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

August 9, 2012

Douglas Talmadge, Real Estate Consultant
Transcend Wireless, LLC
c/o Clearwire, LLC
147 Austin Ryer Lane
Branford, CT 06405

RE: **EM-CLEARWIRE-044-120720** – Clearwire LLC notice of intent to modify an existing telecommunications facility located at 45 Saltonstall Road, East 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:

- 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 July 19, 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,

LRoberts

Linda Roberts
Executive Director

LR/CDM/jbw

c: The Honorable Joseph Maturo, Jr., Mayor, Town of East Haven
George Mingione, Zoning Enforcement Officer, Town of East Haven
South Central CT Regional Water Authority

clearwire
wireless broadband

Transcend Wireless, LLC
C/O Clearwire, LLC
147 Austing Ryer Ln
Branford, CT 06405
Phone: (203)-410-4531
Douglas Talmadge
Real Estate Consultant

EM-CLEARWIRE-044-120720

ORIGINAL

July 19, 2012

HAND DELIVERED

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

RE: Clearwire LLC notice of intent to modify an existing telecommunications facility located at 45 Saltonstall Rd, East haven, CT 06512. Clearwire site CT-NHN0095.

Dear Ms. Roberts:

In order to accommodate technological changes, implement 4G Worldwide Interoperability for Microwave Access ("WIMAX") to wirelessly deliver high-speed internet service to a large geographical area and enhance system performance in the state of Connecticut, Clearwire, LLC plans to modify the equipment originally approved for exempt modification per EM-CLEARWIRE-044-120327. Clearwire needs to move the approved antenna centerline for (1) MW dish to 95' therefore Clearwire is requesting approval for an Exempt Modification. 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.

4G Worldwide Interoperability for Microwave Access ("WiMAX") is a communication technology for wirelessly delivering high-speed Internet service to large geographical areas. WiMAX can provide at-home or mobile internet access across whole cities or countries. In many cases this has resulted in competition in markets which typically only had access through an existing incumbent DSL (or similar) operator.

Attached is a summary of the planned modifications, including power density calculations reflecting the modifications of Clearwire's equipment at the site and a structural assessment of the tower to accommodate the revised antenna configuration.

The changes to the facility do not constitute modification as defined Connecticut General Statues ("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. The equipment will be located within the existing fenced in compound.
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 WiMAX. . 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 Clearwire, 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 with questions concerning this matter. Thank you for your consideration.

Sincerely,

Douglas Talmadge
Real Estate Consultant

C Squared Systems, LLC
65 Dartmouth Fr.
Auburn, NH 03032
Phone: (603) 644 2800
support@csquaredsystems.com

Field Measured & Calculated Radio Frequency Emissions

clearwire®

CT-NHN0095

Saltonstall Place, East Haven, CT 06512

Table of Contents

List of Tables

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed collocation of Clearwire on the existing lattice tower located off Saltonstall Place in East Haven, CT. The coordinates of the tower are 41-17-37.28 N, 72-51-26.49 W.

Clearwire is proposing the following:

1) Install three 2.6GHz panel antennas (one per sector),
2) Install two 11GHz microwave dishes for network backhaul.

Since the actual ERP for each of the existing antennas is unknown, and no previous CSC filing exists for this tower, RF field measurements were taken around the perimeter of the facility compound.

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:

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

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

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. 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 installation.

4. Measured & Calculated Results

Table 1 below outlines the power density information for the site. Frequency and ERP information for carriers other than Clearwire is based on licenses obtained through the FCC database. Since the actual ERP for each antenna is unknown, and no previous CSC filing exists for this tower, measurements were taken at the base of the tower. Measurements were taken on November 1, 2010. The highest measured value is used in Table 1 below as the existing composite %MPE.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	%MPE
East Haven FD	102	453.5625	1	55	0.0019	0.3024	1.6% (Field Measured)
East Haven PD	102	453.2000	1	110	0.0038	0.3021	
East Haven PD	91	934.3750	1	1995	0.0866	0.6229	
East Haven DPW	89	156.2400	1	100	0.0045	0.2000	
HAM Radio	79	449.8250	1	100	0.0058	0.2999	
HAM Radio	70	147.2550	1	100	0.0073	0.2000	
Clearwire (WiMAX)	85	2650	2	155	0.0154	1.0000	1.54%
Clearwire (MWV)	95	10800	1	50	0.0020	1.0000	0.20%
						Total	**3.34%**

Table 1: Carrier Information[1, 2]

[1] For carriers other than Clearwire, the ERP per transmitter value represents the maximum ERP allowed by the particular operator's FCC license. Please note that %MPE values listed are rounded to two decimal points. The total %MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

[2]

5. Conclusion

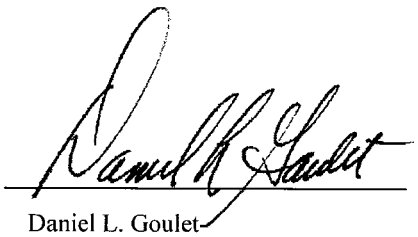
The above analysis verifies that emissions from the existing site will be well below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed and existing transmit antennas at the existing facility is well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at the base of the tower is 3.34% of the FCC limit.[3]

As noted in the introduction, 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 installation.

[3] The above analysis and report was initially completed in November of 2010 in anticipation of Clearwire's pending installation. Clearwire elected to postpone that installation until this year and is now moving forward with their permitting process. Transcend Wireless has confirmed that the operations on the tower has remained unchanged since the time of the initial survey and further, that Clearwire's proposed installation is the same today as was planned in 2010. For these reasons we affirm that this report is still valid as presented. The report dates have been changed to reflect our second review and submission.

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/IEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.



Daniel L. Goulet
C Squared Systems, LLC

June 18, 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 Exposure[4]

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 Exposure[5]

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)

[4] 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

[5] 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

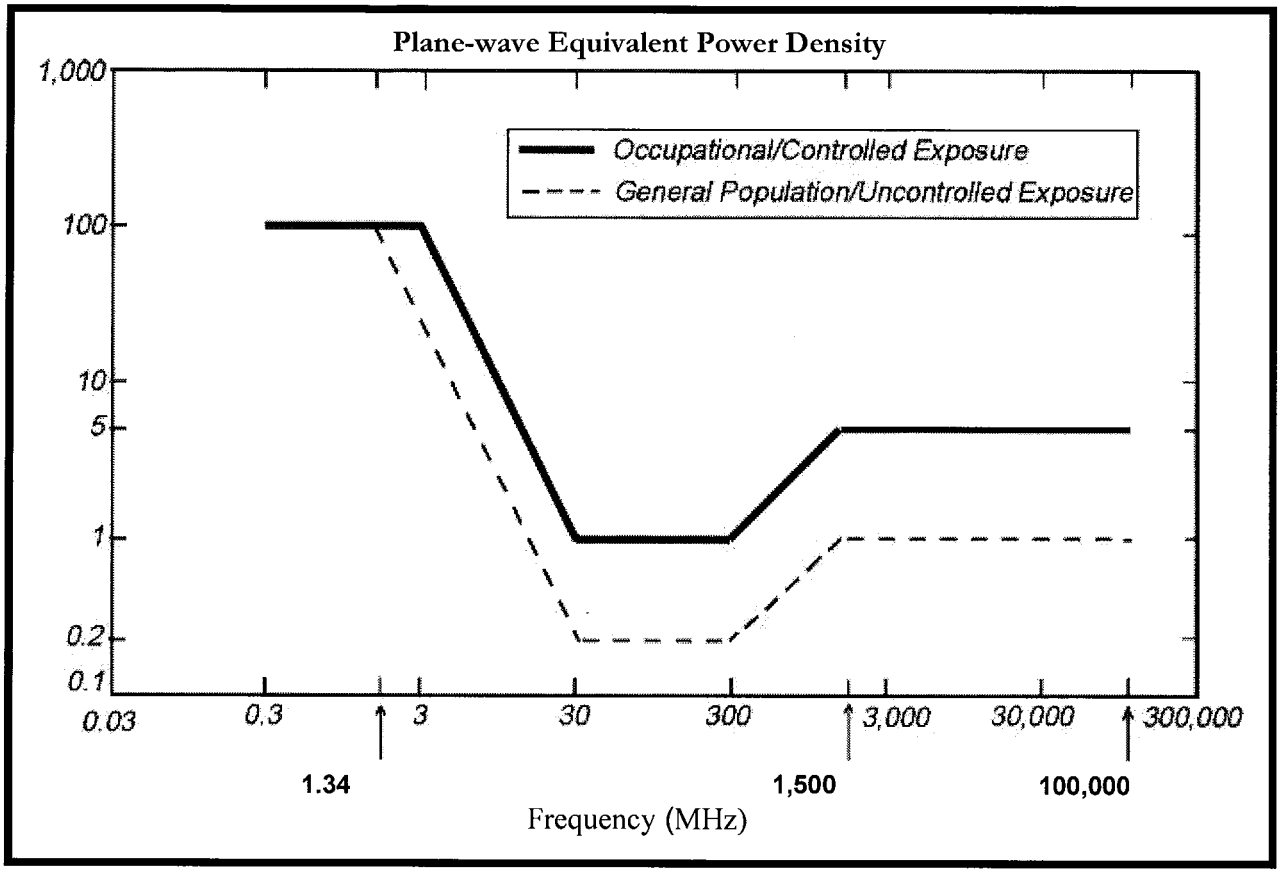
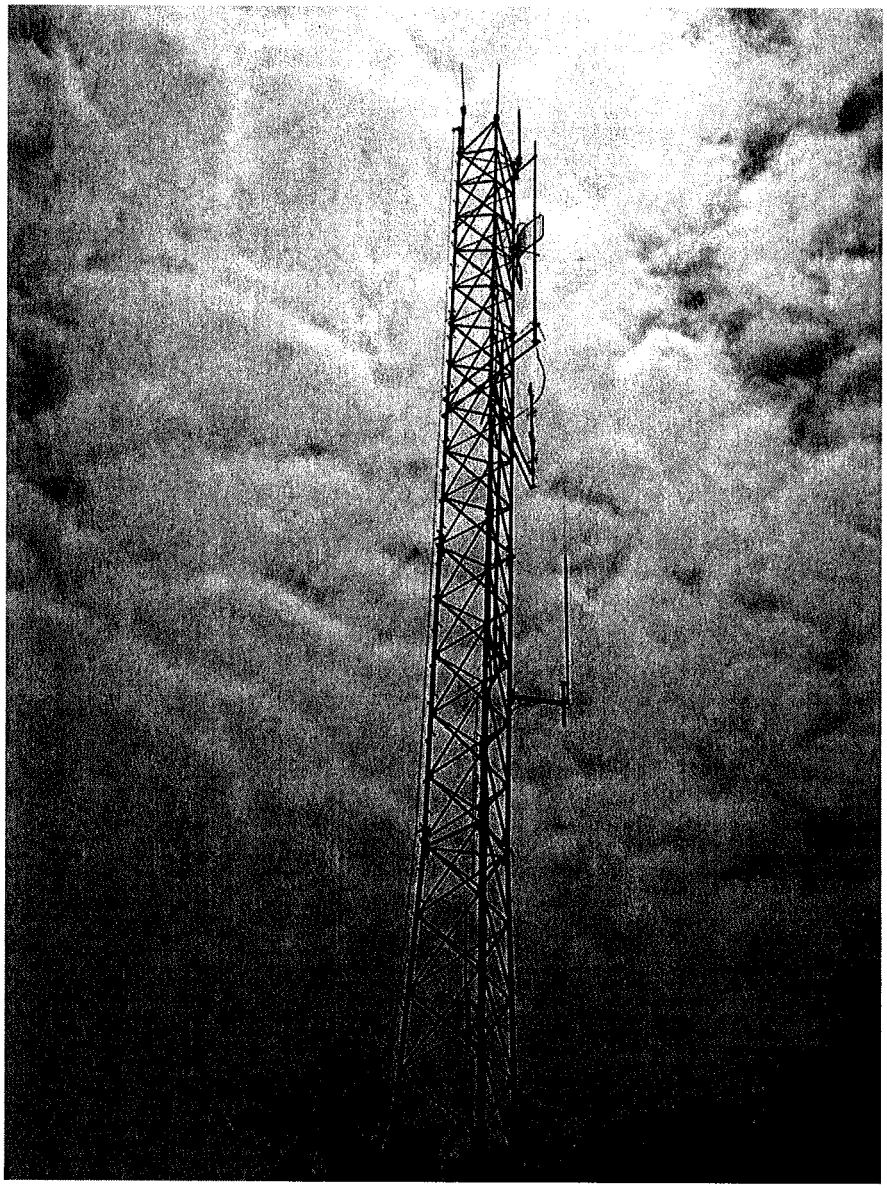


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Saltonstall Place Tower

New Haven County, Connecticut
CT-NHN0095E



Prepared for:
Transcend Wireless
18 Industrial Avenue
Mahwah, New Jersey 07430
May 24, 2012

CHA Consulting, Inc.
III Winners Circle
P.O. Box 5269
Albany, NY 12205
CHA Project No. 20621.1065.28000 R4

May 23, 2012

Mr. Mike Kithcart
Transcend Wireless
18 Industrial Avenue
Mahwah, New Jersey 07430

RE: Structural Analysis for Saltonstall Place Tower
Located in East Haven, CT
Site No. CT-NHN0095E
CHA Project No. 20621-1065-28000 Rev. 4

Dear Mr. Kithcart:

CHA has performed a structural analysis of the referenced site. This analysis is based on the following information:

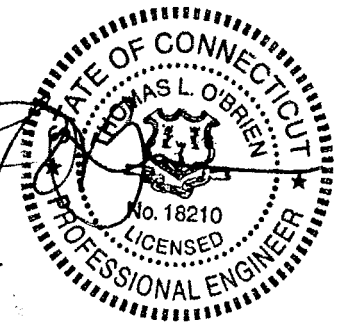
- A site visit performed by CHA on May 24, 2010.
- Existing tower design drawings by Rohn Manufacturing, dated November 22, 1991.
- Tower climb information provided by Bay State Design, Inc., dated September 8, 2010.
- A previous Structural Analysis performed by CHA, dated September 17, 2010.

Based upon our analysis the Lattice Tower **is** capable of supporting the proposed equipment under the existing conditions. The tower will support the following proposed antennas which includes (1) Andrew VHLP2-18 24" microwave antenna, (3) panel antennas and (3) remote radio units attached to the tower at a centerline elevation of 85' above grade level, also (1) Andrew VHLP2-18 24" microwave antenna **(Beta sector)** will be attached to the tower leg at a centerline elevation of 95' above ground level. The proposed Clearwire cabinet is proposed to be placed on a new concrete pad within the lease area.

This analysis is based on the current Connecticut State Building Code (2003 IBC), with the 2005 Connecticut Supplement and the 2009 Amendment to the 2005 Connecticut Supplement. The Connecticut State Building Code also references ASCE 7-02, "Minimum Design Loads for Buildings and Other Structures" and the TIA-EIA-222-F, "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures", which were referenced in the analysis.

If you have any questions or if we can be of further assistance please call.

Very truly yours,



Thomas L. O'Brien, P.E.
Partner

TOB/am
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EXECUTIVE SUMMARY

Saltonstall Place Tower
Transcend Wireless
CT-NHN0095E

May 23, 2012

Tower Information:

Tower Owner:	East Haven Water Department
Tower Manufacturer:	ROHN
Tower Height:	100 feet
Tower Type:	Lattice Tower

Proposed Antenna and Appurtenance Data:

- Three (3) Argus LLPX310R panel antennas and three (3) remote radio units mounted on (3) 2' standoff frames and (3) double antenna mounts at an antenna centerline elevation of 85' above ground level with six (6) 5/16" coaxial cables within a 2" diameter innerduct.

- One (1) Andrew VHLP2-18 2' diameter Microwave dish mounted on the above mentioned mounts at an antenna centerline elevation of 85' above ground level with one (1) 1/2" diameter coaxial cable.

- One (1) Andrew VHLP2-18 2' diameter Microwave dish **(Beta sector)** mounted to the tower leg at an antenna centerline elevation of 95' above ground level with one (1) 1/2" diameter coaxial cable.

Existing Antenna and Appurtenance Data:

- Three (3) 10' whip antennas mounted to the top of the tower at a centerline elevation of 100'-0" above ground level with three (3) 1/2" coaxial cables.

- One (1) Police Department 960 MDS microwave grid antenna mounted to the tower leg at an antenna centerline elevation of 90'-0" above ground level with one (1) 1/2" coaxial cable.

- One (1) 18' whip antenna mounted to the tower leg at a centerline elevation of 72'-0" above ground level with one (1) 1/2" coaxial cable.

- One (1) 4 bay microwave antenna mounted to the tower leg at a centerline elevation of 69'-0" above ground level with one (1) 1/2" coaxial cable.

- One (1) 18' whip antenna mounted to the tower leg at a centerline elevation of 50'-0" above ground level with one (1) 1/2" coaxial cable.

- One (1) 22' whip antenna mounted to the tower leg at a centerline elevation of 45'-0" above ground level.

- One (1) 6' ham antenna mounted to the tower leg at a centerline elevation of 35'-0" above ground level with one (1) 1/2" coaxial cable.

CHA

- One (1) 4' whip antenna mounted to the tower leg at a centerline elevation of 30'-0" above ground level with one (1) 1/2" coaxial cable.

Code Data: Applicable Code: - ANSI/EIA/TIA-222-F, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

- Connecticut State Building Code (2003 IBC)

Wind Velocity: 85 mph (fastest mile) for New Haven County, Connecticut

Load Cases: (1) Weight of Tower, Antennas, and Appurtenances plus Wind Load without radial ice.

(2) Weight of Tower, Antennas, and Appurtenances plus Wind Load on iced tower plus weight of 1/2" radial ice.

Tower Leg Members: *(50 ksi)*

0' – 40'-0":	ROHN 2-1/2" X-STR
40'-0" – 60'-0":	ROHN 2-1/2" STD
60'-0" – 80' – 0":	ROHN 2" STD
80' – 100':	ROHN 2" STD

Tower Diagonal Members: *(36 ksi)*

0'-0" – 40'-0", 60'-0" – 100'-0":	L1.5x1.5x1/8
40'- 0" – 60' -0":	L1.5x1.5x3/16

Tower Superstructure:

The governing tower section (Legs from 0' - 20' AGL) is stressed at approximately 98.6% of its allowable capacity.

Section Capacity Table

Section No.	*Elevation ft*	*Component Type*	*Size*	*Critical Element*	*P lb*	*SF*P_{allow} lb*	*% Capacity*	*Pass Fail*
T1	100 - 80	Leg	ROHN 2 STD	3	-4723.490	32298.456	14.6	Pass
		Diagonal	L1 1/2x1 1/2x1/8	10	877.309	8154.214	10.8	Pass
							27.9 (b)	
		Top Girt	L1 1/2x1 1/2x1/8	6	-19.119	2332.097	0.8	Pass
T2	80 - 60	Leg	ROHN 2 STD	39	-19616.400	32298.456	60.7	Pass
		Diagonal	L1 1/2x1 1/2x1/8	42	1955.130	8154.214	24.0	Pass
							62.2 (b)	
T3	60 - 40	Leg	ROHN 2.5 STD	71	-43203.801	55076.626	78.4	Pass
		Diagonal	L1 1/2x1 1/2x3/16	75	-3177.590	12333.262	25.8	Pass
							64.2 (b)	
T4	40 - 20	Leg	ROHN 2.5 X-STR	104	-55617.699	65602.926	84.8	Pass
		Diagonal	L1 1/2x1 1/2x1/8	129	-1842.270	7827.962	23.5	Pass
							54.1 (b)	
		Top Girt	L1 1/2x1 1/2x1/8	108	-200.960	2332.097	8.6	Pass
T5	20 - 0	Leg	ROHN 2.5 X-STR	134	-64649.699	65600.525	98.6	Pass
		Diagonal	L1 1/2x1 1/2x1/8	144	-1743.740	6549.428	26.6	Pass
							55.1 (b)	
							Summary	
						Leg (T5)	98.6	Pass
						Diagonal (T3)	64.2	Pass
						Top Gi	6	ss

CHA

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
						(T4) Bolt Checks	64.2	Pass
						RATING =	**98.6**	**Pass**

Foundation Analysis:

Force	Design Reactions*	Actual	Results
Tower Compression	65.0 kips	65.49 kips	Pass*
Shear	8.2 kips	5.48 kips	Pass
Uplift	59.3 kips	58.43 kips	Pass
Moment	455.3 kip-ft	465.49 kip-ft	Pass**

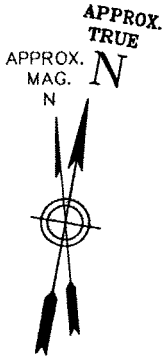
***The tower compression force is less than 1% over the design reactions and therefore is within the allowable 5% capacity limit.**

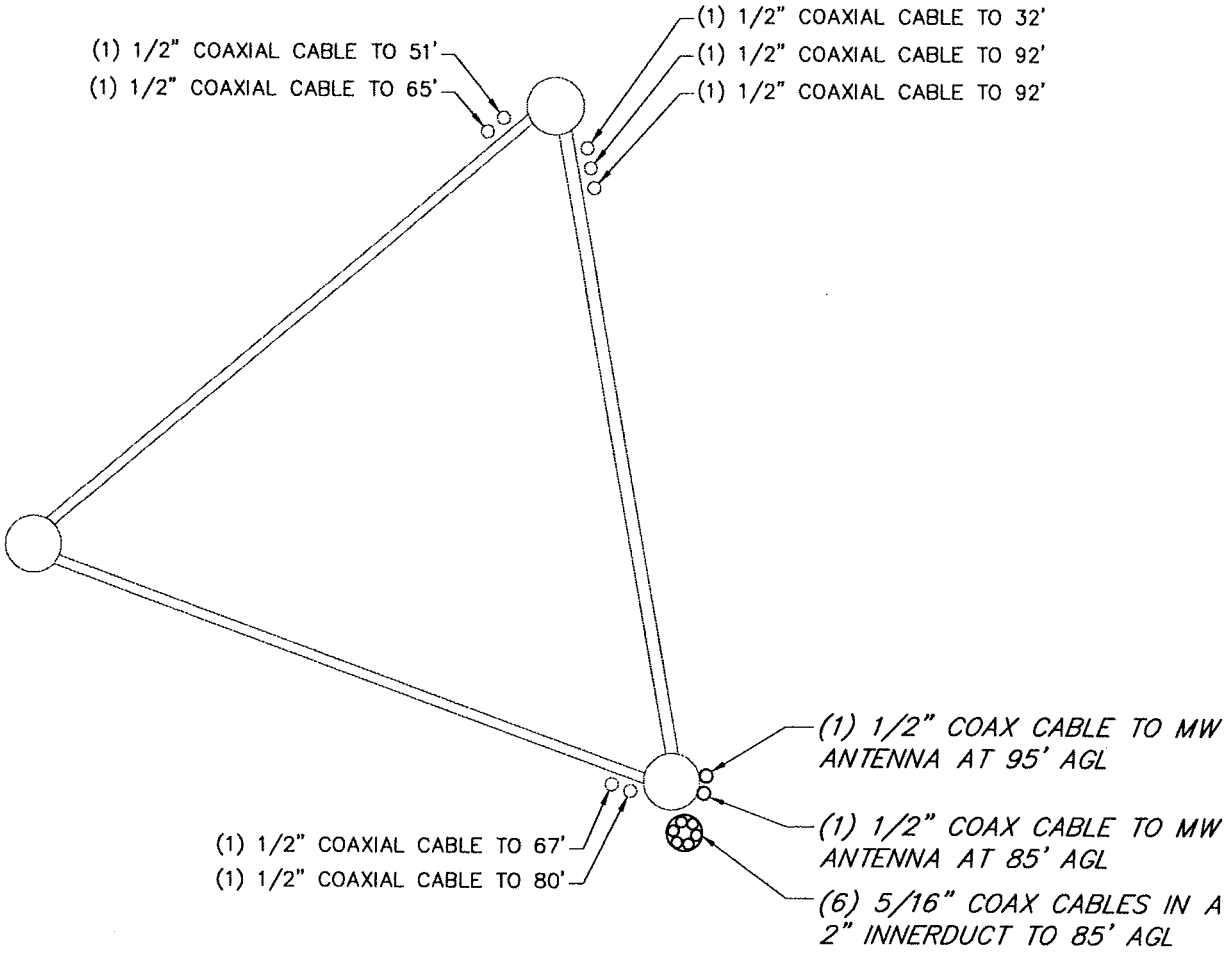
****The design of the foundation uses a factor of safety of 2 against uplift/overturning. This complies to section 3108.4.2 of the International Building Code. The overturning moment is within the allowable 5% capacity limit.**

Conclusion:

The analysis indicates that the existing 100'-0" Lattice tower and foundation is structurally capable of supporting the existing and proposed equipment.

CABLE LAYOUT





CABLE LAYOUT DIAGRAM

NOTE:
CONTRACTOR TO VERIFY THAT THE EXISTING COAXIAL CABLE CONFIGURATION SHOWN IS ACCURATE AND NOTIFY ENGINEER IMMEDIATELY IF CABLES ARE INSTALLED DIFFERENTLY PRIOR TO THE START OF CONSTRUCTION.

CHA
III Winners Circle, PO Box 5269, Albany, NY 12205
www.chacompanies.com

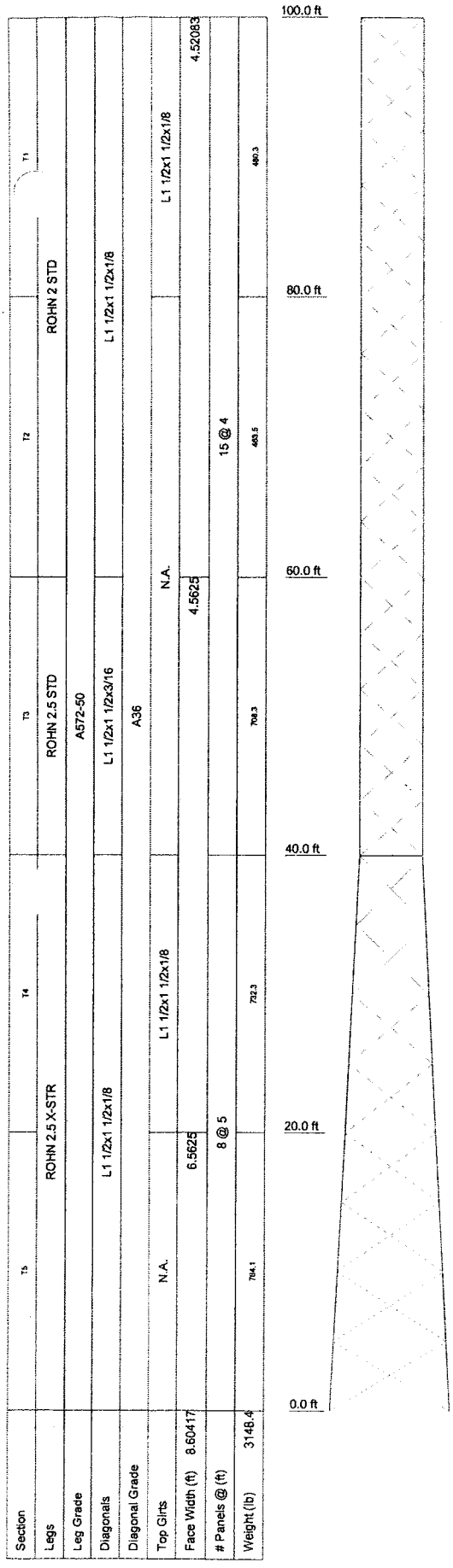
TRANSCEND WIRELESS, LLC
18 INDUSTRIAL AVENUE
MAHWAH, NJ 07430

SALTONSTALL TOWER
EAST HAVEN, CT

CHA PROJ. NO. – 20621.1065

1 OF 1
REV 4
S–1

TOWER PROFILE



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
4' WHIP (E-TOP)	100	Remote RU (P)	80
4' WHIP (E-TOP)	100	Remote RU (P)	80
4' WHIP (E-TOP)	100	Remote RU (P)	80
Andrew 2' w/Radome (P)	95	Pirod 6' Side Mount Standoff (1) (E)	72
PR950 (E-FOR GRID DISH)	90	19.5' WHIP (E)	72
ADP-U frame for 2 ant w 2' standoff (P)	85	Pirod 6' Side Mount Standoff (1) (E)	69
		DB264-JJ (E)	69
ADP-U frame for 2 ant w 2' standoff (P)	85	Pirod 4' Side Mount Standoff (1) (E)	50
		19.5' WHIP (E)	50
ADP-U frame for 2 ant w 2' standoff (P)	85	Pirod 4' Side Mount Standoff (1) (E)	45
		20' WHIP (E)	45
LLPX310R (P)	85	7' WHIP (E)	35
LLPX310R (P)	85	Pirod 4' Side Mount Standoff (1) (E)	35
LLPX310R (P)	85	4' WHIP (E)	30
Andrew 2' w/Radome (P)	85		

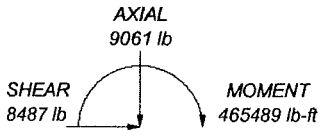
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

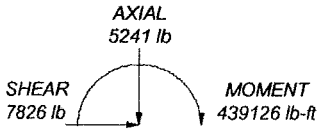
TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 60 mph wind.
5. Weld together tower sections have flange connections.
6. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
7. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
8. Welds are fabricated with ER-70S-6 electrodes.

MAX. CORNER REACTIONS AT BASE:
DOWN: 65488 lb
UPLIFT: -58426 lb
SHEAR: 5479 lb



TORQUE 5073 lb-ft
74 mph WIND - 0.5000 in ICE



TORQUE 4064 lb-ft
REACTIONS - 85 mph WIND

CHA Inc.
III Winners Circle
Albany, NY 12205
Phone: (518) 453-4500
FAX:

Job: *Saltonstall - CT_NHN0095E*			
Project: *20621.1065.28000 R3*			
Client: Transcend	Drawn by: 1948	App'd:	
Code: TIA/EIA-222-F	Date: 05/23/12	Scale: NTS	
Path: W:\Transcend\20621\Sites\1065-CT-NHN0095\Struct\Rev 4\ModelTower Model-R4.eri		Dwg No. E-1	

RISA TOWER ANALYSIS

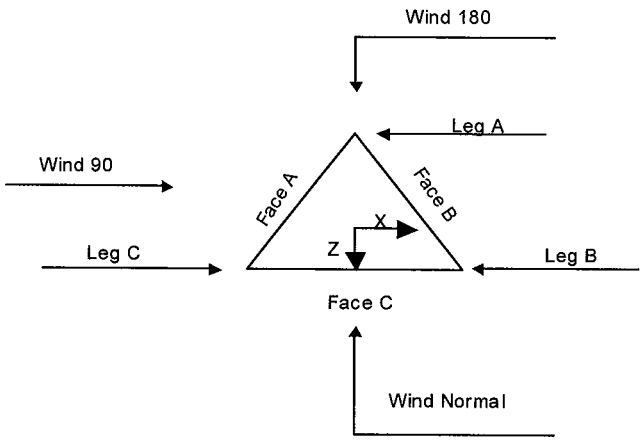
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 100.000 ft above the ground line.
The base of the tower is set at an elevation of 0.000 ft above the ground line.
The face width of the tower is 4.521 ft at the top and 8.604 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in New Haven County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 74 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Weld together tower sections have flange connections..
Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
Welds are fabricated with ER-70S-6 electrodes..
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	√ Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	√ Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	√ Assume Rigid Index Plate	√ Calculate Redundant Bracing Forces
Use Moment Magnification	√ Use Clear Spans For Wind Area	√ Ignore Redundant Members in FEA
√ Use Code Stress Ratios	√ Use Clear Spans For KL/r	SR Leg Bolts Resist Compression
√ Use Code Safety Factors - Guys	√ Retension Guys To Initial Tension	√ All Leg Panels Have Same Allowable
Escalate Ice	Bypass Mast Stability Checks	Offset Girt At Foundation
Always Use Max Kz	Use Azimuth Dish Coefficients	√ Consider Feedline Torque
Use Special Wind Profile	√ Project Wind Area of Appurt.	√ Include Angle Block Shear Check
√ Include Bolts In Member Capacity	√ Autocalc Torque Arm Areas	**Poles**
Leg Bolts Are At Top Of Section	√ SR Members Have Cut Ends	Include Shear-Torsion Interaction
Secondary Horizontal Braces Leg	Sort Capacity Reports By Component	Always Use Sub-Critical Flow
√ Use Diamond Inner Bracing (4 Sided)	√ Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
√ Add IBC .6D+W Combination		



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	100.000-80.000			4.521	1	20.000
T2	80.000-60.000			4.521	1	20.000
T3	60.000-40.000			4.563	1	20.000
T4	40.000-20.000			4.563	1	20.000
T5	20.000-0.000			6.563	1	20.000

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	100.000-80.000	4.000	X Brace	No	No	0.0000	0.0000
T2	80.000-60.000	4.000	X Brace	No	No	0.0000	0.0000
T3	60.000-40.000	4.000	X Brace	No	No	0.0000	0.0000
T4	40.000-20.000	5.000	X Brace	No	No	0.0000	0.0000
T5	20.000-0.000	5.000	X Brace	No	No	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 100.000-80.000	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T2 80.000-60.000	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T3 60.000-40.000	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T4 40.000-20.000	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T5 20.000-0.000	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 100.000-80.000	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T4 40.000-20.000	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)	Equal Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 100.000-80.000	0.000	0.0000	A36 (36 ksi)	1.05	1	1.05	36.0000	36.0000
T2 80.000-60.000	0.000	0.0000	A36 (36 ksi)	1.05	1	1.05	36.0000	36.0000
T3 60.000-40.000	0.000	0.0000	A36 (36 ksi)	1.05	1	1.05	36.0000	36.0000
T4 40.000-20.000	0.000	0.0000	A36 (36 ksi)	1.05	1	1.05	36.0000	36.0000
T5 20.000-0.000	0.000	0.0000	A36 (36 ksi)	1.05	1	1.05	36.0000	36.0000

Tower Section Geometry *(cont'd)*

K Factors[1]

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 100.000-80.000	No	No	1	0.5 0.5	0.5 0.5	0.5 0.5	1 1	1 1	1 1	1 1
T2 80.000-60.000	No	No	1	0.5 0.5	0.5 0.5	0.5 0.5	1 1	1 1	1 1	1 1
T3 60.000-40.000	No	No	1	0.5 0.5	0.5 0.5	0.5 0.5	1 1	1 1	1 1	1 1
T4 40.000-20.000	No	No	1	0.5 0.5	0.5 0.5	0.5 0.5	1 1	1 1	1 1	1 1
T5 20.000-0.000	No	No	1	0.5 0.5	0.5 0.5	0.5 0.5	1 1	1 1	1 1	1 1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 100.000-80.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 80.000-60.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 60.000-40.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 40.000-20.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 20.000-0.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 100.000-80.000	Flange	0.6250 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 80.000-60.000	Flange	0.6250 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 60.000-40.000	Flange	0.6250 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 40.000-20.000	Flange	0.7500 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T5 20.000-0.000	Flange	0.7500 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF4P-50A (1/2 FOAM) (E)	A	No	Ar (CfAe)	30.000 - 8.000	1	1	0.6300	0.6300		0.150
LDF4-50A (1/2 FOAM) (E)	A	No	Ar (Leg)	35.000 - 8.000	1	1	0.6300	0.6300		0.150
LDF4-50A (1/2 FOAM) (E)	A	No	Ar (Leg)	45.000 - 8.000	1	1	0.6300	0.6300		0.150
LDF4-50A (1/2 FOAM) (E)	A	No	Ar (Leg)	50.000 - 8.000	1	1	0.6300	0.6300		0.150
LDF4-50A (1/2 FOAM) (E)	A	No	Ar (Leg)	69.000 - 8.000	1	1	0.6300	0.6300		0.150
LDF4-50A (1/2 FOAM) (E)	A	No	Ar (Leg)	72.000 - 8.000	1	1	0.6300	0.6300		0.150
LDF4-50A (1/2 FOAM) (E)	A	No	Ar (Leg)	90.000 - 8.000	1	1	0.6300	0.6300		0.150
PROPOSED										
2" Rigid Conduit (P-(6) 5/16")	B	No	Ar (Leg)	85.000 - 8.000	1	1	2.0000	2.0000		2.800
LDF4-50A (1/2 FOAM) (P-MWA)	B	No	Ar (Leg)	85.000 - 8.000	1	1	0.6300	0.6300		0.150
LDF4P-50A (1/2 FOAM) (P-MWA)	B	No	Ar (Leg)	95.000 - 8.000	1	1	0.6300	0.6300		0.150
Exisitng										
LDF4-50A (1/2 FOAM) (E)	A	No	Ar (Leg)	100.000 - 8.000	1	1	0.6300	0.6300		0.150
LDF4-50A (1/2 FOAM) (E)	A	No	Ar (Leg)	100.000 - 8.000	1	1	0.6300	0.6300		0.150
LDF4-50A (1/2 FOAM) (E)	A	No	Ar (Leg)	100.000 - 8.000	1	1	0.6300	0.6300		0.150

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	100.000-80.000	A	3.675	0.000	0.000	0.000	10.500
		B	5.558	0.000	0.000	0.000	17.000
		C	1.883	0.000	0.000	0.000	0.000
T2	80.000-60.000	A	5.303	0.000	0.000	0.000	15.150
		B	10.736	0.000	0.000	0.000	62.000
		C	5.433	0.000	0.000	0.000	0.000
T3	60.000-40.000	A	7.088	0.000	0.000	0.000	20.250
		B	12.521	0.000	0.000	0.000	62.000
		C	5.433	0.000	0.000	0.000	0.000
T4	40.000-20.000	A	9.713	0.000	0.000	0.000	27.750

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B	14.621	0.000	0.000	0.000	62.000
		C	5.433	0.000	0.000	0.000	0.000
T5	20.000-0.000	A	6.300	0.000	0.000	0.000	18.000
		B	8.930	0.000	0.000	0.000	37.200
		C	3.260	0.000	0.000	0.000	0.000

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	100.000-80.000	A	0.500	9.508	0.000	0.000	0.000	58.819
		B		13.475	0.000	0.000	0.000	38.441
		C		3.967	0.000	0.000	0.000	0.000
T2	80.000-60.000	A	0.500	13.719	0.000	0.000	0.000	84.868
		B		24.153	0.000	0.000	0.000	120.154
		C		10.433	0.000	0.000	0.000	0.000
T3	60.000-40.000	A	0.500	18.337	0.000	0.000	0.000	113.437
		B		28.771	0.000	0.000	0.000	120.154
		C		10.433	0.000	0.000	0.000	0.000
T4	40.000-20.000	A	0.500	25.129	0.000	0.000	0.000	155.451
		B		34.204	0.000	0.000	0.000	120.154
		C		10.433	0.000	0.000	0.000	0.000
T5	20.000-0.000	A	0.500	16.300	0.000	0.000	0.000	100.833
		B		20.930	0.000	0.000	0.000	72.093
		C		6.260	0.000	0.000	0.000	0.000

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	100.000-80.000	0.8615	-1.4438	1.0691	-2.3419
T2	80.000-60.000	2.1769	-1.1974	2.3828	-2.2438
T3	60.000-40.000	1.9455	-1.8072	2.1420	-3.1105
T4	40.000-20.000	2.0720	-3.0943	2.1794	-4.9440
T5	20.000-0.000	1.6877	-2.7828	1.8330	-4.6550

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Pirod 4' Side Mount Standoff (1)	A	From Leg	0.000 0.000	0.0000	35.000	No Ice 1/2" Ice	2.720 4.910	2.720 4.910	50.000 89.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(E)			0.000						
7' WHIP	A	From Leg	2.000	0.0000	35.000	No Ice	1.400	1.400	15.000
(E)			0.000			1/2" Ice	2.125	2.125	25.919
			0.000						
Pirod 4' Side Mount Standoff	A	From Leg	0.000	0.0000	45.000	No Ice	2.720	2.720	50.000
(1)			0.000			1/2" Ice	4.910	4.910	89.000
(E)			0.000						
20' WHIP	A	From Leg	4.000	0.0000	45.000	No Ice	6.000	6.000	60.000
(E)			0.000			1/2" Ice	8.033	8.033	103.168
			0.000						
Pirod 4' Side Mount Standoff	B	From Leg	0.000	0.0000	50.000	No Ice	2.720	2.720	50.000
(1)			0.000			1/2" Ice	4.910	4.910	89.000
(E)			0.000						
19.5' WHIP	B	From Leg	4.000	0.0000	50.000	No Ice	5.850	5.850	32.000
(E)			0.000			1/2" Ice	7.833	7.833	74.099
			0.000						
Pirod 6' Side Mount Standoff	B	From Leg	0.000	0.0000	69.000	No Ice	4.970	4.970	70.000
(1)			0.000			1/2" Ice	6.120	6.120	130.000
(E)			0.000						
DB264-JJ	B	From Leg	6.000	0.0000	69.000	No Ice	3.160	3.160	36.000
(E)			0.000			1/2" Ice	5.688	5.688	46.800
			0.000						
Pirod 6' Side Mount Standoff	A	From Leg	0.000	0.0000	72.000	No Ice	4.970	4.970	70.000
(1)			0.000			1/2" Ice	6.120	6.120	130.000
(E)			0.000						
19.5' WHIP	A	From Leg	6.000	0.0000	72.000	No Ice	5.850	5.850	32.000
(E)			0.000			1/2" Ice	7.833	7.833	74.099
			0.000						
PR950	B	From Leg	0.000	0.0000	90.000	No Ice	5.950	2.975	38.000
(E-FOR GRID DISH)			0.000			1/2" Ice	6.291	3.258	75.009
			0.000						
4' WHIP	A	From Leg	0.000	0.0000	100.000	No Ice	0.600	0.600	8.250
(E-TOP)			0.000			1/2" Ice	0.919	0.919	13.296
			0.000						
4' WHIP	B	From Leg	0.000	0.0000	100.000	No Ice	0.600	0.600	8.250
(E-TOP)			0.000			1/2" Ice	0.919	0.919	13.296
			0.000						
4' WHIP	C	From Leg	0.000	0.0000	100.000	No Ice	0.600	0.600	8.250
(E-TOP)			0.000			1/2" Ice	0.919	0.919	13.296
			0.000						
PROPOSED									
ADP-U frame for 2 ant w 2'	A	From Leg	0.000	0.0000	85.000	No Ice	3.223	3.223	300.000
standoff			0.000			1/2" Ice	3.616	3.616	333.960
(P)			0.000						
ADP-U frame for 2 ant w 2'	B	From Leg	0.000	0.0000	85.000	No Ice	3.223	3.223	300.000
standoff			0.000			1/2" Ice	3.616	3.616	333.960
(P)			0.000						
ADP-U frame for 2 ant w 2'	C	From Leg	0.000	0.0000	85.000	No Ice	3.223	3.223	300.000
standoff			0.000			1/2" Ice	3.616	3.616	333.960
(P)			0.000						
LLPX310R	A	From Leg	4.000	0.0000	85.000	No Ice	4.837	1.957	28.700
(P)			0.000			1/2" Ice	5.191	2.226	54.670
			0.000						
LLPX310R	B	From Leg	4.000	0.0000	85.000	No Ice	4.837	1.957	28.700
(P)			0.000			1/2" Ice	5.191	2.226	54.670
			0.000						
LLPX310R	C	From Leg	4.000	0.0000	85.000	No Ice	4.837	1.957	28.700

Description	Face or Leg	Offset Type	Offsets: Horz Lateral / Vert (ft / ft / ft)	Azimuth Adjustment (°)	Placement (ft)		C_AA_A Front (ft^2)	C_AA_A Side (ft^2)	Weight (lb)
(P)			0.000 0.000			1/2" Ice	5.191	2.226	54.670
Remote RU	A	From Leg	4.000	0.0000	80.000	No Ice	0.000	0.856	33.000
(P)			0.000 0.000			1/2" Ice	0.000	0.999	44.966
Remote RU	B	From Leg	4.000	0.0000	80.000	No Ice	0.000	0.856	33.000
(P)			0.000 0.000			1/2" Ice	0.000	0.999	44.966
Remote RU	C	From Leg	4.000	0.0000	80.000	No Ice	0.000	0.856	33.000
(P)			0.000 0.000			1/2" Ice	0.000	0.999	44.966
Existing 4' WHIP	A	From Leg	0.000	0.0000	30.000	No Ice	0.600	0.600	8.250
(E)			0.000 0.000			1/2" Ice	0.919	0.919	13.296

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral / Vert (ft)	Azimuth Adjustment (°)	3 dB Beam Width (°)	Elevation (ft)	Outside Diameter (ft)		Aperture Area (ft^2)	Weight (lb)
Andrew 2' w/Radome	A	Paraboloid w/Radome	From Leg	2.000	Worst		95.000	2.000	No Ice	3.142	70.000
(P)				0.000 0.000					1/2" Ice	3.409	282.000
Andrew 2' w/Radome	C	Paraboloid w/Radome	From Leg	2.000	Worst		85.000	2.000	No Ice	3.142	70.000
(P)				0.000 0.000					1/2" Ice	3.409	282.000

Tower Pressures - No Ice

$G_H = 1.162$

Section Elevation (ft)	z (ft)	K_Z	q_z (psf)	A_G (ft^2)	Face	A_F (ft^2)	A_R (ft^2)	A_{leg} (ft^2)	Leg %	C_AA_A In Face (ft^2)	C_AA_A Out Face (ft^2)
T1	90.000	1.332	25	94.375	A	8.143	11.592	7.917	40.11	0.000	0.000
100.000-80.00					B	8.143	13.475		36.62	0.000	0.000
0					C	8.143	9.800		44.12	0.000	0.000
T2	70.000	1.24	23	94.792	A	7.597	13.219	7.917	38.03	0.000	0.000
80.000-60.000					B	7.597	18.653		30.16	0.000	0.000
					C	7.597	13.350		37.79	0.000	0.000
T3	50.000	1.126	21	96.042	A	7.553	16.671	9.583	39.56	0.000	0.000
60.000-40.000					B	7.553	22.104		32.31	0.000	0.000
					C	7.553	15.017		42.46	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T4 40.000-20.000	30.000	1	18	116.048	A	8.092	19.312	9.599	35.03	0.000	0.000
					B	8.092	24.220		29.71	0.000	0.000
					C	8.092	15.033		41.51	0.000	0.000
T5 20.000-0.000	10.000	1	18	156.465	A	9.242	15.900	9.600	38.18	0.000	0.000
					B	9.242	18.530		34.57	0.000	0.000
					C	9.242	12.860		43.43	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.162$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1 100.000-80.000	90.000	1.332	18	0.5000	96.042	A	8.143	25.929	11.250	33.02	0.000	0.000
						B	8.143	29.895		29.58	0.000	0.000
						C	8.143	20.387		39.43	0.000	0.000
T2 80.000-60.000	70.000	1.24	17	0.5000	96.458	A	7.597	29.793	11.250	30.09	0.000	0.000
						B	7.597	40.226		23.52	0.000	0.000
						C	7.597	26.507		32.99	0.000	0.000
T3 60.000-40.000	50.000	1.126	16	0.5000	97.708	A	7.553	36.050	12.917	29.62	0.000	0.000
						B	7.553	46.483		23.90	0.000	0.000
						C	7.553	28.145		36.18	0.000	0.000
T4 40.000-20.000	30.000	1	14	0.5000	117.716	A	8.092	43.205	12.938	25.22	0.000	0.000
						B	8.092	52.280		21.43	0.000	0.000
						C	8.092	28.509		35.35	0.000	0.000
T5 20.000-0.000	10.000	1	14	0.5000	158.133	A	9.242	35.107	12.939	29.18	0.000	0.000
						B	9.242	39.737		26.42	0.000	0.000
						C	9.242	25.067		37.71	0.000	0.000

Tower Pressure - Service

$G_H = 1.162$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1 100.000-80.00 0	90.000	1.332	12	94.375	A	8.143	11.592	7.917	40.11	0.000	0.000
					B	8.143	13.475		36.62	0.000	0.000
					C	8.143	9.800		44.12	0.000	0.000
T2 80.000-60.000	70.000	1.24	11	94.792	A	7.597	13.219	7.917	38.03	0.000	0.000
					B	7.597	18.653		30.16	0.000	0.000
					C	7.597	13.350		37.79	0.000	0.000
T3 60.000-40.000	50.000	1.126	10	96.042	A	7.553	16.671	9.583	39.56	0.000	0.000
					B	7.553	22.104		32.31	0.000	0.000
					C	7.553	15.017		42.46	0.000	0.000
T4 40.000-20.000	30.000	1	9	116.048	A	8.092	19.312	9.599	35.03	0.000	0.000
					B	8.092	24.220		29.71	0.000	0.000
					C	8.092	15.033		41.51	0.000	0.000
T5	10.000	1	9	156.465	A	9.242	15.900	9.600	38.18	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
20.000-0.000					B	9.242	18.530		34.57	0.000	0.000
					C	9.242	12.860		43.43	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	27.500	480.293	A	0.209	2.566	0.592	1	1	15.009	1159.241	57.962	B
100.000-80.00			B	0.229	2.502	0.597	1	1	16.185			
0			C	0.19	2.629	0.588	1	1	13.910			
T2	77.150	463.480	A	0.22	2.532	0.595	1	1	15.457	1191.810	59.590	B
80.000-60.000			B	0.277	2.359	0.609	1	1	18.959			
			C	0.221	2.527	0.595	1	1	15.539			
T3	82.250	708.279	A	0.252	2.431	0.602	1	1	17.596	1167.759	58.388	B
60.000-40.000			B	0.309	2.273	0.619	1	1	21.227			
			C	0.235	2.483	0.598	1	1	16.535			
T4	89.750	732.304	A	0.236	2.48	0.598	1	1	19.649	1156.877	57.844	B
40.000-20.000			B	0.278	2.355	0.61	1	1	22.855			
			C	0.199	2.598	0.59	1	1	16.965			
T5	55.200	764.064	A	0.161	2.733	0.583	1	1	18.515	1154.917	57.746	B
20.000-0.000			B	0.177	2.673	0.586	1	1	20.102			
			C	0.141	2.804	0.58	1	1	16.704			
Sum Weight:	331.850	3148.420						OTM	292401.83 lb-ft	5830.604		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	27.500	480.293	A	0.209	2.566	0.592	0.8	1	13.380	1042.587	52.129	B
100.000-80.00			B	0.229	2.502	0.597	0.8	1	14.556			
0			C	0.19	2.629	0.588	0.8	1	12.281			
T2	77.150	463.480	A	0.22	2.532	0.595	0.8	1	13.938	1096.293	54.815	B
80.000-60.000			B	0.277	2.359	0.609	0.8	1	17.439			
			C	0.221	2.527	0.595	0.8	1	14.020			
T3	82.250	708.279	A	0.252	2.431	0.602	0.8	1	16.086	1084.658	54.233	B
60.000-40.000			B	0.309	2.273	0.619	0.8	1	19.717			
			C	0.235	2.483	0.598	0.8	1	15.025			
T4	89.750	732.304	A	0.236	2.48	0.598	0.8	1	18.030	1074.958	53.748	B
40.000-20.000			B	0.278	2.355	0.61	0.8	1	21.237			
			C	0.199	2.598	0.59	0.8	1	15.347			
T5	55.200	764.064	A	0.161	2.733	0.583	0.8	1	16.666	1048.717	52.436	B
20.000-0.000			B	0.177	2.673	0.586	0.8	1	18.254			
			C	0.141	2.804	0.58	0.8	1	14.855			
Sum Weight:	331.850	3148.420						OTM	267542.16 lb-ft	5347.213		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	27.500	480.293	A	0.209	2.566	0.592	0.85	1	13.788	1071.751	53.588	B
100.000-80.00			B	0.229	2.502	0.597	0.85	1	14.963			
0			C	0.19	2.629	0.588	0.85	1	12.688			
T2	77.150	463.480	A	0.22	2.532	0.595	0.85	1	14.318	1120.172	56.009	B
80.000-60.000			B	0.277	2.359	0.609	0.85	1	17.819			
			C	0.221	2.527	0.595	0.85	1	14.400			
T3	82.250	708.279	A	0.252	2.431	0.602	0.85	1	16.463	1105.434	55.272	B
60.000-40.000			B	0.309	2.273	0.619	0.85	1	20.094			
			C	0.235	2.483	0.598	0.85	1	15.402			
T4	89.750	732.304	A	0.236	2.48	0.598	0.85	1	18.435	1095.438	54.772	B
40.000-20.000			B	0.278	2.355	0.61	0.85	1	21.641			
			C	0.199	2.598	0.59	0.85	1	15.751			
T5	55.200	764.064	A	0.161	2.733	0.583	0.85	1	17.128	1075.267	53.763	B
20.000-0.000			B	0.177	2.673	0.586	0.85	1	18.716			
			C	0.141	2.804	0.58	0.85	1	15.317			
Sum Weight:	331.850	3148.420						OTM	273757.08 lb-ft	5468.061		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	97.261	887.080	A	0.355	2.161	0.634	1	1	24.587	1226.763	61.338	B
100.000-80.00			B	0.396	2.072	0.65	1	1	27.575			
0			C	0.297	2.304	0.615	1	1	20.681			
T2	205.022	849.993	A	0.388	2.089	0.647	1	1	26.862	1354.515	67.726	B
80.000-60.000			B	0.496	1.906	0.695	1	1	35.569			
			C	0.354	2.163	0.634	1	1	24.396			
T3	233.592	1113.845	A	0.446	1.98	0.672	1	1	31.762	1379.899	68.995	B
60.000-40.000			B	0.553	1.841	0.726	1	1	41.299			
			C	0.365	2.137	0.638	1	1	25.512			
T4	275.606	1155.762	A	0.436	1.998	0.667	1	1	36.903	1363.715	68.186	B
40.000-20.000			B	0.513	1.884	0.704	1	1	44.904			
			C	0.311	2.267	0.619	1	1	25.748			
T5	172.926	1225.790	A	0.28	2.349	0.61	1	1	30.662	1238.475	61.924	B
20.000-0.000			B	0.31	2.27	0.619	1	1	33.837			
			C	0.217	2.54	0.594	1	1	24.133			
Sum Weight:	984.407	5232.469						OTM	327515.84 lb-ft	6563.366		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	97.261	887.080	A	0.355	2.161	0.634	0.8	1	22.958	1154.307	57.715	B
100.000-80.00			B	0.396	2.072	0.65	0.8	1	25.947			
0			C	0.297	2.304	0.615	0.8	1	19.053			
T2	205.022	849.993	A	0.388	2.089	0.647	0.8	1	25.343	1296.653	64.833	B
80.000-60.000			B	0.496	1.906	0.695	0.8	1	34.049			
			C	0.354	2.163	0.634	0.8	1	22.877			
T3	233.592	1113.845	A	0.446	1.98	0.672	0.8	1	30.252	1329.427	66.471	B
60.000-40.000			B	0.553	1.841	0.726	0.8	1	39.788			
			C	0.365	2.137	0.638	0.8	1	24.001			
T4	275.606	1155.762	A	0.436	1.998	0.667	0.8	1	35.285	1314.566	65.728	B
40.000-20.000			B	0.513	1.884	0.704	0.8	1	43.286			
			C	0.311	2.267	0.619	0.8	1	24.129			
T5	172.926	1225.790	A	0.28	2.349	0.61	0.8	1	28.813	1170.818	58.541	B
20.000-0.000			B	0.31	2.27	0.619	0.8	1	31.989			
			C	0.217	2.54	0.594	0.8	1	22.284			
Sum Weight:	984.407	5232.469						OTM	312269.88 lb-ft	6265.771		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	97.261	887.080	A	0.355	2.161	0.634	0.85	1	23.365	1172.421	58.621	B
100.000-80.00			B	0.396	2.072	0.65	0.85	1	26.354			
0			C	0.297	2.304	0.615	0.85	1	19.460			
T2	205.022	849.993	A	0.388	2.089	0.647	0.85	1	25.722	1311.119	65.556	B
80.000-60.000			B	0.496	1.906	0.695	0.85	1	34.429			
			C	0.354	2.163	0.634	0.85	1	23.256			
T3	233.592	1113.845	A	0.446	1.98	0.672	0.85	1	30.630	1342.045	67.102	B
60.000-40.000			B	0.553	1.841	0.726	0.85	1	40.166			
			C	0.365	2.137	0.638	0.85	1	24.379			
T4	275.606	1155.762	A	0.436	1.998	0.667	0.85	1	35.689	1326.853	66.343	B
40.000-20.000			B	0.513	1.884	0.704	0.85	1	43.691			
			C	0.311	2.267	0.619	0.85	1	24.534			
T5	172.926	1225.790	A	0.28	2.349	0.61	0.85	1	29.276	1187.732	59.387	B
20.000-0.000			B	0.31	2.27	0.619	0.85	1	32.451			
			C	0.217	2.54	0.594	0.85	1	22.746			
Sum Weight:	984.407	5232.469						OTM	316081.37 lb-ft	6340.170		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	27.500	480.293	A	0.209	2.566	0.592	1	1	15.009	577.615	28.881	B
100.000-80.00			B	0.229	2.502	0.597	1	1	16.185			
0			C	0.19	2.629	0.588	1	1	13.910			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T2	77.150	463.480	A	0.22	2.532	0.595	1	1	15.457	593.843	29.692	B
80.000-60.000			B	0.277	2.359	0.609	1	1	18.959			
			C	0.221	2.527	0.595	1	1	15.539			
T3	82.250	708.279	A	0.252	2.431	0.602	1	1	17.596	581.859	29.093	B
60.000-40.000			B	0.309	2.273	0.619	1	1	21.227			
			C	0.235	2.483	0.598	1	1	16.535			
T4	89.750	732.304	A	0.236	2.48	0.598	1	1	19.649	576.437	28.822	B
40.000-20.000			B	0.278	2.355	0.61	1	1	22.855			
			C	0.199	2.598	0.59	1	1	16.965			
T5	55.200	764.064	A	0.161	2.733	0.583	1	1	18.515	575.460	28.773	B
20.000-0.000			B	0.177	2.673	0.586	1	1	20.102			
			C	0.141	2.804	0.58	1	1	16.704			
Sum Weight:	331.850	3148.420						OTM	145695.03 lb-ft	2905.214		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	27.500	480.293	A	0.209	2.566	0.592	0.8	1	13.380	519.490	25.974	B
100.000-80.00			B	0.229	2.502	0.597	0.8	1	14.556			
0			C	0.19	2.629	0.588	0.8	1	12.281			
T2	77.150	463.480	A	0.22	2.532	0.595	0.8	1	13.938	546.250	27.312	B
80.000-60.000			B	0.277	2.359	0.609	0.8	1	17.439			
			C	0.221	2.527	0.595	0.8	1	14.020			
T3	82.250	708.279	A	0.252	2.431	0.602	0.8	1	16.086	540.453	27.023	B
60.000-40.000			B	0.309	2.273	0.619	0.8	1	19.717			
			C	0.235	2.483	0.598	0.8	1	15.025			
T4	89.750	732.304	A	0.236	2.48	0.598	0.8	1	18.030	535.619	26.781	B
40.000-20.000			B	0.278	2.355	0.61	0.8	1	21.237			
			C	0.199	2.598	0.59	0.8	1	15.347			
T5	55.200	764.064	A	0.161	2.733	0.583	0.8	1	16.666	522.544	26.127	B
20.000-0.000			B	0.177	2.673	0.586	0.8	1	18.254			
			C	0.141	2.804	0.58	0.8	1	14.855			
Sum Weight:	331.850	3148.420						OTM	133308.20 lb-ft	2664.355		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	27.500	480.293	A	0.209	2.566	0.592	0.85	1	13.788	534.021	26.701	B
100.000-80.00			B	0.229	2.502	0.597	0.85	1	14.963			
0			C	0.19	2.629	0.588	0.85	1	12.688			
T2	77.150	463.480	A	0.22	2.532	0.595	0.85	1	14.318	558.148	27.907	B
80.000-60.000			B	0.277	2.359	0.609	0.85	1	17.819			
			C	0.221	2.527	0.595	0.85	1	14.400			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T3	82.250	708.279	A	0.252	2.431	0.602	0.85	1	16.463	550.804	27.540	B
60.000-40.000			B	0.309	2.273	0.619	0.85	1	20.094			
			C	0.235	2.483	0.598	0.85	1	15.402			
T4	89.750	732.304	A	0.236	2.48	0.598	0.85	1	18.435	545.824	27.291	B
40.000-20.000			B	0.278	2.355	0.61	0.85	1	21.641			
			C	0.199	2.598	0.59	0.85	1	15.751			
T5	55.200	764.064	A	0.161	2.733	0.583	0.85	1	17.128	535.773	26.789	B
20.000-0.000			B	0.177	2.673	0.586	0.85	1	18.716			
			C	0.141	2.804	0.58	0.85	1	15.317			
Sum Weight:	331.850	3148.420						OTM	136404.91 lb-ft	2724.570		

Discrete Appurtenance Pressures - No Ice $G_H = 1.162$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft²	C_AA_C Side ft²
Pirod 4' Side Mount Standoff (1)	0.0000	50.000	0.000	-2.923	35.000	1.017	19	2.720	2.720
7' WHIP	0.0000	15.000	0.000	-4.923	35.000	1.017	19	1.400	1.400
Pirod 4' Side Mount Standoff (1)	0.0000	50.000	0.000	-2.634	45.000	1.093	20	2.720	2.720
20' WHIP	0.0000	60.000	0.000	-6.634	45.000	1.093	20	6.000	6.000
Pirod 4' Side Mount Standoff (1)	120.0000	50.000	2.281	1.317	50.000	1.126	21	2.720	2.720
19.5' WHIP	120.0000	32.000	5.745	3.317	50.000	1.126	21	5.850	5.850
Pirod 6' Side Mount Standoff (1)	120.0000	70.000	2.272	1.312	69.000	1.235	23	4.970	4.970
DB264-JJ	120.0000	36.000	7.468	4.312	69.000	1.235	23	3.160	3.160
Pirod 6' Side Mount Standoff (1)	0.0000	70.000	0.000	-2.620	72.000	1.250	23	4.970	4.970
19.5' WHIP	0.0000	32.000	0.000	-8.620	72.000	1.250	23	5.850	5.850
PR950	120.0000	38.000	2.260	1.305	90.000	1.332	25	5.950	2.975
4' WHIP	0.0000	8.250	0.000	-2.610	100.000	1.373	25	0.600	0.600
4' WHIP	120.0000	8.250	2.260	1.305	100.000	1.373	25	0.600	0.600
4' WHIP	240.0000	8.250	-2.260	1.305	100.000	1.373	25	0.600	0.600
ADP-U frame for 2 ant w 2' standoff	0.0000	300.000	0.000	-2.610	85.000	1.310	24	3.223	3.223
ADP-U frame for 2 ant w 2' standoff	120.0000	300.000	2.260	1.305	85.000	1.310	24	3.223	3.223
ADP-U frame for 2 ant w 2' standoff	240.0000	300.000	-2.260	1.305	85.000	1.310	24	3.223	3.223
LLPX310R	0.0000	28.700	0.000	-6.610	85.000	1.310	24	4.837	1.957
LLPX310R	120.0000	28.700	5.725	3.305	85.000	1.310	24	4.837	1.957
LLPX310R	240.0000	28.700	-5.725	3.305	85.000	1.310	24	4.837	1.957
Remote RU	0.0000	33.000	0.000	-6.610	80.000	1.288	24	0.000	0.856
Remote RU	120.0000	33.000	5.725	3.305	80.000	1.288	24	0.000	0.856
Remote RU	240.0000	33.000	-5.725	3.305	80.000	1.288	24	0.000	0.856
4' WHIP	0.0000	8.250	0.000	-3.212	30.000	1.000	18	0.600	0.600
	Sum Weight:	1621.100							

Discrete Appurtenance Pressures - With Ice $G_H = 1.162$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
Pirod 4' Side Mount Standoff (1)	0.0000	89.000	0.000	-2.923	35.000	1.017	14	4.910	4.910	0.5000
7' WHIP	0.0000	25.919	0.000	-4.923	35.000	1.017	14	2.125	2.125	0.5000
Pirod 4' Side Mount Standoff (1)	0.0000	89.000	0.000	-2.634	45.000	1.093	15	4.910	4.910	0.5000
20' WHIP	0.0000	103.168	0.000	-6.634	45.000	1.093	15	8.033	8.033	0.5000
Pirod 4' Side Mount Standoff (1)	120.0000	89.000	2.281	1.317	50.000	1.126	16	4.910	4.910	0.5000
19.5' WHIP	120.0000	74.099	5.745	3.317	50.000	1.126	16	7.833	7.833	0.5000
Pirod 6' Side Mount Standoff (1)	120.0000	130.000	2.272	1.312	69.000	1.235	17	6.120	6.120	0.5000
DB264-JJ	120.0000	46.800	7.468	4.312	69.000	1.235	17	5.688	5.688	0.5000
Pirod 6' Side Mount Standoff (1)	0.0000	130.000	0.000	-2.620	72.000	1.250	17	6.120	6.120	0.5000
19.5' WHIP	0.0000	74.099	0.000	-8.620	72.000	1.250	17	7.833	7.833	0.5000
PR950	120.0000	75.009	2.260	1.305	90.000	1.332	18	6.291	3.258	0.5000
4' WHIP	0.0000	13.296	0.000	-2.610	100.000	1.373	19	0.919	0.919	0.5000
4' WHIP	120.0000	13.296	2.260	1.305	100.000	1.373	19	0.919	0.919	0.5000
4' WHIP	240.0000	13.296	-2.260	1.305	100.000	1.373	19	0.919	0.919	0.5000
ADP-U frame for 2 ant w 2' standoff	0.0000	333.960	0.000	-2.610	85.000	1.310	18	3.616	3.616	0.5000
ADP-U frame for 2 ant w 2' standoff	120.0000	333.960	2.260	1.305	85.000	1.310	18	3.616	3.616	0.5000
ADP-U frame for 2 ant w 2' standoff	240.0000	333.960	-2.260	1.305	85.000	1.310	18	3.616	3.616	0.5000
LLPX310R	0.0000	54.670	0.000	-6.610	85.000	1.310	18	5.191	2.226	0.5000
LLPX310R	120.0000	54.670	5.725	3.305	85.000	1.310	18	5.191	2.226	0.5000
LLPX310R	240.0000	54.670	-5.725	3.305	85.000	1.310	18	5.191	2.226	0.5000
Remote RU	0.0000	44.966	0.000	-6.610	80.000	1.288	18	0.000	0.999	0.5000
Remote RU	120.0000	44.966	5.725	3.305	80.000	1.288	18	0.000	0.999	0.5000
Remote RU	240.0000	44.966	-5.725	3.305	80.000	1.288	18	0.000	0.999	0.5000
4' WHIP	0.0000	13.296	0.000	-3.212	30.000	1.000	14	0.919	0.919	0.5000
	Sum Weight:	2280.069								

Discrete Appurtenance Pressures - Service $G_H = 1.162$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
Pirod 4' Side Mount Standoff (1)	0.0000	50.000	0.000	-2.923	35.000	1.017	9	2.720	2.720
7' WHIP	0.0000	15.000	0.000	-4.923	35.000	1.017	9	1.400	1.400
Pirod 4' Side Mount Standoff (1)	0.0000	50.000	0.000	-2.634	45.000	1.093	10	2.720	2.720
20' WHIP	0.0000	60.000	0.000	-6.634	45.000	1.093	10	6.000	6.000
Pirod 4' Side Mount Standoff (1)	120.0000	50.000	2.281	1.317	50.000	1.126	10	2.720	2.720
19.5' WHIP	120.0000	32.000	5.745	3.317	50.000	1.126	10	5.850	5.850
Pirod 6' Side Mount Standoff (1)	120.0000	70.000	2.272	1.312	69.000	1.235	11	4.970	4.970
DB264-JJ	120.0000	36.000	7.468	4.312	69.000	1.235	11	3.160	3.160
Pirod 6' Side Mount Standoff (1)	0.0000	70.000	0.000	-2.620	72.000	1.250	12	4.970	4.970
19.5' WHIP	0.0000	32.000	0.000	-8.620	72.000	1.250	12	5.850	5.850
PR950	120.0000	38.000	2.260	1.305	90.000	1.332	12	5.950	2.975
4' WHIP	0.0000	8.250	0.000	-2.610	100.000	1.373	13	0.600	0.600

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
4' WHIP	120.0000	8.250	2.260	1.305	100.000	1.373	13	0.600	0.600
4' WHIP	240.0000	8.250	-2.260	1.305	100.000	1.373	13	0.600	0.600
ADP-U frame for 2 ant w 2' standoff	0.0000	300.000	0.000	-2.610	85.000	1.310	12	3.223	3.223
ADP-U frame for 2 ant w 2' standoff	120.0000	300.000	2.260	1.305	85.000	1.310	12	3.223	3.223
ADP-U frame for 2 ant w 2' standoff	240.0000	300.000	-2.260	1.305	85.000	1.310	12	3.223	3.223
LLPX310R	0.0000	28.700	0.000	-6.610	85.000	1.310	12	4.837	1.957
LLPX310R	120.0000	28.700	5.725	3.305	85.000	1.310	12	4.837	1.957
LLPX310R	240.0000	28.700	-5.725	3.305	85.000	1.310	12	4.837	1.957
Remote RU	0.0000	33.000	0.000	-6.610	80.000	1.288	12	0.000	0.856
Remote RU	120.0000	33.000	5.725	3.305	80.000	1.288	12	0.000	0.856
Remote RU	240.0000	33.000	-5.725	3.305	80.000	1.288	12	0.000	0.856
4' WHIP	0.0000	8.250	0.000	-3.212	30.000	1.000	9	0.600	0.600
	Sum Weight:	1621.100							

Dish Pressures - No Ice

Elevation ft	Dish Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	K_z	A_A ft^2	q_z psf
95.000	Andrew 2' w/Radome	0.0000	70.000	0.000	-4.610	1.353	3.142	25
85.000	Andrew 2' w/Radome	240.0000	70.000	-3.992	2.305	1.310	3.142	24
		Sum Weight:	140.000					

Dish Pressures - With Ice

Elevation ft	Dish Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	K_z	A_A ft^2	q_z psf	t_z in
95.000	Andrew 2' w/Radome	0.0000	282.000	0.000	-4.610	1.353	3.409	19	0.5000
85.000	Andrew 2' w/Radome	240.0000	282.000	-3.992	2.305	1.310	3.409	18	0.5000
		Sum Weight:	564.000						

Dish Pressures - Service

Elevation ft	Dish Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	K_z	A_A ft^2	q_z psf
95.000	Andrew 2' w/Radome	0.0000	70.000	0.000	-4.610	1.353	3.142	12
85.000	Andrew 2' w/Radome	240.0000	70.000	-3.992	2.305	1.310	3.142	12
		Sum Weight:	140.000					

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Leg Weight	1793.866					
Bracing Weight	1354.554					
Total Member Self-Weight	3148.420			-841.88	-1153.19	
Total Weight	5241.370			-841.88	-1153.19	
Wind 0 deg - No Ice		-36.881	-7761.969	-431455.27	2166.15	2628.02
Wind 30 deg - No Ice		3689.066	-6389.650	-355957.52	-206179.30	682.78
Wind 60 deg - No Ice		6321.875	-3607.349	-200844.11	-354205.89	-1385.03
Wind 90 deg - No Ice		7442.013	36.881	2477.45	-416954.66	-3097.64
Wind 120 deg - No Ice		6777.385	3912.925	217339.44	-379054.32	-4049.80
Wind 150 deg - No Ice		3752.947	6426.532	357593.09	-211928.55	-3780.42
Wind 180 deg - No Ice		36.881	7278.579	404911.84	-4472.52	-2559.77
Wind 210 deg - No Ice		-3689.066	6389.650	354273.76	203872.92	-682.78
Wind 240 deg - No Ice		-6740.503	3849.044	211590.19	373428.61	1421.77
Wind 270 deg - No Ice		-7442.013	-36.881	-4161.21	414648.29	3097.64
Wind 300 deg - No Ice		-6358.756	-3671.230	-206593.37	355218.84	3944.80
Wind 330 deg - No Ice		-3752.947	-6426.532	-359276.85	209622.18	3780.42
Member Ice	2084.049					
Total Weight Ice	9060.945			-2980.19	-1512.69	
Wind 0 deg - Ice		-28.204	-8437.830	-460445.63	1025.62	3113.82
Wind 30 deg - Ice		4099.175	-7099.979	-387985.19	-223795.43	687.74
Wind 60 deg - Ice		7063.752	-4045.692	-221891.69	-385755.16	-1875.43
Wind 90 deg - Ice		8247.200	28.204	-441.87	-450474.66	-3957.78
Wind 120 deg - Ice		7349.680	4243.340	227950.78	-401496.86	-5039.35
Wind 150 deg - Ice		4148.025	7128.183	384563.12	-228191.93	-4645.52
Wind 180 deg - Ice		28.204	8140.235	439239.29	-4051.01	-3067.60
Wind 210 deg - Ice		-4099.175	7099.979	382024.80	220770.04	-687.74
Wind 240 deg - Ice		-7321.477	4194.490	223554.28	395933.16	1925.54
Wind 270 deg - Ice		-8247.200	-28.204	-5518.51	447449.28	3957.78
Wind 300 deg - Ice		-7091.955	-4094.542	-226288.18	385268.09	4943.03
Wind 330 deg - Ice		-4148.025	-7128.183	-390523.50	225166.54	4645.52
Total Weight	5241.370			-841.88	-1153.19	
Wind 0 deg - Service		-18.377	-3867.556	-215489.86	1121.71	1309.47
Wind 30 deg - Service		1838.151	-3183.770	-177871.61	-102690.56	340.21
Wind 60 deg - Service		3150.000	-1797.433	-100583.27	-176447.75	-690.12
Wind 90 deg - Service		3708.131	18.377	725.75	-207713.57	-1543.46
Wind 120 deg - Service		3376.967	1949.693	107785.01	-188828.98	-2017.89
Wind 150 deg - Service		1869.981	3202.147	177669.18	-105555.24	-1883.67
Wind 180 deg - Service		18.377	3626.697	201246.69	-2186.14	-1275.45
Wind 210 deg - Service		-1838.151	3183.770	176015.26	101626.12	-340.21
Wind 240 deg - Service		-3358.590	1917.863	104920.33	186110.62	708.43
Wind 270 deg - Service		-3708.131	-18.377	-2582.10	206649.14	1543.46
Wind 300 deg - Service		-3168.377	-1829.263	-103447.95	177037.24	1965.58
Wind 330 deg - Service		-1869.981	-3202.147	-179525.53	104490.80	1883.67

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	IBC .6 Dead+Wind 0 deg - No Ice
4	Dead+Wind 30 deg - No Ice
5	IBC .6 Dead+Wind 30 deg - No Ice
6	Dead+Wind 60 deg - No Ice
7	IBC .6 Dead+Wind 60 deg - No Ice
8	Dead+Wind 90 deg - No Ice

Comb. No.	Description
9	IBC .6 Dead+Wind 90 deg - No Ice
10	Dead+Wind 120 deg - No Ice
11	IBC .6 Dead+Wind 120 deg - No Ice
12	Dead+Wind 150 deg - No Ice
13	IBC .6 Dead+Wind 150 deg - No Ice
14	Dead+Wind 180 deg - No Ice
15	IBC .6 Dead+Wind 180 deg - No Ice
16	Dead+Wind 210 deg - No Ice
17	IBC .6 Dead+Wind 210 deg - No Ice
18	Dead+Wind 240 deg - No Ice
19	IBC .6 Dead+Wind 240 deg - No Ice
20	Dead+Wind 270 deg - No Ice
21	IBC .6 Dead+Wind 270 deg - No Ice
22	Dead+Wind 300 deg - No Ice
23	IBC .6 Dead+Wind 300 deg - No Ice
24	Dead+Wind 330 deg - No Ice
25	IBC .6 Dead+Wind 330 deg - No Ice
26	Dead+Ice+Temp
27	Dead+Wind 0 deg+Ice+Temp
28	IBC .6 Dead+Wind 0 deg+.6 Ice+Temp
29	Dead+Wind 30 deg+Ice+Temp
30	IBC .6 Dead+Wind 30 deg+.6 Ice+Temp
31	Dead+Wind 60 deg+Ice+Temp
32	IBC .6 Dead+Wind 60 deg+.6 Ice+Temp
33	Dead+Wind 90 deg+Ice+Temp
34	IBC .6 Dead+Wind 90 deg+.6 Ice+Temp
35	Dead+Wind 120 deg+Ice+Temp
36	IBC .6 Dead+Wind 120 deg+.6 Ice+Temp
37	Dead+Wind 150 deg+Ice+Temp
38	IBC .6 Dead+Wind 150 deg+.6 Ice+Temp
39	Dead+Wind 180 deg+Ice+Temp
40	IBC .6 Dead+Wind 180 deg+.6 Ice+Temp
41	Dead+Wind 210 deg+Ice+Temp
42	IBC .6 Dead+Wind 210 deg+.6 Ice+Temp
43	Dead+Wind 240 deg+Ice+Temp
44	IBC .6 Dead+Wind 240 deg+.6 Ice+Temp
45	Dead+Wind 270 deg+Ice+Temp
46	IBC .6 Dead+Wind 270 deg+.6 Ice+Temp
47	Dead+Wind 300 deg+Ice+Temp
48	IBC .6 Dead+Wind 300 deg+.6 Ice+Temp
49	Dead+Wind 330 deg+Ice+Temp
50	IBC .6 Dead+Wind 330 deg+.6 Ice+Temp
51	Dead+Wind 0 deg - Service
52	Dead+Wind 30 deg - Service
53	Dead+Wind 60 deg - Service
54	Dead+Wind 90 deg - Service
55	Dead+Wind 120 deg - Service
56	Dead+Wind 150 deg - Service
57	Dead+Wind 180 deg - Service
58	Dead+Wind 210 deg - Service
59	Dead+Wind 240 deg - Service
60	Dead+Wind 270 deg - Service
61	Dead+Wind 300 deg - Service
62	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T1	100 - 80	Leg	Max Tension	48	3201.133	57.25	25.09
			Max. Compression	27	-4723.488	6.86	-0.89
			Max. Mx	8	1060.974	110.98	3.31
			Max. My	2	400.319	-0.50	-126.76
			Max. Vy	8	186.881	-72.81	3.31
			Max. Vx	2	-207.289	-0.50	77.19
		Diagonal	Max Tension	12	877.309	0.00	0.00
			Max. Compression	24	-880.586	0.00	0.00
			Max. Mx	49	469.218	4.69	-0.07
			Max. My	16	-873.612	-0.49	-0.74
			Max. Vy	49	4.778	4.69	-0.07
			Max. Vx	31	0.254	0.00	0.00
		Top Girt	Max Tension	11	10.191	0.00	0.00
			Max. Compression	47	-19.119	0.00	0.00
			Max. Mx	26	-3.719	-7.24	0.00
			Max. My	49	-7.448	0.00	-0.00
			Max. Vy	26	6.403	0.00	0.00
			Max. Vx	49	-0.000	0.00	0.00
T2	80 - 60	Leg	Max Tension	48	16710.894	-20.51	-2.03
			Max. Compression	27	-19616.405	49.82	-9.89
			Max. Mx	27	-12441.135	54.68	-42.83
			Max. My	41	-1116.351	-0.66	-109.97
			Max. Vy	2	123.164	30.19	-21.92
			Max. Vx	20	-327.642	0.07	-18.82
		Diagonal	Max Tension	49	1955.126	0.00	0.00
			Max. Compression	37	-1982.817	0.00	0.00
			Max. Mx	27	1174.490	10.90	-0.59
			Max. My	37	-1859.657	-2.09	2.34
			Max. Vy	27	-6.859	10.90	-0.59
			Max. Vx	37	-0.779	-2.09	2.34
T3	60 - 40	Leg	Max Tension	48	38601.640	25.82	59.23
			Max. Compression	35	-43203.777	-174.79	-103.59
			Max. Mx	33	-2197.418	-314.90	-13.83
			Max. My	27	16222.197	89.39	227.34
			Max. Vy	33	260.959	-314.90	-13.83
			Max. Vx	29	149.281	-97.32	188.72
		Diagonal	Max Tension	49	3025.389	0.00	0.00
			Max. Compression	35	-3177.588	0.00	0.00
			Max. Mx	35	2466.609	22.80	-0.62
			Max. My	33	-2089.342	-9.48	6.71
			Max. Vy	35	-11.461	22.80	-0.62
			Max. Vx	33	-2.218	-9.48	6.71
T4	40 - 20	Leg	Max Tension	48	49586.618	-26.01	-7.45
			Max. Compression	35	-55617.655	43.60	4.85
			Max. Mx	35	-47362.848	203.16	2.32
			Max. My	33	-2450.279	-0.89	246.68
			Max. Vy	10	46.473	202.47	-0.78
			Max. Vx	33	152.385	-0.89	246.68
		Diagonal	Max Tension	35	1700.470	0.00	0.00
			Max. Compression	35	-1842.265	0.00	0.00
			Max. Mx	27	619.709	13.66	-2.44
			Max. My	49	-1652.888	-5.28	-6.89
			Max. Vy	27	-7.535	13.66	-2.44
			Max. Vx	49	2.222	0.00	0.00
		Top Girt	Max Tension	48	162.776	0.00	0.00
			Max. Compression	10	-200.960	0.00	0.00
			Max. Mx	26	20.381	-7.37	0.00
			Max. My	35	93.948	0.00	0.21
			Max. Vy	26	6.459	0.00	0.00
			Max. Vx	35	-0.187	0.00	0.00
T5	20 - 0	Leg	Max Tension	48	57229.115	65.88	-5.01

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	35	-64649.733	-0.00	-0.01
			Max. Mx	48	56030.029	-243.08	-3.27
			Max. My	33	-2738.653	135.71	194.64
			Max. Vy	48	-75.522	-243.08	-3.27
			Max. Vx	33	56.297	135.71	194.64
		Diagonal	Max Tension	38	1729.610	0.00	0.00
			Max. Compression	37	-1743.739	0.00	0.00
			Max. Mx	47	197.880	16.18	-1.25
			Max. My	49	-1719.820	5.14	-3.68
			Max. Vy	47	9.101	16.18	-1.25
			Max. Vx	49	1.003	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	43	64536.305	4355.864	-2668.831
	Max. H_x	43	64536.305	4355.864	-2668.831
	Max. H_z	32	-58043.497	-4644.586	2829.773
	Min. Vert	32	-58043.497	-4644.586	2829.773
	Min. H_x	32	-58043.497	-4644.586	2829.773
	Min. H_z	43	64536.305	4355.864	-2668.831
Leg B	Max. Vert	35	65488.344	-4288.334	-2868.907
	Max. H_x	48	-58425.702	4568.328	3024.604
	Max. H_z	48	-58425.702	4568.328	3024.604
	Min. Vert	48	-58425.702	4568.328	3024.604
	Min. H_x	35	65488.344	-4288.334	-2868.907
	Min. H_z	35	65488.344	-4288.334	-2868.907
Leg A	Max. Vert	27	65321.348	207.089	5120.971
	Max. H_x	47	33643.878	590.848	2364.675
	Max. H_z	27	65321.348	207.089	5120.971
	Min. Vert	40	-57575.000	-206.772	-5429.019
	Min. H_x	36	-29081.990	-595.915	-2992.429
	Min. H_z	40	-57575.000	-206.772	-5429.019

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	5241.370	-0.000	0.000	-841.77	-1153.19	-0.00
Dead+Wind 0 deg - No Ice	5241.370	-36.881	-7761.970	-433604.27	2164.97	2639.85
IBC .6 Dead+Wind 0 deg - No Ice	3144.822	-36.881	-7761.970	-432395.95	2622.51	2634.63
Dead+Wind 30 deg - No Ice	5241.370	3689.068	-6389.651	-357728.11	-207212.21	690.07
IBC .6 Dead+Wind 30 deg - No Ice	3144.822	3689.068	-6389.651	-356672.61	-206332.78	688.04
Dead+Wind 60 deg - No Ice	5241.370	6321.876	-3607.350	-201847.90	-355974.43	-1387.00
IBC .6 Dead+Wind 60 deg - No Ice	3144.800	6321.864	-3607.277	-201105.71	-354794.79	-1385.85
Dead+Wind 90 deg - No Ice	5241.370	7442.015	36.881	2477.90	-419040.53	-3108.37
IBC .6 Dead+Wind 90 deg - No	3144.822	7442.015	36.881	2809.87	-417733.27	-3104.87

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Ice						
Dead+Wind 120 deg - No Ice	5241.370	6777.386	3912.925	218405.06	-380960.67	-4063.59
IBC .6 Dead+Wind 120 deg - No Ice	3144.822	6777.386	3912.925	218304.06	-379729.68	-4057.53
Dead+Wind 150 deg - No Ice	5241.370	3752.947	6426.534	359367.27	-213012.17	-3792.95
IBC .6 Dead+Wind 150 deg - No Ice	3144.822	3752.947	6426.533	358983.37	-212117.56	-3787.01
Dead+Wind 180 deg - No Ice	5241.370	36.882	7278.580	406931.01	-4517.91	-2570.84
IBC .6 Dead+Wind 180 deg - No Ice	3144.806	36.829	7278.540	406452.53	-4042.14	-2566.00
Dead+Wind 210 deg - No Ice	5241.370	-3689.066	6389.652	356038.39	204879.04	-690.06
IBC .6 Dead+Wind 210 deg - No Ice	3144.822	-3689.067	6389.652	355663.72	204933.57	-688.04
Dead+Wind 240 deg - No Ice	5241.370	-6740.504	3849.044	212629.85	375288.67	1423.76
IBC .6 Dead+Wind 240 deg - No Ice	3144.822	-6740.504	3849.045	212545.19	375000.28	1422.91
Dead+Wind 270 deg - No Ice	5241.370	-7442.015	-36.882	-4207.38	416717.82	3108.28
IBC .6 Dead+Wind 270 deg - No Ice	3144.822	-7442.015	-36.882	-3856.56	416343.48	3104.77
Dead+Wind 300 deg - No Ice	5241.370	-6358.758	-3671.230	-207650.16	356985.96	3957.83
IBC .6 Dead+Wind 300 deg - No Ice	3144.820	-6358.761	-3671.228	-206891.66	356730.09	3952.24
Dead+Wind 330 deg - No Ice	5241.370	-3752.948	-6426.533	-361083.44	210655.67	3793.06
IBC .6 Dead+Wind 330 deg - No Ice	3144.822	-3752.948	-6426.533	-360018.42	210693.44	3787.01
Dead+Ice+Temp	9060.945	-0.000	0.000	-3013.30	-1522.49	0.01
Dead+Wind 0 deg+Ice+Temp	9060.945	-28.203	-8437.830	-464231.77	1025.72	3125.30
IBC .6 Dead+Wind 0 deg+.6 Ice+Temp	5436.567	-28.203	-8437.832	-461436.59	1625.84	3120.21
Dead+Wind 30 deg+Ice+Temp	9060.945	4099.175	-7099.980	-391170.67	-225633.88	683.93
IBC .6 Dead+Wind 30 deg+.6 Ice+Temp	5436.567	4099.174	-7099.981	-388627.37	-224253.98	686.25
Dead+Wind 60 deg+Ice+Temp	9060.945	7063.752	-4045.692	-223724.09	-388920.79	-1896.97
IBC .6 Dead+Wind 60 deg+.6 Ice+Temp	5436.567	7063.751	-4045.692	-221754.36	-386978.56	-1887.98
Dead+Wind 90 deg+Ice+Temp	9060.945	8247.201	28.204	-471.61	-454179.76	-3991.64
IBC .6 Dead+Wind 90 deg+.6 Ice+Temp	5436.567	8247.202	28.205	733.87	-452011.70	-3978.22
Dead+Wind 120 deg+Ice+Temp	9060.945	7349.681	4243.340	229789.11	-404816.74	-5073.25
IBC .6 Dead+Wind 120 deg+.6 Ice+Temp	5436.567	7349.683	4243.341	230205.80	-402816.18	-5058.77
Dead+Wind 150 deg+Ice+Temp	9060.945	4148.025	7128.183	387695.45	-230101.02	-4668.80
IBC .6 Dead+Wind 150 deg+.6 Ice+Temp	5436.567	4148.026	7128.183	387571.80	-228698.83	-4657.78
Dead+Wind 180 deg+Ice+Temp	9060.945	28.203	8140.235	442830.46	-4116.55	-3078.71
IBC .6 Dead+Wind 180 deg+.6 Ice+Temp	5436.567	28.203	8140.234	442519.47	-3488.78	-3073.65
Dead+Wind 210 deg+Ice+Temp	9060.945	-4099.175	7099.980	385144.29	222566.32	-683.91
IBC .6 Dead+Wind 210 deg+.6 Ice+Temp	5436.567	-4099.176	7099.979	385033.08	222415.81	-686.24
Dead+Wind 240 deg+Ice+Temp	9060.945	-7321.477	4194.490	225358.02	399183.52	1947.88
IBC .6 Dead+Wind 240 deg+.6 Ice+Temp	5436.567	-7321.478	4194.491	225796.39	398424.42	1938.52
Dead+Wind 270 deg+Ice+Temp	9060.945	-8247.201	-28.203	-5608.68	451127.47	3991.58
IBC .6 Dead+Wind 270 deg+.6 Ice+Temp	5436.567	-8247.202	-28.202	-4378.04	450186.99	3978.15
Dead+Wind 300 deg+Ice+Temp	9060.945	-7091.956	-4094.542	-228189.33	388430.08	4975.58
IBC .6 Dead+Wind 300 deg+.6 Ice+Temp	5436.567	-7091.956	-4094.541	-226197.61	387701.80	4961.61
Dead+Wind 330 deg+Ice+Temp	9060.945	-4148.026	-7128.183	-393755.67	227006.78	4668.67
IBC .6 Dead+Wind 330 deg+.6	5436.567	-4148.025	-7128.184	-391199.69	226830.78	4657.73

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Ice+Temp						
Dead+Wind 0 deg - Service	5241.370	-18.377	-3867.556	-216484.46	500.14	1315.43
Dead+Wind 30 deg - Service	5241.370	1838.151	-3183.770	-178676.19	-103831.71	342.93
Dead+Wind 60 deg - Service	5241.370	3150.000	-1797.433	-101001.52	-177958.99	-691.16
Dead+Wind 90 deg - Service	5241.370	3708.131	18.377	813.08	-209383.84	-1547.94
Dead+Wind 120 deg - Service	5241.370	3376.967	1949.693	108407.62	-190407.60	-2024.85
Dead+Wind 150 deg - Service	5241.370	1869.980	3202.147	178643.33	-106718.69	-1890.89
Dead+Wind 180 deg - Service	5241.357	18.418	3626.665	202340.90	-2830.21	-1280.99
Dead+Wind 210 deg - Service	5241.370	-1838.151	3183.770	176981.56	101506.37	-342.92
Dead+Wind 240 deg - Service	5241.370	-3358.590	1917.863	105526.14	186417.67	709.43
Dead+Wind 270 deg - Service	5241.370	-3708.131	-18.377	-2518.12	207061.05	1547.91
Dead+Wind 300 deg - Service	5241.370	-3168.377	-1829.263	-103889.50	177299.66	1971.87
Dead+Wind 330 deg - Service	5241.370	-1869.981	-3202.147	-180344.40	104387.34	1890.84

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	-0.000	-5241.370	0.000	0.000	5241.370	-0.000	0.000%
2	-36.881	-5241.370	-7761.969	36.881	5241.370	7761.970	0.000%
3	-36.881	-3144.822	-7761.969	36.881	3144.822	7761.970	0.000%
4	3689.066	-5241.370	-6389.650	-3689.068	5241.370	6389.651	0.000%
5	3689.066	-3144.822	-6389.650	-3689.068	3144.822	6389.651	0.000%
6	6321.875	-5241.370	-3607.349	-6321.876	5241.370	3607.350	0.000%
7	6321.875	-3144.822	-3607.349	-6321.864	3144.800	3607.277	0.001%
8	7442.013	-5241.370	36.881	-7442.015	5241.370	-36.881	0.000%
9	7442.013	-3144.822	36.881	-7442.015	3144.822	-36.881	0.000%
10	6777.385	-5241.370	3912.925	-6777.386	5241.370	-3912.925	0.000%
11	6777.385	-3144.822	3912.925	-6777.386	3144.822	-3912.925	0.000%
12	3752.947	-5241.370	6426.532	-3752.947	5241.370	-6426.534	0.000%
13	3752.947	-3144.822	6426.532	-3752.947	3144.822	-6426.533	0.000%
14	36.881	-5241.370	7278.579	-36.882	5241.370	-7278.580	0.000%
15	36.881	-3144.822	7278.579	-36.829	3144.806	-7278.540	0.001%
16	-3689.066	-5241.370	6389.650	3689.066	5241.370	-6389.652	0.000%
17	-3689.066	-3144.822	6389.650	3689.067	3144.822	-6389.652	0.000%
18	-6740.503	-5241.370	3849.044	6740.504	5241.370	-3849.044	0.000%
19	-6740.503	-3144.822	3849.044	6740.504	3144.822	-3849.045	0.000%
20	-7442.013	-5241.370	-36.881	7442.015	5241.370	36.882	0.000%
21	-7442.013	-3144.822	-36.881	7442.015	3144.822	36.882	0.000%
22	-6358.756	-5241.370	-3671.230	6358.758	5241.370	3671.230	0.000%
23	-6358.756	-3144.822	-3671.230	6358.761	3144.820	3671.228	0.000%
24	-3752.947	-5241.370	-6426.532	3752.948	5241.370	6426.533	0.000%
25	-3752.947	-3144.822	-6426.532	3752.948	3144.822	6426.533	0.000%
26	-0.000	-9060.945	0.000	0.000	9060.945	-0.000	0.000%
27	-28.204	-9060.945	-8437.830	28.203	9060.945	8437.830	0.000%
28	-28.204	-5436.567	-8437.830	28.203	5436.567	8437.832	0.000%
29	4099.175	-9060.945	-7099.979	-4099.175	9060.945	7099.980	0.000%
30	4099.175	-5436.567	-7099.979	-4099.174	5436.567	7099.981	0.000%
31	7063.752	-9060.945	-4045.692	-7063.752	9060.945	4045.692	0.000%
32	7063.752	-5436.567	-4045.692	-7063.751	5436.567	4045.692	0.000%
33	8247.200	-9060.945	28.204	-8247.201	9060.945	-28.204	0.000%
34	8247.200	-5436.567	28.204	-8247.202	5436.567	-28.205	0.000%
35	7349.680	-9060.945	4243.340	-7349.681	9060.945	-4243.340	0.000%
36	7349.680	-5436.567	4243.340	-7349.683	5436.567	-4243.341	0.000%
37	4148.025	-9060.945	7128.183	-4148.025	9060.945	-7128.183	0.000%
38	4148.025	-5436.567	7128.183	-4148.026	5436.567	-7128.183	0.000%
39	28.204	-9060.945	8140.234	-28.203	9060.945	-8140.235	0.000%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
40	28.204	-5436.567	8140.234	-28.203	5436.567	-8140.234	0.000%
41	-4099.175	-9060.945	7099.979	4099.175	9060.945	-7099.980	0.000%
42	-4099.175	-5436.567	7099.979	4099.176	5436.567	-7099.979	0.000%
43	-7321.477	-9060.945	4194.490	7321.477	9060.945	-4194.490	0.000%
44	-7321.477	-5436.567	4194.490	7321.478	5436.567	-4194.491	0.000%
45	-8247.200	-9060.945	-28.204	8247.201	9060.945	28.203	0.000%
46	-8247.200	-5436.567	-28.204	8247.202	5436.567	28.202	0.000%
47	-7091.955	-9060.945	-4094.542	7091.956	9060.945	4094.542	0.000%
48	-7091.955	-5436.567	-4094.542	7091.956	5436.567	4094.541	0.000%
49	-4148.025	-9060.945	-7128.183	4148.026	9060.945	7128.183	0.000%
50	-4148.025	-5436.567	-7128.183	4148.025	5436.567	7128.184	0.000%
51	-18.377	-5241.370	-3867.556	18.377	5241.370	3867.556	0.000%
52	1838.151	-5241.370	-3183.770	-1838.151	5241.370	3183.770	0.000%
53	3150.000	-5241.370	-1797.433	-3150.000	5241.370	1797.433	0.000%
54	3708.131	-5241.370	18.377	-3708.131	5241.370	-18.377	0.000%
55	3376.967	-5241.370	1949.693	-3376.967	5241.370	-1949.693	0.000%
56	1869.980	-5241.370	3202.147	-1869.980	5241.370	-3202.147	0.000%
57	18.377	-5241.370	3626.697	-18.418	5241.357	-3626.665	0.001%
58	-1838.151	-5241.370	3183.770	1838.151	5241.370	-3183.770	0.000%
59	-3358.590	-5241.370	1917.863	3358.590	5241.370	-1917.863	0.000%
60	-3708.131	-5241.370	-18.377	3708.131	5241.370	18.377	0.000%
61	-3168.377	-5241.370	-1829.263	3168.377	5241.370	1829.263	0.000%
62	-1869.980	-5241.370	-3202.147	1869.981	5241.370	3202.147	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000001
3	Yes	4	0.00000001	0.00000001
4	Yes	4	0.00000001	0.00000001
5	Yes	4	0.00000001	0.00000001
6	Yes	4	0.00000001	0.00000001
7	Yes	4	0.00000001	0.00000001
8	Yes	4	0.00000001	0.00000001
9	Yes	4	0.00000001	0.00000001
10	Yes	4	0.00000001	0.00000001
11	Yes	4	0.00000001	0.00000001
12	Yes	4	0.00000001	0.00000001
13	Yes	4	0.00000001	0.00000001
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00000001
16	Yes	4	0.00000001	0.00000001
17	Yes	4	0.00000001	0.00000001
18	Yes	4	0.00000001	0.00000001
19	Yes	4	0.00000001	0.00000001
20	Yes	4	0.00000001	0.00000001
21	Yes	4	0.00000001	0.00000001
22	Yes	4	0.00000001	0.00000001
23	Yes	4	0.00000001	0.00000001
24	Yes	4	0.00000001	0.00000001
25	Yes	4	0.00000001	0.00000001
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00000384
28	Yes	4	0.00000001	0.00000403

29	Yes	4	0.00000001	0.00000391
30	Yes	4	0.00000001	0.00000001
31	Yes	4	0.00000001	0.00000001
32	Yes	4	0.00000001	0.00000001
33	Yes	4	0.00000001	0.00000419
34	Yes	4	0.00000001	0.00000362
35	Yes	4	0.00000001	0.00000392
36	Yes	4	0.00000001	0.00000410
37	Yes	4	0.00000001	0.00000383
38	Yes	4	0.00000001	0.00000001
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000001
41	Yes	4	0.00000001	0.00000381
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000374
44	Yes	4	0.00000001	0.00000395
45	Yes	4	0.00000001	0.00000413
46	Yes	4	0.00000001	0.00000355
47	Yes	4	0.00000001	0.00000361
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000389
50	Yes	4	0.00000001	0.00000001
51	Yes	4	0.00000001	0.00000001
52	Yes	4	0.00000001	0.00000001
53	Yes	4	0.00000001	0.00000001
54	Yes	4	0.00000001	0.00000001
55	Yes	4	0.00000001	0.00000001
56	Yes	4	0.00000001	0.00000001
57	Yes	4	0.00000001	0.00000001
58	Yes	4	0.00000001	0.00000001
59	Yes	4	0.00000001	0.00000001
60	Yes	4	0.00000001	0.00000001
61	Yes	4	0.00000001	0.00000001
62	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	100 - 80	6.107	55	0.4666	0.0957
T2	80 - 60	4.152	55	0.4569	0.0922
T3	60 - 40	2.340	55	0.3758	0.0757
T4	40 - 20	0.988	55	0.2392	0.0542
T5	20 - 0	0.245	55	0.1098	0.0198

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
100.000	4' WHIP	55	6.107	0.4666	0.0957	210132
95.000	Andrew 2' w/Radome	55	5.615	0.4678	0.0956	210132
90.000	PR950	55	5.124	0.4675	0.0953	105066
85.000	Andrew 2' w/Radome	55	4.636	0.4643	0.0942	70044
80.000	Remote RU	55	4.152	0.4569	0.0922	45994

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
72.000	Pirod 6' Side Mount Standoff (1)	55	3.393	0.4340	0.0867	18793
69.000	Pirod 6' Side Mount Standoff (1)	55	3.118	0.4219	0.0840	15080
50.000	Pirod 4' Side Mount Standoff (1)	55	1.592	0.3103	0.0664	8361
45.000	Pirod 4' Side Mount Standoff (1)	55	1.271	0.2748	0.0609	7899
35.000	Pirod 4' Side Mount Standoff (1)	55	0.744	0.2047	0.0460	7649
30.000	4' WHIP	55	0.539	0.1717	0.0369	7819

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	100 - 80	12.626	27	0.9614	0.2264
T2	80 - 60	8.616	35	0.9382	0.2187
T3	60 - 40	4.895	35	0.7765	0.1807
T4	40 - 20	2.086	35	0.4999	0.1310
T5	20 - 0	0.522	35	0.2317	0.0489

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
100.000	4' WHIP	27	12.626	0.9614	0.2264	99098
95.000	Andrew 2' w/Radome	27	11.614	0.9625	0.2264	99098
90.000	PR950	27	10.605	0.9608	0.2256	49549
85.000	Andrew 2' w/Radome	35	9.606	0.9536	0.2232	33032
80.000	Remote RU	35	8.616	0.9382	0.2187	21935
72.000	Pirod 6' Side Mount Standoff (1)	35	7.061	0.8918	0.2059	9276
69.000	Pirod 6' Side Mount Standoff (1)	35	6.496	0.8677	0.1999	7510
50.000	Pirod 4' Side Mount Standoff (1)	35	3.346	0.6448	0.1594	4160
45.000	Pirod 4' Side Mount Standoff (1)	35	2.678	0.5726	0.1467	3901
35.000	Pirod 4' Side Mount Standoff (1)	35	1.576	0.4291	0.1116	3723
30.000	4' WHIP	35	1.145	0.3607	0.0900	3775

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	100	Leg	A325N	0.6250	4	800.283	13499.000	0.059 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	877.309	2356.250	0.372 ✓	1.333	Member Block Shear
T2	80	Leg	A325N	0.6250	4	4177.720	13499.000	0.309 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	1955.130	2356.250	0.830 ✓	1.333	Member Block Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T3	60	Leg	A325N	0.6250	4	9650.410	13499.000	0.715 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	3025.390	3534.380	0.856 ✔	1.333	Member Block Shear
T4	40	Leg	A325N	0.7500	4	12396.700	19438.600	0.638 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	1700.470	2356.250	0.722 ✔	1.333	Member Block Shear
T5	20	Leg	A325N	0.7500	4	14307.300	19438.600	0.736 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	1729.610	2356.250	0.734 ✔	1.333	Member Block Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio P / P_a
T1	100 - 80	ROHN 2 STD	20.000	4.000	61.0 K=1.00	22.549	1.0745	-4723.490	24229.900	0.195 ✔
T2	80 - 60	ROHN 2 STD	20.000	4.000	61.0 K=1.00	22.549	1.0745	-19616.400	24229.900	0.810 ✔
T3	60 - 40	ROHN 2.5 STD	20.000	4.000	50.7 K=1.00	24.247	1.7040	-43203.801	41317.801	1.046 ✔
T4	40 - 20	ROHN 2.5 X-STR	20.033	5.008	65.0 K=1.00	21.839	2.2535	-55617.699	49214.500	1.130 ✔
T5	20 - 0	ROHN 2.5 X-STR	20.035	5.009	65.0 K=1.00	21.838	2.2535	-64649.699	49212.699	1.314 ✔

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio P / P_a
T1	100 - 80	L1 1/2x1 1/2x1/8	6.036	2.886	58.5 K=0.50	17.576	0.3594	-880.586	6316.480	0.139 ✔
T2	80 - 60	L1 1/2x1 1/2x1/8	6.065	2.903	58.8 K=0.50	17.543	0.3594	-1982.820	6304.510	0.315 ✔
T3	60 - 40	L1 1/2x1 1/2x3/16	6.068	2.875	58.8 K=0.50	17.545	0.5273	-3177.590	9252.260	0.343 ✔
T4	40 - 20	L1 1/2x1 1/2x1/8	6.941	3.498	70.9 K=0.50	16.341	0.3594	-1842.270	5872.440	0.314 ✔
T5	20 - 0	L1 1/2x1 1/2x1/8	9.299	4.661	94.4 K=0.50	13.672	0.3594	-1743.740	4913.300	0.355 ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	100 - 80	L1 1/2x1 1/2x1/8	4.521	4.323	175.1 K=1.00	4.868	0.3594	-19.119	1749.510	0.011 ✔
T4	40 - 20	L1 1/2x1 1/2x1/8	4.563	4.323	175.1 K=1.00	4.868	0.3594	-200.960	1749.510	0.115 ✔

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	100 - 80	ROHN 2 STD	20.000	4.000	61.0	30.000	1.0745	3201.130	32235.900	0.099 ✔
T2	80 - 60	ROHN 2 STD	20.000	4.000	61.0	30.000	1.0745	16710.900	32235.900	0.518 ✔
T3	60 - 40	ROHN 2.5 STD	20.000	4.000	50.7	30.000	1.7040	38601.602	51121.500	0.755 ✔
T4	40 - 20	ROHN 2.5 X-STR	20.033	5.008	65.0	30.000	2.2535	49586.602	67606.203	0.733 ✔
T5	20 - 0	ROHN 2.5 X-STR	20.035	5.009	65.0	30.000	2.2535	57229.102	67606.203	0.847 ✔

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	100 - 80	L1 1/2x1 1/2x1/8	6.036	2.886	111.7	29.000	0.2109	877.309	6117.190	0.143 ✔
T2	80 - 60	L1 1/2x1 1/2x1/8	6.065	2.903	112.3	29.000	0.2109	1955.130	6117.190	0.320 ✔
T3	60 - 40	L1 1/2x1 1/2x3/16	6.068	2.875	113.3	29.000	0.3076	3025.390	8920.900	0.339 ✔
T4	40 - 20	L1 1/2x1 1/2x1/8	7.297	3.667	137.5	29.000	0.2109	1700.470	6117.190	0.278 ✔
T5	20 - 0	L1 1/2x1 1/2x1/8	9.733	4.876	184.8	29.000	0.2109	1729.610	6117.190	0.283

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
										✔

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	100 - 80	L1 1/2x1 1/2x1/8	4.521	4.323	111.5	21.600	0.3594	10.191	7762.500	0.001 ✔
T4	40 - 20	L1 1/2x1 1/2x1/8	4.563	4.323	111.5	21.600	0.3594	162.776	7762.500	0.021 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	100 - 80	Leg	ROHN 2 STD	3	-4723.490	32298.456	14.6	Pass
		Diagonal	L1 1/2x1 1/2x1/8	10	877.309	8154.214	10.8	Pass
							27.9 (b)	
		Top Girt	L1 1/2x1 1/2x1/8	6	-19.119	2332.097	0.8	Pass
T2	80 - 60	Leg	ROHN 2 STD	39	-19616.400	32298.456	60.7	Pass
		Diagonal	L1 1/2x1 1/2x1/8	42	1955.130	8154.214	24.0	Pass
							62.2 (b)	
T3	60 - 40	Leg	ROHN 2.5 STD	71	-43203.801	55076.626	78.4	Pass
		Diagonal	L1 1/2x1 1/2x3/16	75	-3177.590	12333.262	25.8	Pass
							64.2 (b)	
T4	40 - 20	Leg	ROHN 2.5 X-STR	104	-55617.699	65602.926	84.8	Pass
		Diagonal	L1 1/2x1 1/2x1/8	129	-1842.270	7827.962	23.5	Pass
							54.1 (b)	
		Top Girt	L1 1/2x1 1/2x1/8	108	-200.960	2332.097	8.6	Pass
T5	20 - 0	Leg	ROHN 2.5 X-STR	134	-64649.699	65600.525	98.6	Pass
		Diagonal	L1 1/2x1 1/2x1/8	144	-1743.740	6549.428	26.6	Pass
							55.1 (b)	
							Summary	
						Leg (T5)	98.6	Pass
						Diagonal (T3)	64.2	Pass
						Top Girt (T4)	8.6	Pass
						Bolt Checks	64.2	Pass
						RATING =	**98.6**	**Pass**

clearwire®
TECHNOLOGIES, INC.

SALTONSTALL PLACE
CW ID#: CT-NHN0095E

SITE ADDRESS:

12 SALTONSTALL PLACE
EAST HAVEN, CT 06512

SHT. NO.	DESCRIPTION	REV NO	REVISION DATE
T01	TITLE SHEET	1	06/27/12
C01	SITE PLAN & GENERAL NOTES	1	06/27/12
C02	TOWER ELEVATION	1	06/27/12
C03	STRUCTURAL NOTES & DETAILS	1	06/27/12
C04	STRUCTURAL DETAILS	1	06/27/12
C05	ANTENNA SCHEDULE & DETAILS	1	06/27/12
C06	EQUIPMENT SPECIFICATIONS	1	06/27/12
C07	BILL OF MATERIALS	1	06/27/12
E01	ELECTRICAL PLAN	1	06/27/12
E02	GROUNDING PLAN	1	06/27/12
E03	ELECTRICAL DETAILS	1	06/27/12
E04	GROUNDING DETAILS	1	06/27/12
E05	ANTENNA GROUNDING DETAILS	1	06/27/12

SHEET INDEX

FROM 100 CORPORATE PLACE, ROCKY HILL, CT.:

HEAD SOUTH ON CORPORATE PL TOWARD WEST ST. (0.2 MI) TURN LEFT ONTO WEST ST. (0.04 MI) MERGE ONTO I-91 S TOWARD NEW HAVEN. (29.0 MI) MERGE ONTO I-95 N/GOVERNOR JOHN DAVIS LODGE TURNPIKE VIA THE EXIT ON THE LEFT TOWARD NEW LONDON. (1.9 MI) TAKE THE FRONTAGE RD EXIT, EXIT 51, TOWARD US-1/EAST HAVEN. (0.2 MI) STAY STRAIGHT TO GO ONTO FRONTAGE RD. (0.7 MI) STAY STRAIGHT TO GO ONTO SALTONSTALL PKWY/US-1 S. (0.6 MI) TURN LEFT ONTO SALTONSTALL PL. THE SITE IS ON THE LEFT.

VICINITY MAP — NO SCALE

PROJECT DESCRIPTION:	PROPOSED (3) WIMAX ANTENNAS (ONE PER SECTOR) AND (2) DISH ANTENNAS ON EXISTING TOWER. EQUIPMENT CABINET WILL BE LOCATED ON AN ELEVATED PLATFORM ON TOP OF A GRAVEL BED. SITE IS AN UNMANNED TELECOMMUNICATIONS FACILITY.
SITE NAME:	SALTONSTALL PLACE
CW ID#:	CT-NHN0095E
SITE ADDRESS:	12 SALTONSTALL PLACE EAST HAVEN, CT 06512
COUNTY:	NEW HAVEN
COORDINATES:	N 41.293624° (NAD 83) W -72.857369° (NAD 83)
PROPERTY OWNER:	REGIONAL WATER AUTHORITY
CONTACT PERSON:	JUSTIN MARRON (203) 245-9463 EXT. 115
APPLICANT:	CLEARWIRE TECHNOLOGIES, INC. 5808 LAKE WASHINGTON BLVD. NE STE. 300 KIRKLAND, WA 98033
ENGINEER:	CHA, INC. 3 WINNERS CIRCLE ALBANY, NY 12205 JOHN P. SOBIECH, P.E. (518) 453-4500

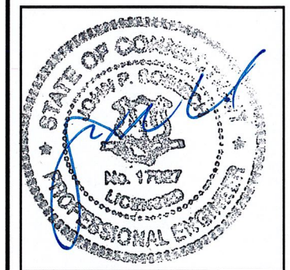
PROJECT SUMMARY

clearwire®
TECHNOLOGIES, INC.
5808 LAKE WASHINGTON
BLVD. NE STE. 300
KIRKLAND, WA 98033
OFFICE: (425) 216-7600
FAX: (425) 216-7900

CHA
111 Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (518) 453-4500 - www.chacompanies.com

CHA PROJECT NO:
20621 - 1065 - 43000

NO.	SUBMITTAL		
0	04/05/12	ISSUED FOR REVIEW	
	BY: JDM	CHK: HAW	APP'D: JPS
1	06/27/12	ISSUED FOR CONSTRUCTION	
	BY: JDM	CHK: HAW	APP'D: JPS



SITE NAME:
SALTONSTALL PLACE

CW ID#:
CT-NHN0095E

SITE ADDRESS:
12 SALTONSTALL PL
EAST HAVEN, CT 06512
NEW HAVEN COUNTY

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T01

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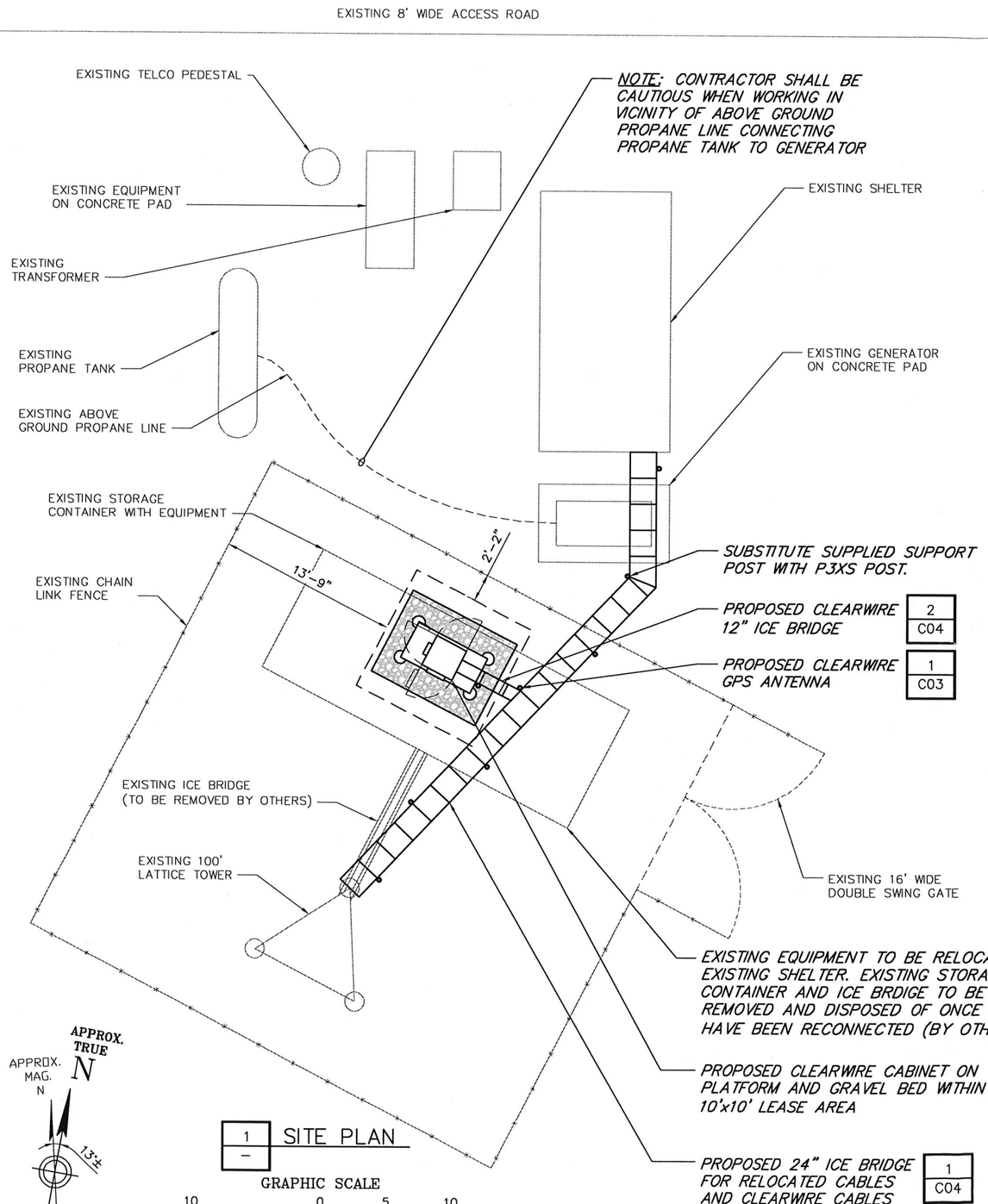
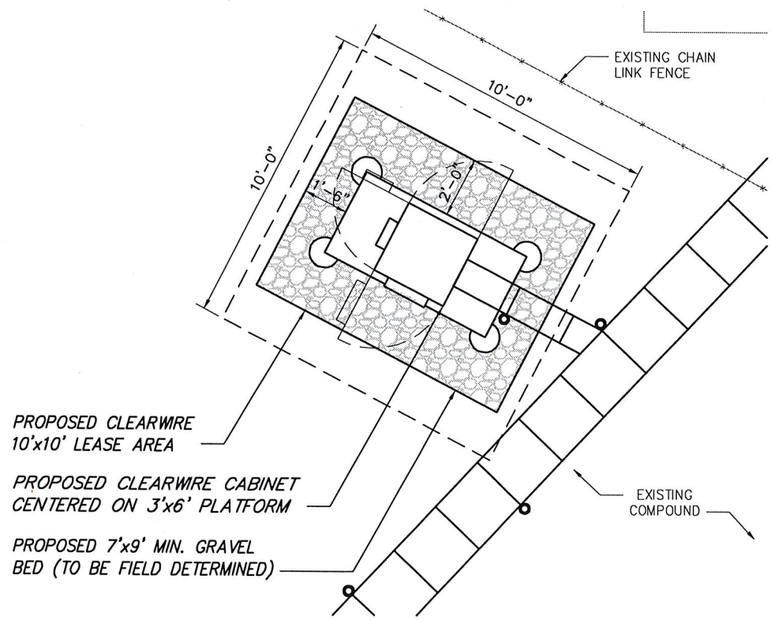


GENERAL NOTES

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE ALL PLAN SHEETS AND SPECIFICATIONS AND COORDINATE HIS WORK WITH THE WORK OF ALL OTHER CONTRACTORS TO ENSURE THAT WORK PROGRESSION IS NOT INTERRUPTED.
2. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING A NEAT AND ORDERLY SITE, YARD AND GROUNDS. REMOVE AND DISPOSE OFF SITE ALL RUBBISH, WASTE MATERIALS, LITTER, AND ALL FOREIGN SUBSTANCES. REMOVE PETRO–CHEMICAL SPILLS, STAINS AND OTHER FOREIGN DEPOSITS. RAKE GROUNDS TO A SMOOTH EVEN–TEXTURED SURFACE.
3. THE OWNER OR OWNER'S REPRESENTATIVE SHALL BE NOTIFIED IN WRITING OF ANY CONDITIONS THAT VARY FROM THOSE SHOWN ON THE PLANS. THE CONTRACTOR'S WORK SHALL NOT VARY FROM THE PLANS WITHOUT THE EXPRESSED APPROVAL OF THE OWNER OR OWNER'S REPRESENTATIVE.
4. THE CONTRACTOR IS INSTRUCTED TO COOPERATE WITH ANY AND ALL OTHER CONTRACTORS PERFORMING WORK ON THIS JOB SITE DURING THE PERFORMANCE OF THIS CONTRACT.
5. THE CONTRACTOR SHALL RESTORE ALL PUBLIC OR PRIVATE PROPERTY DAMAGED OR REMOVED TO AT LEAST AS GOOD OF CONDITION AS BEFORE DISTURBED AS DETERMINED BY THE OWNER OR OWNER'S REPRESENTATIVE.
6. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIRED PERMITS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING, AND INCURRING THE COST OF ALL REQUIRED PERMITS, INSPECTIONS, CERTIFICATES, ETC.
8. ALL UTILITY WORK INVOLVING CONNECTIONS TO EXISTING SYSTEMS SHALL BE COORDINATED WITH THE OWNER OR OWNER'S REPRESENTATIVE AND THE UTILITY OWNER. NOTIFY THE OWNER OR OWNER'S REPRESENTATIVE AND THE UTILITY OWNER BEFORE EACH AND EVERY CONNECTION TO EXISTING SYSTEMS IS MADE.

BASEMAP NOTES:

1. BASEMAP FROM FIELD VISITS PERFORMED BY CHA, INC. ON MAY 24, 2010, AND FEBRUARY 29, 2012 AND DOES NOT REPRESENT AN ACTUAL FIELD SURVEY.



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CHA
111 Winners Circle, PO Box 5269 · Albany, NY 12205-0269
Main: (518) 453-4500 · www.chacompanies.com

CHA PROJECT NO:
20621 – 1065 – 43000

NO.	SUBMITTAL		
0	04/05/12	ISSUED FOR REVIEW	
	BY: JDM	CHK: HAW	APP'D: JPS
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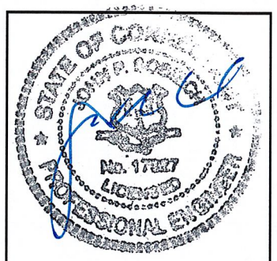
	BY: JDM	CHK: HAW	APP'D: JPS



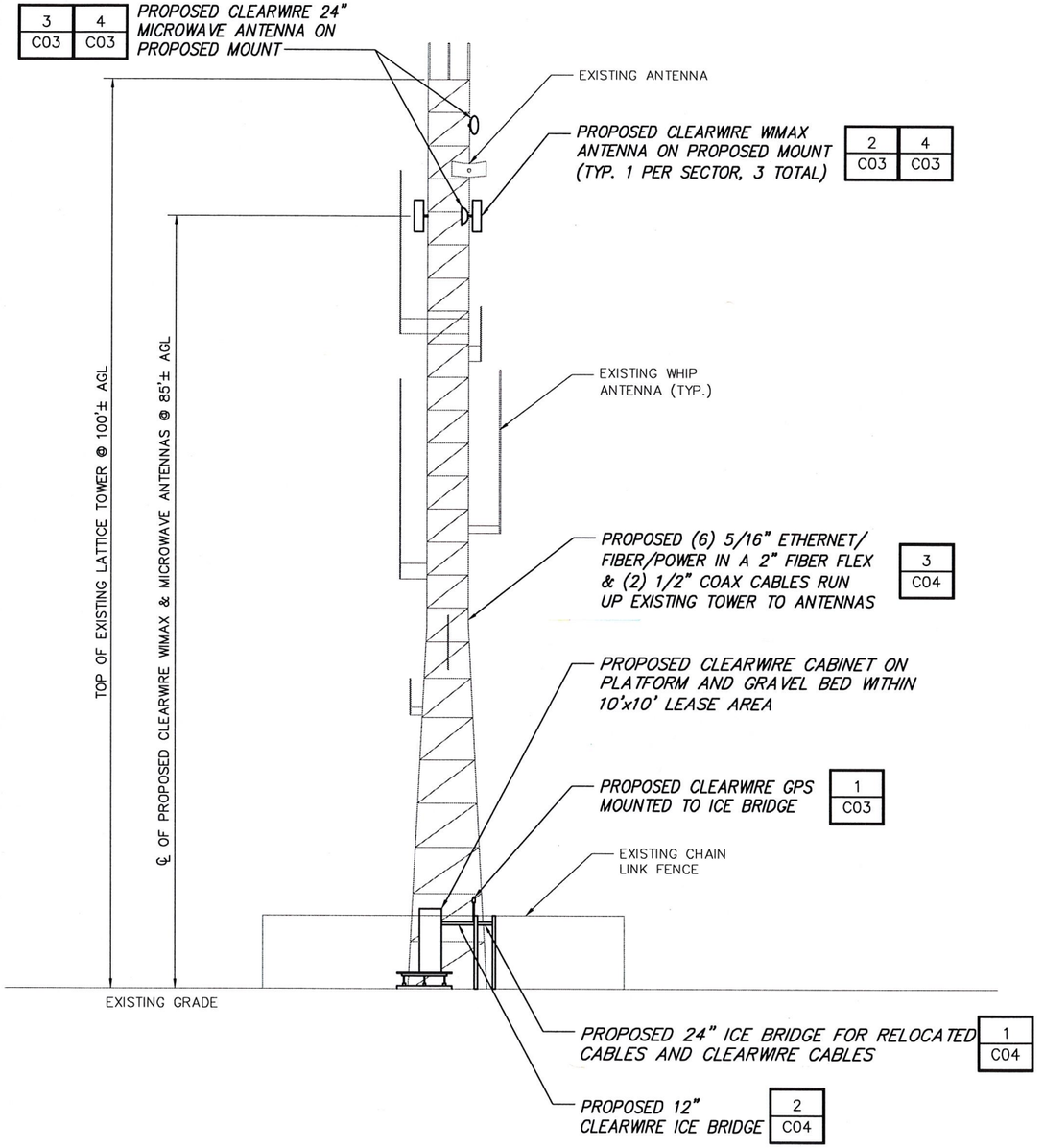
SITE NAME:
SALTONSTALL PLACE

CW ID#:
CT–NHN0095E

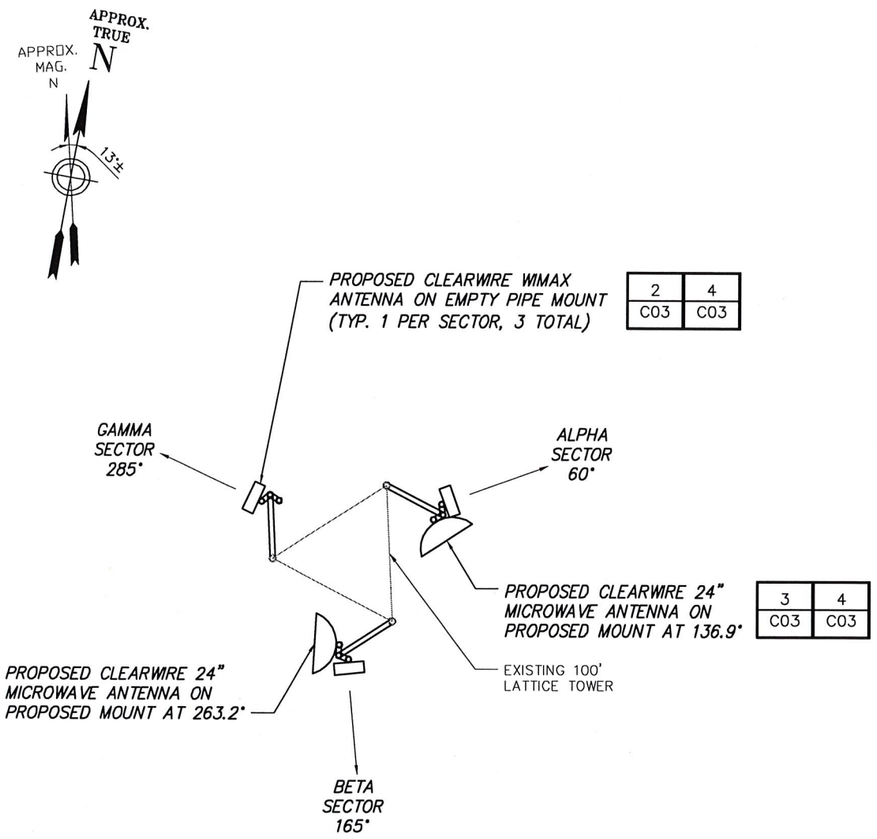
SITE ADDRESS:
12 SALTONSTALL PL
EAST HAVEN, CT 06512
NEW HAVEN COUNTY

SHEET TITLE
SITE PLAN &
GENERAL NOTES

SHEET NUMBER
C01



1 — TOWER ELEVATION
NO SCALE



2 — ANTENNA CONFIGURATION
NO SCALE

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Main: (518) 453-4500 · www.chacompanies.com

CHA PROJECT NO:
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NO.	SUBMITTAL		
0	04/05/12	ISSUED FOR REVIEW	
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	BY: JDM	CHK: HAW	APP'D: JPS

STATE OF CONNECTICUT · JOHN P. SOBOLEWSKI · No. 17027 · LICENSED PROFESSIONAL ENGINEER

SITE NAME:
SALTONSTALL PLACE

CW ID#:
CT–NHN0095E

SITE ADDRESS:
12 SALTONSTALL PL
EAST HAVEN, CT 06512
NEW HAVEN COUNTY

SHEET TITLE
TOWER ELEVATION

SHEET NUMBER
C02

GENERAL NOTES

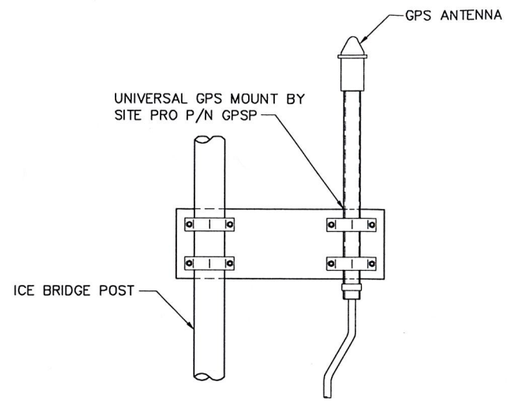
1. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER IN WRITING.
2. DO NOT CHANGE SIZE NOR SPACING OF STRUCTURAL ELEMENTS.
3. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
4. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY.
5. BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
6. DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS, DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
7. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE OWNER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE APPROVAL.
8. EACH CONTRACTOR SHALL COOPERATE WITH THE OWNER'S REPRESENTATIVE, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
9. CONTRACTOR TO FOLLOW ALL STATE, LOCAL AND NATIONAL CODES AS APPLICABLE.

ANTENNA SUPPORT BRACKET NOTES

1. DESIGN RESPONSIBILITY OF ANTENNA MOUNTING BRACKETS, POLES AND ALL COMPONENTS THERE OF AND ATTACHMENT THERE TO SHALL BE THE RESPONSIBILITY OF THE MANUFACTURER. MFR. SHALL PROVIDE TO THE ENGINEER FOR APPROVAL, DRAWINGS DETAILING ALL COMPONENTS OF THE ASSEMBLY, INCLUDING CONNECTIONS, DESIGN LOADS, AND ALL OTHER PERTINENT DATA. ALL SUBMISSIONS SHALL BEAR THE STAMP AND SIGNATURE OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE THE WORK IS BEING PERFORMED.
2. BRACKETS SHALL BE DESIGNED TO SUPPORT CURRENT AND FUTURE PANEL ANTENNAS AND COAXIAL CABLES AS SHOWN.

STRUCTURAL STEEL NOTES

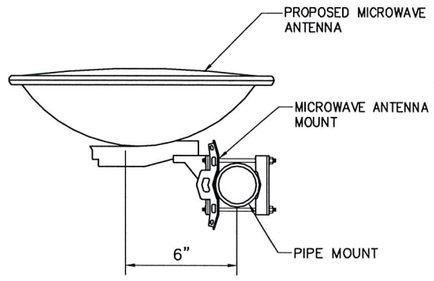
1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS". ALL W-SHAPES SHALL BE ASTM A992. ALL STEEL PIPE SHALL BE ASTM A53 GRADE B. ALL RECTANGULAR HOLLOW STRUCTURAL STEEL SHALL BE ASTM A500. ALL OTHER STEEL SHALL BE ASTM A-36.
2. ALL INTERIOR STRUCTURAL STEEL USED SHALL BE, WHEN DELIVERED, FINISHED WITH ONE COAT FABRICATOR'S NON-LEAD, RED OXIDE PRIMER. PRIMING SHALL BE PERFORMED AFTER SHOP FABRICATION TO THE GREATEST EXTENT POSSIBLE. ALL DINGS, SCRAPES, MARS, AND WELDS IN THE PRIMED AREAS SHALL BE REPAIRED BY FIELD TOUCHUP PRIOR TO COMPLETION OF THE WORK.
3. ALL EXTERIOR STEEL WORK SHALL BE GALVANIZED IN ACCORDANCE WITH SPECIFICATION ASTM A123 UNLESS OTHERWISE NOTED. GALVANIZING SHALL BE PERFORMED AFTER SHOP FABRICATION TO THE GREATEST EXTENT POSSIBLE. ALL DINGS, SCRAPES, MARS, AND WELDS IN THE GALVANIZED AREAS SHALL BE REPAIRED BY FIELD TOUCHUP PRIOR TO COMPLETION OF THE WORK USING ZRC COLD GALVANIZING COMPOUND OR APPROVED EQUAL.
4. DO NOT PLACE HOLES THROUGH STRUCTURAL STEEL MEMBERS EXCEPT AS SHOWN AND DETAILED ON STRUCTURAL DRAWINGS.
5. CONNECTIONS:
   - A. ALL WELDING SHALL BE DONE BY A CERTIFIED WELDER USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND AWS 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.
   - B. BOLTED CONNECTIONS SHALL USE BEARING TYPE GALVANIZED ASTM A325 BOLTS (3/4" DIA.) AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
   - C. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIA. GALVANIZED ASTM A 307 BOLTS UNLESS NOTED OTHERWISE.
   - D. CONNECTION DESIGN BY FABRICATOR WILL BE SUBJECT TO REVIEW AND APPROVAL BY ENGINEER.
   - E. AT ALL BOLTED CONNECTIONS, PROVIDE A NUT AND A WASHER CONFORMING TO ASTM F436. PROVIDE A WASHER MATCHING THE BOLT SIZE UNDER ALL BOLT HEADS AND NUTS THAT WILL BE TURNED IN TIGHTENING THE CONNECTION. TIGHTEN TO AISC "SNUGTIGHT" CRITERIA.



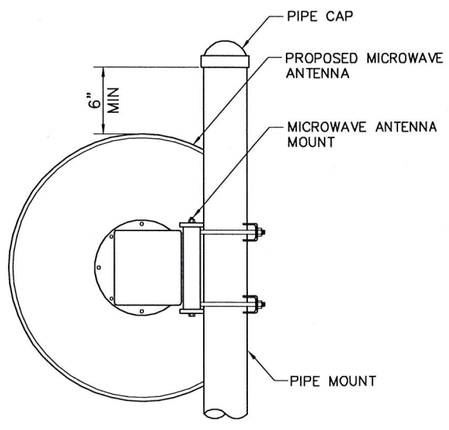
ELEVATION

NOTES:
1. THE WEIGHT OF THE ANTENNA MOUNT IS 6.5 LBS.

1 — GPS ANTENNA MOUNTING DETAIL
SCALE: NTS

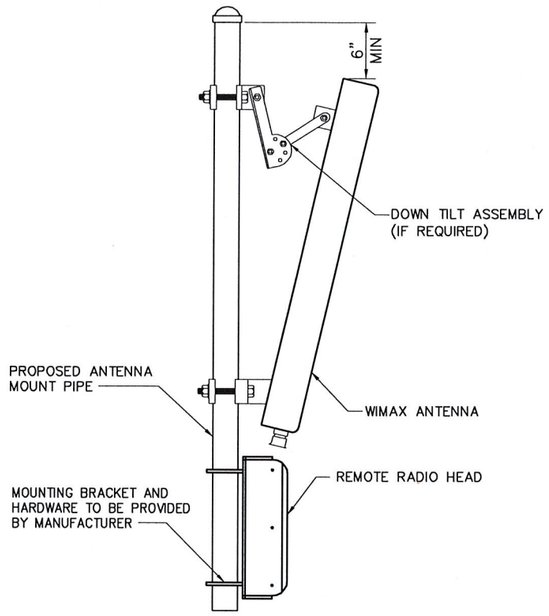


PLAN



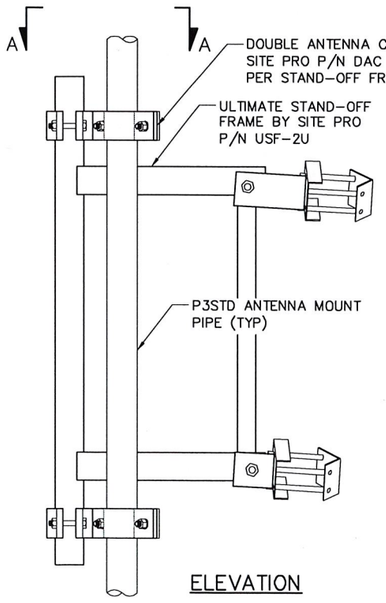
ELEVATION

3 — MICROWAVE ANTENNA MOUNTING DETAIL
SCALE: NTS

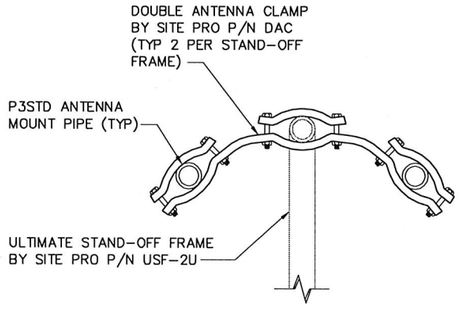


NOTE:
MOUNT ANTENNA IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDED PROCEDURE.

2 — TYPICAL ANTENNA MOUNTING DETAIL
SCALE: NTS



ELEVATION



SECTION A-A

4 — ANTENNA STANDOFF FRAME ASSEMBLY
SCALE: NTS

clearwire TECHNOLOGIES, INC.
5808 LAKE WASHINGTON BLVD. NE STE. 300
KIRKLAND, WA 98033
OFFICE: (425) 216-7600
FAX: (425) 216-7900

CHA
111 Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (518) 453-4500 - www.chacompanies.com

CHA PROJECT NO:
20621 - 1065 - 43000

NO.	SUBMITTAL		
0	04/05/12	ISSUED FOR REVIEW	
	BY: BAS	CHK: AM	APP'D: JPS
1	06/27/12	ISSUED FOR CONSTRUCTION	
	BY: BAS	CHK: AM	APP'D: JPS

STATE OF CONNECTICUT · JOHN P. GORDON · No. 17087 · LICENSED PROFESSIONAL ENGINEER

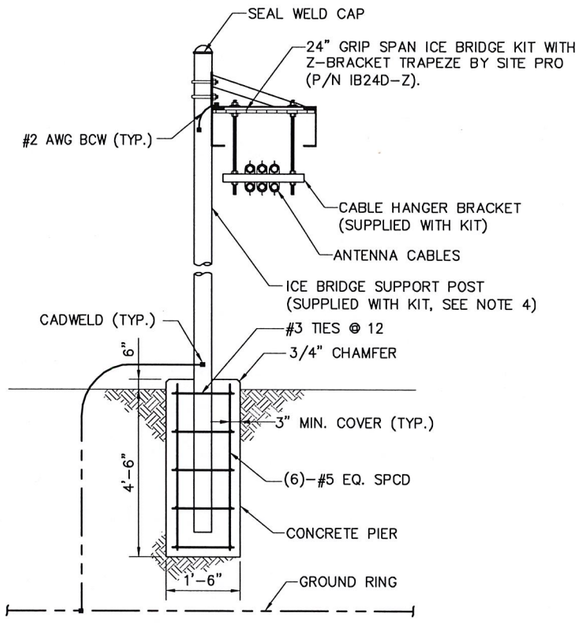
SITE NAME:
SALTONSTALL PLACE

CW ID#:
CT-NHN0095E

SITE ADDRESS:
12 SALTONSTALL PL
EAST HAVEN, CT 06512
NEW HAVEN COUNTY

SHEET TITLE
STRUCTURAL NOTES & DETAILS

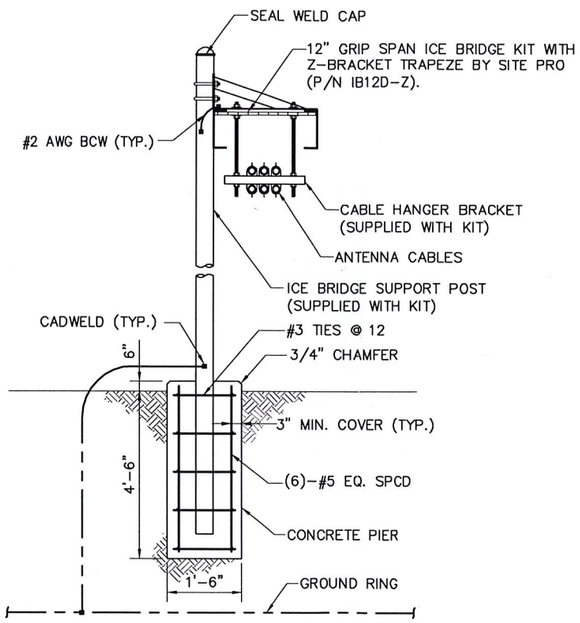
SHEET NUMBER
C03



NOTES:

1. USE SITE PRO PARTS OR APPROVED EQUAL.
2. SUPPORT POSTS SHALL BE LOCATED ON ALTERNATING SIDES OF ICE BRIDGE SPACED NO MORE THAN 6'-0".
3. ANY SPLICES OR CANTILEVERED SECTIONS OF THE ICE BRIDGE SHALL BE LOCATED WITHIN 2'-0" OF A SUPPORT POST.
4. REPLACE SUPPLIED SUPPORT POST WITH P3XS POST AT SPAN OVER GENERATOR, SEE C-01 FOR LOCATION.

1 — 24" ICE BRIDGE SECTION
SCALE: NTS



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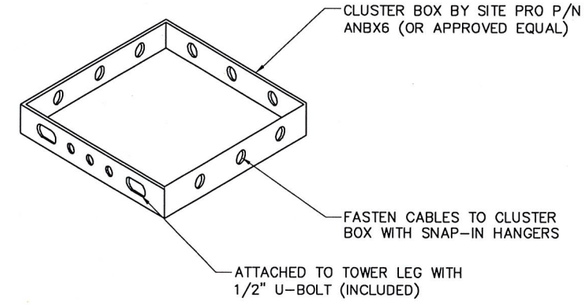
2. SUPPORT POSTS SHALL BE LOCATED ON ALTERNATING SIDES OF ICE BRIDGE SPACED NO MORE THAN 6'-0".
3. ANY SPLICES OR CANTILEVERED SECTIONS OF THE ICE BRIDGE SHALL BE LOCATED WITHIN 2'-0" OF A SUPPORT POST.

2 — 12" ICE BRIDGE SECTION
SCALE: NTS



3 — CABLES MOUNTED TO TOWER LEG
SCALE: NTS

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KIRKLAND, WA 98033
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FAX: (425) 216-7900

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STATE OF CONNECTICUT · JOHN P. GOLDEN · No. 17627 · LICENSED PROFESSIONAL ENGINEER

SITE NAME:
SALTONSTALL PLACE

CW ID#:
CT-NHN0095E

SITE ADDRESS:
12 SALTONSTALL PL
EAST HAVEN, CT 06512
NEW HAVEN COUNTY

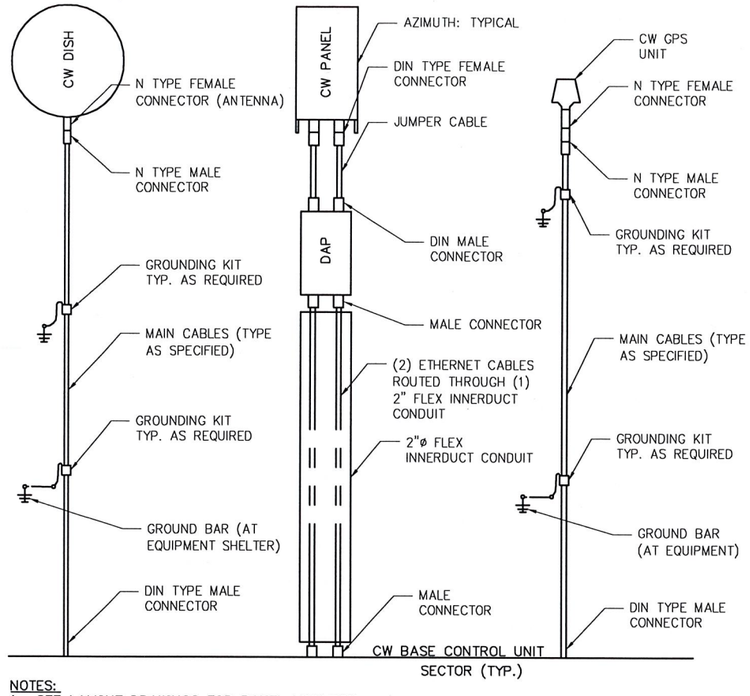
SHEET TITLE
STRUCTURAL DETAILS

SHEET NUMBER
C04

MICROWAVE BACKHAUL						
LINE	BAND 1	BAND 2	BAND 3	BAND 4		COMMENT
1	GREY					CLOSEST TO 0° TN
2	GREY	GREY				2nd CLOCKWISE DISH
3	GREY	GREY	GREY			3rd CLOCKWISE DISH ETC.
4	GREY	GREY	GREY	GREY		
5	GREY	GREY	GREY	GREY	ETC.	
DPRM	GREY'S (AS ABOVE)		RED			
1+1	GREY'S (AS ABOVE)		RED			

SAMSUNG WIMAX					
SECTORS	1st DAP	2nd DAP			COMMENT
ALPHA	RED	VIOLET			FIBER/POWER – CLOSEST TO 0° TN
BETA	BLUE	WHITE			FIBER/POWER
GAMMA	YELLOW	ORANGE			FIBER/POWER
RF JUMPERS	DAP TO ANTENNA (COLORS DEFINED ABOVE)				
1st JUMPER	SECTOR COLOR				
2nd JUMPER	SECTOR COLOR	SECTOR COLOR			
3rd JUMPER	SECTOR COLOR	SECTOR COLOR	SECTOR COLOR		
4th JUMPER	SECTOR COLOR	SECTOR COLOR	SECTOR COLOR	SECTOR COLOR	

1 – ANTENNA COLOR CODING
NO SCALE



NOTES:
1. SEE LAYOUT DRAWINGS FOR PANEL LOCATION.
2. DO NOT INSTALL PANEL GROUND KIT ON CABLE BEND.
3. CW PANEL PIPE MAST TO BE GROUNDED.

2 – CABLE INSTALLATION DIAGRAM
NO SCALE

PROPOSED ANTENNA AND CABLE SCHEDULE															
SECTOR	ANTENNA	AZIMUTH (TN)	DOWN TILT–M	DOWN TILT–E	RAD CENTER (FT. AGL)	MAKE	MODEL	FEED	CABLE SIZE	CABLE MANUF.	CABLE LENGTH	JUMPER SIZE	JUMPER MANUF.	JUMPER MODEL	JUMPER LENGTH–TOP	JUMPER LENGTH–BOT
ALPHA	WIMAX	0°	0°	2°	85'–0"	ARGUS	LLPX310R	BOTTOM	5/16"	BELDEN 7919A	135'±	–	–	–	–	–
BETA	WIMAX	120°	0°	2°	85'–0"	ARGUS	LLPX310R	BOTTOM	5/16"	BELDEN 7919A	135'±	–	–	–	–	–
GAMMA	WIMAX	230°	0°	2°	85'–0"	ARGUS	LLPX310R	BOTTOM	5/16"	BELDEN 7919A	135'±	–	–	–	–	–

PROPOSED CLEARWIRE MICROWAVE DISH ANTENNA AND CABLE SCHEDULE															
SECTOR	ANTENNA	AZIMUTH (TN)	DOWN TILT–M	DOWN TILT–E	RAD CENTER (FT. AGL)	MAKE	MODEL	FEED	CABLE SIZE	CABLE MANUF.	CABLE LENGTH	JUMPER SIZE	JUMPER MANUF.	JUMPER MODEL	JUMPER LENGTH–TOP	JUMPER LENGTH–BOT
ALPHA	MW DISH	136.9°	–	–	85'–0"	ANDREW	VHLP2–18	BACK	1/2"	EUPEN EC4–50	135'±	1/2"	–	–	–	–
BETA	MW DISH	263.2°	–	–	95'–0"	ANDREW	VHLP2–18	BACK	1/2"	EUPEN EC4–50	145'±	1/2"	–	–	–	–

3 – PROPOSED ANTENNA AND CABLE SCHEDULE
NO SCALE

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KIRKLAND, WA 98033
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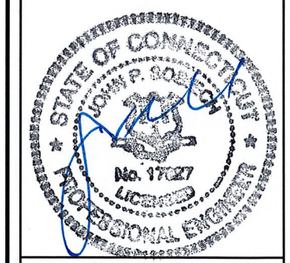

SITE NAME:
SALTONSTALL PLACE

CW ID#:
CT–NHN0095E

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EAST HAVEN, CT 06512
NEW HAVEN COUNTY

SHEET TITLE
ANTENNA SCHEDULE & DETAILS

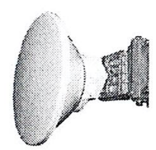
SHEET NUMBER
C05

Product Specifications

ANDREW. A CommScope Company

VHLP2-18

0.6 m | 2 ft ValuLine® High Performance Low Profile Antenna, single-polarized, 17.700–19.700 GHz



CHARACTERISTICS

General Specifications

Antenna Type	VHLP - ValuLine® High Performance Low Profile Antenna, single-polarized
Diameter, nominal	0.6 m | 2 ft
Polarization	Single

Electrical Specifications

Beamwidth, Horizontal	2.1 °
Beamwidth, Vertical	2.1 °
Cross Polarization Discrimination (XPD)	30 dB
Electrical Compliance	Brazil Anatel Class 2 | Canada SRSP 317.8 Part A | ETSI 302 217 Class 3 | US FCC Part 101A
Front-to-Back Ratio	67 dB
Gain, Low Band	38.3 dBi
Gain, Mid Band	38.7 dBi
Gain, Top Band	39.1 dBi
Operating Frequency Band	17.700 - 19.700 GHz
Radiation Pattern Envelope Reference (RPE)	7012A
Return Loss	17.7 dB
VSWR	1.30

Mechanical Specifications

Fine Azimuth Adjustment	±10°
Fine Elevation Adjustment	±25°
Mounting Pipe Diameter	48 mm–115 mm | 1.9 in–4.5 in
Net Weight	14 kg | 31 lb

www.commscope.com/andrew

Join the Evolution

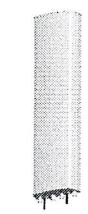
page 1 of 5
7/6/2010

1 | 2 FT MW ANTENNA SPEC SHEET (OR EQUIV)
— | NO SCALE

Product Data Sheet — LLPX310R

2300-2700MHz Remote Tilt Panel Antenna

Electrical Specifications



Frequency Range	2300 - 2700 MHz / 2300 - 2700 MHz
Gain	17.3 dBi 2.4 GHz18 dBi 2.6 GHz
Return Loss	> 15 dB
Polarization	Dual Slant ± 45°
Horizontal Beamwidth	65°
Vertical Beamwidth	6.5° with nullfill
Electrical Downtilt	0° - 10° independently continuously adjustable
Upper Sidelobe Level	< -18 dB
Front to Back Ratio	> 30 dB
Isolation Between Ports	> 30 dB
Power Rating	250W
Impedance	50 ohm
Lightning Protection	DC grounded
Connector Type	N-Type female or 4.1-9.5 DIN
RET Type	Internal motor & manual override
RET Interface	AISG 2 Remotely upgradeable
RET Connector	Single AISG 8 pin male

Mechanical Specifications

Antenna Dimensions	1070x300x115 mm
Packed Dimensions	1200x330x200 mm
Antenna Weight	13 kg
Radome Material	Polyester Fibreglass pultrusion

Maximum Environmental Ratings

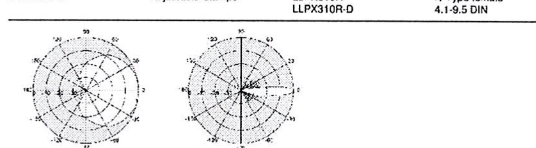
Humidity	95% RH @ +30°C
Lateral Loading (Front)	0.45 kN @ 160 km/h
Lateral Loading (Rear)	0.48 kN @ 160 km/h
Rain	140mm per hour
Rated Wind Velocity	200 km/h
Temperature	-40°C to +70°C

Mounting Options

F-042-GL-E	Fixed Clamps
T-045-GL-E	Adjustable Clamps

Product Options

LLPX310R	N-Type female
LLPX310R-D	4.1-9.5 DIN



Azimuth — Elevation

Last Updated: 27-03-2009

Argus Technologies (Australia) Pty Ltd
10-12 Lexington Drive, Norwest Business Park, Bella Vista NSW 2153 Australia
T +61 2 8884 0628 F +61 2 8884 0682 E info@argusantennas.com W www.argusantennas.com
Argus Technologies is continually improving products. Specifications may change at any time without notice

2 | ANTENNA SPEC SHEET (OR EQUIV)
— | NO SCALE

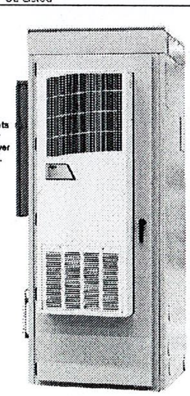
Data Sheet
October 2004

OCS Series
Outdoor Cabinet System

Cabinet Specifications

Dimensions	
Power Cabinet	30"(W) x 31"(D) x 76"(H)
Supplemental Battery Cabinet	30"(W) x 31"(D) x 84"(H)
Construction	0.125" thick aluminum power coated; insulation on inner walls
Environmental	12,000 BTU/Hr air conditioner with 1500W Heater
Standards	UL Listed

The OCS outdoor cabinets provide a 12,000 BTU air conditioner in every power or supplemental cabinet.



tyco / Electronics

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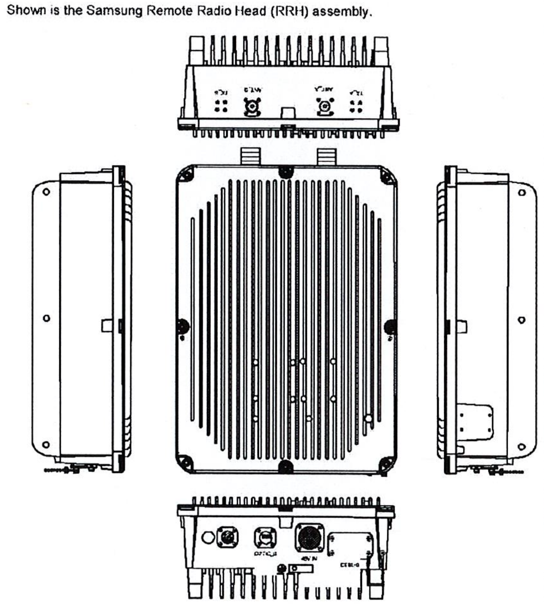
October 2004
DS04-043 Rev.1

3 | CABINET SPEC SHEET (OR EQUIV)
— | NO SCALE

RRH Description — Shown is the Samsung Remote Radio Head (RRH) assembly.



Architecture	MIMO Dual Transmit and Dual Receive Paths
Frequency Bands	2,500-2,530 MHz
Output Power	4W/Carrier Path @ 10 MHz, MIMO
Ports	1 Fiber, 1 DC Power
Operating Temperature Range	-40 C to +50 C, (-40 F to 122 F)
Input Power	-48 VDC nominal (-40VDC to -56VDC)
Power Consumption	3.75A
Weight	15.0 kg
Dimensions	295mm W x 410mm H x 135mm D
Multi-Carrier Capable	Yes – 2 carriers/3 sectors

4 | RRH SPEC SHEET (OR EQUIV)
— | NO SCALE

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TECHNOLOGIES, INC.
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BLVD. NE STE. 300
KIRKLAND, WA 98033
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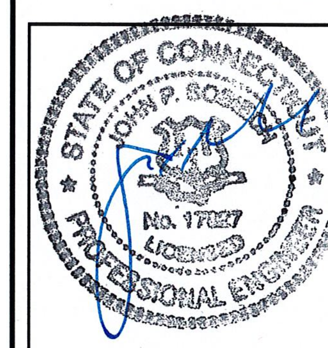

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SITE NAME:
SALTONSTALL PLACE

CW ID#:
CT-NHN0095E

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12 SALTONSTALL PL
EAST HAVEN, CT 06512
NEW HAVEN COUNTY

SHEET TITLE
EQUIPMENT SPECIFICATIONS

SHEET NUMBER
C06

BILL OF MATERIALS

ITEM	DESCRIPTION	QTY (EA)	DIMENSIONS	WEIGHT (LBS)	PART/MODEL#
1	CW Wimax Antenna - Alpha Sector	1	H: 42" W: 12" D: 4.5" (max)	28.6 lbs plus mounting HW	Argus LLPX310R, or equiv
2	CW RRH - Alpha Sector	1	H: 16" W: 11.5" D: 5.5" (typ)	33 lbs + mounting HW	Samsung, or equiv
3	CW Dish Antenna - Alpha Sector	1	2'	31 lbs incl. mounting HW	Andrew VHLP2-18, or equiv
4	Sprint Panel Antenna - Alpha Sector	0	N/A	N/A	N/A
5	CW Wimax Antenna - BETA Sector	1	H: 42" W: 12" D: 4.5" (max)	28.6 lbs plus mounting HW	Argus LLPX310R, or equiv
6	CW RRH - BETA Sector	1	H: 16" W: 11.5" D: 5.5" (typ)	33 lbs + mounting HW	Samsung, or equiv
7	CW Dish Antenna - BETA Sector	1	2'	31 lbs incl. mounting HW	Andrew VHLP2-18, or equiv
8	Sprint Panel Antenna - BETA Sector	0	N/A	N/A	N/A
9	CW Wimax Antenna - GAMMA Sector	1	H: 42" W: 12" D: 4.5" (max)	28.6 lbs plus mounting HW	Argus LLPX310R, or equiv
10	CW RRH - GAMMA Sector	1	H: 16" W: 11.5" D: 5.5" (typ)	33 lbs + mounting HW	Samsung, or equiv
11	CW Dish Antenna - GAMMA Sector	0	N/A	N/A	N/A
12	Sprint Panel Antenna - GAMMA Sector	0	N/A	N/A	N/A
13	CW Dish Antenna - other	0	N/A	N/A	N/A
14	GPS Antenna	1	N/A	0.7 lbs plus mounting HW	Motorola Timing 2000, HP58532A, or equiv
15	main cable run: BTS to RRH, ALPHA Sector	2	135 feet	N/A	Belden 7919A or SM fiber
16	main cable run: BTS to RRH, BETA Sector	2	135 feet	N/A	Belden 7919A or SM fiber
17	main cable run: BTS to RRH, GAMMA Sector	2	135 feet	N/A	Belden 7919A or SM fiber
18	main cable runs BTS to MW Dishes, ALPHA Sector	1	135 feet	N/A	EUPEN EC4-50
19	main cable run: BTS to MW Dishes, BETA Sector	1	145 feet	N/A	EUPEN EC4-50
20	main cable run: BTS to MW Dishes, GAMMA Sector	0	N/A	N/A	N/A
21	main cable run: BTS to MW Dishes, other	0	N/A	N/A	N/A
22	main cable run: BTS to GPS	1	15 feet	N/A	EUPEN EC4-50
23	coax jumpers (all sectors)	TBD	6 feet	N/A	L4-PDMDM-6 (or equiv)
24	connectors, ground kits, weatherproofing (all sectors)	TBD	N/A	N/A	as needed (DIN, N, RG45 typ.)
25	BTS equipment cabinet (outdoor sites)	1	W: 30" D: 31" H: 84"	200 lbs (est, empty); 1250 lbs w/ electronics (max)	Tyco/Lineage OCS Series (or equiv)
26	BTS equipment racks (indoor sites)	0	W: 24" D: 24" H: 84"	200 lbs (est, empty); 1250 lbs w/ electronics (max)	TBD

1 BILL OF MATERIALS (BOM)
– NO SCALE

clearwire®
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STATE OF CONNECTICUT · JOHN P. DOOLEY · No. 17027 · LICENSED PROFESSIONAL ENGINEER

SITE NAME:
SALTONSTALL PLACE

CW ID#:
CT–NHN0095E

SITE ADDRESS:
12 SALTONSTALL PL
EAST HAVEN, CT 06512
NEW HAVEN COUNTY

SHEET TITLE
BILL OF MATERIALS

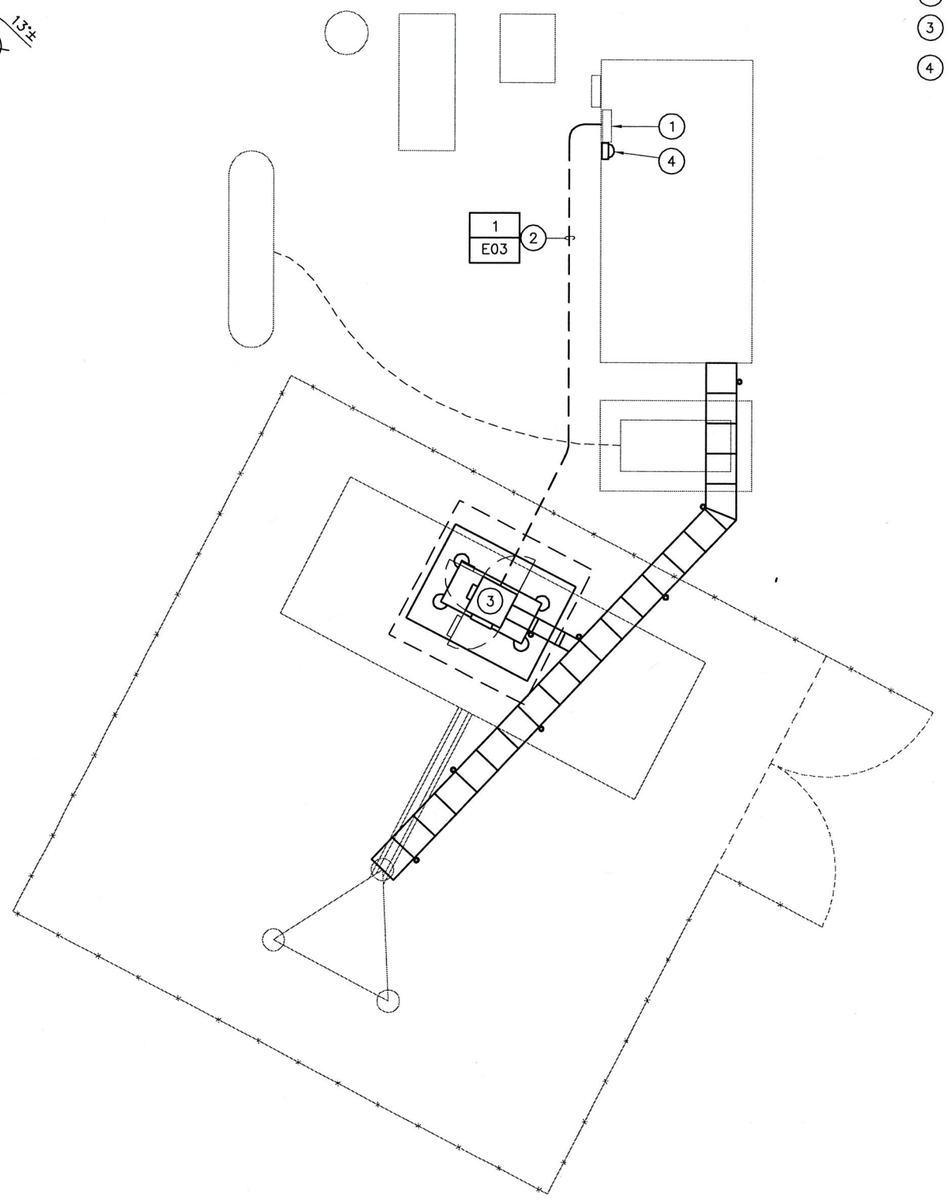
SHEET NUMBER
C07

APPROX. TRUE N

APPROX. MAG. N

13±

DRAWINGS WERE COMPLETED BEFORE THE UTILITY COMPANIES COULD CONFIRM THE SOURCE OF ELECTRICAL/TELEPHONE SERVICES. DESIGN IS BASED UPON SITE OBSERVATIONS ONLY.



1 / – POWER & TELEPHONE PLAN

GRAPHIC SCALE

10 0 5 10

IN FEET

CODED DRAWING NOTES:

1. EXISTING PANEL. PROVIDE (2) 30A/2P BREAKERS TYPE TO MATCH EXISTING.
2. 1"C. w/(6) #8 AWG + #8G.
3. RADIO CABINET. FURNISHED BY OTHERS.
4. ELECTRICAL SUB-METER BY THIS CONTRACT. E-MON D-MON SERIES. COORDINATE INSTALLATION REQUIREMENTS WITH MANUFACTURERS WRITTEN INSTALLATION INSTRUCTIONS AND EXACT LOCATION WITH BUILDING OWNER. SUB-METER SHALL MONITOR THE CUMULATIVE LOAD OF THE (2) 30A BREAKERS INSTALLED PER THIS CONTRACT.

LEGEND

- UTILITY POLE
- SERVICE DISCONNECT SWITCH
- GENERATOR RECEPTACLE
- (M) METER SOCKET BY OTHERS, METER BY UTILITY COMPANY
- EXPOSED CONDUIT
- UNDERGROUND ELECTRICAL/TELEPHONE
- (#) CODED DRAWING NOTE
- XXX / XX — DETAIL NUMBER / DRAWING(S) NUMBER

ABBREVIATIONS

AWG	AMERICAN WIRE GAUGE
DWG	DRAWING
RGS	RIGID GALVANIZED STEEL
TYP.	TYPICAL
W/	WITH

GENERAL SPECIFICATIONS:

1. WIRING SHALL BE AWG STRANDED COPPER WITH THHN OR EQUIVANT INSULATION. #12 MINIMUM INSTALLED IN 1/2" MINIMUM CONDUIT. SIGNAL WIRING SHALL BE INSULATED #22 AWG NO BX OR ROMEX CABLE IS PERMITTED. CONDUITS SHALL BE SURFACE MOUNTED.
2. WIRING DEVICES AND EQUIPMENT SHALL BE UL LISTED SPECIFICATIONS GRADE.
3. MATERIALS SHALL BE NEW AND CONFORM TO THE APPLICABLE STANDARDS ESTABLISHED FOR EACH ITEM BY THE ORGANIZATIONS LISTED BELOW.
   - AMERICAN SOCETY FOR TESTINGMATERIALS (ASTM)
   - UNDERWRITERS LABORATORY (UI)
   - NATIONAL ELECTRICAL MANUFACTURING ASSOCIATION (NEMA)
   - AMERICAN STANDARDS ASSOCIATION (ASA)
   - NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
4. INSTALLATION OF MATERIALS SHALL COMPLY WITH REGULATIONS OF:
   - THE NATIONAL ELECTRICAL CODE (NFPA 70)
   - THE NATIONAL ELECTRICAL SAFETY CODE (ANSI C-2)
   - LOCAL BUILDING CODES
5. THE ENTIRE SYSTEM SHALL BE SOLIDLY GROUNDED USING LOCKNUTS AND BONDING NUTS OR CONDUITS AND PROPERLY BONDED GROUND CONDUCTOR. RECEPTACLES AND EQUIPMENT BRANCH CIRCUITS SHALL BE GROUNDED WITH A FULL-SIZED EQUIPMENT GROUNDING CONDUCTOR RUN IN THE CIRCUITS CONDUIT.
6. OUTLET AND JUNCTION BOXES SHALL BE ZINC-COATED OR CADIUM PLATED STEEL. NOT LESS THAN 4" SQUARE AND SUITABLE FOR THE TYPE SERVICE AND OUTLET. OUTLET AND JUNCTION BOXES SHALL BE SURFACE MOUNTED AND LABELED WITH BRANCH CIRCUIT BREAKER NUMBER.
7. LABEL ALL EQUIPMENT SERVED FROM CLEARWIRE TECHNOLOGIES, INC. PANELBOARD WITH PHENOLIC LABELS SIZED IN RELATION TO USAGE.
8. INDOOR CONDUCTORS SHALL BE INSULAT.ED IN EMT UNLESS NOTED OTHERWISE. OUTDOOR CONDUCTORS SHALL BE INSTALLED IN RIGID GALVANIZED STEEL UNLESS NOTED OTHERWISE. WHERE EMT IS USED, IT SHALL BE WITH ONLY LISTED COMPRESSION F1TTINGS. NO SET SCREW FITTINGS SHALL BE ALLOWED.
9. CONTRACTOR TO PROVIDE AND INSTALL ENGRAVED LABEL ON THE CLEARWIRE TECHNOLOGIES, INC. METER SOCKET ENCLOSURE.

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TECHNOLOGIES, INC.
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OFFICE: (425) 216-7600
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III Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (518) 453-4500 - www.chacompanies.com

CHA PROJECT NO:
20621 - 1065 - 43000

NO.	SUBMITTAL		
0	04/05/12	ISSUED FOR REVIEW	
	BY: MSH	CHK: MSH	APP'D: JPS
1	06/27/12	ISSUED FOR CONSTRUCTION	
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STATE OF CONNECTICUT
JOSEPH P. GOSSELIN
No. 17957
LICENSED PROFESSIONAL ENGINEER

SITE NAME:
SALTONSTALL PLACE

CW ID#:
CT-NHN0095E

SITE ADDRESS:
12 SALTONSTALL PL
EAST HAVEN, CT 06512
NEW HAVEN COUNTY

SHEET TITLE
ELECTRICAL PLAN

SHEET NUMBER
E01

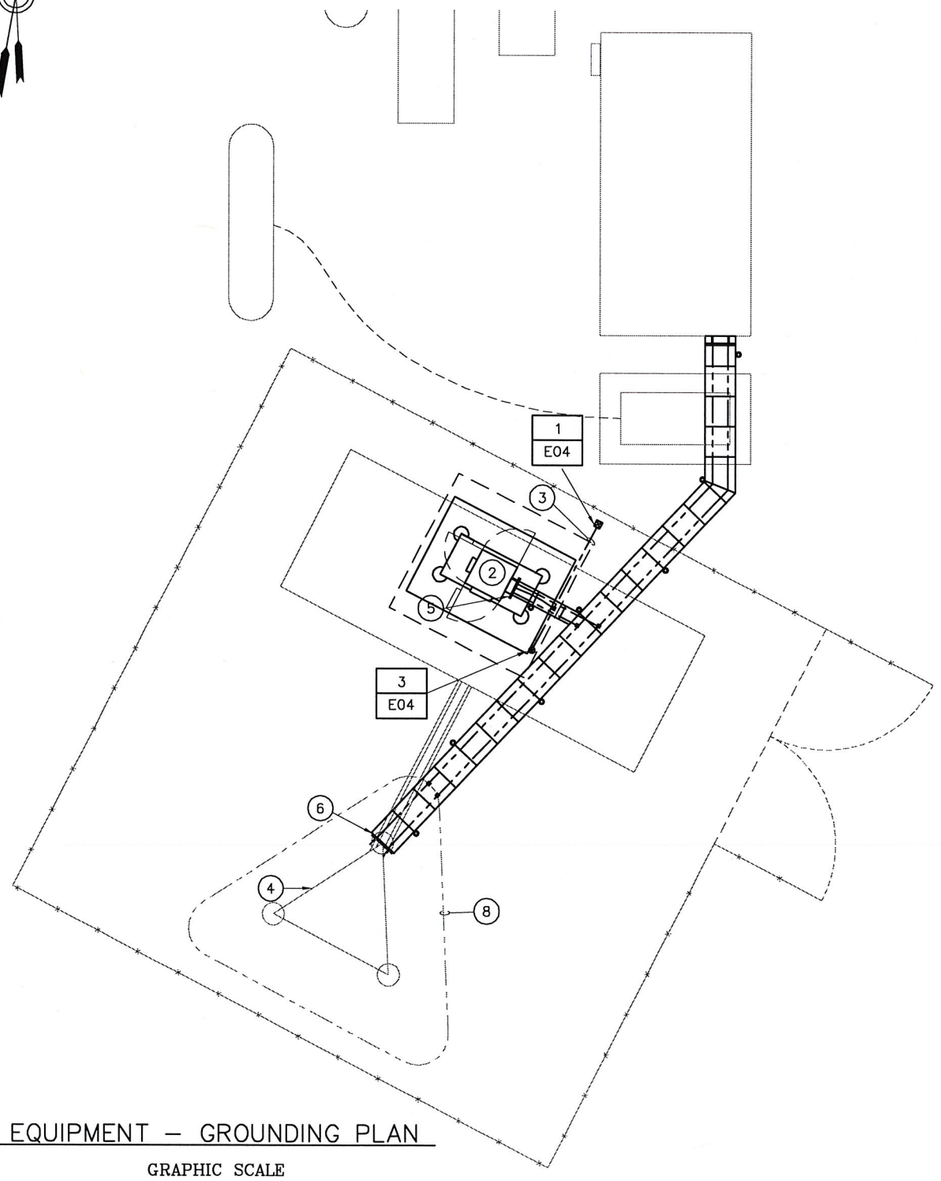
LEGEND

———	GROUNDING WIRE, #2 BCW U.N.O.
•	COMPRESSION TYPE CONNECTION
⊗	GROUND ROD
⊠	5/8" x 10'-0" COPPER CLAD GROUND ROD W/ ACCESS
■	CADWELD CONNECTION
MG — MIGB	MIGB – GROUND BAR
CG — CIGBE	CIGBE – GROUND BAR
M	METER SOCKET BY OTHERS METER BY UTILITY COMPANY
#	CODED DRAWING NOTE
XXX / XX	DETAIL NUMBER DRAWING(S) NUMBER

APPROX. TRUE N

APPROX. MAG. N

13°±



1 — EQUIPMENT – GROUNDING PLAN

GRAPHIC SCALE

10 0 5 10

IN FEET

ABBREVIATIONS

AWG	AMERICAN WIRE GAUGE
BCW	BARE COPPER WIRE
CGBE	COAX GROUND BAR EXTERNAL
CIGBE	COAX ISOLATED GROUND BAR EXTERNAL
DWG	DRAWING
MIGB	MASTER ISOLATION GROUND BAR
TYP.	TYPICAL
W/	WITH

CODED DRAWING NOTES:

1. NOT USED.
2. RADIO CABINET. FURNISHED BY OTHERS.
3. #2 SOLID TINNED BCW BURIED EXTERIOR GROUND RING.
4. EXISTING TOWER.
5. INTERIOR GROUND BAR. SUPPLIED WITH CABINET.
6. CGBE.
7. NOT USED.
8. EXISTING GROUND RING. EXACT LOCATION TO BE DETERMINED IN FIELD.

GROUNDING SPECIFICATIONS:

1. GROUNDING SHALL COMPLY WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE.
2. ALL GROUNDING DEVICES SHALL BE U.L. APPROVED OR LSITED FOR THEIR INTENDED USE.
3. GROUND WIRES SHALL BE TINNED #2 AWG BARE SOLID Cu UNLESS NOTED OTHERWISE.
4. GROUNDING CONNECTIONS SHALL BE EXOTHERMIC (CADWELD) UNLESS NOTED OTHERWISE. CLEAN SURFACES TO SHINY METAL. WHERE GROUND WIRES ARE CADWELDED TO GALVANIZED SURFACES, SPRAY CADWELD WITH GALVANIZING PAINT.
5. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTIST AND STRAIGHTEST PATH POSSIBLE. BEND GROUNDING LEADS WIN A MINIMUM 8" RADIUS.
6. PRIOR TO INSTALLING LUGS ON GROUND WIRES, APPLY THOMAS & BETSS KOPR-SHIELD (TM OF JET LUB INC.). PRIOR TO BOLTING GROUND WIRE LUGS TO GROUND BARS, APPLY KOPR-SHIELD OR EQUAL.
7. WHERE BARE COPPER GROUND WIRES ARE ROUTED FROM ANY CONNECTION ABOVE GRADE TO GROUND RING, INSTALL WIRE IN ¾" PVC SLEEVE, FROM 1'-0" ABOVE GRADE AND SEAL TOP WITH SILICONE MATERIAL
8. PREPARE ALL BONDING SURFACES FOR GROUNDING CONNECTIONS BY REMOVING ALL PAINT AND CORROSION DOWN TO SHINY METAL. FOLLOWING CONNECTION, APPLY APPROPRIATE ANTI-OXIDIZATION PAINT.
9. GROUNDING WIRE CONNECTIONS SHALL BE 3-CRIMP C-TAP COMPRESSION TYPE. SPLIT BOLTS ARE NOT ACCEPTABLE.
10. GROUND RODS SHALL BE COPPER CLAD STEEL 5/8"x10' SPACED NOT LESS NAN 10' O.C..
11. CONNECTORS SHALL BE CRIMPED USING HYDRAULIC CRIMPING TOOLS.
12. SURFACE CONNECTIONS SHALL BE MADE TO BARE METAL. PAINTED SURFACES SHALL BE FILED TO ENSURE PROPER CONTACT. APPLY NON-OXIDIZING AGENT TO CONNECTIONS.
13. COPPER BUSES SHALL BE CLEANED, POLISHED AND A NON-OXIDIZING AGENT APPLIED. NO FINGERPRINTS OR DISCOLORED COPPER WILL BE PERMITTED.
14. GROUNDING CONDUCTORS SHALL BE RUN THROUGH PVC SLEEVE WHERE ROUTED THROUGH WALLS, FLOORS, AND CEILING. ENDS OF CONDUIT SHALL BE GROUNDED. SEAL BOTH ENDS OF CONDUIT WITH SILICONE CAULK.
15. HARDWARE (I.E. NUTS, BOLTS, WASHERS, ETC.) IS TO BE STAINLESS STEEL.
16. EXOTHERMIC WELDS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
17. THE ENTIRE SYSTEM SHALL BE SOLIDLY GROUNDED USING LOCKNUTS, AND BONDING NUTS ON CONDUITS AND PROPERLY BONDED GROUND CONDUCTORS. RECEPTACLES AND EQUIPMENT BRANCH CIRCUITS SHALL BE GROUNDED WITH A FULL SIZED EQUIPMENT GROUNDING CONDUCTOR RUN IN THE CIRCUIT'S CONDUIT.
18. INSTALL GROUND BUSHINGS ON ALL METALLIC CONDUITS AND BOND TO THE EQUIPMENT GROUND BUS IN THE PANEL BOARD.
19. GROUND BARS (SECTOR, COLLLECTOR, MASTER) SHALL BE BARE 1/4'X4' COPPER; LARGE ENOUGH 10 ACCOMODATE THE REQUIRED NUMBER OF GROUND CONNECTIONS. THE HARDWARE SECURING THE MIGB SHALL ELECTRICALLY INSULATE THE MIGB FROM ANY STRUCTURE TO WHICH IT IS FASTENED.
20. APPLY T&8 KOPR-SHIELD OR APPROVED EQUAL PRIOR TO MAKING MECHANICAL CONNECTIONS. CONNECTIONS SHALL BE MADE WITH STAINLESS STEEL BOLTS, NUTS AND LOCK WASHERS 3/8" DIAMETER MIN. WHERE GALVANIZING IS REMOVED FROM METAL. IT SHALL BE PAINTED OR TOUCHED UP WITH 'GALVONOX' OR EQUAL.
21. ALL TERMINATIONS AT EQUIPMENT ENCLOSURES, PANELS, FRAMES OF EQUIPMENT AND WHERE EXPOSED FOR GROUNDING CONDUCTOR TERMINATION SHALL BE PERFORMED UTILIZING TWO HOLE BOLTED TONGUE COMPRESSION TYPE WITH STAINLESS STEEL SELF-TAPPING SCREWS.
22. ALL CLAMPS AND SUPPORTS USED TO SUPPORT THE GROUNDING SYSTEM CONDUCTORS AND PVC CONDUITS SHALL BE PVC TYPE (NON-CONDUCTIVE). DO NOT USE METAL BRACKETS OR SUPPORTS WHICH WOULD FORM A COMPLETE RING AROUND ANY GROUNDING CONDUCTOR.
23. ALL BOLTS, WASHERS AND NUTS USED ON GROUNDING CONNECTIONS SHALL BE STAINLESS STEEL.
24. THE CONTRACTOR SHALL ENGAGE AN INDEPENDENT ELECTRICAL TESTING FIRM TO TEST AND VERIFY THAT RESISTANCE TO EARTH DOES NOT EXCEED 5.0 OHMS. PROVIDE A COPY OF TESTING REPORT, INCLUDING THE METHOD AND INSTRUMENTS USED TO VERIFY RESISTANCE TO CLEARWIRE REPRESENTATIVE.
25. BOND CABINET THROUGH THE MAIN GROUND BAR.

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STATE OF CONNECTICUT
JOHN P. CORLEY
No. 17587
LICENSED
PROFESSIONAL ENGINEER

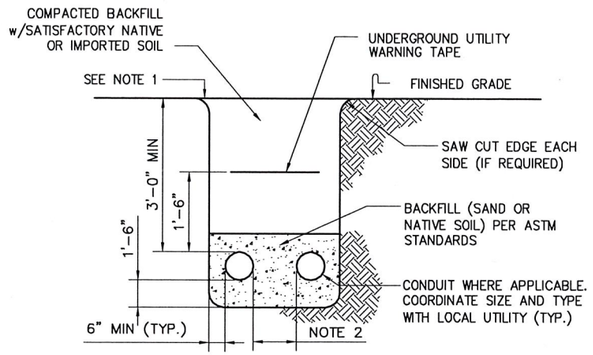
SITE NAME:
SALTONSTALL PLACE

CW ID#:
CT-NHN0095E

SITE ADDRESS:
12 SALTONSTALL PL
EAST HAVEN, CT 06512
NEW HAVEN COUNTY

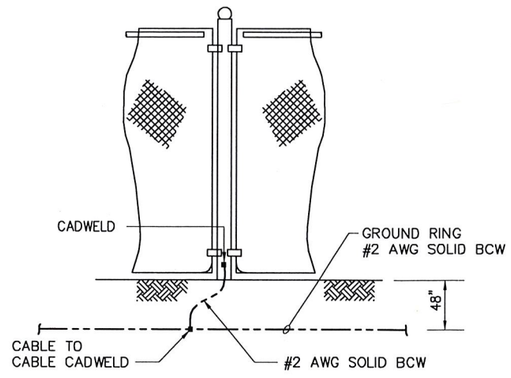
SHEET TITLE
GROUNDING PLAN

SHEET NUMBER
E02

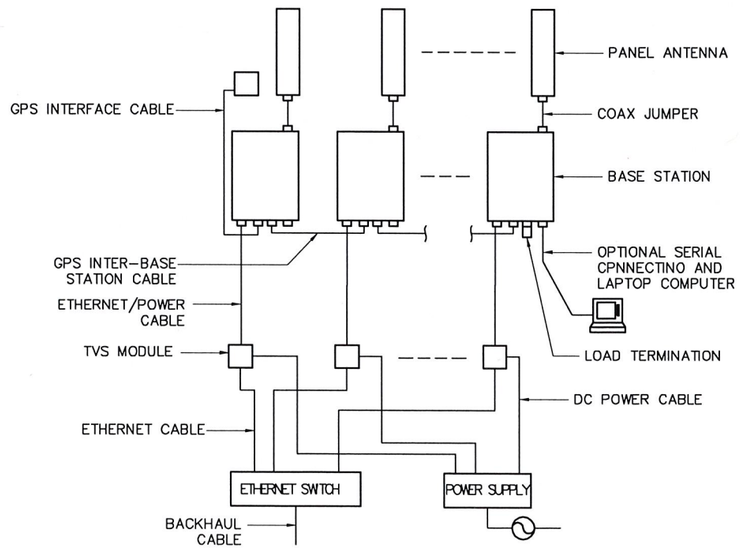


NOTES:
1. REPLACE EXISTING SURFACE CONDITIONS IN KIND TO INCLUDE, BUT NOT LIMITED TO: CONCRETE, CRUSHED STONE, SELECT GRAVEL, ASPHALT, TOPSOIL AND GRASS.
2. 4" MIN TO SECONDARY ELECTRIC, 12" MIN TO PRIMARY ELECTRIC

1 — TYPICAL TRENCH SECTION
NO SCALE



2 — FENCE GROUNDING
NO SCALE



3 — BTS CABLING
NO SCALE

GENERAL NOTES:

1. OBTAIN PERMITS AND PAY FEES RELATED TO ELECTRICAL WORK PERFORMED ON THIS PROJECT. DELIVER COPIES OF ALL PERMITS TO CLEARWIRE TECHNOLOGIES, INC.
2. SCHEDULE AND ATTEND INSPECTIONS RELATED TO ELECTRICAL WORK REQUIRED BY JURISDICTION HAVING AUTHORITY. CORRECT AND PAY FOR ANY WORK REQUIRED TO PASS ANY FAILED INSPECTION.
3. REDLINED AS-BUILTS ARE TO BE DELIVERED TO CLEARWIRE TECHNOLOGIES. INC REPRESENTATIVE.
4. PROVIDE TWO COPIES OF OPERATION AND MAINTENANCE MANUALS IN THREE-RING BINDER.
5. FURNISH AND INSTALL THE COMPLETE ELECTRICAL SYSTEM, TELCO SYSTEM, AND THE GROUNDING SYSTEM AS SHOWN ON THESE DRAWINGS.
6. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL APPLICABLE BUILDING CODES AND LOCAL ORDINANCES, INSTALLED IN A NEAT MANNER AND SHALL BE SUBJECT TO APPROVAL BY CLEARWIRE TECHNOLOGIES, INC REPRESENTATIVE.
7. CONDUCT A PRE-CONSTRUCTION SITE VISIT AND VERIFY EXISTING SITE CONDITIONS AFFECTING TNIS WORK. REPORT ANY OMISSIONS OR DISCREPANCIES OR CLARIFICATION PRIOR TO THE START OF CONSTRUCTION.
8. PROTECT ADJACENT STRUCTURES AND FINISHES FROM DAMAGE. REPAIR TO ORIGINAL CONDITION ANY DAMAGED AREA.
9. REMOVE DEBRIS ON A DAILY BASIS. DEBRIS NOT REMOVED IN A TIMELY FASHION WILL BE REMOVED BY OTHERS AND THE RESPONSIBLE SUBCONTRACTOR SHALL BE CHARGED ACCORDINGLY. REMOVAL OF DEBRIS SHALL BE COORDINATED WITH THE SITE OWNER'S REPRESENTATIVE. DEBRIS SHALL BE REMOVED FROM THE PROPERTY AND DISPOSED OF LEGALLY. USE OF THE PROPERTY'S DUMPSTER IS PROHIBITED.
10. CONTRACTOR TO CONFIRM AVAILABLE CAPACITY AT EXISTING UTILITY PEDESTAL AND ADVISE ENGINEER OF SERVICE SIZE AND FAULT CURRENT LEVEL.
11. IF PEDESTAL DOES NOT HAVE ADEQUATE CAPACITY, CONTRACTOR TO SUBMIT COST QUOTATION TO UPGRADE. UPON APPROVAL CF SUBMITTED COST QUOTATION, THE CONTRACTOR SHALL PROVIDE NEW SERVICE AND/OR UPGRADE SERVICE FEEDERS AND EQUIPMENT/ELECTRODE GROUNDING CONDUCTORS SIZE ACCORDINGLY.
12. CONTRACTOR SHALL VERIFY SEPARATION DIMENSION BETWEEN POWER COMPANY ELECTRICAL CONDUITS AND LP GAS PIPES AS PER UTILITY COMPANY, LOCAL CODES, NEC, NFPA, AND GAS TANK MANUFACTURER'S SPECIFICATION.
13. CONTRACTOR SHALL VERIFY THAT THE TOTAL NUMBER OF SERVICE ENTRANCE DISCONNECTS IN THE EXISTING UTILITY COMPANY PEDESTAL MUST NOT EXCEED SIX. IF THE NEW SERVICE ADDED EXCEEDS THIS VALUE, CONTRACTOR MUST COORDINATE WITH THE UTLITY COMPANY AND AUTHORITY HAVING JURISDICTION. THE RUNNING OF AN ADDITIONAL EXCLUSIVE AND DEDICATED SERVICE LATERAL SET FOR THE NEW LOAD ADDED TO THE COMPOUND AS PER NEC ARTICLE 230--2(8).
14. THE EQUIPMENT/PROTECTIONS MUST BE RATED FOR STANDARD AIC RATE HIGHER THAN INCOMING EQUIPMENT AND/OR UTILITY COMPANY AIC RATE.

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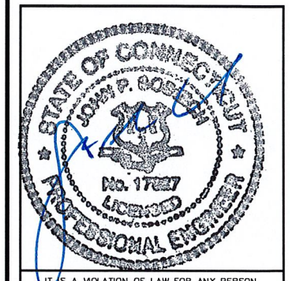

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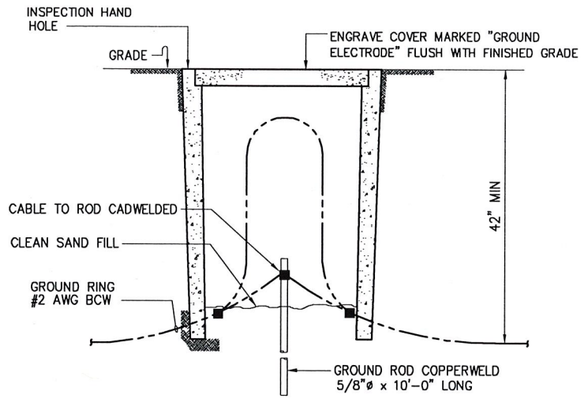
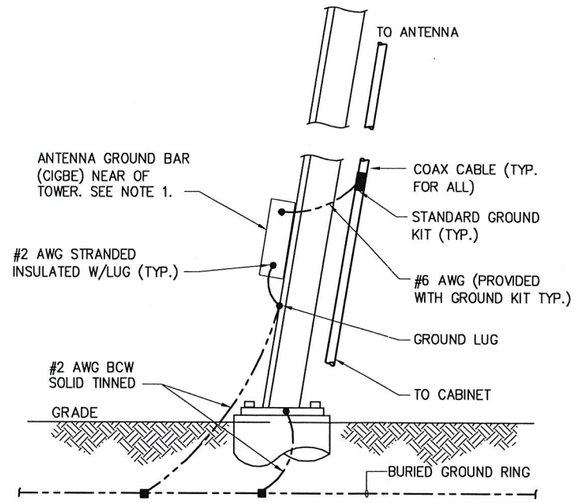
SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E03



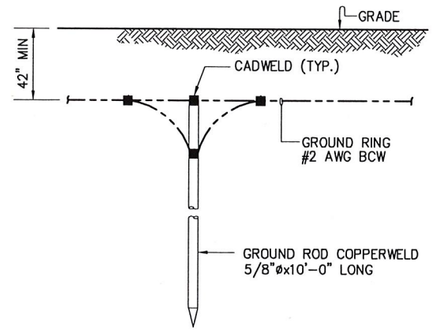
NOTE: INSPECTION HAND HOLE MAY BE CONCRETE OR PVC AND SHALL BE A MINIMUM OF 8" WIDTH/DIAMETER.

1 — GROUND ROD WITH ACCESS
NO SCALE

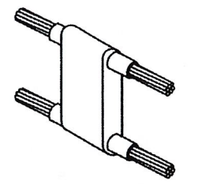


NOTE: 1. NUMBER OF GROUNDING BARS MAY VARY DEPENDS ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.

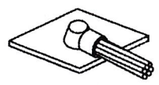
2 — ANTENNA CABLE GROUNDING FOR TOWER
NO SCALE



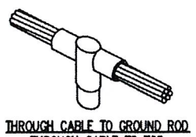
3 — TYPICAL GROUND ROD
NO SCALE



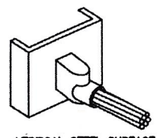
PARALLEL HORIZONTAL CONDUCTORS
PARALLEL THROUGH CONNECTION OF HORIZONTAL CABLES
TYPE PT



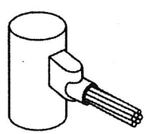
HORIZONTAL STEEL SURFACE
TO FLAT STEEL SURFACE OR HORIZONTAL PIPE
TYPE HS



THROUGH CABLE TO GROUND ROD
THROUGH CABLE TO TOP OF GROUND ROD
TYPE GT

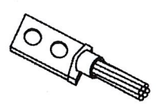


VERTICAL STEEL SURFACE
CABLE DOWN AT 45° TO VERTICAL STEEL SURFACE INCLUDING PIPE
TYPE VS



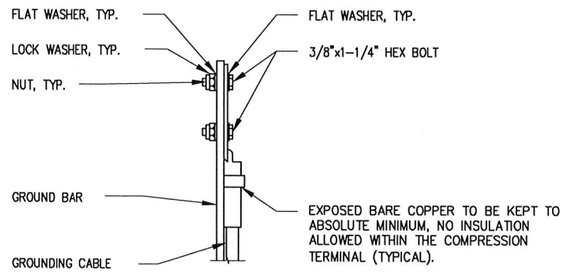
VERTICAL PIPE
CABLE DOWN AT 45° TO RANGE OF VERTICAL PIPES
TYPE VS

BOND JUMPER
FIELD FABRICATED
GREEN STRANDED INSULATED
TYPE 2-YA-2



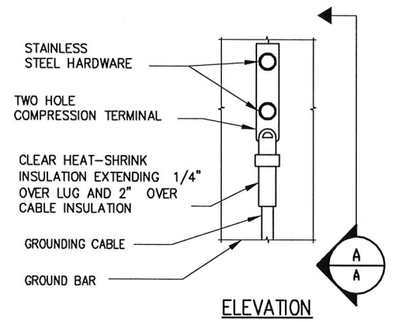
COPPER LUGS
TWO HOLE-LONG BARREL LENGTH
TYPE YA-2

4 — TYP. CADWELD TYPES
NO SCALE



SECTION A-A

NOTES:
1. "DOUBLING UP" OR "STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS AND TO BE APPLIED PRIOR TO ADDING HARDWARE.



ELEVATION

5 — TYPICAL GROUND BAR CONNECTION DETAILS
NO SCALE

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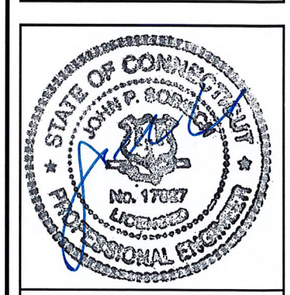

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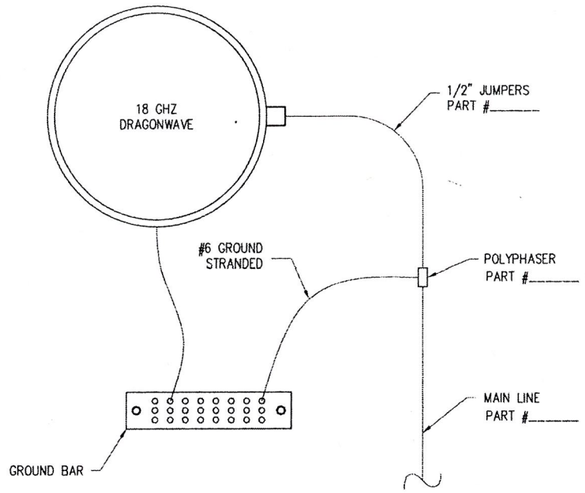
SALTONSTALL PLACE

CW ID#:
CT-NHN0095E

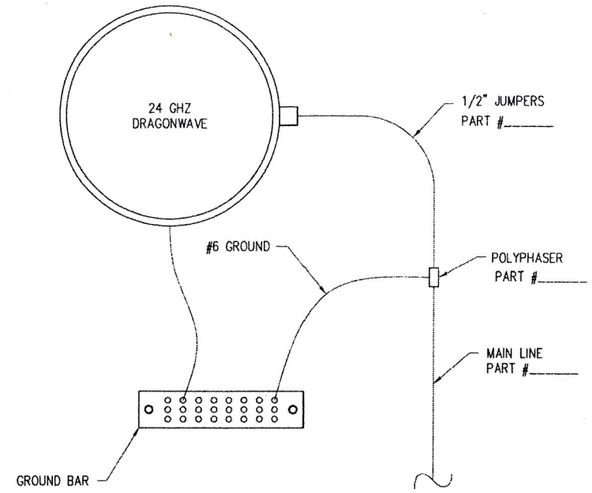
SITE ADDRESS:
12 SALTONSTALL PL
EAST HAVEN, CT 06512
NEW HAVEN COUNTY

SHEET TITLE
GROUNDING DETAILS

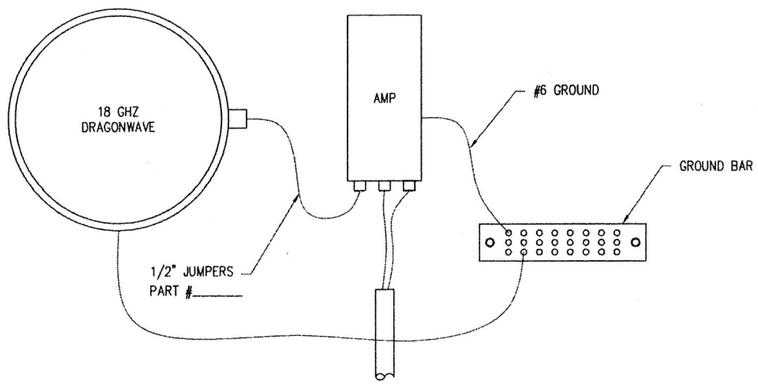
SHEET NUMBER
E04



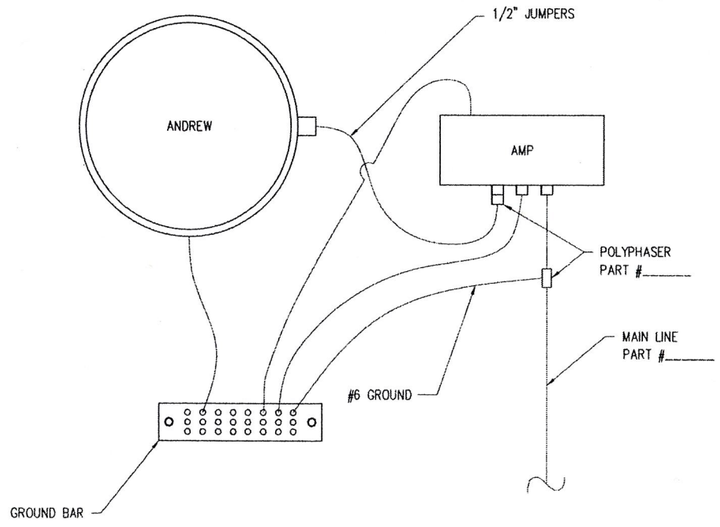
1 — 18 GHZ DRAGONWAVE GROUNDING
NO SCALE



2 — 24 GHZ DRAGONWAVE GROUNDING
NO SCALE



3 — 18 GHZ DRAGONWAVE/AMP GROUNDING
NO SCALE



4 — ANDREW GROUNDING
NO SCALE

clearwire®
TECHNOLOGIES, INC.
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BLVD. NE STE. 300
KIRKLAND, WA 98033
OFFICE: (425) 216-7600
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CHA
111 Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (518) 453-4500 - www.chacompanies.com

CHA PROJECT NO:
20621 - 1065 - 43000

NO.	SUBMITTAL		
0	04/05/12	ISSUED FOR REVIEW	
	BY: MSH	CHK: MSH	APP'D: JPS
1	06/27/12	ISSUED FOR CONSTRUCTION	
	BY: MSH	CHK: MSH	APP'D: JPS

SITE NAME:
SALTONSTALL PLACE

CW ID#:
CT-NHN0095E

SITE ADDRESS:
12 SALTONSTALL PL
EAST HAVEN, CT 06512
NEW HAVEN COUNTY

SHEET TITLE
ANTENNA
GROUNDING DETAILS

SHEET NUMBER
E05

File: W:\TRANSCEND\20621\SITES\1065-CT-NHN0095\CD\CT-NHN0095E-E05.DWG Saved: 6/27/2012 4:45:27 PM PLotted: 6/28/2012 8:10:41 AM User: Montgomery, John