.72	

Site Number: 302505
 Location: Wshn - West Haven, CT

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Tower Loading

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Weight (lb)	No Ice CaAa (sf)	CaAa Factor	Weight (lb)	Ice CaAa (sf)	CaAa Factor	Distance From Face (ft)	X Angle (deg)	Vert Ecc (ft)
154.0	Raycap DC6-48-60-18-8F	1	32.80	1.470	1.00	50.50	1.670	1.00	0.000	0.00	0.000
154.0	11' Omni	1	11.00	3.300	1.00	34.93	4.430	1.00	0.000	0.00	6.500
154.0	KMW AWS Twin Dual 700	12	17.40	1.160	0.67	24.60	1.380	0.67	0.000	0.00	0.000
154.0	Allgon 7770.00	6	35.00	5.880	0.73	68.00	6.430	0.73	0.000	0.00	0.000
154.0	KMW AM-X-CD-16-65-00T-	3	48.50	8.260	0.75	95.00	9.080	0.75	0.000	0.00	0.000
154.0	Ericsson RRUS 11 (Band 12)	6	55.00	2.940	0.67	74.30	3.290	0.67	0.000	0.00	0.000
154.0	Sector Frame	3	300.00	14.400	0.67	415.00	19.200	0.67	0.000	0.00	0.000
140.0	72" x 12" Panel	3	45.00	8.400	0.75	92.20	9.230	0.75	0.000	0.00	0.000
140.0	48" x 12" Panel	9	30.00	5.600	0.75	62.50	6.190	0.75	0.000	0.00	0.000
140.0	Sector Frame	3	300.00	14.400	0.67	415.00	19.200	0.67	0.000	0.00	0.000
125.0	Sector Frame	3	300.00	14.400	0.67	415.00	19.200	0.67	0.000	0.00	0.000
119.0	Round Side Arm	1	150.00	4.000	1.00	175.00	5.900	1.00	0.000	0.00	0.000
119.0	Antel BCD-87010	1	26.50	2.900	1.00	47.98	4.050	1.00	0.000	0.00	5.583
103.0	Round Side Arm	1	150.00	4.000	1.00	175.00	5.900	1.00	0.000	0.00	0.000
103.0	Decibel DB636	1	30.00	2.520	1.00	51.00	3.490	1.00	0.000	0.00	4.985
80.00	Round Side Arm	1	150.00	4.000	1.00	175.00	5.900	1.00	0.000	0.00	0.000
80.00	Yagi	1	1.50	0.420	1.00	7.20	0.870	1.00	0.000	0.00	0.000
80.00	Round Side Arm	1	150.00	4.000	1.00	175.00	5.900	1.00	0.000	0.00	0.000
80.00	Decibel DB224	1	32.00	4.920	1.00	74.00	9.080	1.00	0.000	0.00	10.625
70.00	Side Arm	1	12.00	3.000	1.00	20.00	3.350	1.00	0.000	0.00	0.000
70.00	5' Yagi	2	20.00	7.290	1.00	80.90	13.000	1.00	0.000	0.00	0.000
Totals		61	4785.10			7155.51			Number of Appurtenances : 21		

Linear Appurtenance Properties

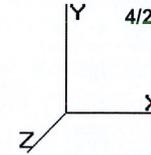
Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Wind	Spread On Faces	Bundling Arrangement
5.00	155.0	1 5/8" Coax	1	1.98	0.82	0.00	1	Separate
5.00	155.0	TX Line Ladder	1	1.50	6.00	100.00	3	Separate
5.00	154.0	1 5/8" Coax	12	1.98	0.82	66.60	3	Separate
5.00	154.0	10 mm Cable	1	0.39	0.07	100.00	3	Separate
5.00	154.0	19.7 mm Cable	2	0.78	0.59	100.00	3	Separate
100.0	140.0	1 5/8" Coax	12	1.98	0.82	100.00	3	Separate
100.0	140.0	TX Line Ladder	1	1.50	6.00	100.00	3	Separate
5.00	119.0	7/8" Coax	1	1.09	0.33	0.00	3	Separate
5.00	103.0	1 1/4" Coax	1	1.55	0.63	100.00	3	Separate
5.00	100.0	1 5/8" Coax	12	1.98	0.82	100.00	Lin App	Separate
5.00	100.0	TX Line Ladder	1	1.50	6.00	100.00	Lin App	Separate
5.00	80.00	1/2" Coax	1	0.63	0.15	100.00	3	Separate
5.00	80.00	7/8" Coax	1	1.09	0.33	100.00	3	Separate
5.00	70.00	1/2" Coax	2	0.63	0.15	100.00	3	Separate

Site Number: 302505
 Location: Wshn - West Haven, CT

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Force/Stress Summary

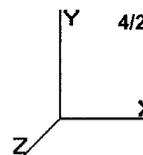
Section: 1		1		Bot Elev (ft): 0.00				Height (ft): 25.000							
Max Compression Member		Force (kip)	Load Case	Len (ft)	Bracing %			Fa (ksi)	Member Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG	PSP - 5" OD x .500"	-269.60	Normal Ice	8.34	50	50	50	31.3	36.0	254.47	0	0	0.00	0.00	105 Member X
HORIZ	DAL - 3X2.5X0.25	-8.99	90 deg Ice	9.167	100	67	50	116.4	14.3	37.57	4	2	34.13	60.00	26 Bolt Shear
DIAG	PSP - STLSS 3" OD X0	-12.79	90 deg Ice	12.63	50	50	50	77.7	20.4	44.04	1	1	0.00	24.00	53 Bolt Bear
Max Tension Member		Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls				
LEG	PSP - 5" OD x .500"	236.12	60 deg Ice	50	282.79	0	0	0.00	0.00	83	Member				
HORIZ	DAL - 3X2.5X0.25	9.21	90 deg Ice	35	68.59	4	2	34.13	60.00	26	Bolt Shear				
DIAG	PSP - STLSS 3" OD X0	12.06	90 deg Ice	35	60.48	1	1	0.00	24.00	50	Bolt Bear				
Max Splice Forces		Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts		Bolt Type							
Top Tension		207.91	60 deg Ice	0.00	0										
Top Compression		237.28	Normal Ice	0.00	0										
Bot Tension		250.45	60 deg Ice	846.62	30	6		1 3/4 A325							
Bot Compression		285.09	Normal Ice	0.00	0										

Section: 2		2		Bot Elev (ft): 25.00				Height (ft): 25.000							
Max Compression Member		Force (kip)	Load Case	Len (ft)	Bracing %			Fa (ksi)	Member Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG	PSP - 5" OD x .500"	-221.48	Normal Ice	8.34	100	100	100	62.5	29.7	210.03	0	0	0.00	0.00	105 Member X
HORIZ	DAL - 3X2.5X0.25	-8.62	90 deg Ice	8.167	100	67	50	103.7	16.5	43.26	4	2	34.13	60.00	25 Bolt Shear
DIAG	PSP - STLSS 3" OD X0	-12.96	90 deg Ice	11.90	100	100	100	146.4	9.3	20.07	1	1	0.00	24.00	64 Member X
Max Tension Member		Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls				
LEG	PSP - 5" OD x .500"	194.16	60 deg Ice	50	282.79	0	0	0.00	0.00	68	Member				
HORIZ	DAL - 3X2.5X0.25	8.76	90 deg Ice	35	68.59	4	2	34.13	60.00	25	Bolt Shear				
DIAG	PSP - STLSS 3" OD X0	12.25	90 deg Ice	35	60.48	1	1	0.00	24.00	51	Bolt Bear				
Max Splice Forces		Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts		Bolt Type							
Top Tension		164.34	60 deg Ice	0.00	0										
Top Compression		187.40	Normal Ice	0.00	0										
Bot Tension		207.91	60 deg Ice	368.63	56	8		1 A325							
Bot Compression		237.28	Normal Ice	0.00	0										

Site Number: 302505
 Location: Wshn - West Haven, CT
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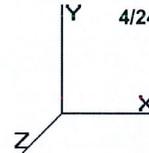


Force/Stress Summary

Section: 3		3 (bot 2 bays)		Bot Elev (ft): 50.00		Height (ft): 16.667										
		Force		Len		Bracing %		Member		Shear Bear		Use				
Max Compression Member		(kip)	Load Case	(ft)	X	Y	Z	KL/R	Fa (ksi)	Cap (kip)	Num Bolts	Num Holes	(kip)	(kip)	%	Controls
LEG	PSP - 5" OD x .500"	-171.07	Normal Ice	8.34	100	100	100	62.5	29.7	210.03	0	0	0.00	0.00	81	Member X
HORIZ	SAE - 3X3X0.25	-7.83	90 deg Ice	7.167	100	67	67	97.3	17.7	25.56	2	1	17.07	29.00	45	Bolt Shear
DIAG	PSP - STLSS 2.75" OD	-12.57	90 deg Ice	11.21	100	100	100	147.9	9.1	13.20	1	1	0.00	16.70	95	Member X
Max Tension Member		(kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls					
LEG	PSP - 5" OD x .500"	149.89	60 deg Ice	50	282.79	0	0	0.00	0.00	53	Member					
HORIZ	SAE - 3X3X0.25	7.96	90 deg Ice	36	36.77	2	1	17.07	29.00	46	Bolt Shear					
DIAG	PSP - STLSS 2.75" OD	12.05	90 deg Ice	36	41.76	1	1	0.00	16.70	72	Bolt Bear					
Max Splice Forces		Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts		Bolt Type								
Top Tension		134.07	60 deg Ice	0.00	0											
Top Compression		153.55	Normal Ice	0.00	0											
Bot Tension		164.34	60 deg Ice	207.35	79	8		3/4 A325								
Bot Compression		187.40	Normal Ice	0.00	0											

Section: 4		3 (top bay)		Bot Elev (ft): 66.67		Height (ft): 8.333										
		Force		Len		Bracing %		Member		Shear Bear		Use				
Max Compression Member		(kip)	Load Case	(ft)	X	Y	Z	KL/R	Fa (ksi)	Cap (kip)	Num Bolts	Num Holes	(kip)	(kip)	%	Controls
LEG	PSP - 5" OD x .500"	-137.42	Normal Ice	8.34	100	100	100	62.5	29.7	210.04	0	0	0.00	0.00	65	Member X
HORIZ	DAL - 3X2.5X0.25	-6.81	90 deg Ice	6.500	100	67	50	82.5	20.1	52.84	4	2	34.13	58.00	19	Bolt Shear
DIAG	PSP - STLSS 2.75" OD	-11.86	90 deg Ice	10.77	100	100	100	142.1	9.9	14.29	1	1	0.00	17.28	82	Member X
Max Tension Member		(kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls					
LEG	PSP - 5" OD x .500"	119.61	60 deg Ice	50	282.79	0	0	0.00	0.00	42	Member					
HORIZ	DAL - 3X2.5X0.25	7.18	90 deg Ice	36	66.30	4	2	34.13	58.00	21	Bolt Shear					
DIAG	PSP - STLSS 2.75" OD	11.31	90 deg Ice	35	40.60	1	1	0.00	17.28	65	Bolt Bear					
Max Splice Forces		Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts		Bolt Type								
Top Tension		119.14	60 deg Ice	0.00	0											
Top Compression		136.92	Normal Ice	0.00	0											
Bot Tension		134.07	60 deg Ice	0.00	0											
Bot Compression		153.55	Normal Ice	0.00	0											

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Force/Stress Summary

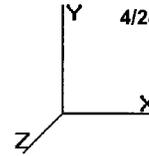
Section: 5		4		Bot Elev (ft): 75.00				Height (ft): 25.000							
Max Compression Member		Force (kip)	Load Case	Len (ft)	Bracing %			Fa (ksi)	Member Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG	PSP - 5" OD x .300"	-120.47	Normal Ice	8.34	100	100	100	60.1	30.3	134.06	0	0	0.00	0.00	89 Member X
HORIZ	DAL - 3X2.5X0.25	-10.15	Normal Ice	5.500	100	67	50	69.8	21.9	57.67	4	2	34.13	58.00	29 Bolt Shear
DIAG	PSP - STLSS 2.75" OD	-11.49	90 deg Ice	10.57	100	100	100	139.4	10.2	14.86	1	1	0.00	16.70	77 Member X
Max Tension Member		Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls				
LEG	PSP - 5" OD x .300"	104.58	60 deg Ice	50	177.20	0	0	0.00	0.00	59	Member				
HORIZ	DAL - 3X2.5X0.25	11.11	90 deg Ice	36	66.30	4	2	34.13	58.00	32	Bolt Shear				
DIAG	PSP - STLSS 2.75" OD	11.01	90 deg Ice	36	41.76	1	1	0.00	16.70	65	Bolt Bear				
Max Splice Forces		Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts Bolt Type									
Top Tension		74.53	60 deg Ice	0.00	0										
Top Compression		86.86	Normal Ice	0.00	0										
Bot Tension		119.14	60 deg Ice	207.35	57	8 3/4 A325									
Bot Compression		136.92	Normal Ice	0.00	0										

Section: 6		5		Bot Elev (ft): 100.0				Height (ft): 25.000							
Max Compression Member		Force (kip)	Load Case	Len (ft)	Bracing %			Fa (ksi)	Member Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG	PSP - STLSS 5" OD X0	-78.90	Normal Ice	8.34	100	100	100	58.6	30.6	76.83	0	0	0.00	0.00	102 Member X
HORIZ	DAL - 3X2.5X0.25	-9.85	Normal Ice	10.33	100	100	50	131.2	11.6	30.41	4	2	34.13	58.00	32 Member X
DIAG	PSP - STLSS 3" OD X0	-14.15	90 deg Ice	13.53	100	100	100	166.4	7.2	15.52	1	1	0.00	24.00	91 Member X
Max Tension Member		Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls				
LEG	PSP - STLSS 5" OD X0	67.44	60 deg Ice	50	100.40	0	0	0.00	0.00	67	Member				
HORIZ	DAL - 3X2.5X0.25	10.61	90 deg Ice	36	66.30	4	2	34.13	58.00	31	Bolt Shear				
DIAG	PSP - STLSS 3" OD X0	12.79	60 deg Ice	35	60.48	1	1	0.00	24.00	53	Bolt Bear				
Max Splice Forces		Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts Bolt Type									
Top Tension		31.45	60 deg No Ice	0.00	0										
Top Compression		39.76	Normal Ice	0.00	0										
Bot Tension		74.53	60 deg Ice	103.68	72	4 3/4 A325									
Bot Compression		86.86	Normal Ice	0.00	0										

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 Location: Wshn - West Haven, CT

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Force/Stress Summary

Section: 7 6 Bot Elev (ft): 125.0 Height (ft): 25.000

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing %				Fa (ksi)	Member			Shear Bear		Use %	Controls
				X	Y	Z	KL/R		Cap (kip)	Num Bolts	Num Holes	Cap (kip)	Cap (kip)		
LEG PSP - STLSS 5" OD X0	-32.76	Normal Ice	8.34	100	100	100	58.6	30.6	76.83	0	0	0.00	0.00	42	Member X
HORIZ SAE - 3X3X0.25	-6.53	Normal Ice	8.333	100	100	100	168.9	7.0	10.05	2	1	17.07	29.00	64	Member Z
DIAG PSP - STLSS 2.75" OD	-10.37	90 deg Ice	12.02	100	100	100	158.6	7.9	11.48	1	1	0.00	16.70	90	Member X

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG PSP - STLSS 5" OD X0	26.41	60 deg No Ice	50	100.40	0	0	0.00	0.00	26	Member
HORIZ SAE - 3X3X0.25	6.93	90 deg Ice	36	36.77	2	1	17.07	29.00	40	Bolt Shear
DIAG PSP - STLSS 2.75" OD	9.23	60 deg Ice	36	41.76	1	1	0.00	16.70	55	Bolt Bear

Max Splice Forces	Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts	Bolt Type
Top Tension	1.67	60 deg No Ice	0.00	0		
Top Compression	5.10	Normal Ice	0.00	0		
Bot Tension	31.45	60 deg No Ice	103.68	30	4	3/4 A325
Bot Compression	39.76	Normal Ice	0.00	0		

Section: 8 7 Bot Elev (ft): 150.0 Height (ft): 5.000

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing %				Fa (ksi)	Member			Shear Bear		Use %	Controls
				X	Y	Z	KL/R		Cap (kip)	Num Bolts	Num Holes	Cap (kip)	Cap (kip)		
LEG PSP - STLSS 5" OD X0	-1.11	Normal Ice	5.00	100	100	100	35.1	35.3	88.68	0	0	0.00	0.00	1	Member X
HORIZ CHN - C4 x 5.4	-1.09	90 deg No Ice	3.500	100	100	100	93.5	18.4	29.21	2	2	17.07	36.97	6	Bolt Shear
DIAG DAL - 2.5X2X0.1875	-2.32	Normal No Ice	6.103	100	100	50	92.4	18.6	30.07	4	2	34.13	43.50	7	Member X

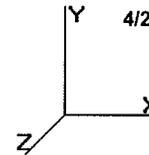
Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG	0.00		0	0.00	0	0	0.00	0.00	0	
HORIZ CHN - C4 x 5.4	1.50	Normal No Ice	36	33.40	2	2	17.07	36.97	8	Bolt Shear
DIAG DAL - 2.5X2X0.1875	2.23	Normal No Ice	36	39.50	4	2	34.13	43.50	6	Bolt Shear

Max Splice Forces	Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts	Bolt Type
Top Tension	0.00		0.00	0		
Top Compression	1.11	Normal Ice	0.00	0		
Bot Tension	1.67	60 deg No Ice	103.68	2	4	3/4 A325
Bot Compression	5.10	Normal Ice	0.00	0		

Site Number: 302505
 Location: Wshn - West Haven, CT
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Support Forces Summary

Load Case	Node	FX (kip)	FY (kip)	FZ (kip)	(-) = Uplift (+) = Down
90 deg	1b	-5.20	-53.72	-2.22	
	1a	-6.57	75.45	3.02	
	1	-1.38	11.10	-0.81	
60 deg	1b	-5.70	-63.46	-3.27	
	1a	-4.47	48.02	1.21	
	1	-1.16	48.27	-4.48	
Normal	1b	-1.97	-26.93	-2.48	
	1a	1.92	-26.77	-2.56	
	1	0.05	86.53	-8.29	
90 deg Ice	1b	-19.94	-213.97	-8.73	
	1a	-21.63	246.60	9.83	
	1	-4.80	16.57	-1.11	
60 deg Ice	1b	-21.78	-249.10	-12.48	
	1a	-14.28	148.91	3.48	
	1	-3.99	149.39	-14.11	
Normal Ice	1b	-8.47	-117.85	-9.54	
	1a	8.28	-117.55	-9.88	
	1	0.19	284.60	-27.33	
90 deg No Ice	1b	-18.45	-198.21	-8.08	
	1a	-19.66	219.94	8.90	
	1	-4.49	11.10	-0.81	
60 deg No Ice	1b	-20.08	-229.77	-11.54	
	1a	-12.92	131.07	3.05	
	1	-3.74	131.53	-12.72	
Normal No Ice	1b	-7.94	-111.40	-8.96	
	1a	7.78	-111.25	-9.23	
	1	0.15	255.48	-24.98	

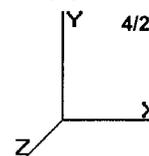
Max Uplift:	249.10 (kip)	Moment:	4,413.15 (ft-kip)	Normal Ice
Max Down:	284.60 (kip)	Total Down:	49.20 (kip)	
Max Shear:	27.33 (kip)	Total Shear:	46.75 (kip)	

Site Number: 302505
 Location: Wshn - West Haven, CT

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4/24/2012 2:46:00 PM

Code: TIA/EIA-222 Rev F



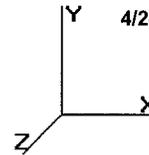
Deflections and Rotations

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
50.00 mph Wind at 60 deg From Face with No Ice	66.67	0.0693	-0.0762	0.1161
	83.33	0.1051	0.0875	0.1401
	100.00	0.1491	0.1126	0.1704
	116.67	0.2061	0.1588	0.2160
	125.00	0.2383	0.1846	0.2362
	141.67	0.3078	0.2386	0.2521
50.00 mph Wind at 90 deg From Face with No Ice	155.00	0.3759	0.2598	0.5181
	66.67	0.0692	-0.0526	0.1137
	83.33	0.1055	0.0556	0.1394
	100.00	0.1498	0.0718	0.1682
	116.67	0.2069	0.1040	0.2107
	125.00	0.2391	0.1233	0.2350
50.00 mph Wind Normal To Face with No Ice	141.67	0.3086	0.1645	0.2658
	155.00	0.3806	0.1803	0.5169
	66.67	0.0706	-0.0467	0.1183
	83.33	0.1071	-0.0008	0.1552
	100.00	0.1514	-0.0011	0.1746
	116.67	0.2083	-0.0015	0.2211
77.94 mph Wind at 60 deg From Face with Ice	125.00	0.2418	0.0531	0.2331
	141.67	0.3125	0.0676	0.2879
	155.00	0.3838	0.0738	0.4758
	66.67	0.2471	-0.1995	0.4127
	83.33	0.3754	0.2635	0.4992
	100.00	0.5323	0.3392	0.6043
77.94 mph Wind at 90 deg From Face with Ice	116.67	0.7332	0.4781	0.7586
	125.00	0.8463	0.5549	0.8257
	141.67	1.0899	0.7142	0.8643
	155.00	1.3152	0.7910	1.5337
	66.67	0.2460	-0.1303	0.4053
	83.33	0.3770	0.1752	0.4974
77.94 mph Wind Normal To Face with Ice	100.00	0.5351	0.2265	0.5976
	116.67	0.7366	0.3300	0.7408
	125.00	0.8495	0.3924	0.8235
	141.67	1.0932	0.5253	0.9083
	155.00	1.3417	0.5830	1.6208
	66.67	0.2521	-0.1665	0.4219
90.00 mph Wind at 60 deg From Face with No Ice	83.33	0.3821	-0.0040	0.5657
	100.00	0.5372	-0.0052	0.6197
	116.67	0.7387	-0.0071	0.7798
	125.00	0.8558	0.1285	0.8145
	141.67	1.1020	0.1644	0.9514
	155.00	1.3318	0.1839	1.3294
90.00 mph Wind at 90 deg From Face with No Ice	66.67	0.2240	-0.2194	0.3745
	83.33	0.3398	0.2802	0.4526
	100.00	0.4821	0.3606	0.5477
	116.67	0.6640	0.5068	0.6921
	125.00	0.7670	0.5870	0.7568
	141.67	0.9904	0.7534	0.7929

Site Number: 302505
 Location: Wshn - West Haven, CT

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Code: TIA/EIA-222 Rev F



	155.00	1.1992	0.8310	1.5133
90.00 mph Wind at 90 deg From Face with No Ice	66.67	0.2239	-0.1584	0.3680
	83.33	0.3416	0.1979	0.4516
	100.00	0.4847	0.2555	0.5419
	116.67	0.6673	0.3686	0.6764
	125.00	0.7704	0.4353	0.7559
	141.67	0.9942	0.5768	0.8415
	155.00	1.2304	0.6361	1.5911
90.00 mph Wind Normal To Face with No Ice	66.67	0.2286	-0.1419	0.3819
	83.33	0.3466	-0.0021	0.5012
	100.00	0.4894	-0.0028	0.5641
	116.67	0.6730	-0.0040	0.7146
	125.00	0.7785	0.1487	0.7482
	141.67	1.0056	0.1893	0.8845
	155.00	1.2207	0.2093	1.2600
		0.0000	0.0000	0.0000

GENERAL

1. ALL METHODS, MATERIALS AND WORKMANSHIP SHALL FOLLOW THE DICTATES OF GOOD CONSTRUCTION PRACTICE.
2. ALL WORK INDICATED ON THESE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TOWER AND FOUNDATION CONSTRUCTION.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IMMEDIATELY OF ANY INSTALLATION INTERFERENCES. ALL NEW WORK SHALL ACCOMMODATE EXISTING CONDITIONS. DETAILS NOT SPECIFICALLY SHOWN ON THE DRAWINGS SHALL FOLLOW SIMILAR DETAILS FOR THIS JOB.
4. ANY SUBSTITUTIONS MUST CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS, AND SHOULD BE SIMILAR TO THOSE SHOWN. ALL SUBSTITUTIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
5. ANY MANUFACTURED DESIGN ELEMENTS MUST CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS AND SHOULD BE SIMILAR TO THOSE SHOWN. THESE DESIGN ELEMENTS MUST BE STAMPED BY AN ENGINEER PROFESSIONALLY REGISTERED IN THE STATE OF THE PROJECT, AND SUBMITTED TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO FABRICATION.
6. ALL WORK SHALL BE DONE IN ACCORDANCE WITH LOCAL CODES AND OSHA SAFETY REGULATIONS.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, ETC. NECESSARY, PER TIA-1019-A-2011, TO PROVIDE A COMPLETE AND STABLE STRUCTURE AS SHOWN ON THESE DRAWINGS.
8. CONTRACTOR'S PROPOSED INSTALLATION SHALL NOT INTERFERE, NOR DENY ACCESS TO, ANY EXISTING OPERATIONAL AND SAFETY EQUIPMENT.

STRUCTURAL STEEL

1. ALL DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC SPECIFICATIONS, LATEST EDITION.
2. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B695.
3. ALL U-BOLTS SHALL BE ASTM A307 OR EQUIVALENT, WITH LOCKING DEVICE, UNLESS NOTED OTHERWISE.
4. FIELD CUT EDGES, EXCEPT DRILLED HOLES, SHALL BE GROUND SMOOTH.
5. ALL FIELD CUT SURFACES AND FIELD DRILLED HOLES SHALL BE REPAIRED WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.
6. ALL FIELD DRILLED HOLES TO BE USED FOR FIELD BOLTING INSTALLATION SHALL BE STANDARD HOLES, AS DEFINED BY AISC, UNLESS NOTED OTHERWISE.

WELDING

1. ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.
2. ALL WELDS SHALL BE INSPECTED VISUALLY. 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE (100% IF REJECTABLE DEFECTS ARE FOUND) TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.
3. INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
4. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.
5. MINIMUM WELD SIZE TO BE 0.1875 INCH FILLET WELDS, UNLESS NOTED OTHERWISE.
6. PRIOR TO FIELD WELDING GALVANIZED MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING 1/2" BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.

BOLT TIGHTENING PROCEDURE

1. STRUCTURAL CONNECTIONS TO BE ASSEMBLED AND INSPECTED IN ACCORDANCE WITH RCSC-2004 (SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR ASTM A490 BOLTS.)

2. TIGHTEN FLANGE BOLTS BY AISC "TURN-OF-THE-NUT" METHOD, USING THE CHART BELOW:

BOLT LENGTHS UP TO AND INCLUDING FOUR DIAMETERS

1/2"	BOLTS UP TO AND INCLUDING 2.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
5/8"	BOLTS UP TO AND INCLUDING 2.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
3/4"	BOLTS UP TO AND INCLUDING 3.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
7/8"	BOLTS UP TO AND INCLUDING 3.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1"	BOLTS UP TO AND INCLUDING 4.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/8"	BOLTS UP TO AND INCLUDING 4.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/4"	BOLTS UP TO AND INCLUDING 5.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-3/8"	BOLTS UP TO AND INCLUDING 5.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/2"	BOLTS UP TO AND INCLUDING 6.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT

BOLT LENGTHS OVER FOUR DIAMETERS BUT NOT EXCEEDING EIGHT DIAMETERS

1/2"	BOLTS 2.25 TO 4.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
5/8"	BOLTS 2.75 TO 5.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
3/4"	BOLTS 3.25 TO 6.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
7/8"	BOLTS 3.75 TO 7.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1"	BOLTS 4.25 TO 8.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/8"	BOLTS 4.75 TO 9.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/4"	BOLTS 5.25 TO 10.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-3/8"	BOLTS 5.75 TO 11.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/2"	BOLTS 6.25 TO 12.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT

3. SPLICE BOLTS SUBJECT TO DIRECT TENSION SHALL BE INSTALLED AND TIGHTENED AS PER SECTION 8.2.1 OF THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS", LOCATED IN THE AISC MANUAL OF STEEL CONSTRUCTION. THE INSTALLATION PROCEDURE IS PARAPHRASED AS FOLLOWS:

FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES AND TIGHTENED BY ONE OF THE METHODS DESCRIBED IN SUBSECTION 8.2.1 THROUGH 8.2.4.

8.2.1 TURN-OF-NUT PRETENSIONING
BOLTS SHALL BE INSTALLED IN ALL HOLES OF THE CONNECTION AND BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1, UNTIL ALL THE BOLTS ARE SIMULTANEOUSLY SNUG TIGHT AND THE CONNECTION IS FULLY COMPACTED. FOLLOWING THIS INITIAL OPERATION ALL BOLTS IN THE CONNECTION SHALL BE TIGHTENED FURTHER BY THE APPLICABLE AMOUNT OF ROTATION SPECIFIED ABOVE. DURING THE TIGHTENING OPERATION THERE SHALL BE NO ROTATION OF THE PART NOT TURNED BY THE WRENCH. TIGHTENING SHALL PROGRESS SYSTEMATICALLY.

4. ALL OTHER BOLTED CONNECTIONS SHALL BE BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1 OF THE SPECIFICATION.

ALL BOLT HOLES SHALL BE ALIGNED TO PERMIT INSERTION OF THE BOLTS WITHOUT UNDUE DAMAGE TO THE THREADS. BOLTS SHALL BE PLACED IN ALL HOLES WITH WASHERS POSITIONED AS REQUIRED AND NUTS THREADED TO COMPLETE THE ASSEMBLY. COMPACTING THE JOINT TO THE SNUG-TIGHT CONDITION SHALL PROGRESS SYSTEMATICALLY FROM THE MOST RIGID PART OF THE JOINT. THE SNUG-TIGHTENED CONDITION IS THE TIGHTNESS THAT IS ATTAINED WITH A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER USING AN ORDINARY SPUD WRENCH TO BRING THE CONNECTED PLIES INTO FIRM CONTACT.

PAINT

1. AS REQUIRED, CLEAN AND PAINT PROPOSED STEEL ACCORDING TO FAA ADVISORY CIRCULAR AC 70/7460-1K.

APPLICABLE CODES AND STANDARDS

1. ANSI/TIA: STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES, 222-F EDITION.
2. 2003 INTERNATIONAL BUILDING CODE WITH 2005 AND 2008 CONNECTICUT SUPPLEMENTS.
3. ACI 318: AMERICAN CONCRETE INSTITUTE, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, 318-02.
4. CRSI: CONCRETE REINFORCING STEEL INSTITUTE, MANUAL OF STANDARD PRACTICE, LATEST EDITION.
5. AISC: AMERICAN INSTITUTE OF STEEL CONSTRUCTION, MANUAL OF STEEL CONSTRUCTION, LATEST EDITION.
6. AWS: AMERICAN WELDING SOCIETY D1.1, STRUCTURAL WELDING CODE, LATEST EDITION.

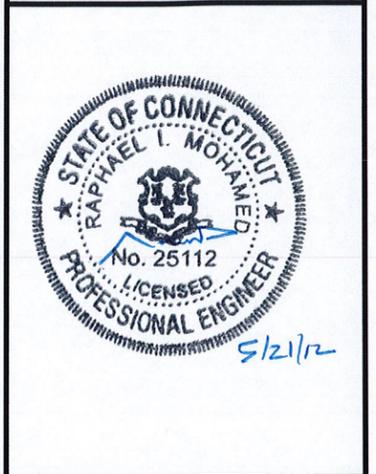


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REV.	DESCRIPTION	BY	DATE
△	FIRST ISSUE	SK	04/26/12
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△			
△			

ATC SITE NUMBER:
 302505
 ATC SITE NAME:
 WSHN - WEST HAVEN, CT
 SITE ADDRESS:
 204 BURWELL STREET
 WEST HAVEN, CT 06516-1105



DRAWN BY:	SK
APPROVED BY:	AP
DATE DRAWN:	04/26/12
JOB NO:	49165832

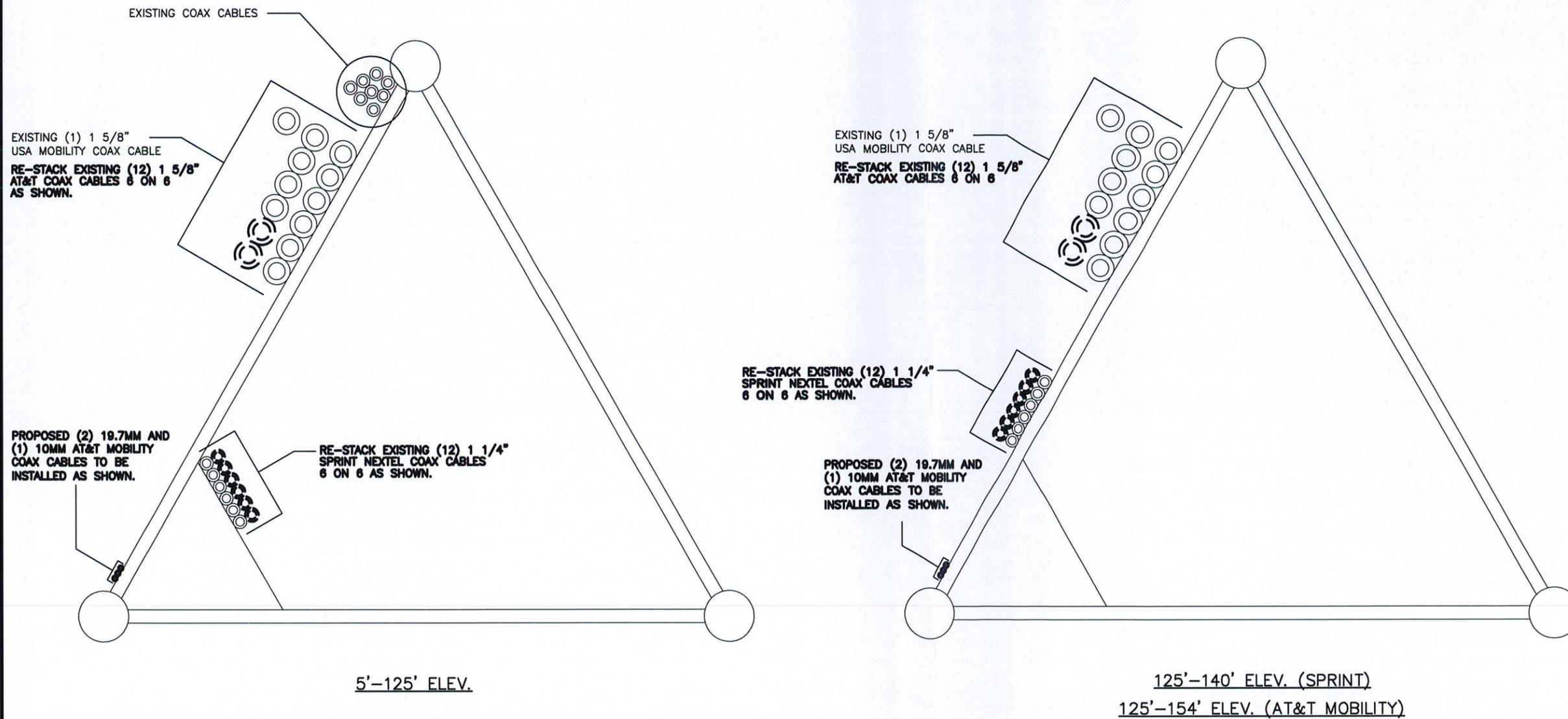
SHEET TITLE:
 IBC GENERAL NOTES

SHEET NUMBER: IGN	REV. # 0
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BASIC WIND SPEED: 90.0 MPH (FASTEST MILE) / 110.0MPH (3-SECOND GUST)
 RADIAL ICE: 78.0 MPH (FASTEST MILE) WITH 1/2" RADIAL ICE CONCURRENT
 CODE: TIA/EIA-222-F / IBC 2003: SECTION 1609.1.1, EXCEPTION (4) AND SECTION 3108.4 /
 2005 AND 2008 CT SUPPLEMENTS

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REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	SK	04/26/12
1			
2			
3			
4			

ATC SITE NUMBER:
 302505

ATC SITE NAME:
 WSHN - WEST HAVEN, CT

SITE ADDRESS:
 204 BURWELL STREET
 WEST HAVEN, CT 06516-1105



DRAWN BY:	SK
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DATE DRAWN:	04/26/12
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SHEET NUMBER:	REV. #
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WIRELESS COMMUNICATIONS FACILITY

CT2064

BANM WEST HAVEN

1 BURWELL ROAD

WEST HAVEN, CT 06516

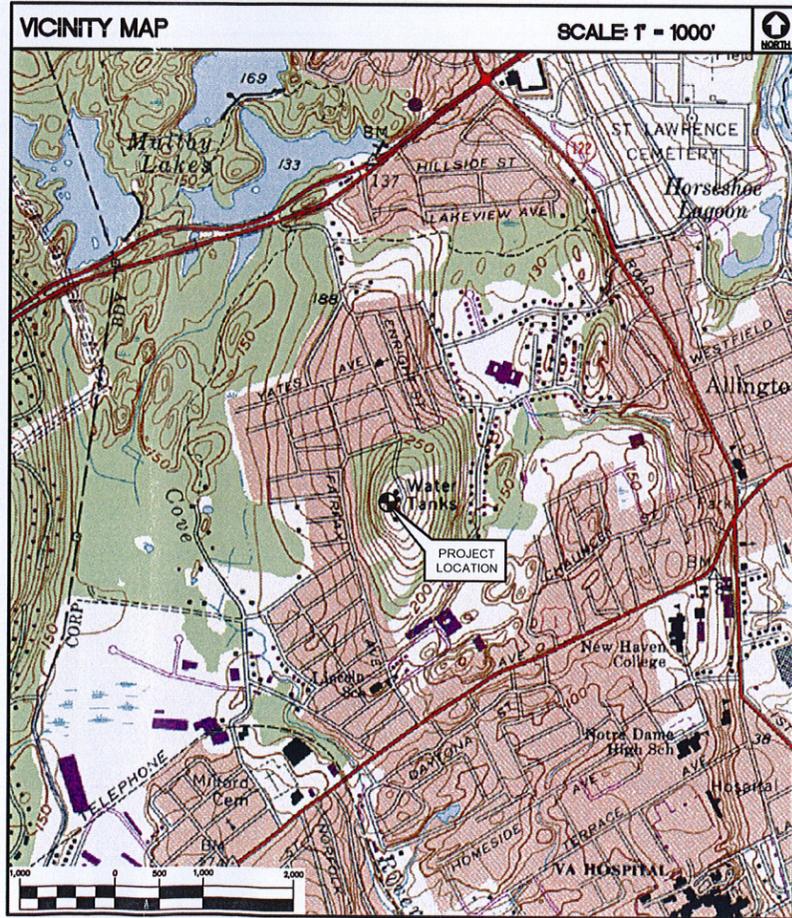
SITE DIRECTIONS

FROM: 500 ENTERPRISE DRIVE ROCKY HILL, CONNECTICUT	TO: 1 BURWELL ROAD WEST HAVEN, CT 06516
--	---

1. Take ramp left for I-91 South 29.1 mi
- Take ramp left for I-95 South toward N.Y. City, 2.5 mi
- Take ramp right 0.2 mi
- Turn right onto CT-122 / 1st Ave 0.9 mi
- Bear right onto Orange Ave, and then immediately bear left onto CT-122 / Forest Rd 0.2 mi
- Turn left onto Burwell Pl, and then immediately bear right onto Hemlock St 0.2 mi
- Turn left onto Spruce St 0.2 mi
- Road name changes to Burwell Rd, 48 ft
- Arrive at 1 Burwell Rd, West Haven, CT 06516

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2005 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2009 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "F" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES," 2005 CONNECTICUT FIRE SAFETY CODE AND 2009 AMENDMENTS, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
5. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
6. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
7. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN "AS-BUILT" SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
8. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
9. 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 BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND "MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO "EXTRA" WILL BE ALLOWED FOR MISSED ITEMS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
15. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
16. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
17. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
19. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
20. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-822-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.



PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK GENERALLY CONSISTS OF THE INSTALLATION OF ONE (1) LTE ANTENNA PER SECTOR FOR A TOTAL OF (3) LTE ANTENNAS TO THE EXISTING AT&T ANTENNA ARRAY. AN LTE BASEBAND EQUIPMENT UNIT (RBS) WILL BE INSTALLED WITHIN THE EXISTING AT&T EQUIPMENT SHELTER.
2. ADDITIONALLY, (2) REMOTE RADIO UNITS (RRUs) PER SECTOR WILL BE INSTALLED. SURGE ARRESTORS WILL BE INSTALLED AT BOTH AT&T RRU AND EQUIPMENT LOCATIONS. REFER TO THESE ACCOMPANYING DRAWINGS FOR FURTHER INFORMATION.
3. COAX RECONFIGURATION WILL BE REQUIRED PRIOR TO INSTALLATION OF ADDITIONAL TOWER LOADING.

PROJECT INFORMATION

AT&T SITE NUMBER:	CT2064
AT&T SITE NAME:	BANM WEST HAVEN
SITE ADDRESS:	1 BURWELL ROAD WEST HAVEN, CT 06516
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT. 06405
PROJECT COORDINATES:	LATITUDE: 41°-17'-42.82"N LONGITUDE: 72°-58'-25.57"W GROUND ELEVATION: ±290'AMSL

SHEET INDEX

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C-2	LTE EQUIPMENT DETAILS	1
E-1	ELECTRICAL DETAILS AND NOTES	1
E-2	ELECTRICAL DETAILS	1

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	CONSTRUCTION CONSTRUCTION
	CFC DEB DMD
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	DATE

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TITLE SHEET

T-1

Sheet No. 1 of 8

DATE:	05/31/12
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JOB NO.	11118.C015

STRUCTURAL SPECIFICATIONS

DESIGN BASIS

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

1. DESIGN CRITERIA:
- WIND LOAD: PER EIA/TIA 222 F-96 (ANTENNA MOUNTS): 90 MPH (FASTEST MILE), EQUIVALENT TO 110 MPH (3 SECOND GUST).
 - BASIC WIND SPEED (OTHER STRUCTURE): 110 MPH (3 SECOND GUST) (EXPOSURE B/IMPORTANCE FACTOR 1.15 BASED ON ASCE 7-02) PER 2003 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2005 CONNECTICUT SUPPLEMENT AND 2009 AMMENDMENT.
 - SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7-95 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.

GENERAL NOTES

- IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.
- DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST THE PRE MANUFACTURED EQUIPMENT BUILDING SHOP DRAWINGS.
- THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
- REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

STRUCTURAL STEEL

- ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)
 - STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
 - STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI)
 - STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
 - STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
 - PIPE---ASTM A53 (FY = 35 KSI)
 - CONNECTION BOLTS---ASTM A325-N
 - U-BOLTS---ASTM A36
 - ANCHOR RODS---ASTM F 1554
 - WELDING ELECTRODE---ASTM E 70XX
- CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
- STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
- PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
- FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
- INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
- AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
- ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
- ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
- CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES APPEARANCE AND QUALITY OF WELDS, AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D1.1 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 OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED.
- THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
- CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
- STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
- CONNECTIONS SHALL CONFORM TO ALL REQUIREMENTS OF THE "AISC SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR SHELTERS", LATEST EDITION, AND THE "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", LATEST EDITION.
- LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
- SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
- MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
- FABRICATE BEAMS WITH MILL CAMBER UP.
- LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
- COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
- INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
- FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

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CHK'D BY:	CFC

NO.	DATE	REV.	BY	CHK'D BY	DESCRIPTION
1	05/29/12	0	DMD	CFC	CONSTRUCTION - CLIENT REVIEW
2	05/29/12	1	DMD	CFC	CONSTRUCTION - CLIENT REVIEW



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JOB NO. 11118.C015

NOTES
AND
SPECIFICATIONS

N-1

Sheet No. 2 of 8

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1	06/14/12	DEB	DEB	CONSTRUCTION - CLIENT REVIEW
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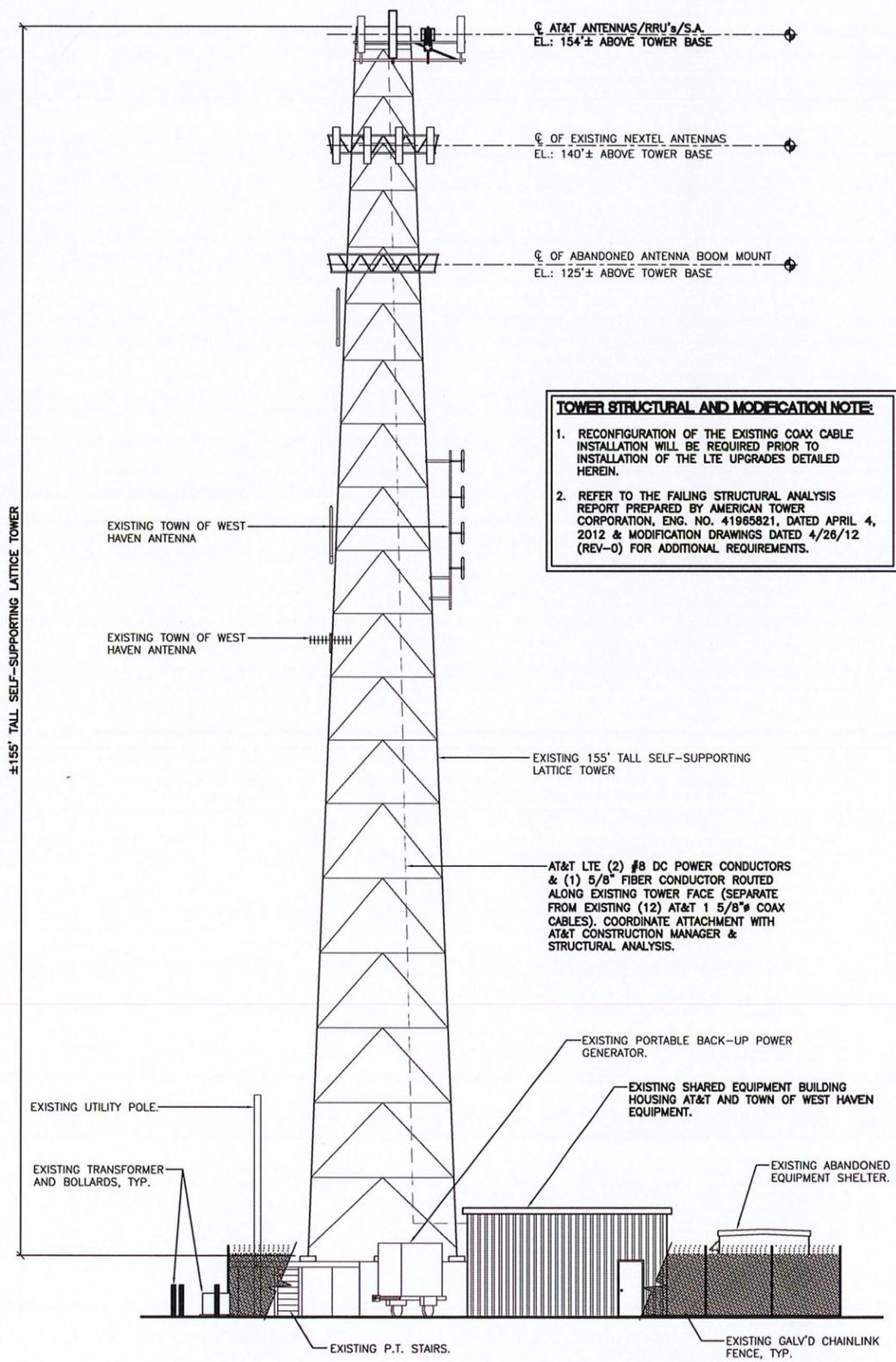
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PLANS,
 ELEVATION
 AND DETAIL

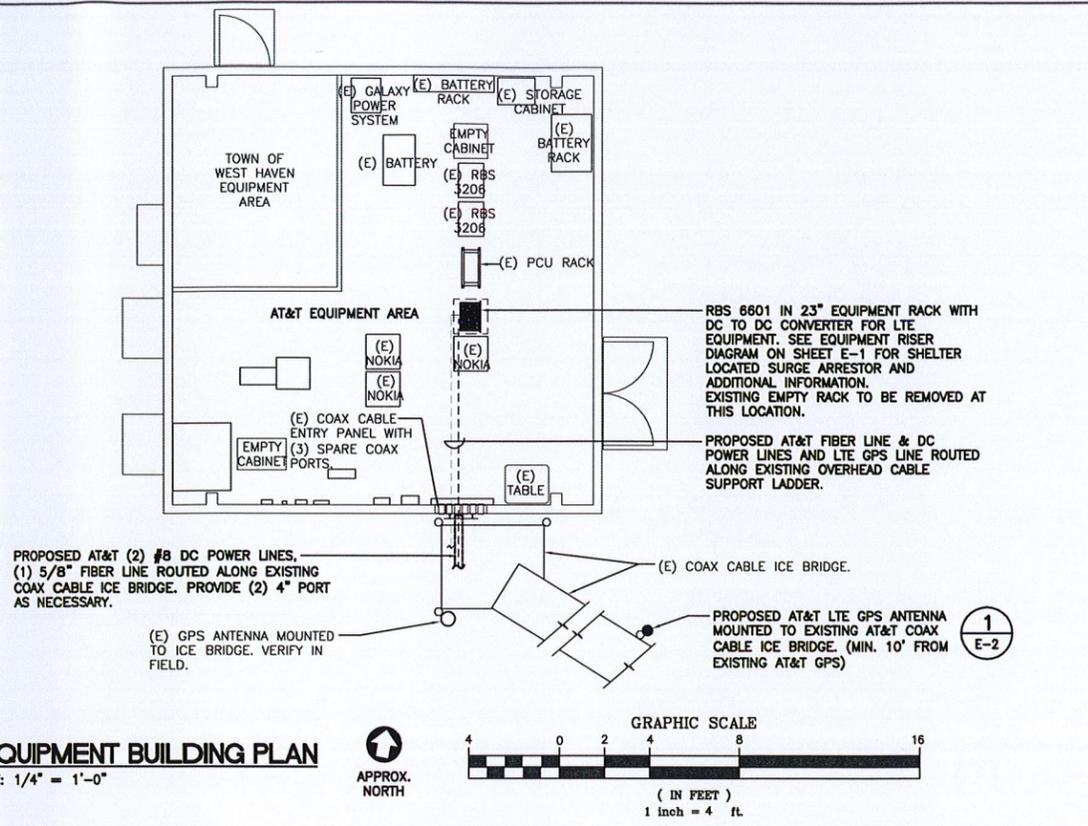
C-1
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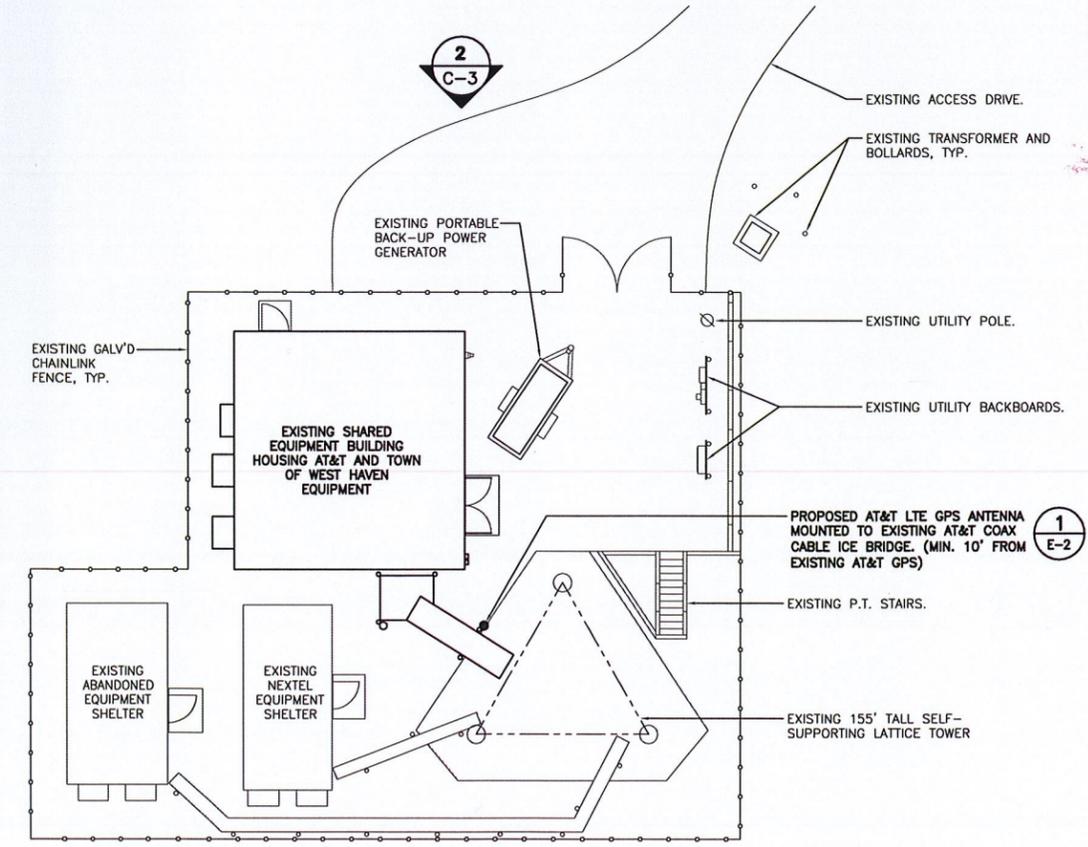
TOWER STRUCTURAL AND MODIFICATION NOTE:

1. RECONFIGURATION OF THE EXISTING COAX CABLE INSTALLATION WILL BE REQUIRED PRIOR TO INSTALLATION OF THE LTE UPGRADES DETAILED HEREIN.
2. REFER TO THE FAILING STRUCTURAL ANALYSIS REPORT PREPARED BY AMERICAN TOWER CORPORATION, ENG. NO. 41965821, DATED APRIL 4, 2012 & MODIFICATION DRAWINGS DATED 4/26/12 (REV-0) FOR ADDITIONAL REQUIREMENTS.

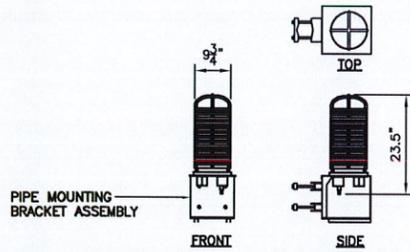
2 NORTH ELEVATION
 C-1 SCALE: 1" = 10'-0"
 GRAPHIC SCALE
 (IN FEET)
 1 inch = 10 ft.



3 EQUIPMENT BUILDING PLAN
 C-1 SCALE: 1/4" = 1'-0"
 GRAPHIC SCALE
 (IN FEET)
 1 inch = 4 ft.



1 COMPOUND PLAN
 C-1 SCALE: 1" = 10'-0"
 GRAPHIC SCALE
 (IN FEET)
 1 inch = 10 ft.

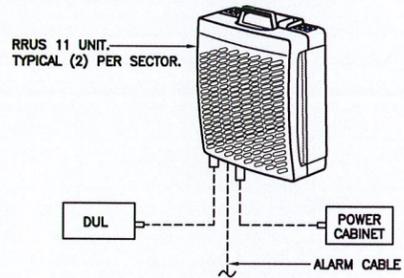


SURGE ARRESTOR				
SITE TYPE	ARRESTOR MAKE/MODEL	QTY REQUIRED	ARRESTOR LOCATION	WEIGHT
TOWER	MAKE: RAYCAP (SQUID) MODEL: DC6-48-60-18-8F	(1) PER SITE	TOWER, ADJACENT TO AT&T ANTENNAS AND RRU.	20 LBS. (WITHOUT MOUNT)

NOTES:

- CONTRACTOR TO COORDINATE FINAL SURGE ARRESTOR MODEL SELECTION(S) WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.
- CONTRACTOR TO INSTALL ARRESTOR IN CONFORMANCE WITH MANUFACTURERS RECOMMENDATIONS.

6 SURGE ARRESTOR DETAIL
C-2 NOT TO SCALE



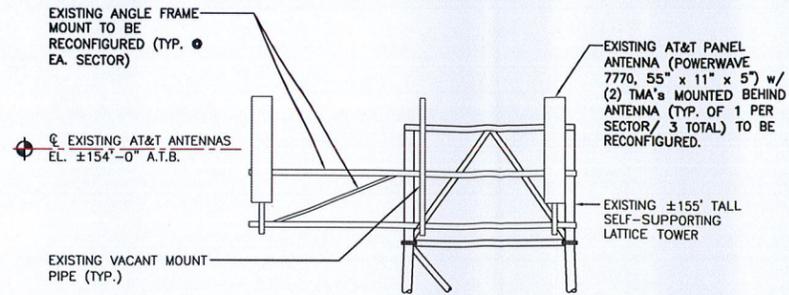
RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRU 11	17.8"L x 17.3"W x 7.2"D	BAND 4: 44 LBS. BAND 12: 50 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. SIDE: 0" MIN.

NOTES:

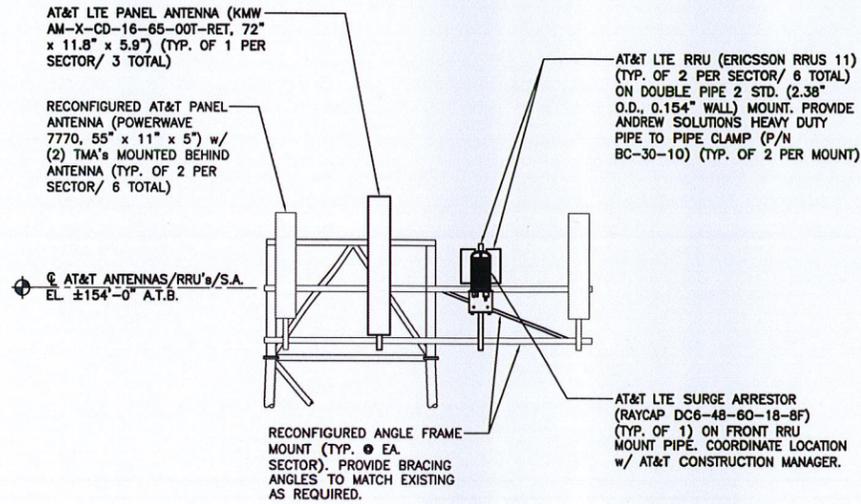
- CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

7 RRU DETAIL
C-2 NOT TO SCALE

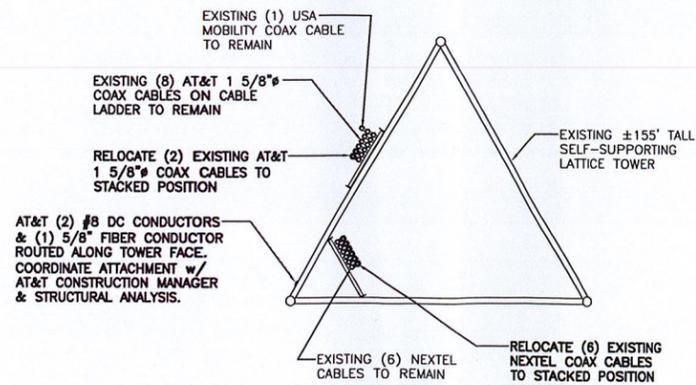
- COAX CABLE NOTES:**
- EXISTING NON-WIRELESS CARRIER COAX CABLES NOT SHOWN.
 - PROVIDE SNAP-IN HANGERS AND OTHER ATTACHMENT HARDWARE. COORDINATE WITH AT&T CONSTRUCTION MANAGER.
 - REFER TO MODIFICATION DRAWING "A-1" ENTITLED "COAX DISTRIBUTION DETAIL" PREPARED BY AMERICAN TOWER, JOB NO. 49155832, DATED 4/28/12 (REV-0) FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



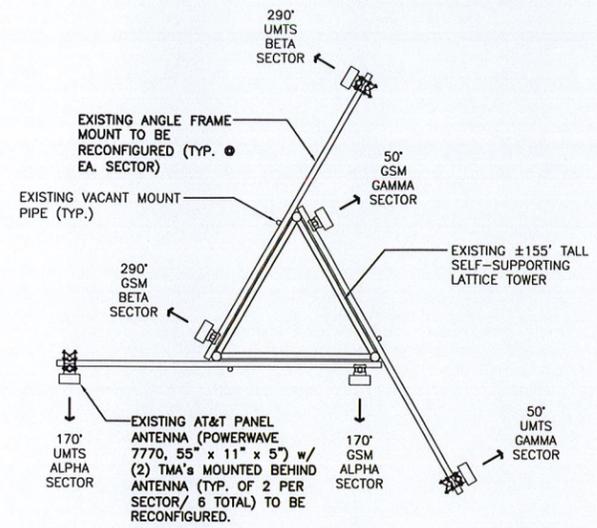
2 TYPICAL ANTENNA SECTOR ELEVATION - EXISTING
C-2 SCALE: 1/4" = 1'- 0"



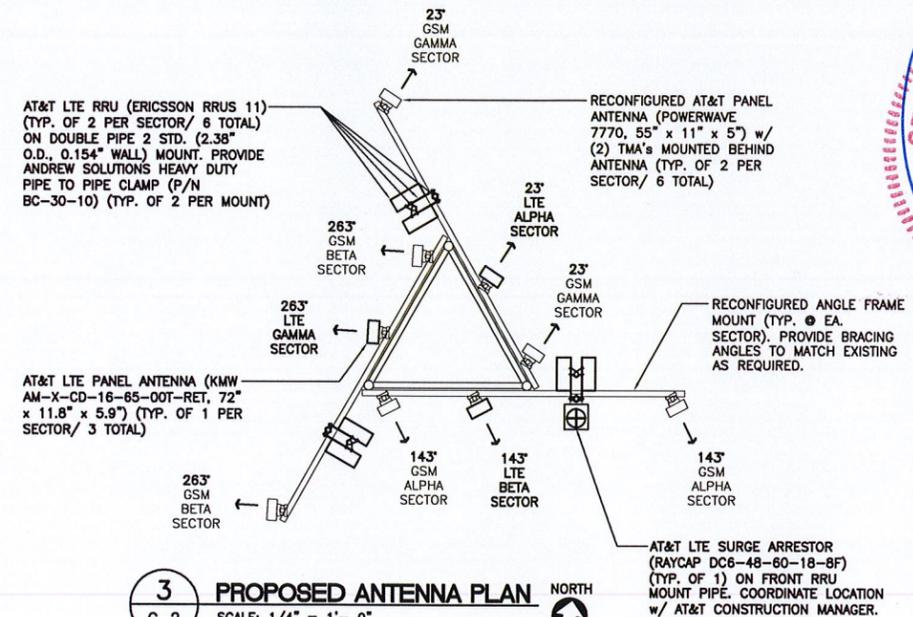
4 TYPICAL ANTENNA SECTOR ELEVATION - EXISTING
C-2 SCALE: 1/4" = 1'- 0"



5 TOWER MOUNTED COAX CABLE KEY PLAN
C-2 SCALE: 1/4" = 1'- 0"



1 EXISTING ANTENNA PLAN
C-2 SCALE: 1/4" = 1'- 0"



3 PROPOSED ANTENNA PLAN
C-2 SCALE: 1/4" = 1'- 0"

- NOTES:**
- ROTATE EXISTING GSM/UMTS ANTENNAS & REPOSITION EXISTING ANGLE FRAME ANTENNA MOUNTS AS REQUIRED TO ACCOMMODATE PROPOSED LTE AZIMUTHS.
 - PROVIDE MOUNTING PIPES, CROSSOVERS & ASSOCIATED HARDWARE TO COMPLETE THE PROPOSED UPGRADE. REPLACE EXISTING COMPONENTS AS REQUIRED.
 - REFER TO STRUCTURAL ANALYSIS AND FINAL AT&T RFDS PRIOR TO INSTALLATION OF ANTENNAS AND COAX.

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DRAWN BY: FLO
CHK'D BY: CFC

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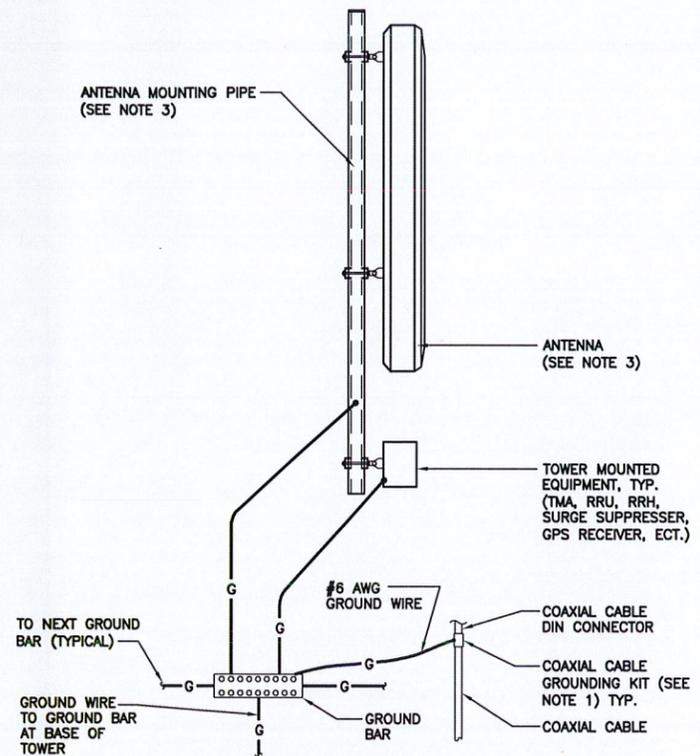
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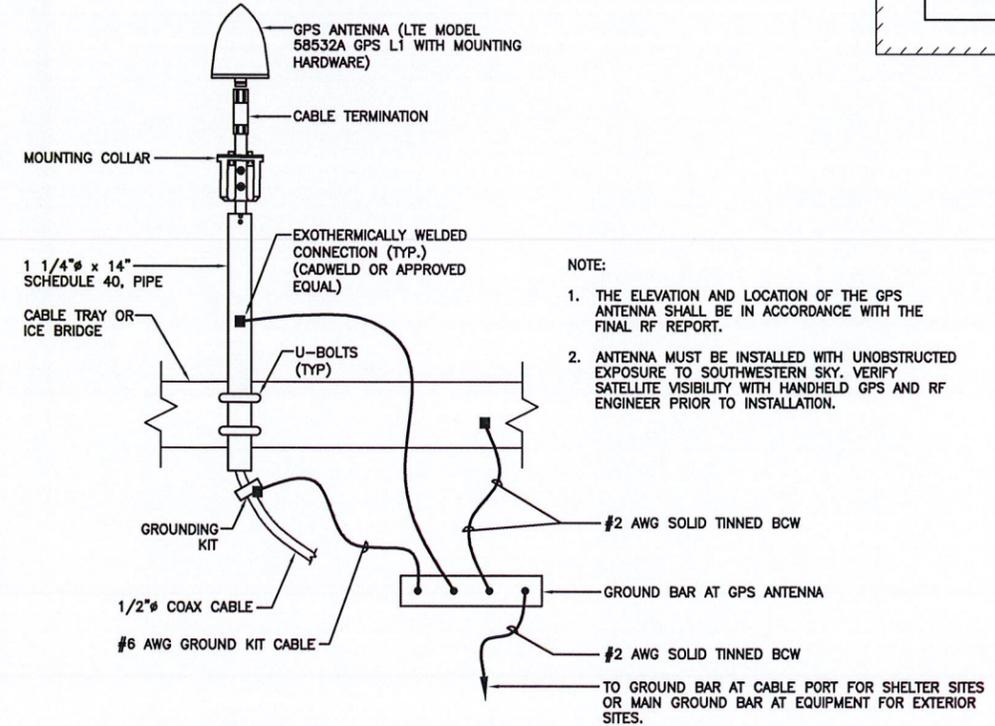
LTE EQUIPMENT DETAILS

C-2
Sheet No. 4 of 6



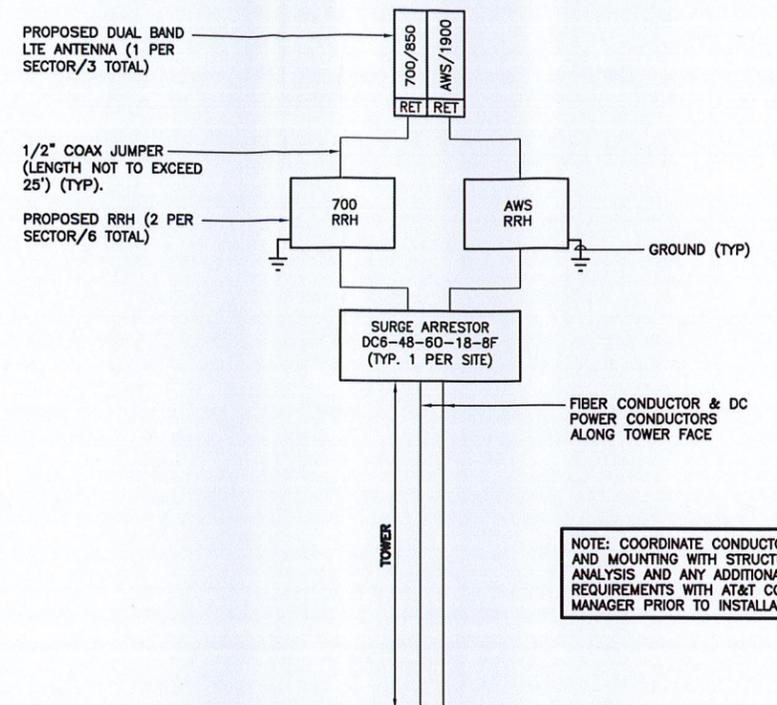
- NOTES:**
- BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
 - BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
 - DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

1 TYPICAL ANTENNA GROUNDING DETAIL
E-1 NOT TO SCALE

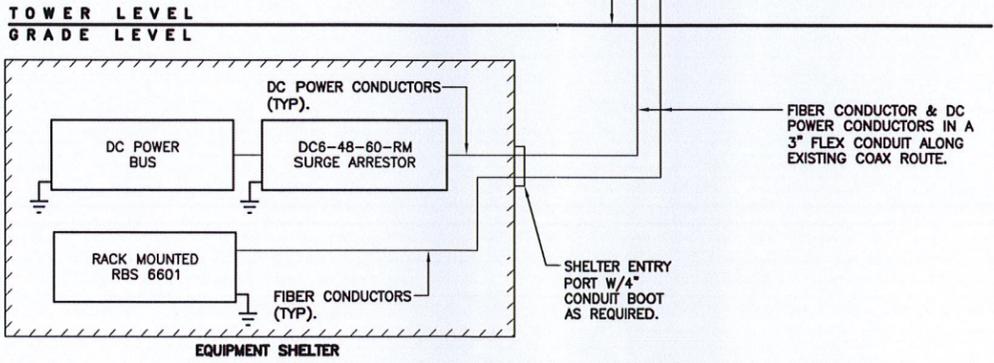


- NOTE:**
- THE ELEVATION AND LOCATION OF THE GPS ANTENNA SHALL BE IN ACCORDANCE WITH THE FINAL RF REPORT.
 - ANTENNA MUST BE INSTALLED WITH UNOBSTRUCTED EXPOSURE TO SOUTHWESTERN SKY. VERIFY SATELLITE VISIBILITY WITH HANDHELD GPS AND RF ENGINEER PRIOR TO INSTALLATION.

3 GPS MOUNTED TO CABLE TRAY / ICE BRIDGE
E-1 NOT TO SCALE



NOTE: COORDINATE CONDUCTOR ROUTING AND MOUNTING WITH STRUCTURAL ANALYSIS AND ANY ADDITIONAL REQUIREMENTS WITH AT&T CONSTRUCTION MANAGER PRIOR TO INSTALLATION.



- NOTES:**
- CONTRACTOR TO CONFIRM ALL PARTS.
 - INSTALL ALL EQUIPMENT TO MANUFACTURERS RECOMMENDATIONS.

2 LTE SCHEMATIC DIAGRAM
E-1 NOT TO SCALE

ELECTRICAL NOTES

- PRIOR TO START OF CONSTRUCTION CONTRACTOR SHALL COORDINATE WITH OWNER FOR ALL CONSTRUCTION STANDARDS AND SPECIFICATIONS, AND ALL MANUFACTURER DOCUMENTATION FOR ALL EQUIPMENT TO BE INSTALLED.
- INSTALL ALL EQUIPMENT IN ACCORDANCE WITH LOCAL BUILDING CODE, NATIONAL ELECTRIC CODE, OWNER AND MANUFACTURER'S SPECIFICATIONS.
- CONNECT ALL NEW EQUIPMENT TO EXISTING TELCO AS REQUIRED BY MANUFACTURER.
- MAINTAIN ALL CLEARANCES REQUIRED BY NEC AND EQUIPMENT MANUFACTURER.
- PRIOR TO INSTALLATION CONTRACTOR SHALL MEASURE EXISTING ELECTRICAL LOAD AND VERIFY EXISTING AVAILABLE CAPACITY FOR PROPOSED INSTALLATION. IF INADEQUATE CAPACITY IS AVAILABLE, CONTRACTOR SHALL COORDINATE WITH LOCAL ELECTRIC UTILITY COMPANY TO UPGRADE EXISTING ELECTRIC SERVICE.
- CONTRACTOR SHALL INSPECT EXISTING GROUNDING AND LIGHTNING PROTECTION SYSTEM AND ENSURE THAT IT IS IN COMPLIANCE WITH NEC, AND SITE OWNER'S SPECIFICATIONS. THE RESULTS OF THIS INSPECTION SHALL BE PRESENTED TO OWNERS REPRESENTATIVE, AND ANY DEFICIENCIES SHALL BE CORRECTED.
- ALL TRANSMISSION TOWER SITES CONTAIN AN EXTENSIVE BURIED GROUNDING SYSTEM. ALL GROUNDING WORK MUST BE COORDINATED WITH, AND APPROVED BY, THE TOWER OWNER'S SITE REPRESENTATIVE. ALL OF THE TOWER OWNER'S SPECIFICATIONS MUST BE STRICTLY FOLLOWED.
- PROVIDE AND INSTALL GROUND KITS FOR ALL NEW COAXIAL CABLES AND BOND TO EXISTING OWNERS GROUNDING SYSTEM PER OWNERS SPECIFICATIONS AND NEC.
- ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION.
- MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.
- THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.
- THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNER'S REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES AS MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS AS MAY BE REQUIRED BY THE LOCAL AUTHORITY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE SITE AND/OR BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
- THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.
- DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.
- ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.
- GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.
- EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122. (MIN. #12 AWG).
- CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 5 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

- CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:

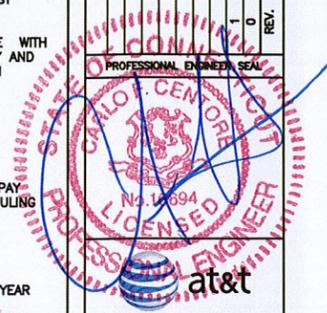
TEST 1: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

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

 - TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
 - CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
 - GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.
- TESTING SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNERS CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.
- THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.
- CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

DESIGNED BY:	CKD
DRAWN BY:	TJB
CHK'D BY:	CKD

NO.	DATE	REV.	BY	DESCRIPTION
1	06/14/12	0	CKD	CONSTRUCTION
2	05/29/12	0	CKD	CONSTRUCTION



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