Michael Gentile, Site Acquisition
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (508) 844-9813
mgentile@clinellc.com

March 17, 2016

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification // Site Number: CT2037
69 Wheeler Street, New Haven, CT 06512 (Site Name: New Haven Wheeler Street)
N 41.2959694// W -72.897925

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains nine (9) antennas at the 91 foot level of the existing 98 foot monopole tower at 69 Wheeler Street, New Haven, CT 06512. The tower is owned by Landmark Dividend, LLC. The property is owned by Elmer & William Laydon. AT&T now intends to swap three (3) of its existing antennas for three (3) new LTE models for its LTE upgrade. These antennas would be installed at the 91 foot level of the tower. AT&T also intends to install three (3) remote radio units, one (1) surge arrestor, two (2) DC power lines and one (1) fiber line.

The current proposal involves an antenna swap only (three for three); zero antennas will be added. AT&T was originally approved for nine (9) antennas on August 1, 2002.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Toni Harp, Mayor for the City of New Haven, as well as the tower owner, Landmark Dividend, LLC and the ground owner, Elmer & William Laydon.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

Attached to accommodate this filing are construction drawings dated 10/30/2015 by ComEx Consultants, a structural analysis dated 3/3/2016 by Bennett & Pless and an Emissions Analysis Report dated 1/19/2016 by EBI Consulting.

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading as shown in the attached structural analysis by Bennett & Pless dated 3/3/2016.

For the foregoing reasons, AT&T respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Michael Gentile, Site Acquisition
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (508) 844-9813
mgentile@centerlincommunications.com

Attachments

cc: Toni Harp, Mayor, City of New Haven - as elected official
Landmark Dividend, LLC - as tower owner
Elmer & William Laydon - as property owner

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RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

AT&T Existing Facility

Site ID: CT2037

New Haven Wheeler Street
69 Wheeler Street
New Haven, CT 06512

January 19, 2016

EBI Project Number: 6216000227

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	15.02 %

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
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January 19, 2016

AT&T Mobility – New England
Attn: Cameron Syme, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT2037 – New Haven Wheeler Street**

EBI Consulting was directed to analyze the proposed AT&T facility located at **69 Wheeler Street, New Haven, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **69 Wheeler Street, New Haven, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

1) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 2 UMTS channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 2 LTE channels (WCS Band – 2300 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) 2 LTE channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

8) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antennas used in this modeling are the **Powerwave 7750, KMW AM-X-CD-14-65-00T-RET, KMW AM-X-CD-16-65-00T-RET, Commscope SBNHH-1D65A and the CCI HPA-65R-BUU-H6** for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

10) The antenna mounting height centerline of the proposed antennas is **91 feet** above ground level (AGL).

11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general public threshold limits.

AT&T Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Powerwave 7750	Make / Model:	Powerwave 7750	Make / Model:	Powerwave 7750
Gain:	12.5 / 15.6 dBd	Gain:	12.5 / 15.6 dBd	Gain:	12.5 / 15.6 dBd
Height (AGL):	91 feet	Height (AGL):	91 feet	Height (AGL):	91 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	3,245.44	ERP (W):	3,245.44	ERP (W):	3,245.44
Antenna A1 MPE%	**2.02**	Antenna B1 MPE%	**2.02**	Antenna C1 MPE%	**2.02**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Commscope SBNHH-1D65A	Make / Model:	CCI HPA-65-BUU-H6	Make / Model:	CCI HPA-65-BUU-H6
Gain:	10.65 / 14.85 dBd	Gain:	11.95 / 14.75 dBd	Gain:	11.95 / 14.75 dBd
Height (AGL):	91 feet	Height (AGL):	91 feet	Height (AGL):	91 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	4,362.77	ERP (W):	4,522.51	ERP (W):	4,522.51
Antenna A2 MPE%	**2.44**	Antenna B2 MPE%	**2.61**	Antenna C2 MPE%	**2.61**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	KMW AM-X-CD-14-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET
Gain:	11.85 / 14.15 dBd	Gain:	13.85 / 15.25 dBd	Gain:	13.85 / 15.25 dBd
Height (AGL):	91 feet	Height (AGL):	91 feet	Height (AGL):	91 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	4,957.50	ERP (W):	6,931.52	ERP (W):	6,931.52
Antenna A3 MPE%	**3.51**	Antenna B3 MPE%	**5.10**	Antenna C3 MPE%	**5.10**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**9.73 %**
Nextel	2.78 %
Clearwire	0.48 %
T-Mobile	2.03 %
Site Total MPE %:	**15.02 %**

AT&T Sector 1 Total:	7.97 %
AT&T Sector 2 Total:	9.73 %
AT&T Sector 3 Total:	9.73 %
Site Total:	15.02 %

AT&T _ Per Sector (Max Sector – Sectors B & C)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	533.48	91	5.31	850	567	0.94 %
AT&T 1900 MHz (PCS) UMTS	2	1089.23	91	10.84	1900	1000	1.08 %
AT&T 850 MHz GSM	2	470.03	91	4.68	850	567	0.82 %
AT&T 2300 MHz (WCS) LTE	2	1791.23	91	17.83	2300	1000	1.78 %
AT&T 700 MHz LTE	2	1455.97	91	14.49	700	467	3.10 %
AT&T 1900 MHz (PCS) LTE	2	2009.79	91	20.00	1900	1000	2.00 %
						Total:	9.73 %

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Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public exposure to RF Emissions.

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector 1:	7.97 %
Sector 2:	9.73 %
Sector 3 :	9.73 %
AT&T Maximum Total (per sector):	9.73 %
Site Total:	15.02 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **15.02%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803

bennett&pless
Experience Structural Expertise

March 3, 2016

Keith Drennan
Com-Ex Consultants, LLC
115 Route 46 Suite E39
Mountain Lakes, NJ 07046

Re: Structural Analysis Report

Structure:	98ft EEI Monopole
Site Address:	69 Wheeler Street, New Haven, CT 06512 (New Haven County) Latitude: 41.2959°N, Longitude: 72.8979°W
Site Name:	AT&T Mobility – New Haven Wheeler Street
Site Number:	AT&T Mobility – CT2037 FA # – 10035247
SC Number:	160147
Status:	**Structure Passes (95% Capacity)** **Foundation Passes**

Dear Ms. Keith:

Per your request, Structural Components, LLC has completed a structural analysis for the above referenced project to verify the tower's compliance to the following design criteria:

Standard:	TIA/EIA-222-F *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures*
Building Code:	2003 International Building Code 2005 Connecticut Building Code 2013 Amendment to Connecticut Building Code
Design Basic Wind Speed without Ice:	85 mph fastest mile (equivalent to 100 mph 3-second gust)
Design Basic Wind Speed with Ice:	38 mph fastest mile (equivalent to 50 mph 3-second gust)
Ice Thickness:	3/4" radial
Serviceability Basic Wind Speed:	50 mph fastest mile (equivalent to 63 mph 3-second gust)

Please refer to the following structural analysis report, which gives complete details of the tower loading, results, information provided, and necessary assumptions.

We trust you find this report satisfactory. Please do not hesitate to contact us if you should have any questions or concerns.

Sincerely,

Analysis by:

Chunhui Song, EIT
Design Engineer

Reviewed by:

Michael T. De Boer, PE
Senior Technical Director
03/03/2016

1 LOADING CONFIGURATION

The following antennas, mounts, transmission lines, and other appurtenances were considered for the structural analysis.

Elev. (ft)[1]	Appurtenance	Line	I/O[2]	Notes
98.0	(6) RFS APX16DWV-16DWVS-E-A20 Panels w/ Pipe Mounts (9) ATMAA1412 TMAs[3] (1) 12' Low Profile Platform (97.0ft)	(18) 1-1/4" TX (1) 1/4" OD	I	T-Mobile Existing
91.0	**(3) Powerwave 7750 Panels** **(1) Andrew SBNHH-1D65A Panel** **(2) CCI HPA-65R-BUU-H6 Panels** **(1) KMW AM-X-CD-14-65-00T-RET Panel** **(2) KMW AM-X-CD-16-65-00T-RET Panels** **(3) Ericsson RRUS-32[3]** **(3) Ericsson RRUS-11[3]** **(3) Ericsson RRUS-11** **(6) Powerwave LPG21401 TMAs[3]** **(2) DC-6 Squid Surge Arrestors** **(6) Kathrein 860-10025 RETs** **(1) Kathrein 860-10006 RET Control Unit**	**(12) 7/8"TX** **(2) 2" ID**	**I**	**AT&T Final**
88.0	(1) 1/2" x 6' Lightning Rod (1) 10' Low Profile Platform w/ Hand Rails	---	I	Existing
82.0	(1) Dragon Wave A-ANT-18G-2-C Dish (1) 1' Dish (2) ODUs (2) ODUs[3]	(4) 1/2" TX	I	Clearwire Existing
80.0	(3) CommScope LLPX310R-V1 Panels w/ Pipe Mounts (3) Samsung RRHs[3]	(2) 2-3/8" Conduit	I	Clearwire Existing
80.0	(11) Andrew DB844H65E-XY Panel w/ Pipe Mount	(12) 7/8"TX	I	Nextel Existing
78.0	(3) 12' T-Arm Mounts	---	---	Existing

1) Elevations reference centerline of panel, yagi, and dish antennas, and base of whip antennas, in relation to the base of the tower.
2) "I/O" designates whether the lines are placed inside or outside of the pole.
3) Secondary appurtenances are placed behind the primary appurtenances such as dish or panels for full or partial frontal shielding. See analysis output in Appendix A for magnitude of assumed shielding.
4) All appurtenances and coax not in this table are assumed to be removed upon installation of the proposed equipment.

2 RESULTS

The analysis was performed using tnxTower v7.0.5.1, a structural analysis program developed by Tower Numeric Inc. specifically for the communication tower industry.

2.1 TOWER MEMBER STRESS LEVELS

The tower has the following stress ratios in its structural members.

Elev. (ft)	Member	Stress Ratio
0 – 98	Monopole Shaft	0.94
0	Base Plate	0.95
0	Anchor Rods	0.70
0 – 70	Reinforcement Switch Blade	0.54

Stress ratio (SR) criteria:
SR $\leq$ 1.00 is completely within code limits.
SR $\leq$ 1.05 is considered within acceptable tolerance of code limits.
SR > 1.05 is outside acceptable tolerance of code limits and requires structural modifications.

2.2 FOUNDATION REACTIONS

The reactions listed below are for the design wind speed listed.

Reaction Type	Current No Ice Reactions	Current Iced Reactions	Foundation Status
Moment (ft-kips)	1297.6	317.0	Passes*
Shear (kips)	17.3	4.1	
Axial (kips)	16.7	23.7	

* Foundation is analyzed using basic soil properties found in previous calculations & TIA-222-G Annex F. It is recommended to obtain a complete geotechnical report for a more thorough analysis. See Appendix A for foundation calculations.

2.3 TOWER DEFLECTION

The deflections are listed below for critical tower elevations using the serviceability wind speed listed.

Elev. (ft)	Displacement (in)	Sway (deg)	Twist (deg)
91.0	21.974	2.2671	0.0186
82.0	17.823	2.1318	0.0157

3 PROVIDED INFORMATION AND ASSUMPTIONS

Information about the tower was provided by Com-Ex Consultants, LLC. Structural Components, LLC visited this site on 03/26/2012 for Pre-Construction & TIA Inspection.

Data	Document	Author	Date	File
Tower	Previous Structural Analysis Report	Structural Components, LLC	01/31/2013	120229
	Pre-Construction & TIA Inspection Report	Structural Components, LLC	03/27/2012	120229
	Modification Drawings	Structural Components, LLC	04/26/2012	CT2037
	Post Modification Report	Centek Engineering	02/11/2013	12033.CO23
Existing and Proposed Loads	Previous Structural Analysis Report	Structural Components, LLC	01/31/2013	120229
	Post Modification Report	Centek Engineering	02/11/2013	12033.CO23
	Construction Drawings	Com-Ex Consultants, LLC	10/30/2015	15178-EMP
	RFDS Loading Sheet	AT&T	09/16/2015	CTU2037
Foundation	Foundation Analysis	All-Point Technology Corp., P.C.	12/10/2008	CT198740

The following assumptions were made in order to complete the analysis. These assumptions must be checked. If they do not accurately represent the existing or proposed tower, foundation, soil, and loading conditions, we must be notified so that we can make the appropriate changes to our analysis, conclusions, and recommendations.

1. The tower and foundation are constructed as shown in the provided drawings, previous structural analysis reports, mapping reports, photos, and/or other documents.
2. The tower and foundation are in good condition with no corrosion, damage or fatiguing issues which could reduce the carrying capacity of the tower.
3. The tower has been properly maintained in accordance with industry standards.
4. The tower and foundation have not been modified except as indicated in the provided information or in this report.
5. Reinforcing steel of existing foundations are assumed to be able to carry the full foundation load up to the capacity of the soil.

4 CONCLUSIONS

To the best of our knowledge and belief the tower does satisfy the requirements of the applicable codes and standards having jurisdiction over the work for the loadings and conditions as outlined in this report. **Structural modifications are not required at this time.**

5 RECOMMENDATIONS

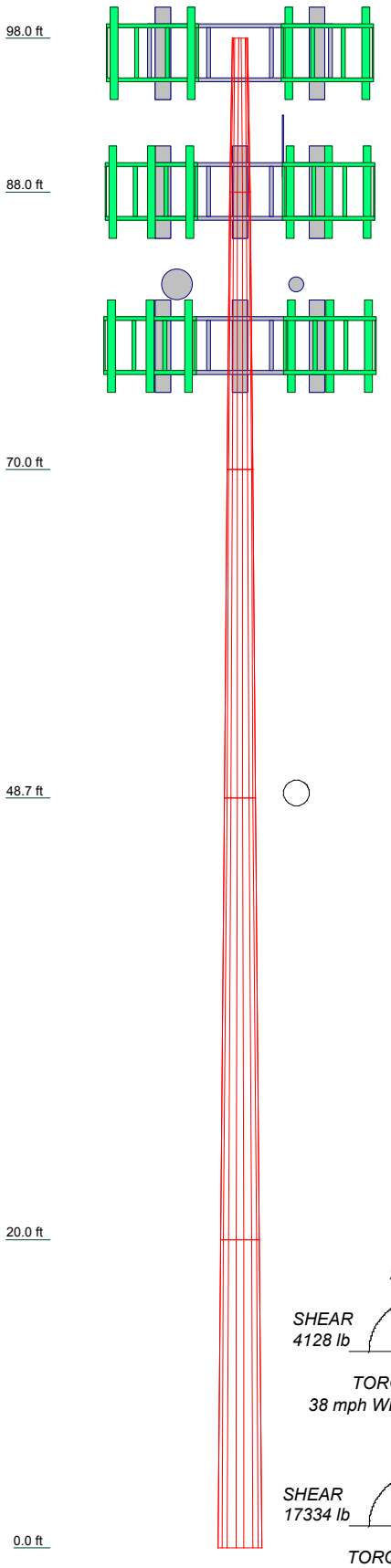
Provided the assumptions outlined are accurate, we recommend the following modification:

1. Provide full geotechnical report for a rigorous analysis of foundation.

APPENDIX A

Tower Profile and Calculations

Section	Length (ft)	Number of Sides	Thickness (in)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	10.00	18	0.2500	12.7500	16.5000	A572-65	388.1
2	18.00	18	0.1875	16.5000	20.0700		659.7
3	21.32	18	0.3240	20.0700	24.3127		1631.4
4	28.68	18	0.3490	24.3127	30.0200		2899.1
5	20.00	18	0.3800	30.0200	34.0000		2596.3
							8174.7



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) APX16DWV-16DWV-S-E-A20 w/Mount Pipe (T-Mobile)	98	(2) LGP21401 TMA (Fully Frontally shielded) (ATI)	91
(2) APX16DWV-16DWV-S-E-A20 w/Mount Pipe (T-Mobile)	98	(2) LGP21401 TMA (Fully Frontally shielded) (ATI)	91
(2) APX16DWV-16DWV-S-E-A20 w/Mount Pipe (T-Mobile)	98	DC-6 Squid Surge Arrestors (ATI)	91
(3) ATMAA1412 TMA (Full Frontal Shielding) (T-Mobile)	98	DC-6 Squid Surge Arrestors (ATI)	91
(3) ATMAA1412 TMA (Full Frontal Shielding) (T-Mobile)	98	(2) 860-10025 (ATI)	91
(3) ATMAA1412 TMA (Full Frontal Shielding) (T-Mobile)	98	(2) 860-10025 (ATI)	91
12' Low Profile Platform (T-Mobile)	97	(2) 860-10025 (ATI)	91
7750.00 (ATI)	91	860-10006 (ATI)	91
7750.00 (ATI)	91	10' Low Profile Platform w/ Rails (ATI)	88
7750.00 (ATI)	91	6' x 1/2" Lightning Rod	88
SBNHH-1D65A (ATI)	91	ODU (Clearwire)	82
HPA-65R-BUU-H6 (ATI)	91	ODU (Fully frontally shielded) (Clearwire)	82
HPA-65R-BUU-H6 (ATI)	91	ODU (Clearwire)	82
AM-X-CD-14-65-00T-RET (ATI)	91	ODU (Fully frontally shielded) (Clearwire)	82
AM-X-CD-16-65-00T-RET (ATI)	91	A-ANT-18G-2-C (Clearwire)	82
AM-X-CD-16-65-00T-RET (ATI)	91	1ft HP Dish w/Shroud (Clearwire)	82
Ericsson RRU 32 (Partially shielded) (ATI)	91	(3) DB844H65E-XY w/ Pipe Mount (Nextel)	80
Ericsson RRU 32 (Fully Frontally shielded) (ATI)	91	(4) DB844H65E-XY w/ Pipe Mount (Nextel)	80
Ericsson RRU 32 (Fully Frontally shielded) (ATI)	91	(4) DB844H65E-XY w/ Pipe Mount (Nextel)	80
RRUS-11 (Partially Frontally Shielded) (ATI)	91	LLPX310R-V1 w/ Pipe Mounts (Clearwire)	80
RRUS-11 (Partially Frontally Shielded) (ATI)	91	LLPX310R-V1 w/ Pipe Mounts (Clearwire)	80
RRUS-11 (Partially Frontally Shielded) (ATI)	91	LLPX310R-V1 w/ Pipe Mounts (Clearwire)	80
RRUS-11 (ATI)	91	Samsung RRUs (Partially Frontally Shielded) (Clearwire)	80
RRUS-11 (ATI)	91	Samsung RRUs (Partially Frontally Shielded) (Clearwire)	80
RRUS-11 (ATI)	91	Samsung RRUs (Partially Frontally Shielded) (Clearwire)	80
(2) LGP21401 TMA (Fully Frontally shielded) (ATI)	91	(3) 12' T-Arms	78

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 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 38 mph basic wind with 0.75 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 93.5%

bennett&pless
Experience Structural Expertise

Bennett & Pless
550 River Drive
North Sioux City, SD 57049
Phone: 605-540-4621
FAX: 678-990-8701

Job: **160147**			
Project: ***New Haven Wheeler Street (CT2037)***			
Client: Com-Ex Consultants, LLC	Drawn by: Chunhui Song	App'd:	
Code: TIA/EIA-222-F	Date: 03/03/16	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

There is a pole section.
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 0.7500 in.
Ice density of 56 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification		Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric				

Tapered Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Splice Length* *ft*	*Number of Sides*	*Top Diameter* *in*	*Bottom Diameter* *in*	*Wall Thickness* *in*	*Bend Radius* *in*	*Pole Grade*
L1	98.00-88.00	10.00	0.00	18	12.7500	16.5000	0.2500	1.0000	A572-65 (65 ksi)
L2	88.00-70.00	18.00	0.00	18	16.5000	20.0700	0.1875	0.7500	A572-65 (65 ksi)
L3	70.00-48.68	21.32	0.00	18	20.0700	24.3127	0.3240	1.2960	A572-65 (65 ksi)
L4	48.68-20.00	28.68	0.00	18	24.3127	30.0200	0.3490	1.3960	A572-65 (65 ksi)
L5	20.00-0.00	20.00		18	30.0200	34.0000	0.3800	1.5200	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	12.9467	9.9187	195.8008	4.4375	6.4770	30.2302	391.8592	4.9603	1.8040	7.216
	16.7545	12.8944	430.1743	5.7687	8.3820	51.3212	860.9147	6.4484	2.4640	9.856
L2	16.7545	9.7080	326.3677	5.7909	8.3820	38.9367	653.1649	4.8549	2.5740	13.728
	20.3796	11.8326	590.9607	7.0583	10.1956	57.9626	1182.6990	5.9174	3.2023	17.079
L3	20.3796	20.3063	1000.2920	7.0098	10.1956	98.1105	2001.9001	10.1551	2.9621	9.142
	24.6878	24.6694	1793.5336	8.5160	12.3509	145.2154	3589.4272	12.3370	3.7088	11.447
L4	24.6878	26.5452	1925.8897	8.5071	12.3509	155.9317	3854.3136	13.2751	3.6648	10.501
	30.4831	32.8673	3655.6647	10.5332	15.2502	239.7132	7316.1395	16.4368	4.6693	13.379
L5	30.4831	35.7494	3967.9169	10.5222	15.2502	260.1885	7941.0549	17.8781	4.6147	12.144
	34.5245	40.5498	5790.5671	11.9351	17.2720	335.2575	11588.7535	20.2787	5.3152	13.987

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	Double Angle Stitch Bolt Spacing Redundants in
L1 98.00-88.00				1	1	1			
L2 88.00-70.00				1	1	1			
L3 70.00-48.68				1	1	1			
L4 48.68-20.00				1	1	1			
L5 20.00-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
SWITCHBLADE	C	Surface Af (CaAa)	70.00 - 0.00	1	1	0.000 0.000	3.5000	20.0000	0.00
***									
Safety Line 3/8	A	Surface Ar (CaAa)	70.00 - 10.00	1	1	0.000 0.000	0.3750		0.22

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF6-50A (1-1/4 FOAM)	C	No	Inside Pole	98.00 - 3.00	18	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
(T-Mobile)						1" Ice	0.00	0.66
1/4" OD	C	No	Inside Pole	98.00 - 3.00	1	No Ice	0.00	0.10
(T-Mobile)						1/2" Ice	0.00	0.10
						1" Ice	0.00	0.10
***								
LDF5-50A (7/8 FOAM)	B	No	Inside Pole	91.00 - 7.50	12	No Ice	0.00	0.33
(AT&T)						1/2" Ice	0.00	0.33

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						1" Ice	0.00	0.33
2" ID (AT&T)	B	No	Inside Pole	91.00 - 7.50	2	No Ice	0.00	3.15
						1/2" Ice	0.00	3.15
						1" Ice	0.00	3.15
***								
LDF4RN-50A (1/2 FOAM) (Clearwire)	A	No	Inside Pole	82.00 - 7.50	4	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
2-3/8" OD Conduit (Clearwire)	A	No	Inside Pole	80.00 - 7.50	2	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
LDF5-50A (7/8 FOAM) (Nextel)	A	No	Inside Pole	80.00 - 7.50	12	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33

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
L1	98.00-88.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	30.78
		C	0.000	0.000	0.000	0.000	119.80
L2	88.00-70.00	A	0.000	0.000	0.000	0.000	63.20
		B	0.000	0.000	0.000	0.000	184.68
		C	0.000	0.000	0.000	0.000	215.64
L3	70.00-48.68	A	0.000	0.000	0.799	0.000	136.87
		B	0.000	0.000	0.000	0.000	218.74
		C	0.000	0.000	12.437	0.000	255.41
L4	48.68-20.00	A	0.000	0.000	1.075	0.000	184.13
		B	0.000	0.000	0.000	0.000	294.26
		C	0.000	0.000	16.730	0.000	343.59
L5	20.00-0.00	A	0.000	0.000	0.375	0.000	79.70
		B	0.000	0.000	0.000	0.000	128.25
		C	0.000	0.000	11.667	0.000	203.66

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
L1	98.00-88.00	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	30.78
		C		0.000	0.000	0.000	0.000	119.80
L2	88.00-70.00	A	0.750	0.000	0.000	0.000	0.000	63.20
		B		0.000	0.000	0.000	0.000	184.68
		C		0.000	0.000	0.000	0.000	215.64
L3	70.00-48.68	A	0.750	0.000	0.000	3.998	0.000	158.85
		B		0.000	0.000	0.000	0.000	218.74
		C		0.000	0.000	17.767	0.000	397.43
L4	48.68-20.00	A	0.750	0.000	0.000	5.378	0.000	213.69
		B		0.000	0.000	0.000	0.000	294.26
		C		0.000	0.000	23.900	0.000	534.64
L5	20.00-0.00	A	0.750	0.000	0.000	1.875	0.000	90.01
		B		0.000	0.000	0.000	0.000	128.25

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight lb
		C		0.000	0.000	16.667	0.000	336.89

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	98.00-88.00	0.0000	0.0000	0.0000	0.0000
L2	88.00-70.00	0.0000	0.0000	0.0000	0.0000
L3	70.00-48.68	-0.0371	0.8255	-0.1529	0.9096
L4	48.68-20.00	-0.0388	0.8286	-0.1640	0.9339
L5	20.00-0.00	-0.0195	0.8476	-0.0856	1.0290

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft²	C_AA_A Side ft²	Weight lb
(2)	A	From Face	3.50	90.0000	98.00	No Ice	7.61	3.63	63.51
APX16DWV-16DWV-S-E-A			0.00			1/2" Ice	8.20	4.53	113.59
20 w/Mount Pipe			0.00			1" Ice	8.76	5.26	170.27
(T-Mobile)									
(2)	B	From Face	3.50	90.0000	98.00	No Ice	7.61	3.63	63.51
APX16DWV-16DWV-S-E-A			0.00			1/2" Ice	8.20	4.53	113.59
20 w/Mount Pipe			0.00			1" Ice	8.76	5.26	170.27
(T-Mobile)									
(2)	C	From Face	3.50	90.0000	98.00	No Ice	7.61	3.63	63.51
APX16DWV-16DWV-S-E-A			0.00			1/2" Ice	8.20	4.53	113.59
20 w/Mount Pipe			0.00			1" Ice	8.76	5.26	170.27
(T-Mobile)									
(3) ATMAA1412 TMA (Full	A	From Face	3.00	90.0000	98.00	No Ice	0.00	0.41	13.00
Frontal Shielding)			0.00			1/2" Ice	0.00	0.49	20.62
(T-Mobile)			0.00			1" Ice	0.00	0.59	30.11
(3) ATMAA1412 TMA (Full	B	From Face	3.00	90.0000	98.00	No Ice	0.00	0.41	13.00
Frontal Shielding)			0.00			1/2" Ice	0.00	0.49	20.62
(T-Mobile)			0.00			1" Ice	0.00	0.59	30.11
(3) ATMAA1412 TMA (Full	C	From Face	3.00	90.0000	98.00	No Ice	0.00	0.41	13.00
Frontal Shielding)			0.00			1/2" Ice	0.00	0.49	20.62
(T-Mobile)			0.00			1" Ice	0.00	0.59	30.11
12' Low Profile Platform	A	None		0.0000	97.00	No Ice	20.00	20.00	1200.00
(T-Mobile)						1/2" Ice	25.00	25.00	1500.00
						1" Ice	30.00	30.00	1800.00
***									
7750.00	A	From Face	3.00	50.0000	91.00	No Ice	6.10	3.06	35.00
(AT&T)			0.00			1/2" Ice	6.54	3.42	68.74
			0.00			1" Ice	6.99	3.78	107.40
7750.00	B	From Face	3.00	60.0000	91.00	No Ice	6.10	3.06	35.00
(AT&T)			0.00			1/2" Ice	6.54	3.42	68.74

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
			0.00			1" Ice	6.99	3.78	107.40
7750.00	C	From Face	3.00	60.0000	91.00	No Ice	6.10	3.06	35.00
(AT&T)			0.00			1/2" Ice	6.54	3.42	68.74
			0.00			1" Ice	6.99	3.78	107.40
SBNHH-1D65A	A	From Face	3.00	50.0000	91.00	No Ice	6.36	3.86	33.50
(AT&T)			0.00			1/2" Ice	6.80	4.22	72.53
			0.00			1" Ice	7.25	4.62	116.56
HPA-65R-BUU-H6	B	From Face	3.00	60.0000	91.00	No Ice	10.36	6.45	50.70
(AT&T)			0.00			1/2" Ice	10.93	6.91	113.69
			0.00			1" Ice	11.50	7.38	183.08
HPA-65R-BUU-H6	C	From Face	3.00	60.0000	91.00	No Ice	10.36	6.45	50.70
(AT&T)			0.00			1/2" Ice	10.93	6.91	113.69
			0.00			1" Ice	11.50	7.38	183.08
AM-X-CD-14-65-00T-RET	A	From Face	3.00	50.0000	91.00	No Ice	5.51	2.83	36.40
(AT&T)			0.00			1/2" Ice	5.90	3.14	68.35
			0.00			1" Ice	6.30	3.47	104.76
AM-X-CD-16-65-00T-RET	B	From Face	3.00	60.0000	91.00	No Ice	8.26	4.64	48.50
(AT&T)			0.00			1/2" Ice	8.81	5.09	95.00
			0.00			1" Ice	9.36	5.54	147.50
AM-X-CD-16-65-00T-RET	C	From Face	3.00	60.0000	91.00	No Ice	8.26	4.64	48.50
(AT&T)			0.00			1/2" Ice	8.81	5.09	95.00
			0.00			1" Ice	9.36	5.54	147.50
Ericsson RRU 32 (Partially shielded)	A	From Face	2.50	50.0000	91.00	No Ice	0.35	2.42	77.00
			0.00			1/2" Ice	0.38	2.63	104.53
(AT&T)			0.00			1" Ice	0.42	2.85	135.66
Ericsson RRU 32 (Fully Frontally shielded)	B	From Face	2.50	60.0000	91.00	No Ice	0.00	2.42	77.00
			0.00			1/2" Ice	0.00	2.63	104.53
(AT&T)			0.00			1" Ice	0.00	2.85	135.66
Ericsson RRU 32 (Fully Frontally shielded)	C	From Face	2.50	60.0000	91.00	No Ice	0.00	2.42	77.00
			0.00			1/2" Ice	0.00	2.63	104.53
(AT&T)			0.00			1" Ice	0.00	2.85	135.66
RRUS-11 (Partially Frontally Shielded)	A	From Face	2.50	50.0000	91.00	No Ice	1.18	1.36	55.00
			0.00			1/2" Ice	1.28	1.52	74.32
(AT&T)			0.00			1" Ice	1.38	1.68	93.64
RRUS-11 (Partially Frontally Shielded)	B	From Face	2.50	60.0000	91.00	No Ice	1.18	1.02	55.00
			0.00			1/2" Ice	1.28	1.16	74.32
(AT&T)			0.00			1" Ice	1.38	1.30	96.56
RRUS-11 (Partially Frontally Shielded)	C	From Face	2.50	60.0000	91.00	No Ice	1.18	1.02	55.00
			0.00			1/2" Ice	1.28	1.16	74.32
(AT&T)			0.00			1" Ice	1.38	1.30	96.56
RRUS-11	A	From Face	1.00	0.0000	91.00	No Ice	2.94	1.25	55.00
(AT&T)			0.00			1/2" Ice	3.17	1.41	74.32
			0.00			1" Ice	3.40	1.57	93.64
RRUS-11	B	From Face	1.00	0.0000	91.00	No Ice	2.94	1.25	55.00
(AT&T)			0.00			1/2" Ice	3.17	1.41	74.32
			0.00			1" Ice	3.40	1.57	93.64
RRUS-11	C	From Face	1.00	0.0000	91.00	No Ice	2.94	1.25	55.00
(AT&T)			0.00			1/2" Ice	3.17	1.41	74.32
			0.00			1" Ice	3.40	1.57	93.64
(2) LGP21401 TMA (Fully Frontally shielded)	A	From Face	2.50	50.0000	91.00	No Ice	0.00	0.35	17.50
			0.00			1/2" Ice	0.00	0.44	23.31
(AT&T)			0.00			1" Ice	0.00	0.53	30.86
(2) LGP21401 TMA (Fully Frontally shielded)	B	From Face	2.50	60.0000	91.00	No Ice	0.00	0.35	17.50
			0.00			1/2" Ice	0.00	0.44	23.31
(AT&T)			0.00			1" Ice	0.00	0.53	30.86
(2) LGP21401 TMA (Fully Frontally shielded)	C	From Face	2.50	60.0000	91.00	No Ice	0.00	0.35	17.50
			0.00			1/2" Ice	0.00	0.44	23.31

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
(AT&T)			0.00			1" Ice	0.00	0.53	30.86
DC-6 Squid Surge Arrestors	A	From Face	1.00	0.0000	91.00	No Ice	2.20	1.81	32.80
(AT&T)			0.00			1/2" Ice	2.40	1.99	53.02
			0.00			1" Ice	2.60	2.18	76.29
DC-6 Squid Surge Arrestors	B	From Face	1.00	0.0000	91.00	No Ice	2.20	1.81	32.80
(AT&T)			0.00			1/2" Ice	2.40	1.99	53.02
			0.00			1" Ice	2.60	2.18	76.29
(2) 860-10025	A	From Face	2.50	0.0000	91.00	No Ice	0.14	0.11	1.16
(AT&T)			0.00			1/2" Ice	0.20	0.17	2.52
			0.00			1" Ice	0.26	0.23	4.75
(2) 860-10025	B	From Face	2.50	0.0000	91.00	No Ice	0.14	0.11	1.16
(AT&T)			0.00			1/2" Ice	0.20	0.17	2.52
			0.00			1" Ice	0.26	0.23	4.75
(2) 860-10025	C	From Face	2.50	0.0000	91.00	No Ice	0.14	0.11	1.16
(AT&T)			0.00			1/2" Ice	0.20	0.17	2.52
			0.00			1" Ice	0.26	0.23	4.75
860-10006	A	From Face	2.50	0.0000	91.00	No Ice	1.66	0.35	5.00
(AT&T)			0.00			1/2" Ice	1.85	0.47	13.08
			0.00			1" Ice	2.04	0.60	23.28
10' Low Profile Platform w/ Rails	C	None		0.0000	88.00	No Ice	25.00	25.00	1350.00
						1/2" Ice	29.00	29.00	1660.00
(AT&T)						1" Ice	33.00	33.00	1970.00
***									
6' x 1/2" Lightning Rod	B	From Face	2.50	0.0000	88.00	No Ice	0.30	0.30	50.00
			0.00			1/2" Ice	0.62	0.62	65.00
			3.00			1" Ice	0.94	0.94	80.00
***									
LLPX310R-V1 w/ Pipe Mounts	A	From Face	3.50	80.0000	80.00	No Ice	5.21	3.15	45.85
			0.00			1/2" Ice	5.66	3.73	85.18
(Clearwire)			0.00			1" Ice	6.11	4.32	129.99
LLPX310R-V1 w/ Pipe Mounts	B	From Face	3.50	90.0000	80.00	No Ice	5.21	3.15	45.85
			0.00			1/2" Ice	5.66	3.73	85.18
(Clearwire)			0.00			1" Ice	6.11	4.32	129.99
LLPX310R-V1 w/ Pipe Mounts	C	From Face	3.50	90.0000	80.00	No Ice	5.21	3.15	45.85
			0.00			1/2" Ice	5.66	3.73	85.18
(Clearwire)			0.00			1" Ice	6.11	4.32	129.99
Samsung RRUs (Partially Frontally Shielded)	A	From Face	2.50	80.0000	80.00	No Ice	1.10	1.02	55.00
			0.00			1/2" Ice	1.20	1.16	74.32
(Clearwire)			0.00			1" Ice	1.30	1.30	96.56
Samsung RRUs (Partially Frontally Shielded)	B	From Face	2.50	90.0000	80.00	No Ice	1.10	1.02	55.00
			0.00			1/2" Ice	1.20	1.16	74.32
(Clearwire)			0.00			1" Ice	1.30	1.30	96.56
Samsung RRUs (Partially Frontally Shielded)	C	From Face	2.50	90.0000	80.00	No Ice	1.10	1.02	55.00
			0.00			1/2" Ice	1.20	1.16	74.32
(Clearwire)			0.00			1" Ice	1.30	1.30	96.56
***									
(3) DB844H65E-XY w/ Pipe Mount	A	From Face	3.50	80.0000	80.00	No Ice	9.80	5.39	38.25
			0.00			1/2" Ice	10.31	6.07	105.94
(Nextel)			0.00			1" Ice	10.83	6.76	180.33
(4) DB844H65E-XY w/ Pipe Mount	B	From Face	3.50	90.0000	80.00	No Ice	9.80	5.39	38.25
			0.00			1/2" Ice	10.31	6.07	105.94
(Nextel)			0.00			1" Ice	10.83	6.76	180.33
(4) DB844H65E-XY w/ Pipe Mount	C	From Face	3.50	90.0000	80.00	No Ice	9.80	5.39	38.25
			0.00			1/2" Ice	10.31	6.07	105.94
(Nextel)			0.00			1" Ice	10.83	6.76	180.33
(3) 12' T-Arms	C	None		0.0000	78.00	No Ice	14.00	14.00	1000.00
						1/2" Ice	16.00	16.00	1100.00

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
						1" Ice	18.00	18.00	1200.00
***									
ODU	A	From Face	3.00	0.0000	82.00	No Ice	1.14	0.43	14.10
(Clearwire)			0.00			1/2" Ice	1.27	0.52	23.28
			0.50			1" Ice	1.41	0.62	34.50
ODU (Fully frontally shielded)	A	From Face	3.00	0.0000	82.00	No Ice	0.00	0.43	14.10
(Clearwire)			0.00			1/2" Ice	0.00	0.52	23.28
			0.00			1" Ice	0.00	0.62	34.50
ODU	B	From Face	3.00	90.0000	82.00	No Ice	1.14	0.43	14.10
(Clearwire)			0.00			1/2" Ice	1.27	0.52	23.28
			0.50			1" Ice	1.41	0.62	34.50
ODU (Fully frontally shielded)	B	From Face	3.00	90.0000	82.00	No Ice	0.00	0.43	14.10
(Clearwire)			0.00			1/2" Ice	0.00	0.52	23.28
			0.00			1" Ice	0.00	0.62	34.50

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
A-ANT-18G-2-C	A	Paraboloid	From	4.00	0.0000		82.00	2.00	No Ice	3.14	25.00
(Clearwire)		w/Shroud (HP)	Face	0.00					1/2" Ice	3.41	42.50
				0.00					1" Ice	3.68	60.01
1ft HP Dish w/Shroud	B	Paraboloid	From	3.50	90.0000		82.00	1.00	No Ice	0.79	19.00
(Clearwire)		w/Shroud (HP)	Face	0.00					1/2" Ice	0.92	25.00
				0.00					1" Ice	1.06	31.00

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp

Comb. No.	Description
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	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
L1	98 - 88	Pole	Max Tension	11	0.01	-0.06	0.65
			Max. Compression	14	-5594.37	-241.94	-27.72
			Max. Mx	5	-2683.48	-36115.16	-198.43
			Max. My	2	-2708.90	215.55	35556.31
			Max. Vy	5	6168.10	-36115.16	-198.43
			Max. Vx	2	-6010.63	215.55	35556.31
			Max. Torque	3			-926.05
L2	88 - 70	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-12420.67	-888.43	181.92
			Max. Mx	5	-6557.43	-223944.95	-3609.66
			Max. My	2	-6580.98	3644.79	220722.72
			Max. Vy	5	13005.53	-223944.95	-3609.66
			Max. Vx	2	-12879.67	3644.79	220722.72
			Max. Torque	3			-2387.64
L3	70 - 48.68	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-15279.89	-862.61	23.21
			Max. Mx	5	-9071.54	-515578.56	-9882.75
			Max. My	2	-9087.99	9812.91	509679.98
			Max. Vy	5	14385.22	-515578.56	-9882.75
			Max. Vx	2	-14259.76	9812.91	509679.98
			Max. Torque	3			-2421.16
L4	48.68 - 20	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-19962.79	-802.47	-225.69
			Max. Mx	5	-13285.92	-950807.49	-18204.79
			Max. My	2	-13292.43	18089.24	941349.49
			Max. Vy	5	16008.09	-950807.49	-18204.79
			Max. Vx	2	-15885.02	18089.24	941349.49
			Max. Torque	3			-2473.19
L5	20 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-23720.80	-770.59	-432.35

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Mx	5	-16662.49	-1282121.46	-23879.78
			Max. My	2	-16662.65	23768.23	1270234.64
			Max. Vy	5	17156.21	-1282121.46	-23879.78
			Max. Vx	2	-17036.03	23768.23	1270234.64
			Max. Torque	3			-2521.07

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	14	23720.80	0.84	-0.05
	Max. H_x	11	16671.86	17115.48	278.87
	Max. H_z	2	16671.97	280.45	17026.91
	Max. M_x	2	1270234.64	280.45	17026.91
	Max. M_z	5	1282121.47	-17147.00	-280.99
	Max. Torsion	9	2494.09	8352.33	-14612.87
	Min. Vert	11	16671.86	17115.48	278.87
	Min. H_x	5	16671.96	-17147.00	-280.99
	Min. H_z	8	16671.98	-308.33	-17026.32
	Min. M_x	8	-1269719.21	-308.33	-17026.32
	Min. M_z	11	-1278795.97	17115.48	278.87
	Min. Torsion	3	-2521.07	-8322.53	14632.21

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	16671.99	-0.10	0.07	-217.51	-310.38	0.00
Dead+Wind 0 deg - No Ice	16671.97	-280.45	-17026.91	-1270234.64	23768.58	2134.75
Dead+Wind 30 deg - No Ice	16671.99	8322.53	-14632.21	-1090372.89	-619720.84	2521.07
Dead+Wind 60 deg - No Ice	16671.99	14739.28	-8247.53	-612458.94	-1100944.05	2344.86
Dead+Wind 90 deg - No Ice	16671.96	17147.00	280.99	23879.55	-1282121.47	1446.27
Dead+Wind 120 deg - No Ice	16671.99	14968.98	8740.23	654197.55	-1120603.99	184.50
Dead+Wind 150 deg - No Ice	16671.99	8810.53	14872.37	1110435.47	-661559.03	-1136.18
Dead+Wind 180 deg - No Ice	16671.98	308.33	17026.32	1269719.21	-26761.56	-2176.49
Dead+Wind 210 deg - No Ice	16671.99	-8352.33	14612.87	1088245.01	621622.42	-2494.09
Dead+Wind 240 deg - No Ice	16671.99	-14714.45	8276.29	614395.57	1098194.91	-2303.08
Dead+Wind 270 deg - No Ice	16671.86	-17115.48	-278.87	-24194.97	1278795.97	-1415.78
Dead+Wind 300 deg - No Ice	16671.99	-14947.54	-8730.67	-653861.14	1118123.28	-146.20
Dead+Wind 330 deg - No Ice	16671.99	-8790.21	-14856.57	-1109558.07	659189.92	1174.09
Dead+Ice+Temp	23720.80	-0.84	0.05	432.35	-770.59	-0.01
Dead+Wind 0 deg+Ice+Temp	23720.79	-55.63	-4066.34	-309907.90	4013.44	477.74
Dead+Wind 30 deg+Ice+Temp	23720.79	1996.42	-3499.84	-266414.85	-152983.85	553.80
Dead+Wind 60 deg+Ice+Temp	23720.79	3523.79	-1979.74	-150045.29	-270114.44	505.71
Dead+Wind 90 deg+Ice+Temp	23720.79	4093.21	55.75	5337.80	-313909.99	302.13
Dead+Wind 120 deg+Ice+Temp	23720.79	3567.67	2077.52	159512.83	-273985.90	23.58
Dead+Wind 150 deg+Ice+Temp	23720.79	2093.25	3545.96	271353.35	-161497.99	-263.72
Dead+Wind 180 deg+Ice+Temp	23720.79	61.86	4065.95	310748.53	-6310.83	-486.22
Dead+Wind 210 deg+Ice+Temp	23720.79	-2003.30	3495.35	266897.58	151822.76	-546.83

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
Dead+Wind 240 deg+Ice+Temp	23720.79	-3518.10	1986.38	151491.87	267861.72	-497.18
Dead+Wind 270 deg+Ice+Temp	23720.79	-4086.51	-55.47	-4441.83	311568.38	-294.66
Dead+Wind 300 deg+Ice+Temp	23720.79	-3562.98	-2075.51	-158465.36	271818.55	-14.05
Dead+Wind 330 deg+Ice+Temp	23720.79	-2088.77	-3542.57	-270184.42	159350.20	273.38
Dead+Wind 0 deg - Service	16671.97	-97.03	-5891.07	-440371.46	8012.69	748.89
Dead+Wind 30 deg - Service	16671.98	2879.61	-5062.77	-378038.61	-215000.58	883.38
Dead+Wind 60 deg - Service	16671.98	5099.83	-2853.67	-212411.99	-381782.91	821.09
Dead+Wind 90 deg - Service	16671.97	5932.61	97.22	8125.51	-444575.43	505.96
Dead+Wind 120 deg - Service	16671.98	5179.29	3024.13	226597.19	-388632.41	63.62
Dead+Wind 150 deg - Service	16671.98	3048.46	5145.86	384725.26	-229521.41	-399.10
Dead+Wind 180 deg - Service	16671.97	106.68	5890.78	439878.51	-9499.10	-763.08
Dead+Wind 210 deg - Service	16671.98	-2889.93	5056.09	376999.45	215210.46	-873.76
Dead+Wind 240 deg - Service	16671.98	-5091.22	2863.61	212783.20	380383.03	-806.71
Dead+Wind 270 deg - Service	16671.97	-5922.26	-96.49	-8536.93	443024.98	-495.68
Dead+Wind 300 deg - Service	16671.98	-5171.87	-3020.83	-226786.08	387330.65	-50.33
Dead+Wind 330 deg - Service	16671.98	-3041.43	-5140.40	-384729.20	228254.68	412.69

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	lb	lb	lb	lb	lb	lb	
1	0.00	-16671.99	0.00	0.10	16671.99	-0.07	0.001%
2	-280.46	-16671.99	-17027.31	280.45	16671.97	17026.91	0.002%
3	8322.54	-16671.99	-14632.23	-8322.53	16671.99	14632.21	0.000%
4	14739.35	-16671.99	-8247.57	-14739.28	16671.99	8247.53	0.000%
5	17147.41	-16671.99	280.99	-17147.00	16671.96	-280.99	0.002%
6	14969.01	-16671.99	8740.25	-14968.98	16671.99	-8740.23	0.000%
7	8810.54	-16671.99	14872.39	-8810.53	16671.99	-14872.37	0.000%
8	308.34	-16671.99	17026.50	-308.33	16671.98	-17026.32	0.001%
9	-8352.36	-16671.99	14612.94	8352.33	16671.99	-14612.87	0.000%
10	-14714.48	-16671.99	8276.31	14714.45	16671.99	-8276.29	0.000%
11	-17117.49	-16671.99	-278.92	17115.48	16671.86	278.87	0.008%
12	-14947.57	-16671.99	-8730.69	14947.54	16671.99	8730.67	0.000%
13	-8790.22	-16671.99	-14856.60	8790.21	16671.99	14856.57	0.000%
14	0.00	-23720.80	0.00	0.84	23720.80	-0.05	0.004%
15	-55.64	-23720.80	-4066.71	55.63	23720.79	4066.34	0.002%
16	1996.61	-23720.80	-3500.16	-1996.42	23720.79	3499.84	0.002%
17	3524.11	-23720.80	-1979.92	-3523.79	23720.79	1979.74	0.002%
18	4093.59	-23720.80	55.75	-4093.21	23720.79	-55.75	0.002%
19	3568.00	-23720.80	2077.71	-3567.67	23720.79	-2077.52	0.002%
20	2093.45	-23720.80	3546.28	-2093.25	23720.79	-3545.96	0.002%
21	61.87	-23720.80	4066.32	-61.86	23720.79	-4065.95	0.002%
22	-2003.48	-23720.80	3495.67	2003.30	23720.79	-3495.35	0.002%
23	-3518.42	-23720.80	1986.56	3518.10	23720.79	-1986.38	0.002%
24	-4086.88	-23720.80	-55.47	4086.51	23720.79	55.47	0.002%
25	-3563.30	-23720.80	-2075.70	3562.98	23720.79	2075.51	0.002%
26	-2088.96	-23720.80	-3542.89	2088.77	23720.79	3542.57	0.002%
27	-97.05	-16671.99	-5891.80	97.03	16671.97	5891.07	0.004%
28	2879.77	-16671.99	-5063.06	-2879.61	16671.98	5062.77	0.002%
29	5100.12	-16671.99	-2853.83	-5099.83	16671.98	2853.67	0.002%
30	5933.36	-16671.99	97.23	-5932.61	16671.97	-97.22	0.004%
31	5179.59	-16671.99	3024.31	-5179.29	16671.98	-3024.13	0.002%
32	3048.63	-16671.99	5146.16	-3048.46	16671.98	-5145.86	0.002%
33	106.69	-16671.99	5891.52	-106.68	16671.97	-5890.78	0.004%
34	-2890.09	-16671.99	5056.38	2889.93	16671.98	-5056.09	0.002%
35	-5091.52	-16671.99	2863.77	5091.22	16671.98	-2863.61	0.002%
36	-5923.01	-16671.99	-96.51	5922.26	16671.97	96.49	0.004%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
37	-5172.17	-16671.99	-3021.00	5171.87	16671.98	3020.83	0.002%
38	-3041.60	-16671.99	-5140.69	3041.43	16671.98	5140.40	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	17	0.00000001	0.00008048
3	Yes	20	0.00000001	0.00007823
4	Yes	19	0.00000001	0.00014721
5	Yes	17	0.00000001	0.00010116
6	Yes	20	0.00000001	0.00007731
7	Yes	20	0.00000001	0.00008077
8	Yes	18	0.00000001	0.00007291
9	Yes	19	0.00000001	0.00014629
10	Yes	20	0.00000001	0.00007722
11	Yes	15	0.00006902	0.00014275
12	Yes	20	0.00000001	0.00007734
13	Yes	20	0.00000001	0.00007394
14	Yes	6	0.00000001	0.00002839
15	Yes	16	0.00000001	0.00009540
16	Yes	16	0.00000001	0.00014058
17	Yes	16	0.00000001	0.00012981
18	Yes	16	0.00000001	0.00009468
19	Yes	16	0.00000001	0.00013909
20	Yes	16	0.00000001	0.00014355
21	Yes	16	0.00000001	0.00009680
22	Yes	16	0.00000001	0.00012785
23	Yes	16	0.00000001	0.00013716
24	Yes	16	0.00000001	0.00009273
25	Yes	16	0.00000001	0.00013764
26	Yes	16	0.00000001	0.00013443
27	Yes	15	0.00000001	0.00009781
28	Yes	16	0.00000001	0.00013010
29	Yes	16	0.00000001	0.00007907
30	Yes	15	0.00000001	0.00008166
31	Yes	16	0.00000001	0.00010639
32	Yes	16	0.00000001	0.00012259
33	Yes	15	0.00000001	0.00011675
34	Yes	16	0.00000001	0.00007837
35	Yes	16	0.00000001	0.00012481
36	Yes	15	0.00000001	0.00006711
37	Yes	16	0.00000001	0.00010706
38	Yes	16	0.00000001	0.00009396

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	98 - 88	25.312	31	2.2813	0.0189

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L2	88 - 70	20.565	31	2.2408	0.0180
L3	70 - 48.68	12.809	31	1.7936	0.0097
L4	48.68 - 20	6.014	31	1.2285	0.0048
L5	20 - 0	0.953	31	0.4610	0.0013

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
98.00	(2) APX16DWV-16DWV-S-E-A20 w/Mount Pipe	31	25.312	2.2813	0.0189	9218
97.00	12' Low Profile Platform	31	24.833	2.2812	0.0189	9218
91.00	7750.00	31	21.974	2.2671	0.0186	6593
88.00	10' Low Profile Platform w/ Rails	31	20.565	2.2408	0.0180	4677
82.00	A-ANT-18G-2-C	31	17.823	2.1318	0.0157	3079
80.00	LLPX310R-V1 w/ Pipe Mounts	31	16.938	2.0823	0.0147	2769
78.00	(3) 12' T-Arms	31	16.071	2.0284	0.0137	2515

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	98 - 88	72.745	6	6.5633	0.0535
L2	88 - 70	59.132	6	6.4473	0.0509
L3	70 - 48.68	36.868	6	5.1647	0.0275
L4	48.68 - 20	17.327	6	3.5400	0.0136
L5	20 - 0	2.747	6	1.3293	0.0038

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
98.00	(2) APX16DWV-16DWV-S-E-A20 w/Mount Pipe	6	72.745	6.5633	0.0547	3305
97.00	12' Low Profile Platform	6	71.372	6.5630	0.0546	3305
91.00	7750.00	6	63.172	6.5227	0.0537	2363
88.00	10' Low Profile Platform w/ Rails	6	59.132	6.4473	0.0520	1674
82.00	A-ANT-18G-2-C	6	51.266	6.1348	0.0453	1098
80.00	LLPX310R-V1 w/ Pipe Mounts	6	48.726	5.9930	0.0424	987
78.00	(3) 12' T-Arms	6	46.236	5.8384	0.0394	896

Compression Checks

Pole Design Data

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 $\frac{P}{P_a}$
L1	98 - 97	TP16.5x12.75x0.25	10.00	0.00	0.0	39.000	10.2163	-373.48	398436.00	0.001
	97 - 96					39.000	10.5139	-1508.63	410041.00	0.004
	96 - 95					39.000	10.8114	-1556.31	421646.00	0.004
	95 - 94					39.000	11.1090	-1605.03	433251.00	0.004
	94 - 93					39.000	11.4066	-1654.77	444856.00	0.004
	93 - 92					39.000	11.7041	-1705.52	456461.00	0.004
	92 - 91					39.000	12.0017	-1757.27	468066.00	0.004
	91 - 90					39.000	12.2992	-2563.76	479671.00	0.005
	90 - 89					39.000	12.5968	-2618.65	491276.00	0.005
	89 - 88					39.000	12.8944	-2674.81	502881.00	0.005
L2	88 - 87	TP20.07x16.5x0.1875	18.00	0.00	0.0	39.000	9.8260	-4006.39	383214.00	0.010
	87 - 86					39.000	9.9440	-4066.10	387818.00	0.010
	86 - 85					39.000	10.0621	-4126.84	392421.00	0.011
	85 - 84					39.000	10.1801	-4188.57	397024.00	0.011
	84 - 83					39.000	10.2981	-4251.27	401628.00	0.011
	83 - 82					39.000	10.4162	-4314.90	406231.00	0.011
	82 - 81					39.000	10.5342	-4449.34	410834.00	0.011
	81 - 80					39.000	10.6522	-4515.09	415437.00	0.011
	80 - 79					39.000	10.7703	-4870.64	420041.00	0.012
	79 - 78					39.000	10.8883	-4943.62	424644.00	0.012
	78 - 77					39.000	11.0063	-5955.69	429247.00	0.014
	77 - 76					39.000	11.1244	-6032.81	433851.00	0.014
	76 - 75					39.000	11.2424	-6111.54	438454.00	0.014
	75 - 74					39.000	11.3604	-6191.80	443057.00	0.014
	74 - 73					39.000	11.4785	-6273.54	447660.00	0.014
	73 - 72					39.000	11.5965	-6356.70	452264.00	0.014
	72 - 71					39.000	11.7145	-6441.23	456867.00	0.014
	71 - 70					39.000	11.8326	-6527.06	461470.00	0.014
L3	70 - 68.934	TP24.3127x20.07x0.324	21.32	0.00	0.0	39.000	20.5245	-6645.82	800454.00	0.008
	68.934 - 67.868					39.000	20.7426	-6761.30	808962.00	0.008
	67.868 - 66.802					39.000	20.9608	-6878.12	817470.00	0.008
	66.802 - 65.736					39.000	21.1789	-6996.24	825978.00	0.008
	65.736 - 64.67					39.000	21.3971	-7115.65	834486.00	0.009
	64.67 - 63.604					39.000	21.6152	-7236.32	842994.00	0.009
	63.604 - 62.538					39.000	21.8334	-7358.24	851502.00	0.009
	62.538 - 61.472					39.000	22.0515	-7481.38	860010.00	0.009
	61.472 - 60.406					39.000	22.2697	-7605.73	868518.00	0.009
	60.406 - 59.34					39.000	22.4879	-7731.27	877026.00	0.009
	59.34 - 58.274					39.000	22.7060	-7857.99	885535.00	0.009
	58.274 - 57.208					39.000	22.9242	-7985.87	894043.00	0.009
	57.208 - 56.142					39.000	23.1423	-8114.90	902551.00	0.009
	56.142 - 55.076					39.000	23.3605	-8245.07	911059.00	0.009
	55.076 - 54.01					39.000	23.5786	-8376.36	919567.00	0.009
	54.01 - 52.944					39.000	23.7968	-8508.77	928075.00	0.009
	52.944 - 51.878					39.000	24.0149	-8642.28	936583.00	0.009
	51.878 - 50.812					39.000	24.2331	-8776.88	945091.00	0.009
	50.812 - 49.746					39.000	24.4512	-8912.57	953599.00	0.009
	49.746 - 48.68					39.000	24.6694	-9049.33	962107.00	0.009
L4	48.68 - 47.246	TP30.02x24.3127x0.349	28.68	0.00	0.0	39.000	26.8613	-9240.49	1047590.00	0.009
	47.246 - 45.812					39.000	27.1774	-9436.44	1059920.00	0.009
	45.812 - 44.378					39.000	27.4935	-9634.29	1072250.00	0.009
	44.378 - 42.944					39.000	27.8096	-9834.02	1084580.00	0.009
	42.944 - 41.51					39.000	28.1257	-10035.60	1096900.00	0.009

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 $\frac{P}{P_a}$
	41.51 - 40.076					39.000	28.4419	-10239.10	1109230.00	0.009
	40.076 - 38.642					39.000	28.7580	-10444.40	1121560.00	0.009
	38.642 - 37.208					39.000	29.0741	-10651.60	1133890.00	0.009
	37.208 - 35.774					39.000	29.3902	-10860.50	1146220.00	0.009
	35.774 - 34.34					39.000	29.7063	-11071.30	1158540.00	0.010
	34.34 - 32.906					39.000	30.0224	-11283.90	1170870.00	0.010
	32.906 - 31.472					39.000	30.3385	-11498.30	1183200.00	0.010
	31.472 - 30.038					39.000	30.6546	-11714.40	1195530.00	0.010
	30.038 - 28.604					39.000	30.9707	-11932.30	1207860.00	0.010
	28.604 - 27.17					39.000	31.2868	-12152.00	1220190.00	0.010
	27.17 - 25.736					39.000	31.6029	-12373.50	1232510.00	0.010
	25.736 - 24.302					39.000	31.9190	-12596.70	1244840.00	0.010
	24.302 - 22.868					39.000	32.2351	-12821.70	1257170.00	0.010
	22.868 - 21.434					39.000	32.5512	-13048.40	1269500.00	0.010
	21.434 - 20					39.000	32.8673	-13276.90	1281830.00	0.010
L5	20 - 19	TP34x30.02x0.38	20.00	0.00	0.0	39.000	35.9894	-13442.90	1403590.00	0.010
	19 - 18					39.000	36.2294	-13604.40	1412950.00	0.010
	18 - 17					39.000	36.4695	-13766.70	1422310.00	0.010
	17 - 16					39.000	36.7095	-13929.90	1431670.00	0.010
	16 - 15					39.000	36.9495	-14094.00	1441030.00	0.010
	15 - 14					39.000	37.1895	-14259.00	1450390.00	0.010
	14 - 13					39.000	37.4295	-14424.90	1459750.00	0.010
	13 - 12					39.000	37.6695	-14591.70	1469110.00	0.010
	12 - 11					39.000	37.9096	-14759.40	1478470.00	0.010
	11 - 10					39.000	38.1496	-14927.90	1487830.00	0.010
	10 - 9					39.000	38.3896	-15097.40	1497190.00	0.010
	9 - 8					39.000	38.6296	-15267.70	1506550.00	0.010
	8 - 7					39.000	38.8696	-15439.00	1515920.00	0.010
	7 - 6					39.000	39.1096	-15611.10	1525280.00	0.010
	6 - 5					39.000	39.3497	-15784.10	1534640.00	0.010
	5 - 4					39.000	39.5897	-15957.90	1544000.00	0.010
	4 - 3					39.000	39.8297	-16132.70	1553360.00	0.010
	3 - 2					39.000	40.0697	-16308.30	1562720.00	0.010
	2 - 1					39.000	40.3097	-16484.90	1572080.00	0.010
	1 - 0					39.000	40.5498	-16662.30	1581440.00	0.011

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	98 - 97	TP16.5x12.75x0.25	1580.45	0.591	39.000	0.015	0.00	0.000	39.000	0.000
	97 - 96		4180.22	1.475	39.000	0.038	0.00	0.000	39.000	0.000
	96 - 95		6815.15	2.273	39.000	0.058	0.00	0.000	39.000	0.000
	95 - 94		9487.17	2.996	39.000	0.077	0.00	0.000	39.000	0.000
	94 - 93		12197.08	3.652	39.000	0.094	0.00	0.000	39.000	0.000
	93 - 92		14945.92	4.248	39.000	0.109	0.00	0.000	39.000	0.000
	92 - 91		17734.50	4.792	39.000	0.123	0.00	0.000	39.000	0.000
	91 - 90		23879.25	6.141	39.000	0.157	0.00	0.000	39.000	0.000
	90 - 89		30001.25	7.353	39.000	0.189	0.00	0.000	39.000	0.000
	89 - 88		36165.2	8.456	39.000	0.217	0.00	0.000	39.000	0.000

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
			5							
L2	88 - 87	TP20.07x16.5x0.1875	43685.67	13.140	39.000	0.337	0.00	0.000	39.000	0.000
	87 - 86		51128.33	15.014	39.000	0.385	0.00	0.000	39.000	0.000
	86 - 85		58611.08	16.808	39.000	0.431	0.00	0.000	39.000	0.000
	85 - 84		66134.08	18.526	39.000	0.475	0.00	0.000	39.000	0.000
	84 - 83		73697.25	20.171	39.000	0.517	0.00	0.000	39.000	0.000
	83 - 82		81300.83	21.748	39.000	0.558	0.00	0.000	39.000	0.000
	82 - 81		89145.83	23.313	39.000	0.598	0.00	0.000	39.000	0.000
	81 - 80		97118.33	24.835	39.000	0.637	0.00	0.000	39.000	0.000
	80 - 79		109451.67	27.375	39.000	0.702	0.00	0.000	39.000	0.000
	79 - 78		121662.50	29.770	39.000	0.763	0.00	0.000	39.000	0.000
	78 - 77		134571.67	32.223	39.000	0.826	0.00	0.000	39.000	0.000
	77 - 76		147519.17	34.574	39.000	0.887	0.00	0.000	39.000	0.000
	76 - 75		160505.00	36.828	39.000	0.944	0.00	0.000	39.000	0.000
	75 - 74		173529.17	38.989	39.000	1.000	0.00	0.000	39.000	0.000
	74 - 73		186590.83	41.062	39.000	1.053	0.00	0.000	39.000	0.000
	73 - 72		199690.83	43.050	39.000	1.104	0.00	0.000	39.000	0.000
	72 - 71		212826.67	44.958	39.000	1.153	0.00	0.000	39.000	0.000
	71 - 70		226000.83	46.789	39.000	1.200	0.00	0.000	39.000	0.000
L3	70 - 68.934	TP24.3127x20.07x0.324	240099.17	28.741	39.000	0.737	0.00	0.000	39.000	0.000
	68.934 - 67.868		254267.50	29.795	39.000	0.764	0.00	0.000	39.000	0.000
	67.868 - 66.802		268507.50	30.807	39.000	0.790	0.00	0.000	39.000	0.000
	66.802 - 65.736		282819.17	31.779	39.000	0.815	0.00	0.000	39.000	0.000
	65.736 - 64.67		297202.50	32.712	39.000	0.839	0.00	0.000	39.000	0.000
	64.67 - 63.604		311656.67	33.609	39.000	0.862	0.00	0.000	39.000	0.000
	63.604 - 62.538		326184.17	34.471	39.000	0.884	0.00	0.000	39.000	0.000
	62.538 - 61.472		340784.17	35.300	39.000	0.905	0.00	0.000	39.000	0.000
	61.472 - 60.406		355456.67	36.097	39.000	0.926	0.00	0.000	39.000	0.000
	60.406 - 59.34		370202.50	36.863	39.000	0.945	0.00	0.000	39.000	0.000
	59.34 - 58.274		385022.50	37.600	39.000	0.964	0.00	0.000	39.000	0.000
	58.274 - 57.208		399915.83	38.310	39.000	0.982	0.00	0.000	39.000	0.000

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	57.208 - 56.142		414882.50	38.992	39.000	1.000	0.00	0.000	39.000	0.000
	56.142 - 55.076		429924.17	39.650	39.000	1.017	0.00	0.000	39.000	0.000
	55.076 - 54.01		445040.83	40.282	39.000	1.033	0.00	0.000	39.000	0.000
	54.01 - 52.944		460232.50	40.892	39.000	1.049	0.00	0.000	39.000	0.000
	52.944 - 51.878		475499.17	41.479	39.000	1.064	0.00	0.000	39.000	0.000
	51.878 - 50.812		490841.67	42.045	39.000	1.078	0.00	0.000	39.000	0.000
	50.812 - 49.746		506260.00	42.590	39.000	1.092	0.00	0.000	39.000	0.000
	49.746 - 48.68		521755.00	43.116	39.000	1.106	0.00	0.000	39.000	0.000
L4	48.68 - 47.246	TP30.02x24.3127x0.349	542705.83	40.781	39.000	1.046	0.00	0.000	39.000	0.000
	47.246 - 45.812		563768.33	41.377	39.000	1.061	0.00	0.000	39.000	0.000
	45.812 - 44.378		584942.50	41.943	39.000	1.075	0.00	0.000	39.000	0.000
	44.378 - 42.944		606229.17	42.480	39.000	1.089	0.00	0.000	39.000	0.000
	42.944 - 41.51		627629.17	42.990	39.000	1.102	0.00	0.000	39.000	0.000
	41.51 - 40.076		649141.67	43.474	39.000	1.115	0.00	0.000	39.000	0.000
	40.076 - 38.642		670768.33	43.934	39.000	1.127	0.00	0.000	39.000	0.000
	38.642 - 37.208		692510.00	44.370	39.000	1.138	0.00	0.000	39.000	0.000
	37.208 - 35.774		714365.83	44.785	39.000	1.148	0.00	0.000	39.000	0.000
	35.774 - 34.34		736337.50	45.179	39.000	1.158	0.00	0.000	39.000	0.000
	34.34 - 32.906		758424.17	45.553	39.000	1.168	0.00	0.000	39.000	0.000
	32.906 - 31.472		780627.50	45.909	39.000	1.177	0.00	0.000	39.000	0.000
	31.472 - 30.038		802947.50	46.246	39.000	1.186	0.00	0.000	39.000	0.000
	30.038 - 28.604		825384.17	46.567	39.000	1.194	0.00	0.000	39.000	0.000
	28.604 - 27.17		847941.67	46.872	39.000	1.202	0.00	0.000	39.000	0.000
	27.17 - 25.736		870608.33	47.162	39.000	1.209	0.00	0.000	39.000	0.000
	25.736 - 24.302		893400.00	47.437	39.000	1.216	0.00	0.000	39.000	0.000
	24.302 - 22.868		916316.67	47.698	39.000	1.223	0.00	0.000	39.000	0.000
	22.868 - 21.434		939341.67	47.947	39.000	1.229	0.00	0.000	39.000	0.000
	21.434 - 20		962491.67	48.182	39.000	1.235	0.00	0.000	39.000	0.000
L5	20 - 19	TP34x30.02x0.38	978708.33	44.535	39.000	1.142	0.00	0.000	39.000	0.000
	19 - 18		994983.33	44.673	39.000	1.145	0.00	0.000	39.000	0.000
	18 - 17		1011308	44.807	39.000	1.149	0.00	0.000	39.000	0.000

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
			.33							
	17 - 16		1027691	44.936	39.000	1.152	0.00	0.000	39.000	0.000
			.67							
	16 - 15		1044125	45.060	39.000	1.155	0.00	0.000	39.000	0.000
			.00							
	15 - 14		1060625	45.179	39.000	1.158	0.00	0.000	39.000	0.000
			.00							
	14 - 13		1077175	45.294	39.000	1.161	0.00	0.000	39.000	0.000
			.00							
	13 - 12		1093783	45.405	39.000	1.164	0.00	0.000	39.000	0.000
			.33							
	12 - 11		1110450	45.511	39.000	1.167	0.00	0.000	39.000	0.000
			.00							
	11 - 10		1127175	45.614	39.000	1.170	0.00	0.000	39.000	0.000
			.00							
	10 - 9		1143950	45.712	39.000	1.172	0.00	0.000	39.000	0.000
			.00							
	9 - 8		1160791	45.807	39.000	1.175	0.00	0.000	39.000	0.000
			.67							
	8 - 7		1177683	45.898	39.000	1.177	0.00	0.000	39.000	0.000
			.33							
	7 - 6		1194641	45.986	39.000	1.179	0.00	0.000	39.000	0.000
			.67							
	6 - 5		1211650	46.071	39.000	1.181	0.00	0.000	39.000	0.000
			.00							
	5 - 4		1228716	46.151	39.000	1.183	0.00	0.000	39.000	0.000
			.67							
	4 - 3		1245850	46.229	39.000	1.185	0.00	0.000	39.000	0.000
			.00							
	3 - 2		1263033	46.304	39.000	1.187	0.00	0.000	39.000	0.000
			.33							
	2 - 1		1280283	46.376	39.000	1.189	0.00	0.000	39.000	0.000
			.33							
	1 - 0		1297583	46.445	39.000	1.191	0.00	0.000	39.000	0.000
			.33							

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V lb	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T lb-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	98 - 97	TP16.5x12.75x0.25	1598.62	0.156	26.000	0.012	0.00	0.000	26.000	0.000
	97 - 96		2617.48	0.249	26.000	0.019	0.00	0.000	26.000	0.000
	96 - 95		2654.21	0.246	26.000	0.019	0.00	0.000	26.000	0.000
	95 - 94		2691.83	0.242	26.000	0.019	0.00	0.000	26.000	0.000
	94 - 93		2730.33	0.239	26.000	0.018	0.00	0.000	26.000	0.000
	93 - 92		2769.73	0.237	26.000	0.018	0.00	0.000	26.000	0.000
	92 - 91		2810.02	0.234	26.000	0.018	0.00	0.000	26.000	0.000
	91 - 90		6102.85	0.496	26.000	0.038	214.68	0.027	26.000	0.001
	90 - 89		6144.62	0.488	26.000	0.038	214.68	0.025	26.000	0.001
	89 - 88		6187.17	0.480	26.000	0.037	214.67	0.024	26.000	0.001
L2	88 - 87	TP20.07x16.5x0.1875	7424.92	0.756	26.000	0.058	264.56	0.039	26.000	0.001
	87 - 86		7465.21	0.751	26.000	0.058	264.55	0.038	26.000	0.001
	86 - 85		7505.57	0.746	26.000	0.057	264.54	0.037	26.000	0.001
	85 - 84		7545.98	0.741	26.000	0.057	264.53	0.036	26.000	0.001
	84 - 83		7586.47	0.737	26.000	0.057	264.51	0.035	26.000	0.001

Section No.	Elevation ft	Size	Actual V lb	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T lb-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	83 - 82		7627.03	0.732	26.000	0.056	264.50	0.034	26.000	0.001
	82 - 81		7956.23	0.755	26.000	0.058	556.61	0.071	26.000	0.003
	81 - 80		7996.88	0.751	26.000	0.058	556.58	0.069	26.000	0.003
	80 - 79		12195.30	1.132	26.000	0.087	108.89	0.013	26.000	0.001
	79 - 78		12235.50	1.124	26.000	0.086	108.89	0.013	26.000	0.000
	78 - 77		12934.50	1.175	26.000	0.090	108.89	0.013	26.000	0.000
	77 - 76		12973.10	1.166	26.000	0.090	108.90	0.012	26.000	0.000
	76 - 75		13011.40	1.157	26.000	0.089	108.90	0.012	26.000	0.000
	75 - 74		13049.50	1.149	26.000	0.088	108.90	0.012	26.000	0.000
	74 - 73		13087.30	1.140	26.000	0.088	108.90	0.012	26.000	0.000
	73 - 72		13125.00	1.132	26.000	0.087	108.90	0.011	26.000	0.000
	72 - 71		13162.40	1.124	26.000	0.086	108.90	0.011	26.000	0.000
	71 - 70		13199.60	1.116	26.000	0.086	108.90	0.011	26.000	0.000
L3	70 - 68.934	TP24.3127x20.07x0.324	13264.30	0.646	26.000	0.050	108.90	0.006	26.000	0.000
	68.934 - 67.868		13331.00	0.643	26.000	0.049	104.93	0.006	26.000	0.000
	67.868 - 66.802		13398.00	0.639	26.000	0.049	100.92	0.006	26.000	0.000
	66.802 - 65.736		13465.20	0.636	26.000	0.049	96.87	0.005	26.000	0.000
	65.736 - 64.67		13532.80	0.632	26.000	0.049	92.77	0.005	26.000	0.000
	64.67 - 63.604		13600.60	0.629	26.000	0.048	88.64	0.005	26.000	0.000
	63.604 - 62.538		13668.60	0.626	26.000	0.048	84.46	0.004	26.000	0.000
	62.538 - 61.472		13737.00	0.623	26.000	0.048	80.24	0.004	26.000	0.000
	61.472 - 60.406		13805.60	0.620	26.000	0.048	75.98	0.004	26.000	0.000
	60.406 - 59.34		13874.50	0.617	26.000	0.047	71.67	0.003	26.000	0.000
	59.34 - 58.274		13943.70	0.614	26.000	0.047	67.33	0.003	26.000	0.000
	58.274 - 57.208		14013.20	0.611	26.000	0.047	62.94	0.003	26.000	0.000
	57.208 - 56.142		14083.00	0.609	26.000	0.047	58.51	0.003	26.000	0.000
	56.142 - 55.076		14153.00	0.606	26.000	0.047	54.04	0.002	26.000	0.000
	55.076 - 54.01		14223.40	0.603	26.000	0.046	49.52	0.002	26.000	0.000
	54.01 - 52.944		14294.00	0.601	26.000	0.046	44.97	0.002	26.000	0.000
	52.944 - 51.878		14364.90	0.598	26.000	0.046	40.37	0.002	26.000	0.000
	51.878 - 50.812		14436.10	0.596	26.000	0.046	35.73	0.001	26.000	0.000
	50.812 - 49.746		14507.70	0.593	26.000	0.046	31.05	0.001	26.000	0.000

Section No.	Elevation ft	Size	Actual V lb	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T lb-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	49.746 - 48.68		14579.50	0.591	26.000	0.045	26.33	0.001	26.000	0.000
L4	48.68 - 47.246	TP30.02x24.3127x0.349	14658.70	0.546	26.000	0.042	21.56	0.001	26.000	0.000
	47.246 - 45.812		14736.80	0.542	26.000	0.042	16.36	0.001	26.000	0.000
	45.812 - 44.378		14815.20	0.539	26.000	0.041	11.10	0.000	26.000	0.000
	44.378 - 42.944		14893.90	0.536	26.000	0.041	5.77	0.000	26.000	0.000
	42.944 - 41.51		14973.00	0.532	26.000	0.041	5.07	0.000	26.000	0.000
	41.51 - 40.076		15052.40	0.529	26.000	0.041	10.58	0.000	26.000	0.000
	40.076 - 38.642		15132.10	0.526	26.000	0.040	16.15	0.001	26.000	0.000
	38.642 - 37.208		15212.10	0.523	26.000	0.040	21.77	0.001	26.000	0.000
	37.208 - 35.774		15292.50	0.520	26.000	0.040	27.46	0.001	26.000	0.000
	35.774 - 34.34		15373.20	0.518	26.000	0.040	33.22	0.001	26.000	0.000
	34.34 - 32.906		15454.30	0.515	26.000	0.040	39.03	0.001	26.000	0.000
	32.906 - 31.472		15535.60	0.512	26.000	0.039	44.90	0.001	26.000	0.000
	31.472 - 30.038		15617.40	0.509	26.000	0.039	50.84	0.001	26.000	0.000
	30.038 - 28.604		15699.40	0.507	26.000	0.039	56.83	0.002	26.000	0.000
	28.604 - 27.17		15781.80	0.504	26.000	0.039	62.89	0.002	26.000	0.000
	27.17 - 25.736		15864.50	0.502	26.000	0.039	69.01	0.002	26.000	0.000
	25.736 - 24.302		15947.60	0.500	26.000	0.038	75.19	0.002	26.000	0.000
	24.302 - 22.868		16031.00	0.497	26.000	0.038	81.43	0.002	26.000	0.000
	22.868 - 21.434		16114.70	0.495	26.000	0.038	87.73	0.002	26.000	0.000
	21.434 - 20		16198.80	0.493	26.000	0.038	94.10	0.002	26.000	0.000
L5	20 - 19	TP34x30.02x0.38	16250.30	0.452	26.000	0.035	98.35	0.002	26.000	0.000
	19 - 18		16306.30	0.450	26.000	0.035	102.62	0.002	26.000	0.000
	18 - 17		16362.50	0.449	26.000	0.035	106.93	0.002	26.000	0.000
	17 - 16		16418.90	0.447	26.000	0.034	111.26	0.002	26.000	0.000
	16 - 15		16475.40	0.446	26.000	0.034	115.63	0.002	26.000	0.000
	15 - 14		16532.10	0.445	26.000	0.034	120.02	0.002	26.000	0.000
	14 - 13		16589.00	0.443	26.000	0.034	124.44	0.003	26.000	0.000
	13 - 12		16646.00	0.442	26.000	0.034	128.89	0.003	26.000	0.000
	12 - 11		16703.20	0.441	26.000	0.034	133.36	0.003	26.000	0.000
	11 - 10		16760.60	0.439	26.000	0.034	137.87	0.003	26.000	0.000

Section No.	Elevation ft	Size	Actual V lb	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T lb-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
			0							
	10 - 9		16818.1	0.438	26.000	0.034	142.40	0.003	26.000	0.000
			0							
	9 - 8		16875.8	0.437	26.000	0.034	146.97	0.003	26.000	0.000
			0							
	8 - 7		16933.7	0.436	26.000	0.034	151.56	0.003	26.000	0.000
			0							
	7 - 6		16991.7	0.434	26.000	0.033	156.18	0.003	26.000	0.000
			0							
	6 - 5		17049.9	0.433	26.000	0.033	160.83	0.003	26.000	0.000
			0							
	5 - 4		17108.2	0.432	26.000	0.033	165.51	0.003	26.000	0.000
			0							
	4 - 3		17166.7	0.431	26.000	0.033	170.21	0.003	26.000	0.000
			0							
	3 - 2		17225.3	0.430	26.000	0.033	174.95	0.003	26.000	0.000
			0							
	2 - 1		17284.2	0.429	26.000	0.033	179.71	0.003	26.000	0.000
			0							
	1 - 0		17343.2	0.428	26.000	0.033	184.50	0.003	26.000	0.000
			0							

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	98 - 97	0.001	0.015	0.000	0.012	0.000	0.016 ✔	1.333	H1-3+VT ✔
	97 - 96	0.004	0.038	0.000	0.019	0.000	0.042 ✔	1.333	H1-3+VT ✔
	96 - 95	0.004	0.058	0.000	0.019	0.000	0.062 ✔	1.333	H1-3+VT ✔
	95 - 94	0.004	0.077	0.000	0.019	0.000	0.081 ✔	1.333	H1-3+VT ✔
	94 - 93	0.004	0.094	0.000	0.018	0.000	0.097 ✔	1.333	H1-3+VT ✔
	93 - 92	0.004	0.109	0.000	0.018	0.000	0.113 ✔	1.333	H1-3+VT ✔
	92 - 91	0.004	0.123	0.000	0.018	0.000	0.127 ✔	1.333	H1-3+VT ✔
	91 - 90	0.005	0.157	0.000	0.038	0.001	0.163 ✔	1.333	H1-3+VT ✔
	90 - 89	0.005	0.189	0.000	0.038	0.001	0.194 ✔	1.333	H1-3+VT ✔
	89 - 88	0.005	0.217	0.000	0.037	0.001	0.223 ✔	1.333	H1-3+VT ✔
L2	88 - 87	0.010	0.337	0.000	0.058	0.001	0.348 ✔	1.333	H1-3+VT ✔
	87 - 86	0.010	0.385	0.000	0.058	0.001	0.396 ✔	1.333	H1-3+VT ✔

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	86 - 85	0.011	0.431	0.000	0.057	0.001	0.442 ✔	1.333	H1-3+VT ✔
	85 - 84	0.011	0.475	0.000	0.057	0.001	0.486 ✔	1.333	H1-3+VT ✔
	84 - 83	0.011	0.517	0.000	0.057	0.001	0.529 ✔	1.333	H1-3+VT ✔
	83 - 82	0.011	0.558	0.000	0.056	0.001	0.569 ✔	1.333	H1-3+VT ✔
	82 - 81	0.011	0.598	0.000	0.058	0.003	0.610 ✔	1.333	H1-3+VT ✔
	81 - 80	0.011	0.637	0.000	0.058	0.003	0.649 ✔	1.333	H1-3+VT ✔
	80 - 79	0.012	0.702	0.000	0.087	0.001	0.715 ✔	1.333	H1-3+VT ✔
	79 - 78	0.012	0.763	0.000	0.086	0.000	0.777 ✔	1.333	H1-3+VT ✔
	78 - 77	0.014	0.826	0.000	0.090	0.000	0.842 ✔	1.333	H1-3+VT ✔
	77 - 76	0.014	0.887	0.000	0.090	0.000	0.902 ✔	1.333	H1-3+VT ✔
	76 - 75	0.014	0.944	0.000	0.089	0.000	0.960 ✔	1.333	H1-3+VT ✔
	75 - 74	0.014	1.000	0.000	0.088	0.000	1.016 ✔	1.333	H1-3+VT ✔
	74 - 73	0.014	1.053	0.000	0.088	0.000	1.069 ✔	1.333	H1-3+VT ✔
	73 - 72	0.014	1.104	0.000	0.087	0.000	1.120 ✔	1.333	H1-3+VT ✔
	72 - 71	0.014	1.153	0.000	0.086	0.000	1.169 ✔	1.333	H1-3+VT ✔
	71 - 70	0.014	1.200	0.000	0.086	0.000	1.216 ✔	1.333	H1-3+VT ✔
L3	70 - 68.934	0.008	0.737	0.000	0.050	0.000	0.746 ✔	1.333	H1-3+VT ✔
	68.934 - 67.868	0.008	0.764	0.000	0.049	0.000	0.773 ✔	1.333	H1-3+VT ✔
	67.868 - 66.802	0.008	0.790	0.000	0.049	0.000	0.799 ✔	1.333	H1-3+VT ✔
	66.802 - 65.736	0.008	0.815	0.000	0.049	0.000	0.824 ✔	1.333	H1-3+VT ✔
	65.736 - 64.67	0.009	0.839	0.000	0.049	0.000	0.848 ✔	1.333	H1-3+VT ✔
	64.67 - 63.604	0.009	0.862	0.000	0.048	0.000	0.871 ✔	1.333	H1-3+VT ✔
	63.604 - 62.538	0.009	0.884	0.000	0.048	0.000	0.893 ✔	1.333	H1-3+VT ✔
	62.538 - 61.472	0.009	0.905	0.000	0.048	0.000	0.914 ✔	1.333	H1-3+VT ✔
	61.472 - 60.406	0.009	0.926	0.000	0.048	0.000	0.935 ✔	1.333	H1-3+VT ✔
	60.406 - 59.34	0.009	0.945	0.000	0.047	0.000	0.955 ✔	1.333	H1-3+VT ✔

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	59.34 - 58.274	0.009	0.964	0.000	0.047	0.000	0.974 ✔	1.333	H1-3+VT ✔
	58.274 - 57.208	0.009	0.982	0.000	0.047	0.000	0.992 ✔	1.333	H1-3+VT ✔
	57.208 - 56.142	0.009	1.000	0.000	0.047	0.000	1.009 ✔	1.333	H1-3+VT ✔
	56.142 - 55.076	0.009	1.017	0.000	0.047	0.000	1.026 ✔	1.333	H1-3+VT ✔
	55.076 - 54.01	0.009	1.033	0.000	0.046	0.000	1.043 ✔	1.333	H1-3+VT ✔
	54.01 - 52.944	0.009	1.049	0.000	0.046	0.000	1.058 ✔	1.333	H1-3+VT ✔
	52.944 - 51.878	0.009	1.064	0.000	0.046	0.000	1.073 ✔	1.333	H1-3+VT ✔
	51.878 - 50.812	0.009	1.078	0.000	0.046	0.000	1.088 ✔	1.333	H1-3+VT ✔
	50.812 - 49.746	0.009	1.092	0.000	0.046	0.000	1.102 ✔	1.333	H1-3+VT ✔
	49.746 - 48.68	0.009	1.106	0.000	0.045	0.000	1.115 ✔	1.333	H1-3+VT ✔
L4	48.68 - 47.246	0.009	1.046	0.000	0.042	0.000	1.055 ✔	1.333	H1-3+VT ✔
	47.246 - 45.812	0.009	1.061	0.000	0.042	0.000	1.070 ✔	1.333	H1-3+VT ✔
	45.812 - 44.378	0.009	1.075	0.000	0.041	0.000	1.085 ✔	1.333	H1-3+VT ✔
	44.378 - 42.944	0.009	1.089	0.000	0.041	0.000	1.099 ✔	1.333	H1-3+VT ✔
	42.944 - 41.51	0.009	1.102	0.000	0.041	0.000	1.112 ✔	1.333	H1-3+VT ✔
	41.51 - 40.076	0.009	1.115	0.000	0.041	0.000	1.124 ✔	1.333	H1-3+VT ✔
	40.076 - 38.642	0.009	1.127	0.000	0.040	0.000	1.136 ✔	1.333	H1-3+VT ✔
	38.642 - 37.208	0.009	1.138	0.000	0.040	0.000	1.148 ✔	1.333	H1-3+VT ✔
	37.208 - 35.774	0.009	1.148	0.000	0.040	0.000	1.158 ✔	1.333	H1-3+VT ✔
	35.774 - 34.34	0.010	1.158	0.000	0.040	0.000	1.168 ✔	1.333	H1-3+VT ✔
	34.34 - 32.906	0.010	1.168	0.000	0.040	0.000	1.178 ✔	1.333	H1-3+VT ✔
	32.906 - 31.472	0.010	1.177	0.000	0.039	0.000	1.187 ✔	1.333	H1-3+VT ✔
	31.472 - 30.038	0.010	1.186	0.000	0.039	0.000	1.196 ✔	1.333	H1-3+VT ✔
	30.038 - 28.604	0.010	1.194	0.000	0.039	0.000	1.204 ✔	1.333	H1-3+VT ✔
	28.604 - 27.17	0.010	1.202	0.000	0.039	0.000	1.212 ✔	1.333	H1-3+VT ✔
	27.17 - 25.736	0.010	1.209	0.000	0.039	0.000	1.220 ✔	1.333	H1-3+VT ✔

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	25.736 - 24.302	0.010	1.216	0.000	0.038	0.000	1.227 ✔	1.333	H1-3+VT ✔
	24.302 - 22.868	0.010	1.223	0.000	0.038	0.000	1.234 ✔	1.333	H1-3+VT ✔
	22.868 - 21.434	0.010	1.229	0.000	0.038	0.000	1.240 ✔	1.333	H1-3+VT ✔
	21.434 - 20	0.010	1.235	0.000	0.038	0.000	1.246 ✔	1.333	H1-3+VT ✔
L5	20 - 19	0.010	1.142	0.000	0.035	0.000	1.152 ✔	1.333	H1-3+VT ✔
	19 - 18	0.010	1.145	0.000	0.035	0.000	1.155 ✔	1.333	H1-3+VT ✔
	18 - 17	0.010	1.149	0.000	0.035	0.000	1.159 ✔	1.333	H1-3+VT ✔
	17 - 16	0.010	1.152	0.000	0.034	0.000	1.162 ✔	1.333	H1-3+VT ✔
	16 - 15	0.010	1.155	0.000	0.034	0.000	1.165 ✔	1.333	H1-3+VT ✔
	15 - 14	0.010	1.158	0.000	0.034	0.000	1.169 ✔	1.333	H1-3+VT ✔
	14 - 13	0.010	1.161	0.000	0.034	0.000	1.172 ✔	1.333	H1-3+VT ✔
	13 - 12	0.010	1.164	0.000	0.034	0.000	1.174 ✔	1.333	H1-3+VT ✔
	12 - 11	0.010	1.167	0.000	0.034	0.000	1.177 ✔	1.333	H1-3+VT ✔
	11 - 10	0.010	1.170	0.000	0.034	0.000	1.180 ✔	1.333	H1-3+VT ✔
	10 - 9	0.010	1.172	0.000	0.034	0.000	1.182 ✔	1.333	H1-3+VT ✔
	9 - 8	0.010	1.175	0.000	0.034	0.000	1.185 ✔	1.333	H1-3+VT ✔
	8 - 7	0.010	1.177	0.000	0.034	0.000	1.187 ✔	1.333	H1-3+VT ✔
	7 - 6	0.010	1.179	0.000	0.033	0.000	1.190 ✔	1.333	H1-3+VT ✔
	6 - 5	0.010	1.181	0.000	0.033	0.000	1.192 ✔	1.333	H1-3+VT ✔
	5 - 4	0.010	1.183	0.000	0.033	0.000	1.194 ✔	1.333	H1-3+VT ✔
	4 - 3	0.010	1.185	0.000	0.033	0.000	1.196 ✔	1.333	H1-3+VT ✔
	3 - 2	0.010	1.187	0.000	0.033	0.000	1.198 ✔	1.333	H1-3+VT ✔
	2 - 1	0.010	1.189	0.000	0.033	0.000	1.200 ✔	1.333	H1-3+VT ✔
	1 - 0	0.011	1.191	0.000	0.033	0.000	1.202 ✔	1.333	H1-3+VT ✔

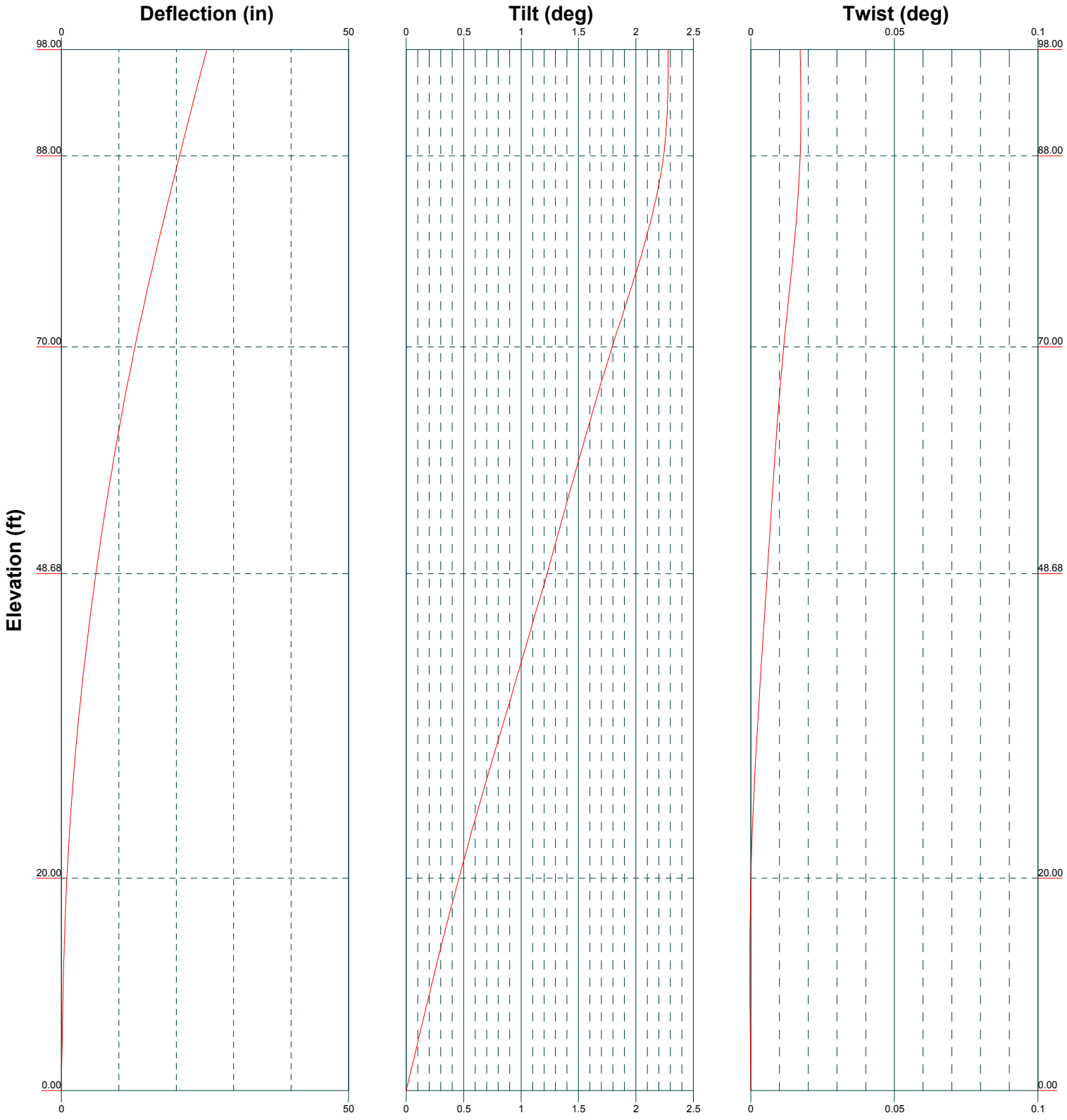
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P_{allow} lb	% Capacity	Pass Fail
L1	98 - 88	Pole	TP16.5x12.75x0.25	1	-2674.81	670340.35	16.7	Pass
L2	88 - 70	Pole	TP20.07x16.5x0.1875	2	-6527.06	615139.48	91.2	Pass
L3	70 - 48.68	Pole	TP24.3127x20.07x0.324	3	-9049.33	1282488.58	83.7	Pass
L4	48.68 - 20	Pole	TP30.02x24.3127x0.349	4	-13276.90	1708679.32	93.5	Pass
L5	20 - 0	Pole	TP34x30.02x0.38	5	-16662.30	2108059.43	90.2	Pass
							Summary	
						Pole (L4)	93.5	Pass
						RATING =	**93.5**	**Pass**

Program Version 7.0.5.1 - 2/1/2016 File:C:/Users/csong/Desktop/Work/Structural Components/160147.NewHavenWheelerStreet.CT2037/160147.New Haven Wheeler Street.CT2037.Analysis.eri

TIA/EIA-222-F - Service - 50 mph

Maximum Values



bennett&pless

Experience Structural Expertise

Bennett & Pless
550 River Drive
North Sioux City, SD 57049
Phone: 605-540-4621
FAX: 678-990-8701

Job: ***160147***			
Project: ***New Haven Wheeler Street (CT2037)***			
Client: Com-Ex Consultants, LLC	Drawn by: Chunhui Song		App'd:
Code: TIA/EIA-222-F	Date: 03/03/16		Scale: NTS
Path:			Dwg No. E-5

Structural Components, LLC

By:	Structural Components, LLC	Job #:	160147
Date:	2/23/2016	Project:	New Haven Wheeler Street (CT
Principal:	WC	Client:	Com-Ex Consultants, LLC

Sheet:
Subject:

Monopole Base Plate & Anchor Bolt Calculator

Assumptions / Criteria

ASCE/SEI 48-05
AISC
TIA

Notes:

Anchor bolt stress for TIA-222-G assumes detail type d connection per figure 4-4. Free length between concrete and leveling nut does not exceed 1" bolt diameter.

	bolt	bolt circle			Per Piece	Per Piece				Properties			LRFD	ASD	4/3rds
Height	dia.	dia	fy	fu	A reinf only	Ix reinf only	quantity	dist centoid to centroid	dist centroid to outer reinf. Fiber	Ax total	Ix total	Sx total	Mmax	Mmax	Mmax
feet	in	in	ksi	ksi	in^2	in^4	n	in	in	in^2	in^4	in^3	k-ft	k-ft	k-ft
bolt	**2.25**	**42**	**75**	**100**	3.248	1.258	**6**	21	1.125	19.49	4304.23	194.54	1094.30	729.53	972.71
reinf	**2.75**	**51.125**	95	115	4.928	2.807	**4**	23.875	1.375	19.71	5624.10	222.74	1587.00	1058.00	1410.66
total			95	115			**10**	23.875	1.375	39.20	9928.33	393.20	2681.29	1787.53	2383.37

Max usable reinf stress 75.00 ksi **O.K.** "only applies when reinforcement anchor rods are installed"

Moment required **1297.3** k-ft
Axial required **16.7** k
Shear required **17.4** k

ASD		**LRFD**	
Ω	**2.00**	Φ	**0.90**
Allowable Stress	**1.33**	Φ_v	**0.80**
Axial Max Bolt	194.9 k	Axial Max Bolt	324.8 k
Axial Max reinf	374.6 k	Axial Max reinf	566.8 k
Shear Max Bolt	108.3 k	Shear Max Bolt	129.9 k
Stress at Bolt	35.5 ksi	Stress at Bolt	2.3 ksi
Stress at reinf	40.5 ksi	Stress at reinf	2.7 ksi
Axial to Bolt	**131.6** k	Axial to Bolt	**131.6** k
Axial to reinf	**199.6** k	Axial to reinf	**199.6** k
Shear to Bolt	**1.7** k	Shear to Bolt	**1.7** k

Splice Plate Analysis

Odd/Even Active Bolt #	Odd TRUE		Even TRUE	
Round or Square	**1**	(round=1,square=0)	**1**	(round=1,square=0)
Plate Thickness	**1.5**	in	**1.5**	in
Pole Base Diameter	**34**	in	**34**	in
Plate Yield	**60**	ksi	**60**	ksi
Bendline	24.66	in	24.66	in
Inclusion Angle	71.90	deg	71.90	deg
Active Bolts	1	Bolts	2	Bolts
D_1	4.00	in	1.19	in
D_2	0.00	in	0.00	in
D_3	0.00	in	0.00	in
D_4	0.00	in	0.00	in
BL_1	131.6	k	109.1	k
BL_2	0.0	k	0.0	k
BL_3	0.0	k	0.0	k
BL_4	0.0	k	0.0	k
M_1	526.2	kip*in	129.5	kip*in
M_2	0.0	kip*in	0.0	kip*in
M_3	0.0	kip*in	0.0	kip*in
M_4	0.0	kip*in	0.0	kip*in

ASD				
Bending Stress	56.9	ksi	14.0	ksi
Allowable Stress	60.0	ksi	40.0	ksi
Ratio	0.949		0.350	

ASD Ratings

Plate	95%
Bolt	70%
Reinforcement	54%

4302.97347 99.97%

Threads per Inch Lookup Table

Diameter (D) (in)	n
2.25	**4.5**
1/4	20
3/8	16
1/2	13
5/8	11
3/4	10
7/8	9
1	8
1 1/8	7
1 1/4	7
1 3/8	6
1 1/2	6
1 3/4	5
2	4.5
2 1/4	4.5
2 1/2	4
2 3/4	4
3	4
3 1/4	4
3 1/2	4
3 3/4	4
4	4
4 1/4	4
4 1/2	4
4 3/4	4
5	4
5 1/4	4
5 1/2	4
5 3/4	4
6	4

Bolt Grade Lookup Table

Steel Grade	Fy (Yield)	Fu (Tensile)	Diameter Range
A36	36	58	to 10
A529	50		
A529	55		
A572	42	60	to 6
A572	50	65	to 4
A572	55	70	to 2
A572	60	75	to 1.25
A572	65	80	to 1.25
A108		65	0.375-0.75
A325		105	Over 1-1.5
A325		120	0.5-1
A490		150	0.5-1.5
F1852		105	1.125
F1852		120	0.5-1
A193-B7		100	over 4-7
A193-B7		115	over 2.5-4
A193-B7		125	2.5 and under
A307		60	0.25-4
A354		140	2.5-4
A354		150	0.25-2.5
A449		90	1.75-3
A449		105	1.125-1.5
A449		120	0.25-1
A588	42	63	Over 5-8
A588	46	67	Over 4-5
A588	50	70	4 and under
A687	105	150	0.625-3
F1554	36	58	0.25-4
F1554	55	75	0.25-4
F1554	105	125	0.25-3
A615	75	100	All

Structural Components, LLC

By:	Structural Components, LLC	Job #:	160147	Sheet:	
Date:	2/23/2016	Project:	New Haven Wheeler Street (CT2037)	Subject:	
Principal:	WC	Client:	Com-Ex Consultants, LLC		

Monopole Splice Calculator at 88ft

Assumptions / Criteria

ASCE/SEI 48-05
AISC
TIA

Notes:

Anchor bolt stress for TIA-222-G assumes detail type d connection per figure 4-4. Free length between concrete and leveling nut does not exceed 1* bolt diameter.
Splice at 88ft.

	Height	bolt dia.	bolt circle dia	fy	fu	Per Piece A reinf only	Per Piece Ix reinf only	quantity	dist centoid to centroid	dist centroid to outer reinf. Fiber	Properties Ax total	Ix total	Sx total	LRFD Mmax	ASD Mmax	4/3rds Mmax
	feet	in	in	ksi	ksi	in^2	in^4	n	in	in	in^2	in^4	in^3	k-ft	k-ft	k-ft
	bolt	**1**	**25.75**	**85**	**120**	0.606	0.049	**12**	12.875	0.5	7.27	603.06	45.09	287.44	191.63	255.50
	reinf	**2.75**	**51.125**	95	115	4.928	2.807	**0**	15.125	1.375	0.00	0.00	0.00	0.00	0.00	0.00
	total			95	115			**12**	15.125	1.375	7.27	603.06	36.55	287.44	191.63	255.50
602.86188																
99.97%																

Max usable reinf stress 75.00 ksi **O.K.** "only applies when reinforcement anchor rods are installed"

Moment required **43.7** k-ft
Axial required **4.1** k
Shear required **7.5** k

ASD		**LRFD**	
Ω	**2.00**	Φ	**0.90**
Allowable Stress	**1.33**	Φ_v	**0.80**
Axial Max Bolt	41.2 k	Axial Max Bolt	72.7 k
Axial Max reinf	374.6 k	Axial Max reinf	566.8 k
Shear Max Bolt	24.2 k	Shear Max Bolt	29.1 k
Stress at Bolt	19.4 ksi	Stress at Bolt	12.9 ksi
Stress at reinf	0.0 ksi	Stress at reinf	0.0 ksi
Axial to Bolt	**7.1** k	Axial to Bolt	**7.1** k
Axial to reinf	**0.0** k	Axial to reinf	**0.0** k
Shear to Bolt	**0.6** k	Shear to Bolt	**0.6** k

Splice Plate Analysis

Odd/Even Active Bolt #	Odd TRUE	Even TRUE
Round or Square	**1** (round=1,square=0)	**1** (round=1,square=0)
Plate Thickness	**1.5** in	**1.5** in
Pole Base Diameter	**16.5** in	**16.5** in
Plate Yield	**60** ksi	**60** ksi
Bendline	19.77 in	19.77 in
Inclusion Angle	100.30 deg	100.30 deg
Active Bolts	3 Bolts	4 Bolts
D_1	4.63 in	4.19 in
D_2	2.90 in	0.85 in
D_3	0.00 in	0.00 in
D_4	0.00 in	0.00 in
BL_1	7.1 k	3.4 k
BL_2	6.2 k	2.6 k
BL_3	0.0 k	0.0 k
BL_4	0.0 k	0.0 k
M_1	32.9 kip*in	14.4 kip*in
M_2	18.0 kip*in	2.2 kip*in
M_3	0.0 kip*in	0.0 kip*in
M_4	0.0 kip*in	0.0 kip*in

ASD		
Bending Stress	6.9 ksi	2.2 ksi
Allowable Stress	60.0 ksi	40.0 ksi
Ratio	**0.115**	**0.056**

ASD Ratings

Plate	**12%**
Bolt	**20%**
Reinforcement	**N/A**

Threads per Inch Lookup Table

Diameter (D) (in)	n
1	**8**
1/4	20
3/8	16
1/2	13
5/8	11
3/4	10
7/8	9
1	8
1 1/8	7
1 1/4	7
1 3/8	6
1 1/2	6
1 3/4	5
2	4.5
2 1/4	4.5
2 1/2	4
2 3/4	4
3	4
3 1/4	4
3 1/2	4
3 3/4	4
4	4
4 1/4	4
4 1/2	4
4 3/4	4
5	4
5 1/4	4
5 1/2	4
5 3/4	4
6	4

Bolt Grade Lookup Table

Steel Grade	Fy (Yield)	Fu (Tensile)	Diameter Range
A36	36	58	to 10
A529	50		
A529	55		
A572	42	60	to 6
A572	50	65	to 4
A572	55	70	to 2
A572	60	75	to 1.25
A572	65	80	to 1.25
A108		65	0.375-0.75
A325	74	105	Over 1-1.5
A325	85	120	0.5-1
A490	120	150	0.5-1.5
F1852		105	1.125
F1852		120	0.5-1
A193-B7		100	over 4-7
A193-B7		115	over 2.5-4
A193-B7		125	2.5 and under
A307	36	60	0.25-4
A354	105	140	2.5-4
A354	120	150	0.25-2.5
A449	55	90	1.75-3
A449	74	105	1.125-1.5
A449		120	0.25-1
A588	42	63	Over 5-8
A588	46	67	Over 4-5
A588	50	70	4 and under
A687	105	150	0.625-3
F1554	36	58	0.25-4
F1554	55	75	0.25-4
F1554	105	125	0.25-3
A615	75	100	All

MONOPOLE INDIVIDUAL
PIER/PAD & MAT FOUNDATION

Template = "MonoPierPadMat-F.xmcd"
Version = 1.07

Structural Components
Bringing It All Together.

11611 E 51st Ave.
Denver, CO 80239
866-386-7622

PROJECT DATA

Job = "160147"

Client = "Com-Ex Consultants, LLC "

Site = "New Haven Wheeler Street (CT2037)"

Model = "98ft EEI Monopole"

DESIGN CODES AND STANDARDS

- TIA-222-F, "Structural Standard for Steel Antenna Towers and Antenna Supporting Structures 1996.
- ACI 318-05, "Building Code Requirements for Structural Concrete and Commentary," 2005.

UNFACTORED FOUNDATION DESIGN LOADS

Overdesign Factor: $\alpha = 1.00$

Percentage for Passing: $PP = 100 \cdot \%$

Allow for reduction in required development length due to excess reinforcement per ACI 12.2.5? red = "Allow Reduction (Analysis Mode)"

Calculation Mode: calc = "Analysis (no seismic provision check)" reinf = "Reinforcing Details Not Available"

	Load Comb. #1	Load Comb. #2
Load Combination:	$Comb_1$ = "D+Wo"	$Comb_2$ = "D+0.75 Wi+I"
Moment Load:	$M_1 = 1297.3 \cdot kip \cdot ft$	$M_2 = 317.0 \cdot kip \cdot ft$
Axial Load:	$P_1 = 16.7 \cdot kip$	$P_2 = 23.8 \cdot kip$
Shear Load:	$V_1 = 17.4 \cdot kip$	$V_2 = 4.2 \cdot kip$

SITE & GEOTECHNICAL DATA

Soil Parameters: sp_1 = "Per Geotechnical Report"

sp_2 = "All-Point Technology Corp, P.C., 12/10/2008, CT198740"

SType = "N/A"

Soil Unit Weight: $\gamma_{soil} = 100 \cdot pcf$

Angle of Internal Friction: $\phi = 30 \cdot deg$

Allowable Bearing Pressure: $B_c = 3.4 \cdot ksf$ Bearing = "Capacity at Depth"

Cohesion: $c = 0 \cdot psf$

Adhesion: $c_A = 0 \cdot psf$

Passive Pressure Coefficient (Rankine): $K_p = 3.00$

Active Pressure Coefficient: $K_a = 0.33$

Ultimate Friction Coefficient: $\mu = 0.35$

Allowable Sliding Friction: $f_s = 0 \cdot psf$

Depth Neglected: $D_n = 0.0$

Depth of Water Table: D_w = "Below Footing"

Seismic Design Category: SDCT = "Seismic Design Category B" $Note_{SDC}$ = "N/A"

MATERIAL SPECIFICATIONS

Concrete:

Compressive Strength:	$f'_c = 4000 \cdot psi$	
Clear Cover:	$cc = 3 \cdot in$	
Lightweight Aggregate Factor:	$\lambda = 1.00$	[ACI 12.2.4]
Unit Weight:	$\gamma_{conc} = 150 \cdot pcf$	

Rebar:

Yield Strength:	$F_y = 60 \cdot ksi$	

DIMENSIONS

Pier (or mat) Extension:	$E = 1.0 \cdot ft$	(above-grade portion)
Depth:	$D = 4.25 \cdot ft$	(from grade to bottom of pad)
Pad Width:	$W = 21.63 \cdot ft$	(each way)
Pad Thickness:	$T = 3.25 \cdot ft$	
Pier: Pier = "Square"	$D_p = 6.0 \cdot ft$	
Base Plate Geometry:	BPG = "None"	$BP = 0.0 \cdot in$

Offset Distance of Pole:	$ecc1 = 0.0 \cdot ft$	(center of pole to center of pier, enter as positive number)
Offset Distance of Pier:	$ecc2 = 0.0 \cdot ft$	(center of pier to center of pad, enter as a positive number if it adds to ecc1 or negative if it subtracts from ecc1)

Concrete Pad Volume:	$V_{pad} = 56.3 \cdot yd^3$
Concrete Pier Volume:	$V_{pier} = 2.7 \cdot yd^3$
Total Concrete Volume:	$V_{conc} = 59.0 \cdot yd^3$

LATERAL CAPACITY

Design Resist.	Lat. Load	Check	Factor of Safety
$\min(S) = 86 \cdot kip$	$\max(V) = 17 \cdot kip$	$Check'_{lateral}$ = "OK"	$FS'_{lateral} = 4.92$

OVERTURNING

Design Resist.	O.T. Moment	Check	Factor of Safety
$\min(MR1, MR2) = 3334\,ft \cdot kips$	$\max(M1, M2) = 1389 \cdot ft \cdot kips$	$Check'_{over}$ = "OK"	$FS'_{over} = 2.40$

SOIL BEARING

Allow. Bearing	Max. Bearing	Check	Ratio
$B_c = 3425 \cdot psf$	$P_{pos} = 1493 \cdot psf$	$Check'_{comp}$ = "OK"	$Ratio'_{comp} = 0.44$

APPENDIX B

Data Provided for Analysis

PROJECT INFORMATION

SCOPE OF WORK:

- AT&T ANTENNAS: (1) NEW ANTENNA PER SECTOR, FOR A TOTAL (3) NEW ANTENNAS. (2) EXISTING ANTENNAS PER SECTOR FOR 3 SECTORS, FOR A TOTAL OF (6) EXISTING ANTENNAS TO REMAIN. (1) EXISTING ANTENNA PER SECTOR FOR (3) SECTORS, FOR A TOTAL OF (3) EXISTING ANTENNAS TO BE REMOVED.
- AT&T RRUs: (1) NEW RRUs PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW RRUs; (2) EXISTING RRU PER SECTOR TO BE REUSED, FOR A TOTAL OF (6) EXISTING RRUs.
- AT&T SQUID: (1) NEW DC6 SURGE, FOR A TOTAL OF (1) NEW SQUID, (1) EXISTING DC-6 SURGE PROTECTOR, FOR A TOTAL OF (1) EXISTING SQUID TO REMAIN.
- AT&T CABLES: (1) NEW FIBER TRUNK & (2) NEW DC TRUNKS.

SITE ADDRESS:	69 WHEELER STREET NEW HAVEN, CT 06512
LATITUDE:	41.2959919 41° 17' 45.57"N
LONGITUDE:	-72.897942 -72° 53' 52.59"W
USID:	61168
TOWER OWNER:	CROWN CASTLE
TYPE OF SITE:	MONOPOLE/INDOOR EQUIPMENT
MONOPOLE HEIGHT:	98'-0"±
RAD CENTER:	91'-0"±
CURRENT USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY
PROPOSED USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

DRAWING INDEX

		REV.
T-1	TITLE SHEET	A
GN-1	GROUNDING & GENERAL NOTES	A
A-1	COMPOUND LAYOUT	A
A-2	EQUIPMENT LAYOUTS	A
A-3	ANTENNA LAYOUTS & ELEVATIONS	A
A-4	DETAILS	A
G-1	GROUNDING, ONE-LINE DIAGRAM & DETAILS	A

APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE SUBCONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN, ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AMD MAY IMPOSE CHANGES OR SITE MODIFICATIONS.

DISCIPLINE:	NAME:	
SITE ACQUISITION:		
CONSTRUCTION MANAGER:		
AT&T PROJECT MANAGER:		

at&t MOBILITY

FA CODE: 10035247
SITE NUMBER: CT2037
SITE NAME: NEW HAVEN WHEELER ST

VICINITY MAP

1.) START OUT GOING WEST ON COCHITUATE RD/MA-30 TOWARD BURR ST. (0.02 MI) 2.) MAKE A U-TURN AT BURR ST ONTO COCHITUATE RD/MA-30. (0.05 MI) 3.) MERGE ONTO I-90 W/MASSACHUSETTS TPKE W (PORTIONS TOLL). (38.8 MI) 4.) MERGE ONTO I-84 W/WILBUR CROSS HWY S VIA EXIT 9 TOWARD US-20/HARTFORD/NEW YORK CITY (PORTIONS TOLL) (CROSSING INTO CONNECTICUT). (41.7 MI) 5.) KEEP LEFT TO TAKE CT-15 S/WILBUR CROSS HWY S VIA EXIT 57 TOWARD I-91 S/CHARTER OAK BR/NY CITY. (2.0 MI) 6.) MERGE ONTO I-91 S VIA EXIT 86 TOWARD NEW HAVEN/NY CITY. (36.2 MI) 7.) TAKE THE HAMILTON ST EXIT, EXIT 2 (0.3 MI) 8.) STAY STRAIGHT TO GO ONTO IVES PL. (0.1 MI) 9.) TURN RIGHT ONTO EAST ST. 10.) TAKE THE 2ND LEFT ONTO WATER ST/US-1 N. 11.) CONTINUE TO FOLLOW US-1 N. (0.7 MI) 12.) TAKE THE 1ST LEFT ONTO WHEELER ST. 13.) ARRIVE 69 WHEELER ST ON THE RIGHT

PROJECT TEAM

CLIENT REPRESENTATIVE

COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617-639-4908
EMAIL: dcooper@empiretelecomm.com

SITE ACQUISITION:

COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
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PHONE: 617-639-4908
EMAIL: dcooper@empiretelecomm.com

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ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617-639-4908
EMAIL: dcooper@empiretelecomm.com

COMPANY: COM-EX CONSULTANTS, LLC
ADDRESS: 4 SECOND AVENUE, SUITE 204, DENVILLE, NJ 07834
CONTACT: NICHOLAS D. BARILE, P.E.
PHONE: 862-209-4300
EMAIL: nbarile@comexconsultants.com

RF ENGINEER:

COMPANY: AT&T MOBILITY - NEW ENGLAND
ADDRESS: 550 COCHITUATE ROAD, SUITE 550 13 & 14, FRAMINGHAM, MA 01701
CONTACT: CAMERON SYME
PHONE: 508-596-7146
EMAIL: cs6970@att.com

CONSTRUCTION MANAGEMENT:

COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: GRZEGORZ "GREG" DORMAN
PHONE: 484-683-1750
EMAIL: gdorman@empiretelecomm.com

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3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

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BILLERICA, MA 01821

SITE NUMBER: CTU2037
SITE NAME: NEW HAVEN WHEELER ST

69 WHEELER STREET
NEW HAVEN, CT 06512
NEW HAVEN COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	10/30/15	INITIAL SUBMISSION	NJM	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: CJT

AT&T

DRAWING TITLE: TITLE SHEET

JOB NUMBER	DRAWING NUMBER	REV
15178-EMP	T-1	A

GROUNDING NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-3PS-EG00-0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.

13. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV-G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').

14. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE ½" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   - CONTRACTOR – EMPIRE TELECOM
   - SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   - OWNER – AT&T MOBILITY
   - OEM – ORIGINAL EQUIPMENT MANUFACTURER

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR (EMPIRE TELECOM).

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR

9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

14. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy=36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."

16. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

17. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

18. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

19. SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
   - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
   - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
   - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS

20. SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
   - AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
   - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, THIRTEENTH EDITION
   - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
   - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
   - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
   - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
   - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVELY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
   - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS

21. FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

22. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

23. INFORMATION SHOWN ON THIS SET OF PLANS TAKEN FROM DRAWINGS PREPARED BY CENTEK ENGINEERING FOR A RECENT UPGRADE DATED 05/03/2012. CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.

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NEW HAVEN COUNTY

at&t MOBILITY
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FRAMINGHAM, MA 01701

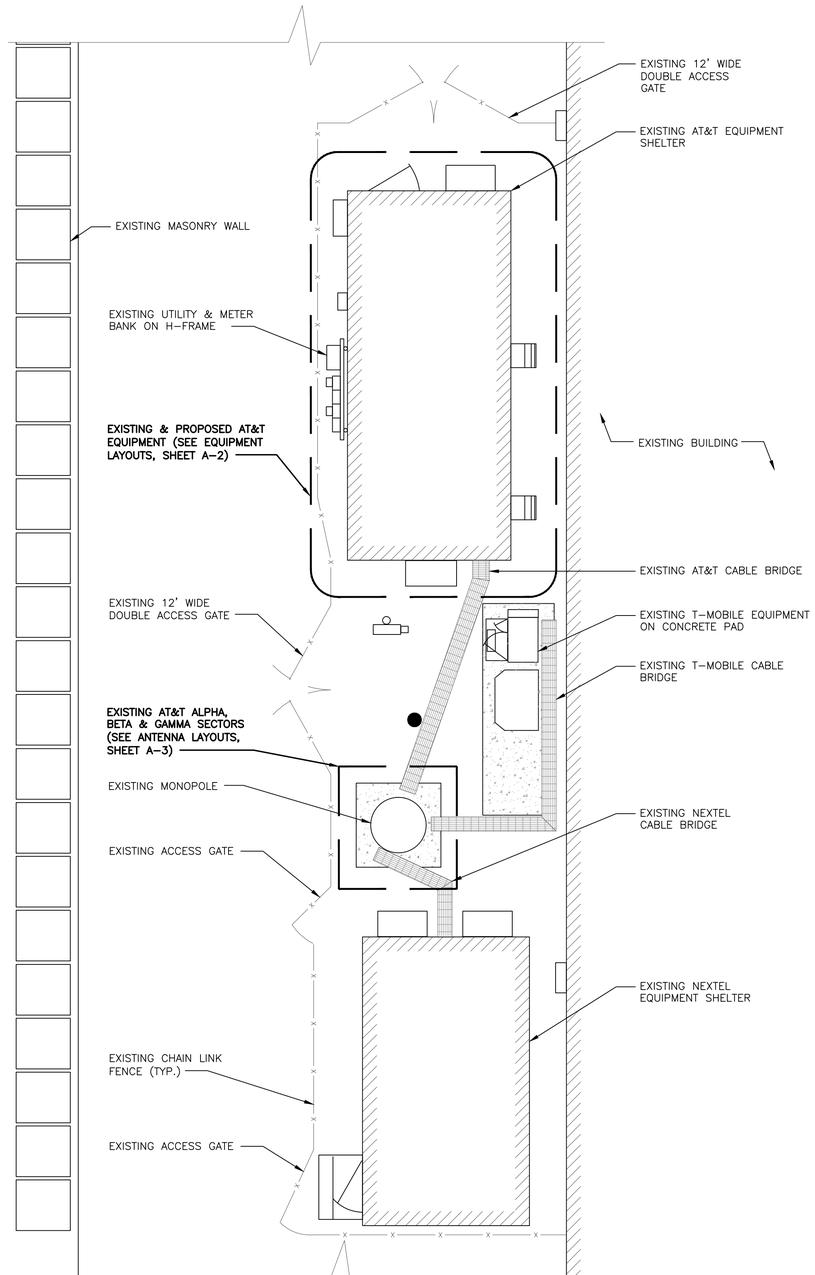
NO.	DATE	REVISIONS	BY	CHK	APP'D
A	10/30/15	INITIAL SUBMISSION	NJM	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: CJT

AT&T

DRAWING TITLE:
GROUNDING & GENERAL NOTES

JOB NUMBER	DRAWING NUMBER	REV
15178-EMP	GN-1	A

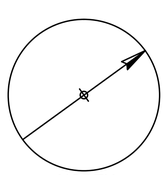


COMPOUND LAYOUT

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

0 4 8 16

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



NOTE:
CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

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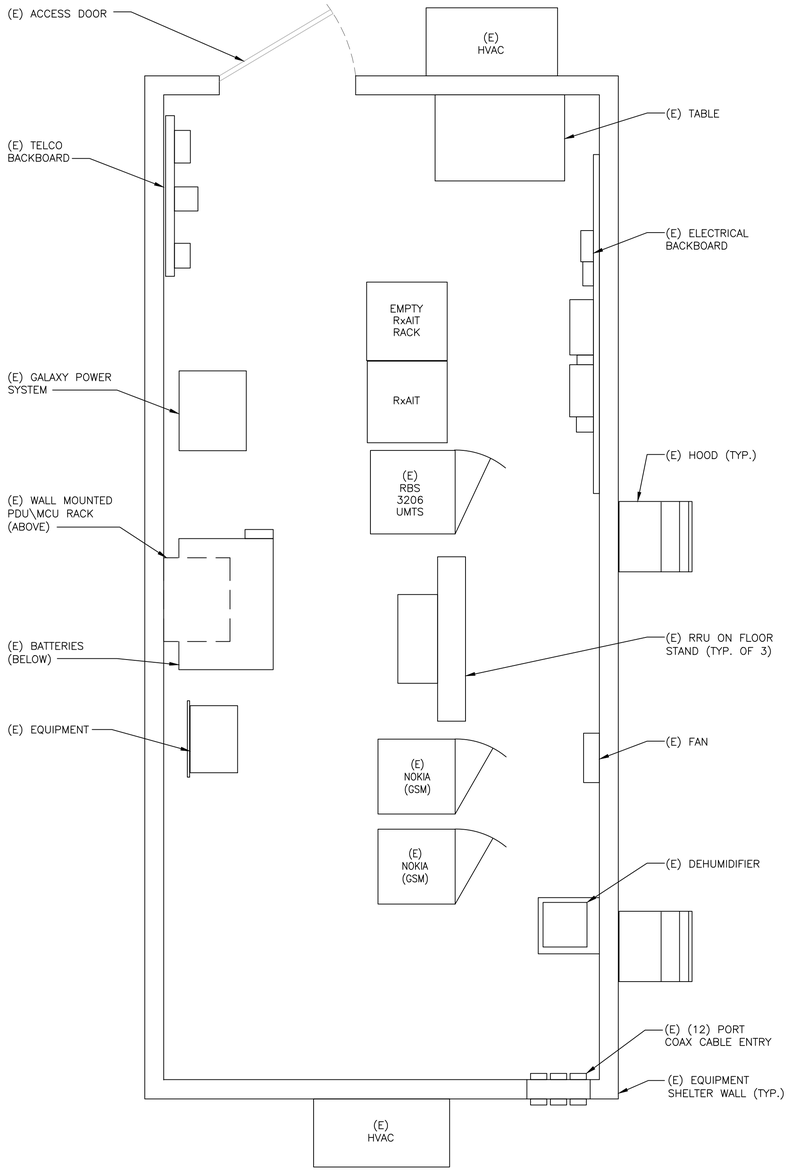
A	10/30/15	INITIAL SUBMISSION	NJM	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: CJT

AT&T

DRAWING TITLE:
COMPOUND LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
15178-EMP	A-1	A



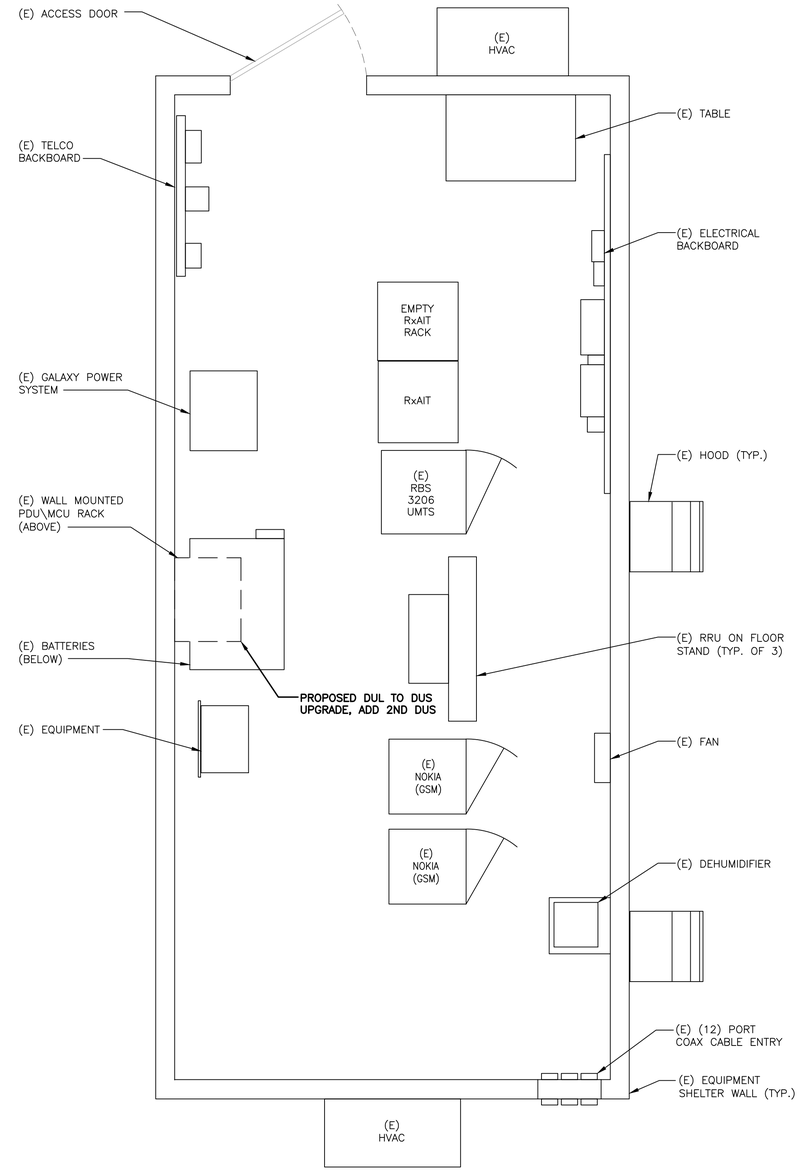
EXISTING EQUIPMENT LAYOUT

SCALE: 1" = 2'-0"

2 0 1 2 4 8

(IN FEET)
1/2 Inch = 1 Foot

NORTH



PROPOSED EQUIPMENT LAYOUT

SCALE: 1" = 2'-0"

2 0 1 2 4 8

(IN FEET)
1/2 Inch = 1 Foot

NORTH

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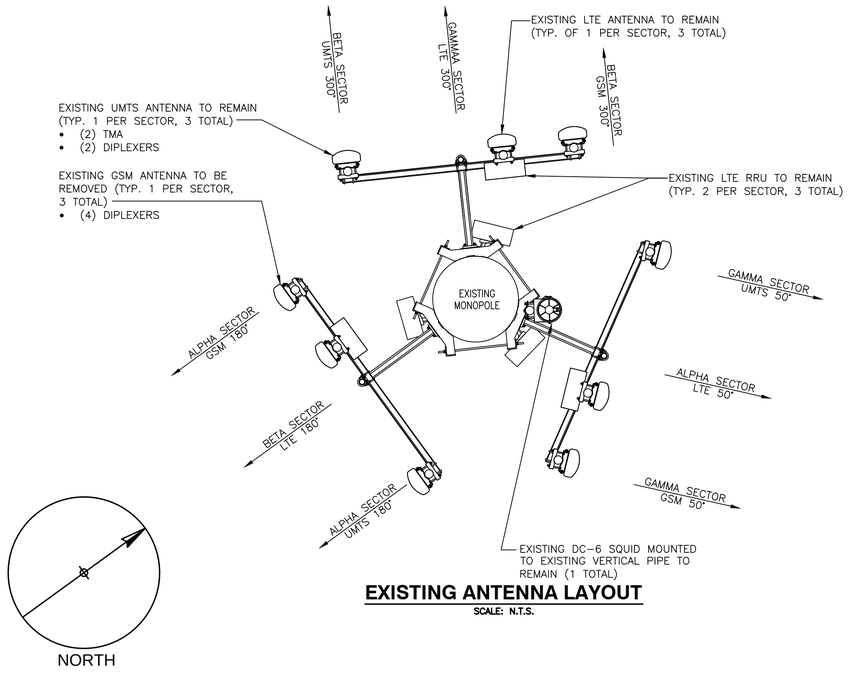
A	10/30/15	INITIAL SUBMISSION	NJM	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: CJT

AT&T

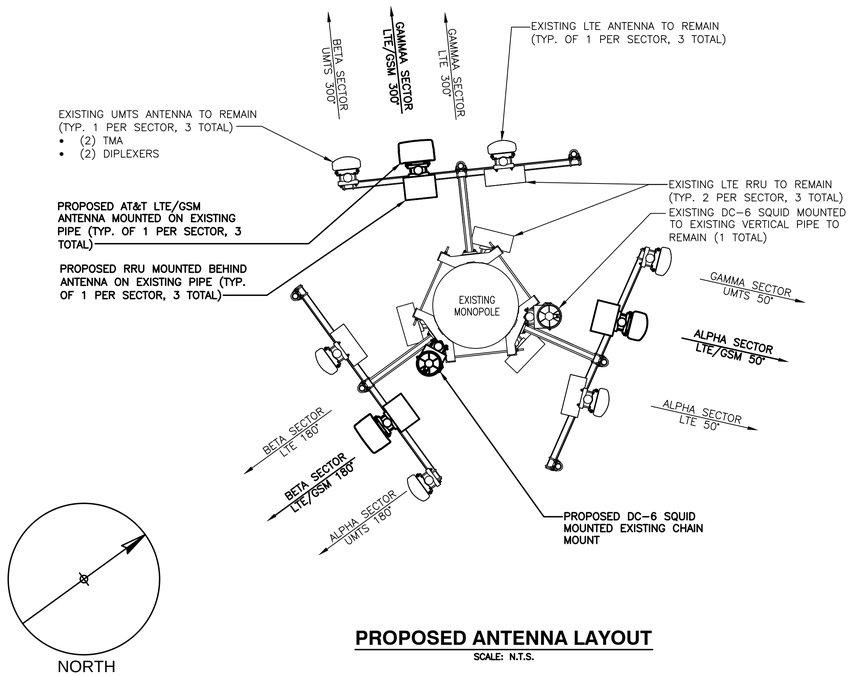
DRAWING TITLE:
EQUIPMENT LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
15178-EMP	A-2	A



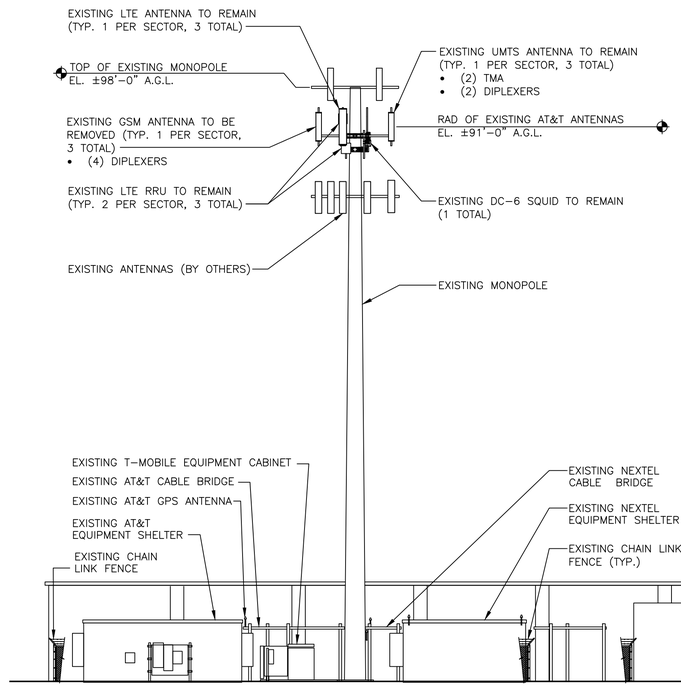
EXISTING ANTENNA LAYOUT

SCALE: N.T.S.



PROPOSED ANTENNA LAYOUT

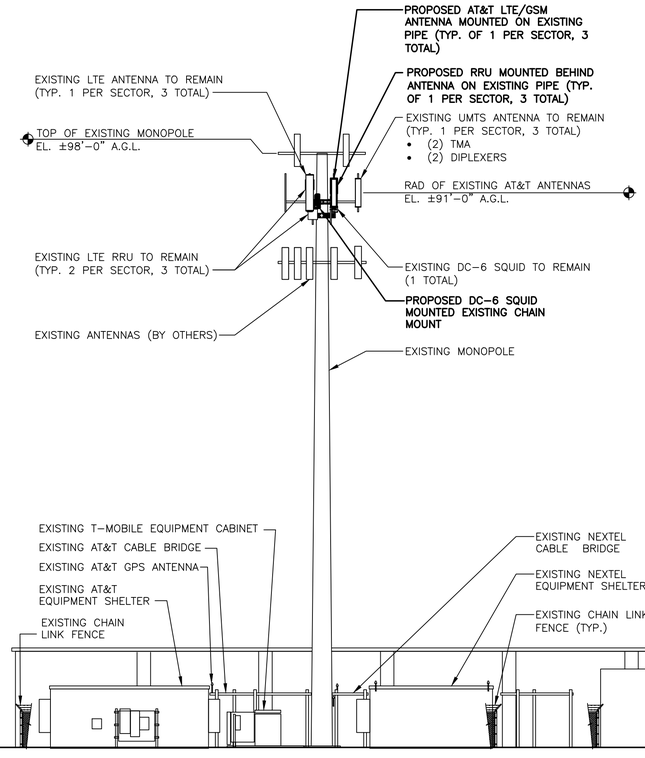
SCALE: N.T.S.



EXISTING TOWER ELEVATION

SCALE: NTS

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.



PROPOSED TOWER ELEVATION

SCALE: NTS

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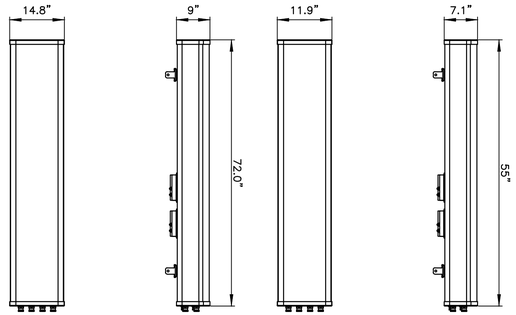
A	10/30/15	INITIAL SUBMISSION	NJM	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: CJT

AT&T

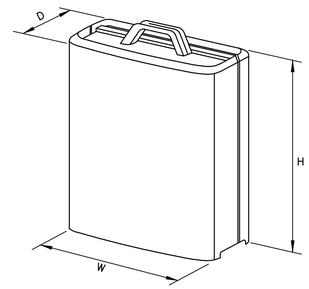
DRAWING TITLE:
ANTENNA LAYOUTS & ELEVATIONS

JOB NUMBER	DRAWING NUMBER	REV
15178-EMP	A-3	A



MANUFACTURER	CCI	ANDREW
MODEL	HPA-65R-BUU-H6	SBNHH-1D65A
WEIGHT	50.7 LBS	33.5 LBS

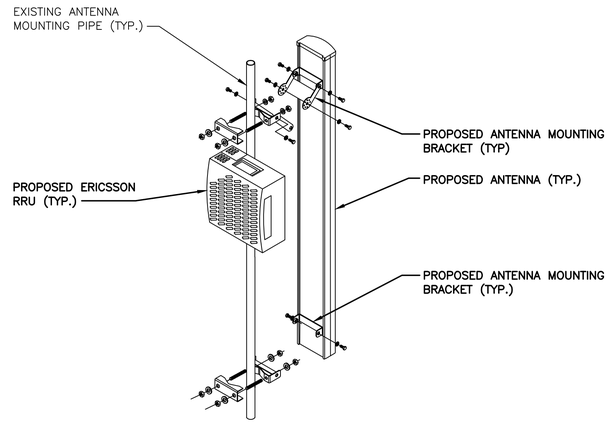
LTE ANTENNA DETAIL
SCALE: N.T.S.



MODEL	L x W x H	WEIGHT
*RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
RRUS-32	29.9"x13.3"x9.5"	77 LBS

*DENOTES EXISTING.

RRUS DETAIL
SCALE: N.T.S.



ANTENNA AND RRU MOUNTING DETAIL
SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7750	57"x11"x5"
	A2	–	–	–
	A3	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
	A4	POWERWAVE	7750	57"x11"x5"
BETA	B1	POWERWAVE	7750	57"x11"x5"
	B2	–	–	–
	B3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	B4	POWERWAVE	7750	57"x11"x5"
GAMMA	G1	POWERWAVE	7750	57"x11"x5"
	G2	–	–	–
	G3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	G4	POWERWAVE	7750	57"x11"x5"

FINAL ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7750	57"x11"x5"
	A2	**ANDREW**	**SBNHH-1D65A**	**55"x11.9"x7.1"**
	A3	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
	A4	–	–	–
BETA	B1	POWERWAVE	7750	57"x11"x5"
	B2	**CCI**	**HPA-65R-BUU-H6**	**72"x14.8"x9"**
	B3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	B4	–	–	–
GAMMA	G1	POWERWAVE	7750	57"x11"x5"
	G2	**CCI**	**HPA-65R-BUU-H6**	**72"x14.8"x9"**
	G3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	G4	–	–	–

PROPOSED RRU SCHEDULE

SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	**ERICSSON**	**RRUS-32**	**29.9"x13.3"x9.5"**	–	–
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	–	–
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
BETA	**ERICSSON**	**RRUS-32**	**29.9"x13.3"x9.5"**	–	–
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	–	–
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
GAMMA	**ERICSSON**	**RRUS-32**	**29.9"x13.3"x9.5"**	–	–
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	–	–
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.

COM-EX Consultants
4 SECOND AVENUE
SUITE 204
DENVILLE, NJ 07834
PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CTU2037
SITE NAME: NEW HAVEN WHEELER ST

69 WHEELER STREET
NEW HAVEN, CT 06512
NEW HAVEN COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

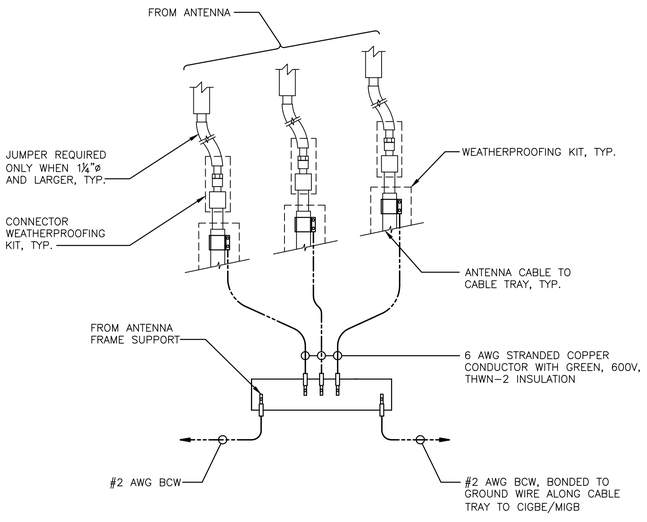
NO.	DATE	REVISIONS	BY	CHK	APP'D
A	10/30/15	INITIAL SUBMISSION	NJM	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: CJT

AT&T

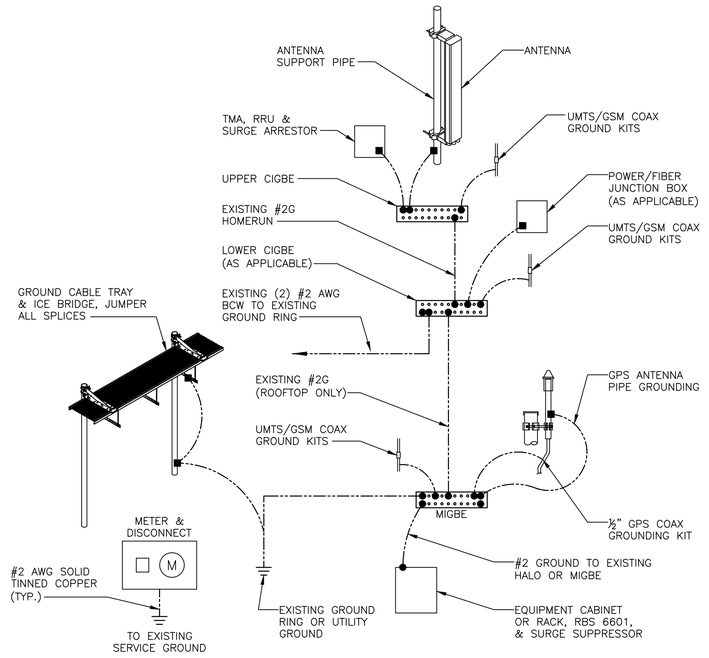
DRAWING TITLE:
DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15178-EMP	A-4	A



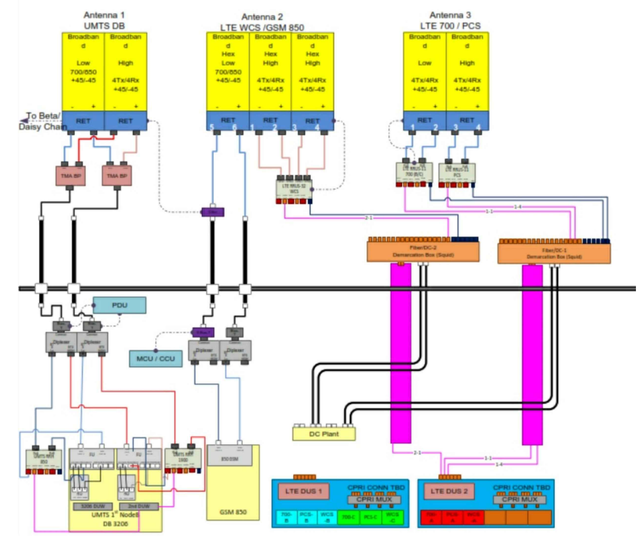
GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



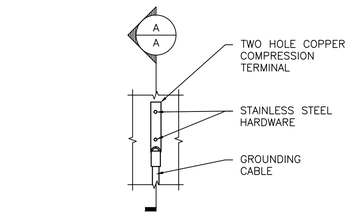
GROUNDING RISER DIAGRAM

SCALE: N.T.S.

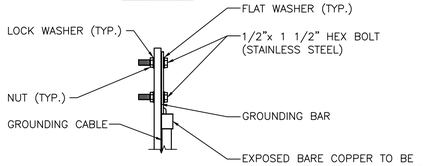


TYPICAL PLUMBING DIAGRAM (PER SECTOR)

SCALE: N.T.S.



ELEVATION



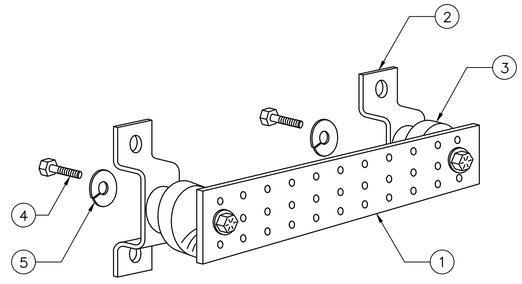
SECTION "A–A"

NOTE:

1. "DOUBLING UP" OR "STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



ITEM NO.	QTY.	DESCRIPTION
1	1	SOLID GROUND BAR (20"x 4"x ¼")
2	2	WALL MOUNTING BRACKET
3	2	INSULATORS
4	4	⅝"–11x1" H.H.C.S.
5	4	⅝" LOCK WASHER

NOTES:

EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION

SECTION "P" – SURGE PRODUCERS
- CABLE ENTRY PORTS (HATCH PLATES) (#2)
- GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
- +24V POWER SUPPLY RETURN BAR (#2)
- –48V POWER SUPPLY RETURN BAR (#2)
- RECTIFIER FRAMES

SECTION "A" – SURGE ABSORBERS
- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
- BUILDING STEEL (IF AVAILABLE) (#2)

GROUND BAR DETAIL

SCALE: N.T.S.

COM-EX Consultants
4 SECOND AVENUE
SUITE 204
DENVILLE, NJ 07834
PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE telecom
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BILLERICA, MA 01821

SITE NUMBER: CTU2037
SITE NAME: NEW HAVEN WHEELER ST

69 WHEELER STREET
NEW HAVEN, CT 06512
NEW HAVEN COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	10/30/15	INITIAL SUBMISSION	NJM	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: CJT

AT&T

DRAWING TITLE: GROUNDING, ONE–LINE DIAGRAM & DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15178–EMP	G–1	A

Section 1 - RFDS GENERAL INFORMATION

RFDS NAME:	CTU2037	DATE:	09/16/2015	RF DESIGN ENG:	Jobet Mariano	RF PERF ENG:		RFDS PROGRAM TYPE:	2016 LTE Next Carrier
ISSUE:	Bronze Standard	Approved? (Y/N):	Yes	RF DESIGN PHONE:	617-460-4072	RF PERF PHONE:		RFDS TECHNOLOGY:	LTE 3C
REVISION:	Preliminary	RF MANAGER:	Cameron Syme	RF DESIGN EMAIL:	rx6597@att.com	RF PERF EMAIL:		State:	Preliminary
INITIATIVE /PROJECT:	LTE 3C WCS w/ Bronze Standard					TRIDENT:		Status:	Approved
						GSM FREQUENCY:	850	RFDS ID:	848125
						UMTS FREQUENCY:	850, 1900	RFDS Version:	1.00
						LTE FREQUENCY:	700, 1900, WCS	Created By:	om636a
								Date Created:	9/15/2015 3:29:01 PM
								Date Updated:	9/17/2015 7:52:19 AM
								Updated By:	om636a
						I-PLAN JOB # 1:	NER-RCTB-15-03297	IPLAN PRD GRP || SUB GRP #1:	LTE Next Carrier || LTE 3C
						I-PLAN JOB # 2:		IPLAN PRD GRP || SUB GRP #2:	
						I-PLAN JOB # 3:		IPLAN PRD GRP || SUB GRP #3:	
						I-PLAN JOB # 4:		IPLAN PRD GRP || SUB GRP #4:	

Section 2 - LOCATION INFORMATION

USID:	61168	FA LOCATION CODE:	10035247	LOCATION NAME:	NEW HAVEN WHEELER ST	ORACLE PTN # 1:	2051585798	PACE JOB # 1:	MRCTB016396
REGION:	NORTHEAST	MARKET CLUSTER:	NEW ENGLAND	MARKET:	CONNECTICUT	ORACLE PTN # 2:		PACE JOB # 2:	
ADDRESS:	69 WHEELER STREET	CITY:	NEW HAVEN	STATE:	CT	ORACLE PTN # 3:		PACE JOB # 3:	
ZIP CODE:	06512	COUNTY:	NEW HAVEN	MSA / RSA:		ORACLE PTN # 4:		PACE JOB # 4:	
LATITUDE (D-M-S):	41d 17m 45.57084s	LONGITUDE (D-M-S):	-72d -53m -52.59516s	LAT (DEC. DEG.):	41.2959919	SEARCH RING NAME:			
DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:	2037 NEW HAVEN CONTRUCTION WHEELER STREET.. I 95 SOUTH TO EXIT 51 TURN RIGHT AT 5TH LIGHT DEMARC IS LOCATED INSIDE SHELTERSPAN# (GSM) ET61-HCGS238851 ET183-HCGS238852 ET247-HCGS732904(UMTS) SITE ON FIBERMETER: UNITED ILLUMINATING #041026272AT&T IS RESPONSIBLE FOR SITE OVERGROWTH					SEARCH RING ID:		CASPR INITIATIVE # 1:	
						BTA:		CASPR INITIATIVE # 2:	
						LONG (DEC. DEG.):	-72.8979431	CASPR INITIATIVE # 3:	
						BORDER CELL WITH CONTOUR COORD:		CASPR INITIATIVE # 4:	
						AM STUDY REQ'D (Y/N):	No		
						FREQ COORD:			

Section 3 - LICENSE COVERAGE/FILING INFORMATION

CGSA - NO FILING TRIGGERED (Yes/No):	No	CGSA LOSS:		PCS REDUCED - UPS ZIP:		CGSA CALL SIGNS:	
CGSA - MINOR FILING NEEDED (Yes/No)::	No	CGSA EXT AGMT NEEDED:		PCS POPS REDUCED:			
CGSA - MAJOR FILING NEEDED (Yes/No):	Yes	CGSA SCORECARD UPDATED:					

Section 4 - TOWER/REGULATORY INFORMATION

STRUCTURE AT&T OWNED?:	Yes	GROUND ELEVATION (ft):	0	STRUCTURE TYPE:	MONOPOLE	MARKET LOCATION 700 MHz Band:		
ADDITIONAL REGULATORY?:	Yes	HEIGHT OVERALL (ft):	0.00	FCC ASR NUMBER:	NR	MARKET LOCATION 850 MHz Band:		
SUB-LEASE RIGHTS?:	Yes	STRUCTURE HEIGHT (ft):	0.00			MARKET LOCATION 1900 MHz Band:		
LIGHTING TYPE:	NOT REQUIRED					MARKET LOCATION AWS Band:		
						MARKET LOCATION WCS Band:		
						MARKET LOCATION Future Band:		

Section 5 - E-911 INFORMATION - existing

		PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:
SECTOR A	E-911	CONNECTICUT STATE POLICE-G TROOP	1319		INTRADO_MIAMI				
SECTOR B		CONNECTICUT STATE POLICE-G TROOP	1319		INTRADO_MIAMI				
SECTOR C		CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO_MIAMI				
SECTOR D		CONNECTICUT STATE POLICE-G TROOP	1319		INTRADO				
SECTOR E		CONNECTICUT STATE POLICE-G TROOP	1319		INTRADO				
SECTOR F		CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO				
OMNI									

Section 5 - E-911 INFORMATION - final

		PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:
SECTOR A	E-911	CONNECTICUT STATE POLICE-G TROOP	1319		INTRADO_MIAMI				
SECTOR B		CONNECTICUT STATE POLICE-G TROOP	1319		INTRADO_MIAMI				
SECTOR C		CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO_MIAMI				
SECTOR D		CONNECTICUT STATE POLICE-G TROOP	1319		INTRADO				
SECTOR E		CONNECTICUT STATE POLICE-G TROOP	1319		INTRADO				
SECTOR F		CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO				
OMNI									

Section 6 - RBS GENERAL INFORMATION - existing

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	UMTS 4TH RBS	UMTS 5TH RBS	UMTS 6TH RBS	LTE 1ST RBS	LTE 2ND RBS	LTE 3RD RBS	LTE 4TH RBS
RBS ID:	99915	99916	172557	247012					366015			
CTS COMMON ID:	049D2037	318D2037	CTU2037	CTV2037					CTL02037			
BTA/TID:	049G	049P	318V	318U					318L			
4-DIGIT SITE ID:	2037	2037	2037	2037					2037			
COW OR TOY?:	No	No	No	No					No			
CELL SITE TYPE:												
SITE TYPE:												
BTS LOCATION ID:												
ORIGINATING CO:												
CELLULAR NETWORK:												
OPS DISTRICT:	SOUTH		CT SOUTH-EAST						CT SOUTH-EAST			
RF DISTRICT:	SOUTH											
OPS ZONE:	NE_CT_S_NHVN_SE_CS		NE_CT_S_NHVN_SE_CS						NE_CT_S_NHVN_SE_CS			
RF ZONE:	BCT05 - NEW HAVEN											
BASE STATION TYPE:												
EQUIPMENT NAME:	NEW HAVEN WHEELER ST	NEW HAVEN WHEELER ST	NEW HAVEN WHEELER ST	NEW HAVEN - WHEELER ST					NEW HAVEN WHEELER ST			
DISASTER PRIORITY:												

Section 6 - RBS GENERAL INFORMATION - final

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	UMTS 4TH RBS	UMTS 5TH RBS	UMTS 6TH RBS	LTE 1ST RBS	LTE 2ND RBS	LTE 3RD RBS	LTE 4TH RBS
RBS ID:	99915	99916	172557	247012					RFDS_10967399	RFDS_10967402		
CTS COMMON ID:	049D2037	318D2037	CTU2037	CTV2037					CTL02037	CTL06037R		
BTA/TID:	049G	049P	318V	318U					318L	318L		
4-DIGIT SITE ID:	2037	2037	2037	2037					2037	6037		
COW OR TOY?:	No	No	No	No					No	No		
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED					SECTORIZED	SECTORIZED		
SITE TYPE:	BTS-CONVENTIONAL	BTS-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL					MACRO-CONVENTIONAL	MACRO-CONVENTIONAL		
BTS LOCATION ID:	GROUND	GROUND	INTERNAL	INTERNAL					INTERNAL	INTERNAL		
ORIGINATING CO:	CINGULAR	CINGULAR	CINGULAR	CINGULAR					CINGULAR	CINGULAR		
CELLULAR NETWORK:	GOLD	GOLD	GOLD	GOLD					GOLD	GOLD		
OPS DISTRICT:		CT-South		CT-South					CT-South	CT-South		
RF DISTRICT:		NPO Triage	NPO Triage	Bridgeport					NPO Triage	NPO Triage		
OPS ZONE:		NE_CT_S_NHVN_SE_CS		NE_CT_S_NHVN_SE_CS					NE_CT_S_NHVN_SE_CS	NE_CT_S_NHVN_SE_CS		
RF ZONE:		Hotseat	Hotseat	BBP04					Hotseat	Hotseat		
BASE STATION TYPE:	BASE	BASE	BASE	OVERLAY					BASE	BASE		
EQUIPMENT NAME:	NEW HAVEN WHEELER ST	NEW HAVEN WHEELER ST	NEW HAVEN WHEELER ST	NEW HAVEN - WHEELER ST					NEW HAVEN WHEELER ST	NEW HAVEN WHEELER ST		
DISASTER PRIORITY:	0	0	2	0					3	3		

Section 7 - RBS SPECIFIC INFORMATION - existing

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	UMTS 4TH RBS	UMTS 5TH RBS	UMTS 6TH RBS	LTE 1ST RBS	LTE 2ND RBS	LTE 3RD RBS	LTE 4TH RBS
MSC												
BSC/RNC/MME POOL ID									FF01			
LAC	05013	05013	05992	05992								
RAC												
EQUIPMENT VENDOR												
EQUIPMENT TYPE	ULTRASITE	ULTRASITE										
LOCATION												
CABINET LOCATION												
MARKET STATE CODE												
AGPS	Yes	Yes	Yes	Yes					Yes			
NODE B NUMBER									2037			
PARENT NAME	BRPTCTBSC04	BRPTCTBSC04	BRPTCT04CR0R04	BRPTCT04CR0R04					FF01			

Section 7 - RBS SPECIFIC INFORMATION - final

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	UMTS 4TH RBS	UMTS 5TH RBS	UMTS 6TH RBS	LTE 1ST RBS	LTE 2ND RBS	LTE 3RD RBS	LTE 4TH RBS
MSC												
BSC/RNC/MME POOL ID	BRPTCTBSC04	BRPTCTBSC04	BRPTCT04CR0R04	BRPTCT04CR0R04					FF01	FF01		
LAC	05013	05013	05992	05992								
RAC												
EQUIPMENT VENDOR	NOKIA	NOKIA	ERICSSON	ERICSSON					ERICSSON	ERICSSON		
EQUIPMENT TYPE	ULTRASITE	ULTRASITE	3206 INDOOR	3206 INDOOR					6601 INDOOR MU	6601 INDOOR MU		
LOCATION												
CABINET LOCATION												
MARKET STATE CODE									CT	CT		
AGPS	Yes	Yes	Yes	Yes					Yes	Yes		
NODE B NUMBER			0						2037	6037		
PARENT NAME	BRIDGEPORT BSC 04	BRIDGEPORT BSC 04	BRIDGEPORT CT RNC004	BRIDGEPORT CT RNC004								

Section 8 - RBS INDIVIDUAL INFORMATION - existing

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 1ST FUTURE		
RBS ID:	99915	99916			247012	172557	247012										366015		366015					
CELL ID/BCF:	049D2037	049D2037			CTU2037	CTU2037	CTU2037										CTL02037		CTL02037					
CTS COMMON ID:	049D2037	318D2037			CTV2037	CTU2037	CTV2037										CTL02037		CTL02037					
																	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 2ND FUTURE		
RBS ID:																								
CELL ID/BCF:																								
CTS COMMON ID:																								

Section 8 - RBS INDIVIDUAL INFORMATION - final

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 1ST FUTURE		
RBS ID:	99915	99916			247012	172557	247012	172557									RFDS_10967399		RFDS_10967400		RFDS_10967401			
CELL ID/BCF:	049D2037	049D2037			CTU2037	CTU2037	CTU2037	CTU2037									CTL02037		CTL02037		CTL02037			
CTS COMMON ID:	049D2037	318D2037			CTV2037	CTU2037	CTV2037	CTU2037									CTL02037		CTL02037		CTL02037			
																	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 2ND FUTURE		
RBS ID:																	RFDS_10967402		RFDS_10967403		RFDS_10967404			
CELL ID/BCF:																	CTL06037R		CTL06037R		CTL06037R			
CTS COMMON ID:																	CTL06037R		CTL06037R		CTL06037R			

Section 9 - SOFT SECTOR ID - existing

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 1ST FUTURE		
USEID (excluding Hard Sector)	61168.850.25G.1	61168.1900.25G.1			61168.850.3G.1	61168.1900.3G.1	61168.850.3G.2										61168.700.4G.1		61168.1900.4G.1					
SECTOR A SOFT SECTOR ID	318G20371	318P20371			CTV20371	CTU20377	CTV2037A										CTL02037_7A_1		CTL02037_9A_1					
SECTOR B	318G20372	318P20372			CTV20372	CTU20378	CTV2037B										CTL02037_7B_1		CTL02037_9B_1					
SECTOR C	318G20373	318P20373			CTV20373	CTU20379	CTV2037C										CTL02037_7C_1		CTL02037_9C_1					
SECTOR D						CTU20374																		
SECTOR E						CTU20375																		
SECTOR F						CTU20376																		
OMNI																								
																	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 2ND FUTURE		
USEID (excluding Hard Sector)																								
SECTOR A SOFT SECTOR ID																								
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 9 - SOFT SECTOR ID - final

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 1ST FUTURE		
USEID (excluding Hard Sector)	61168.850.25G.1	61168.1900.25G.1			61168.850.3G.1	61168.1900.3G.1	61168.850.3G.2	61168.1900.3G.2									61168.700.4G.111		61168.1900.4G.111		61168.WCS.4G.111			
SECTOR A SOFT SECTOR ID	318G20371	318P20371			CTV20371	CTU20377	CTV2037A	CTU20374																
SECTOR B	318G20372	318P20372			CTV20372	CTU20378	CTV2037B	CTU20375									CTL02037_7B_1		CTL02037_9B_1		CTL02037_3B_1			
SECTOR C	318G20373	318P20373			CTV20373	CTU20379	CTV2037C	CTU20376									CTL02037_7C_1		CTL02037_9C_1		CTL02037_3C_1			
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								
																	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 2ND FUTURE		
USEID (excluding Hard Sector)																	61168.700.4G.222		61168.1900.4G.222		61168.WCS.4G.222			
SECTOR A SOFT SECTOR ID																	CTL06037_7A_1		CTL06037_9A_1		CTL06037_3A_1			
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 9 - SOFT SECTOR CELL NUMBER - existing

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 1ST FUTURE		
USEID (excluding Hard Sector)	61168.850.25G.1	61168.1900.25G.1			61168.850.3G.1	61168.1900.3G.1	61168.850.3G.2										61168.700.4G.1		61168.1900.4G.1					
SECTOR A CELL NUMBER																	15		8					
SECTOR B																	16		9					
SECTOR C																	17		10					
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								
																	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 2ND FUTURE		
USEID (excluding Hard Sector)																								
SECTOR A CELL NUMBER																								
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 9 - SOFT SECTOR CELL NUMBER - final

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 1ST FUTURE		
USEID (excluding Hard Sector)	61168.850.25G.1	61168.1900.25G.1			61168.850.3G.1	61168.1900.3G.1	61168.850.3G.2	61168.1900.3G.2									61168.700.4G.111		61168.1900.4G.111		61168.WCS.4G.111			
SECTOR A CELL NUMBER						0		0																
SECTOR B						0		0									16		9		150			
SECTOR C						0		0									17		10		151			
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								
																	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 2ND FUTURE		
USEID (excluding Hard Sector)																	61168.700.4G.222		61168.1900.4G.222		61168.WCS.4G.222			
SECTOR A CELL NUMBER																	15		8		149			
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 10 - CID/SAC - existing

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900								
SECTOR A CID/SAC	20371	20371			20371	20377	60371																	
SECTOR B	20372	20372			20372	20378	60372																	
SECTOR C	20373	20373			20373	20379	60373																	
SECTOR D						20374																		
SECTOR E						20375																		
SECTOR F						20376																		
OMNI																								

Section 10 - CID/SAC - final

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900								
SECTOR A CID/SAC	20371	20371			20371	20377	60371	20374																
SECTOR B	20372	20372			20372	20378	60372	20375																
SECTOR C	20373	20373			20373	20379	60373	20376																
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 11 - CURRENT RADIO COUNTS existing

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 1ST FUTURE		
SECTOR A RADIO COUNTS																								
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								
																	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 2ND FUTURE		
SECTOR A RADIO COUNTS																								
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 12 - CURRENT T1 COUNTS existing

	GSM 1st Cabinet	GSM 2nd Cabinet	UMTS 1st Cabinet	UMTS 2nd Cabinet	UMTS 3rd Cabinet	UMTS 4th Cabinet	UMTS 5th Cabinet	UMTS 6th Cabinet	LTE 1st Cabinet	LTE 2nd Cabinet	LTE 3rd Cabinet	LTE 4th Cabinet
# T1s												
LINK PROFILE												
RF COMBINING												
FIBER or ETHERNET?												
Tx Board Model												
Tx Board QTY												
RAX/ECU Board Model												
RAX/ECU Board QTY												
BBU Board Model												
BBU Board QTY												
RRU - location												
FIBER JUMPER												
DC CABLE												
DC/Fiber Dem. Box												
Bundled Fiber Cable												
Bundled DC Cable												

Section 13 - NEW/PROPOSED RADIO COUNTS

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 1ST FUTURE		
SECTOR A RADIO COUNTS																								
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								
																	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 2ND FUTURE		
SECTOR A RADIO COUNTS																								
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 14 - NEW/PROPOSED T1 COUNTS

	GSM 1st Cabinet	GSM 2nd Cabinet	UMTS 1st Cabinet	UMTS 2nd Cabinet	UMTS 3rd Cabinet	UMTS 4th Cabinet	UMTS 5th Cabinet	UMTS 6th Cabinet	LTE 1st Cabinet	LTE 2nd Cabinet	LTE 3rd Cabinet	LTE 4th Cabinet
# T1s												
LINK PROFILE												
RF COMBINING												
FIBER or ETHERNET?												
Tx Board Model												
Tx Board QTY												
RAX/ECU Board Model												
RAX/ECU Board QTY												
BBU Board Model												
BBU Board QTY												
RRU - location												
FIBER JUMPER												
DC CABLE												
DC/Fiber Dem. Box												
Bundled Fiber Cable												
Bundled DC Cable												

Section 15A - CURRENT SECTOR/CELL INFORMATION - SECTOR A (OR OMNI)

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	7750				AM-X-CD-14-65-00T-RET		7750							
ANTENNA VENDOR	POWERWAVE				KMW		POWERWAVE							
ANTENNA SIZE (H x W x D)	57X11X5				48X11.8X5.9		57X11X5							
ANTENNA WEIGHT	35				36.4		35							
AZIMUTH	180				50		180							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	91				91		91							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	3				0		3							
FEEDER AMOUNT	2						2							
Antenna RET Motor (QTY/MODEL)	2	Kathrein 860-10025				Internal	2	Kathrein 860-10025						
SURGE ARRESTOR (QTY/MODEL)					1	DC/Fiber Squid	1	Polyphaser 1000860						
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901					4	Powerwave / LGP 21901						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)						LTE RRH	1	Kathrein / 860-10006						
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	Powerwave LGP 21401 (DB - 850 Bypass)												
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860												
PDU FOR TMAS (QTY/MODEL)	1	LGP 12104 (1900 AND 850 Bypass TMA)												
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)					1	RRUS-11								
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)					1	RRUS-11								
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)							2	Pwav 1001983 (1) & 1001940 (1)						
Additional Component2 (QTY/MODEL)														
Additional Component3 (QTY/MODEL)														
Local Market Note1														
Local Market Note2	LTE alpha is with UMTS Gamma Face // LTE Beta is with UMTS Alpha Face // LTE Gamma is with UMTS Beta Face													
Local Market Note3														

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		61168.A.850.3G.1	CTV20371			UMTS 850	7750.00.800.04	14.5		5	None	7/8 at 850 MHz	120.03				NO				
	PORT 2		61168.A.850.3G.2	CTV2037A			UMTS 850	7750.00.800.04	14.5		5	Bottom	7/8 at 850 MHz	120.03				NO				
	PORT 3		61168.A.1900.3G.1	CTU20377			UMTS 1900	7750.00.1900.00	17.7		0	None	7/8 at 1900 MHz	120.03				NO				
	PORT 4		61168.A.1900.3G.2	CTU20374			UMTS 1900	7750.00.1900.00	17.7		0	Bottom	7/8 at 1900 MHz	120.03				NO				
ANTENNA POSITION 3	PORT 1		61168.A.700.4G.1	CTL02037_7A_1			LTE 700	AM-X-CD-14-65-00T-RET_725MHz_03DT	14.1		3	Top	FIBER	0								
	PORT 3		61168.A.1900.4G.1	CTL02037_9A_1			LTE 1900	AM-X-CD-14-65-00T-RET_1930MHz_03DT	14.1		3	Top	FIBER	0								
ANTENNA POSITION 4	PORT 1		61168.A.850.25G.1	318G20371			GSM 850	7750.00.800.04	14.5		5	None	7/8 at 850 MHz	120.03				NO	11.22	162.92		

Section 15B - CURRENT SECTOR/CELL INFORMATION - SECTOR B

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	7750				AM-X-CD-16-65-00T-RET		7750							
ANTENNA VENDOR	POWERWAVE				KMW		POWERWAVE							
ANTENNA SIZE (H x W x D)	57X11X5				72X11.8X5.9		57X11X5							
ANTENNA WEIGHT	35				48.5		35							
AZIMUTH	300				180		300							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	91				91		91							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	3				0		3							
FEEDER AMOUNT	2						2							
Antenna RET Motor (QTY/MODEL)	2	Kathrein 860-10025				Internal	2	Kathrein 860-10025						
SURGE ARRESTOR (QTY/MODEL)							2	Polyphaser 1000860						
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901					4	Powerwave / LGP 21901						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)						LTE RRH								
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	Powerwave LGP 21401 (DB - 850 Bypass)												
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860												
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)					1	RRUS-11								
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)					1	RRUS-11								
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)														
Additional Component2 (QTY/MODEL)														
Additional Component3 (QTY/MODEL)														
Local Market Note1														
Local Market Note2	LTE alpha is with UMTS Gamma Face // LTE Beta is with UMTS Alpha Face // LTE Gamma is with UMTS Beta Face													
Local Market Note3														

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		61168.B.850.3G.1	CTV20372			UMTS 850	7750.00.800.02	14.5		2	None	7/8 at 850 MHz	120.03				NO				
	PORT 2		61168.B.850.3G.2	CTV2037B			UMTS 850	7750.00.800.02	14.5		2	Bottom	7/8 at 850 MHz	120.03				NO				
	PORT 3		61168.B.1900.3G.1	CTU20378			UMTS 1900	7750.00.1900.00	17.7		0	None	7/8 at 1900 MHz	120.03				NO				
	PORT 4		61168.B.1900.3G.2	CTU20375			UMTS 1900	7750.00.1900.00	17.7		0	Bottom	7/8 at 1900 MHz	120.03				NO				
ANTENNA POSITION 3	PORT 1		61168.B.700.4G.1	CTL02037_7B_1			LTE 700	AM-X-CD-16-65-00T-RET_725MHz_03DT	15.6		3	Top	FIBER	0								
	PORT 3		61168.B.1900.4G.1	CTL02037_9B_1			LTE 1900	AM-X-CD-16-65-00T-RET_1930MHz_03DT	15.6		3	Top	FIBER	0								
ANTENNA POSITION 4	PORT 1		61168.B.850.25G.1	318G20372			GSM 850	7750.00.800.02	14.5		2	None	7/8 at 850 MHz	120.03				NO	11.22	162.92		

Section 15C - CURRENT SECTOR/CELL INFORMATION - SECTOR C

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	7750				AM-X-CD-16-65-00T-RET		7750							
ANTENNA VENDOR	POWERWAVE				KMW		POWERWAVE							
ANTENNA SIZE (H x W x D)	57X11X5				72X11.8X5.9		57X11X5							
ANTENNA WEIGHT	35				48.5		35							
AZIMUTH	50				300		50							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	91				91		91							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0				0		0							
FEEDER AMOUNT	2						2							
Antenna RET Motor (QTY/MODEL)	2	Kathrein 860-10025				Internal	2	Kathrein 860-10025						
SURGE ARRESTOR (QTY/MODEL)							2	Polyphaser 1000860						
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901					4	Powerwave / LGP 21901						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)						LTE RRH								
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	Powerwave LGP 21401 (DB - 850 Bypass)												
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860												
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)					1	RRUS-11								
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)					1	RRUS-11								
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)														
Additional Component2 (QTY/MODEL)														
Additional Component3 (QTY/MODEL)														
Local Market Note1														
Local Market Note2	LTE alpha is with UMTS Gamma Face // LTE Beta is with UMTS Alpha Face // LTE Gamma is with UMTS Beta Face													
Local Market Note3														

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		61168.C.850.3G.1	CTV20373			UMTS 850	7750.00.800.02	14.5		2	None	7/8 at 850 MHz	120.03				NO				
	PORT 2		61168.C.850.3G.2	CTV2037C			UMTS 850	7750.00.800.02	14.5		2	Bottom	7/8 at 850 MHz	120.03				NO				
	PORT 3		61168.C.1900.3G.1	CTU20379			UMTS 1900	7750.00.1900.00	17.7		0	None	7/8 at 1900 MHz	120.03				NO				
	PORT 4		61168.C.1900.3G.2	CTU20376			UMTS 1900	7750.00.1900.00	17.7		0	Bottom	7/8 at 1900 MHz	120.03				NO				
ANTENNA POSITION 3	PORT 1		61168.C.700.4G.1	CTL02037_7C_1			LTE 700	AM-X-CD-16-65-00T-RET_725MHz_05DT	15.6		5	Top	FIBER	0								
	PORT 3		61168.C.1900.4G.1	CTL02037_9C_1			LTE 1900	AM-X-CD-16-65-00T-RET_1930MHz_05DT	15.6		5	Top	FIBER	0								
ANTENNA POSITION 4	PORT 1		61168.C.850.25G.1	318G20373			GSM 850	7750.00.800.02	14.5		2	None	7/8 at 850 MHz	120.03				NO	12.58	182.81		

Section 16A - NEW/PROPOSED SECTOR/CELL INFORMATION - SECTOR A (OR OMNI)

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL		SBNHH-1D65A					
ANTENNA VENDOR		Andrew					
ANTENNA SIZE (H x W x D)		55X11.9X7.1					
ANTENNA WEIGHT		33.5					
AZIMUTH		50					
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		91					
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT		0					
FEEDER AMOUNT							
Antenna RET Motor (QTY/MODEL)		Internal					
SURGE ARRESTOR (QTY/MODEL)		1 DC/Fiber Squid					
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		LTE RRH					
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)		1 RRUS-32					
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component1 (QTY/MODEL)							
Additional Component2 (QTY/MODEL)							
Additional Component3 (QTY/MODEL)							
Local Market Note1	Bronze Standard - WCS will be the 3C at the site- Replace existing GSM Antenna with Hex 4' on Alpha while 6' on Beta and Gamma. Install at Pos 2- Add WCS RRUS - 32- Add 1 Fiber/DC Squid- Add 1 Fiber and 2 DC trunks- Remove GSM Diplexers from top- Connect GSM to 850 ports of Hex Ant- Connect the RET cable directly to the UMTS ANT.- DUL to DUS upgrade- Add 2nd DUS						
Local Market Note2	LTE alpha is with UMTS Gamma Face // LTE Beta is with UMTS Alpha Face // LTE Gamma is with UMTS Beta Face						
Local Market Note3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 2	PORT 3		61168.A.WCS.4G.1	CTL02037_3A_1			LTE WCS	SBNHH-1D65A_2355MHz_03DT	17.3		3	Top	FIBER	0								

Section 16B - NEW/PROPOSED SECTOR/CELL INFORMATION - SECTOR B

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL		HPA-65R-BUU-H6					
ANTENNA VENDOR		CCI Products					
ANTENNA SIZE (H x W x D)		72X14.8X9					
ANTENNA WEIGHT		50.7					
AZIMUTH		180					
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		91					
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT		0					
FEEDER AMOUNT							
Antenna RET Motor (QTY/MODEL)		Internal					
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		LTE RRH					
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)		1 RRUS-32					
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component1 (QTY/MODEL)							
Additional Component2 (QTY/MODEL)							
Additional Component3 (QTY/MODEL)							
Local Market Note1	Bronze Standard - WCS will be the 3C at the site- Replace existing GSM Antenna with Hex 4' on Alpha while 6' on Beta and Gamma. Install at Pos 2- Add WCS RRUS - 32- Add 1 Fiber/DC Squid- Add 1 Fiber and 2 DC trunks- Remove GSM Diplexers from top- Connect GSM to 850 ports of Hex Ant- Connect the RET cable directly to the UMTS ANT.- DUL to DUS upgrade- Add 2nd DUS						
Local Market Note2	LTE alpha is with UMTS Gamma Face // LTE Beta is with UMTS Alpha Face // LTE Gamma is with UMTS Beta Face						
Local Market Note3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 2	PORT 3		61168.B.WCS.4G.1	CTL02037_3B_1			LTE WCS	HPA-65R-BUU-H6_2360MHz_03DT	17.45		3	Top	FIBER	0								

Section 16C - NEW/PROPOSED SECTOR/CELL INFORMATION - SECTOR C

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL		HPA-65R-BUU-H6					
ANTENNA VENDOR		CCI Products					
ANTENNA SIZE (H x W x D)		72X14.8X9					
ANTENNA WEIGHT		50.7					
AZIMUTH		300					
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		91					
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT		0					
FEEDER AMOUNT							
Antenna RET Motor (QTY/MODEL)		Internal					
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		LTE RRH					
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)		1 RRUS-32					
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component1 (QTY/MODEL)							
Additional Component2 (QTY/MODEL)							
Additional Component3 (QTY/MODEL)							
Local Market Note1	Bronze Standard - WCS will be the 3C at the site- Replace existing GSM Antenna with Hex 4' on Alpha while 6' on Beta and Gamma. Install at Pos 2- Add WCS RRUS - 32- Add 1 Fiber/DC Squid- Add 1 Fiber and 2 DC trunks- Remove GSM Diplexers from top- Connect GSM to 850 ports of Hex Ant- Connect the RET cable directly to the UMTS ANT.- DUL to DUS upgrade- Add 2nd DUS						
Local Market Note2	LTE alpha is with UMTS Gamma Face // LTE Beta is with UMTS Alpha Face // LTE Gamma is with UMTS Beta Face						
Local Market Note3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 2	PORT 3		61168.C.WCS.4G.1	CTL02037_3C_1			LTE WCS	HPA-65R-BUU-H6_2360MHz_03DT	17.45		3	Top	FIBER	0								

Section 17A - FINAL SECTOR/CELL INFORMATION - SECTOR A (OR OMNI)

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	7750		SBNHH-1D65A		AM-X-CD-14-65-00T-RET									
ANTENNA VENDOR	POWERWAVE		Andrew		KMW									
ANTENNA SIZE (H x W x D)	57X11X5		55X11.9X7.1		48X11.8X5.9									
ANTENNA WEIGHT	35		33.5		36.4									
AZIMUTH	180		50		50									
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	91		91		91									
ANTENNA TIP HEIGHT	93		93		93									
MECHANICAL DOWNTILT	3		0		0									
FEEDER AMOUNT	2		Fiber + 2 Coax											
Antenna RET Motor (QTY/MODEL)	2	Kathrein 860-10025		Internal		Internal								
SURGE ARRESTOR (QTY/MODEL)			2	DC/Fiber Squid (1) + Polyphaser 1000860 (1)	1	DC/Fiber Squid								
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901	2	Powerwave / LGP 21901										
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)	1	Kathrein / 860-10006		LTE RRH		LTE RRH								
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	Powerwave LGP 21401 (DB - 850 Bypass)												
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860												
PDU FOR TMAS (QTY/MODEL)	1	LGP 12104 (1900 AND 850 Bypass TMA)												
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)					1	RRUS-11								
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)					1	RRUS-11								
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)			1	RRUS-32										
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)			2	Pwav 1001983 (1) & 1001940 (1)										
Additional Component2 (QTY/MODEL)														
Additional Component3 (QTY/MODEL)														
Local Market Note1	Bronze Standard - WCS will be the 3C at the site - Replace existing GSM Antenna with Hex 4' on Alpha while 6' on Beta and Gamma. Install at Pos 2 - Add WCS RRUS - 32 - Add 1 Fiber/DC Squid - Add 1 Fiber and 2 DC trunks - Remove GSM Diplexers from top - Connect GSM to 850 ports of Hex Ant - Connect the RET cable directly to the UMTS ANT. - DUL to DUS upgrade - Add 2nd DUS													
Local Market Note2	LTE alpha is with UMTS Gamma Face // LTE Beta is with UMTS Alpha Face // LTE Gamma is with UMTS Beta Face													
Local Market Note3														

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	61168.A.850.3G.1	61168.A.850.3G.1	CTV20371	CTV20371		UMTS 850	7750.00.800.04	14.5	180	5	None	7/8 at 850 MHz	120.03		0		NO		356.45	1	
	PORT 2	61168.A.850.3G.2	61168.A.850.3G.2	CTV20371	CTV2037A		UMTS 850	7750.00.800.04	14.5	180	5	Bottom	7/8 at 850 MHz	120.03		0		NO		356.45	2	
	PORT 3	61168.A.1900.3G.1	61168.A.1900.3G.1	CTU20377	CTU20377		UMTS 1900	7750.00.1900.00	17.7	180	0	None	7/8 at 850 MHz	120.03		0		NO		524.81	1	
	PORT 4	61168.A.1900.25G.1,61168.A.1900.3G.2	61168.A.1900.3G.2	CTU20377	CTU20374		UMTS 1900	7750.00.1900.00	17.7	180	0	Bottom	7/8 at 850 MHz	120.03		0		NO		912.01	2	
ANTENNA POSITION 2	PORT 1	61168.A.850.25G.1	61168.A.850.25G.1	318G20371	318G20371		GSM 850	SBNHH-1D65A_851MHz_05DT	12.9	50	5	None	7/8 at 850 MHz	120.03				NO	11.22	162.92	4	
	PORT 3	61168.A.WCS.4G.222	61168.A.WCS.4G.1	CTL06037_3A_1	CTL06037_3A_1		LTE WCS	SBNHH-1D65A_2355MHz_03DT	17.3	50	3	Top	FIBER	0						1093.9563	3	
ANTENNA POSITION 3	PORT 1	61168.A.700.4G.222	61168.A.700.4G.1	CTL06037_7A_1	CTL06037_7A_1		LTE 700	AM-X-CD-14-65-00T-RET_725MHz_03DT	14.1	50	3	Top	FIBER	0						792.5013	5	
	PORT 3	61168.A.1900.4G.222	61168.A.1900.4G.1	CTL06037_9A_1	CTL06037_9A_1		LTE 1900	AM-X-CD-14-65-00T-RET_1930MHz_03DT	14.1	50	3	Top	FIBER	0						1733.8039	5	

Section 17B - FINAL SECTOR/CELL INFORMATION - SECTOR B

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	7750		HPA-65R-BUU-H6		AM-X-CD-16-65-00T-RET									
ANTENNA VENDOR	POWERWAVE		CCI Products		KMW									
ANTENNA SIZE (H x W x D)	57X11X5		72X14.8X9		72X11.8X5.9									
ANTENNA WEIGHT	35		50.7		48.5									
AZIMUTH	300		180		180									
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	91		91		91									
ANTENNA TIP HEIGHT	93		94		94									
MECHANICAL DOWNTILT	3		0		0									
FEEDER AMOUNT	2		Fiber + 2 Coax											
Antenna RET Motor (QTY/MODEL)	2	Kathrein 860-10025		Internal		Internal								
SURGE ARRESTOR (QTY/MODEL)			2	Polyphaser 1000860										
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901	2	Powerwave / LGP 21901										
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)				LTE RRH		LTE RRH								
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	Powerwave LGP 21401 (DB - 850 Bypass)												
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860												
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)					1	RRUS-11								
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)					1	RRUS-11								
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)			1	RRUS-32										
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)														
Additional Component2 (QTY/MODEL)														
Additional Component3 (QTY/MODEL)														
Local Market Note1	Bronze Standard - WCS will be the 3C at the site - Replace existing GSM Antenna with Hex 4' on Alpha while 6' on Beta and Gamma. Install at Pos 2 - Add WCS RRUS - 32 - Add 1 Fiber/DC Squid - Add 1 Fiber and 2 DC trunks - Remove GSM Diplexers from top - Connect GSM to 850 ports of Hex Ant - Connect the RET cable directly to the UMTS ANT. - DUL to DUS upgrade - Add 2nd DUS													
Local Market Note2	LTE alpha is with UMTS Gamma Face // LTE Beta is with UMTS Alpha Face // LTE Gamma is with UMTS Beta Face													
Local Market Note3														

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	61168.B.850.3G.1	61168.B.850.3G.1	CTV20372	CTV20372		UMTS 850	7750.00.800.02	14.5	300	2	None	7/8 at 850 MHz	120.03		0		NO		356.45	9	
	PORT 2	61168.B.850.3G.2	61168.B.850.3G.2	CTV20372	CTV2037B		UMTS 850	7750.00.800.02	14.5	300	2	Bottom	7/8 at 850 MHz	120.03		0		NO		356.45	10	
	PORT 3	61168.B.1900.3G.1	61168.B.1900.3G.1	CTU20378	CTU20378		UMTS 1900	7750.00.1900.00	17.7	300	0	None	7/8 at 850 MHz	120.03		0		NO		524.81	9	
	PORT 4	61168.B.1900.25G.1,61168.B.1900.3G.2	61168.B.1900.3G.2	CTU20378	CTU20375		UMTS 1900	7750.00.1900.00	17.7	300	0	Bottom	7/8 at 850 MHz	120.03		0		NO		912.01	10	
ANTENNA POSITION 2	PORT 1	61168.B.850.25G.1	61168.B.850.25G.1	318G20372	318G20372		GSM 850	HPA-65R-BUU-H6_849MHz_02DT	15.01	180	2	None	7/8 at 850 MHz	120.03				NO	11.22	162.92	12	
	PORT 3	61168.B.WCS.4G.111	61168.B.WCS.4G.1	CTL02037_3B_1	CTL02037_3B_1		LTE WCS	HPA-65R-BUU-H6_2360MHz_03DT	17.45	180	3	Top	FIBER	0						1183.0415	11	
ANTENNA POSITION 3	PORT 1	61168.B.700.4G.111	61168.B.700.4G.1	CTL02037_7B_1	CTL02037_7B_1		LTE 700	AM-X-CD-16-65-00T-RET_725MHz_03DT	15.6	180	3	Top	FIBER	0						1119.4378	13	
	PORT 3	61168.B.1900.4G.111	61168.B.1900.4G.1	CTL02037_9B_1	CTL02037_9B_1		LTE 1900	AM-X-CD-16-65-00T-RET_1930MHz_03DT	15.6	180	3	Top	FIBER	0						2182.7299	13	

Section 17C - FINAL SECTOR/CELL INFORMATION - SECTOR C

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	7750		HPA-65R-BUU-H6		AM-X-CD-16-65-00T-RET									
ANTENNA VENDOR	POWERWAVE		CCI Products		KMW									
ANTENNA SIZE (H x W x D)	57X11X5		72X14.8X9		72X11.8X5.9									
ANTENNA WEIGHT	35		50.7		48.5									
AZIMUTH	50		300		300									
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	91		91		91									
ANTENNA TIP HEIGHT	93		94		94									
MECHANICAL DOWNTILT	0		0		0									
FEEDER AMOUNT	2		Fiber + 2 Coax											
Antenna RET Motor (QTY/MODEL)	2	Kathrein 860-10025		Internal		Internal								
SURGE ARRESTOR (QTY/MODEL)			2	Polyphaser 1000860										
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901	2	Powerwave / LGP 21901										
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)				LTE RRH		LTE RRH								
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	Powerwave LGP 21401 (DB - 850 Bypass)												
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860												
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)					1	RRUS-11								
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)					1	RRUS-11								
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)			1	RRUS-32										
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)														
Additional Component2 (QTY/MODEL)														
Additional Component3 (QTY/MODEL)														
Local Market Note1	Bronze Standard - WCS will be the 3C at the site - Replace existing GSM Antenna with Hex 4' on Alpha while 6' on Beta and Gamma. Install at Pos 2 - Add WCS RRUS - 32 - Add 1 Fiber/DC Squid - Add 1 Fiber and 2 DC trunks - Remove GSM Diplexers from top - Connect GSM to 850 ports of Hex Ant - Connect the RET cable directly to the UMTS ANT. - DUL to DUS upgrade - Add 2nd DUS													
Local Market Note2	LTE alpha is with UMTS Gamma Face // LTE Beta is with UMTS Alpha Face // LTE Gamma is with UMTS Beta Face													
Local Market Note3														

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	61168.C.850.3G.1	61168.C.850.3G.1	CTV20373	CTV20373		UMTS 850	7750.00.800.02	14.5	50	2	None	7/8 at 850 MHz	120.03		0		NO		356.45	17	
	PORT 2	61168.C.850.3G.2	61168.C.850.3G.2	CTV20373	CTV2037C		UMTS 850	7750.00.800.02	14.5	50	2	Bottom	7/8 at 850 MHz	120.03		0		NO		356.45	18	
	PORT 3	61168.C.1900.3G.1	61168.C.1900.3G.1	CTU20379	CTU20379		UMTS 1900	7750.00.1900.00	17.7	50	0	None	7/8 at 850 MHz	120.03		0		NO		524.81	17	
	PORT 4	61168.C.1900.25G.1,61168.C.1900.3G.2	61168.C.1900.3G.2	CTU20379	CTU20376		UMTS 1900	7750.00.1900.00	17.7	50	0	Bottom	7/8 at 850 MHz	120.03		0		NO		912.01	18	
ANTENNA POSITION 2	PORT 1	61168.C.850.25G.1	61168.C.850.25G.1	318G20373	318G20373		GSM 850	HPA-65R-BUU-H6_849MHz_02DT	15.01	300	2	None	7/8 at 850 MHz	120.03				NO	12.58	182.81	20	
	PORT 3	61168.C.WCS.4G.111	61168.C.WCS.4G.1	CTL02037_3C_1	CTL02037_3C_1		LTE WCS	HPA-65R-BUU-H6_2360MHz_03DT	17.45	300	3	Top	FIBER	0						1183.0415	19	
ANTENNA POSITION 3	PORT 1	61168.C.700.4G.111	61168.C.700.4G.1	CTL02037_7C_1	CTL02037_7C_1		LTE 700	AM-X-CD-16-65-00T-RET_725MHz_05DT	15.6	300	5	Top	FIBER	0						1119.4378	21	
	PORT 3	61168.C.1900.4G.111	61168.C.1900.4G.1	CTL02037_9C_1	CTL02037_9C_1		LTE 1900	AM-X-CD-16-65-00T-RET_1930MHz_05DT	15.6	300	5	Top	FIBER	0						2182.7299	21	

Diagram - Sector	A	Diagram File Name - CT2037_A_LTE3CWCS_BrStd_Rev1.vsd					
Atoll Site Name -	CTU2037	Location Name -	NEW HAVEN WHEELER ST	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments:							

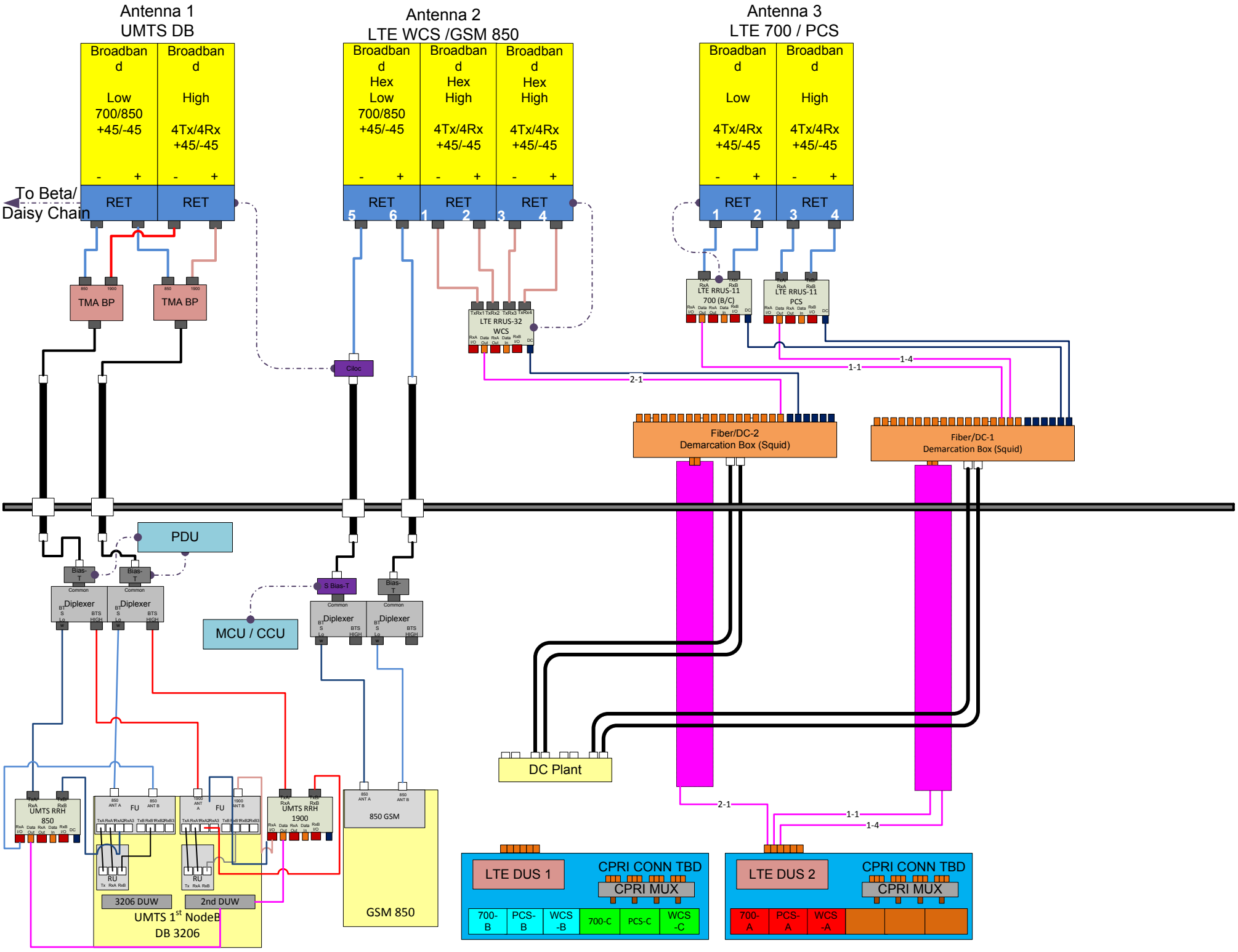
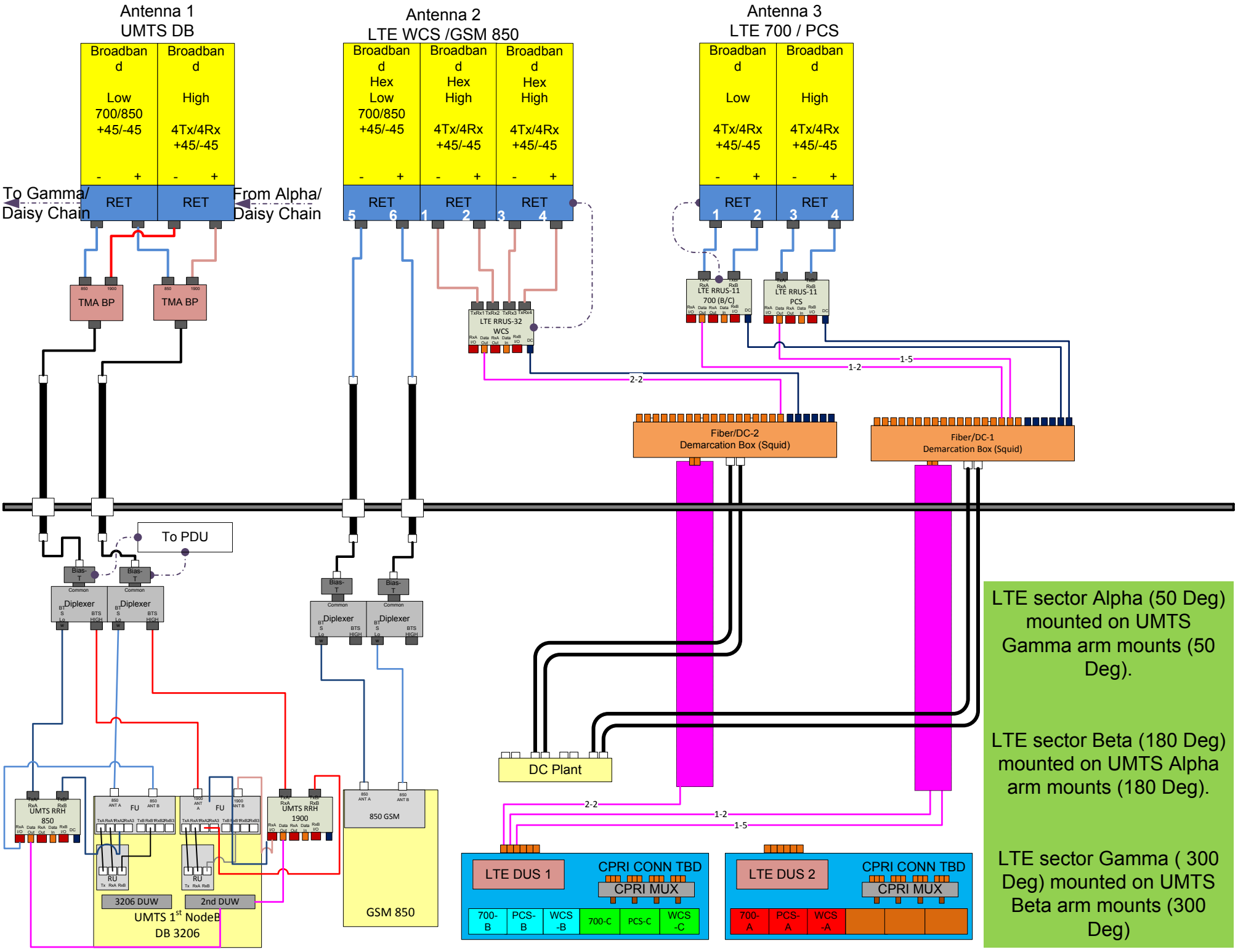


Diagram - Sector	B	Diagram File Name - CT2037_B_LTE3CWCS_BrStd_Rev1.vsd					
Atoll Site Name -	CTU2037	Location Name -	NEW HAVEN WHEELER ST	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments:							

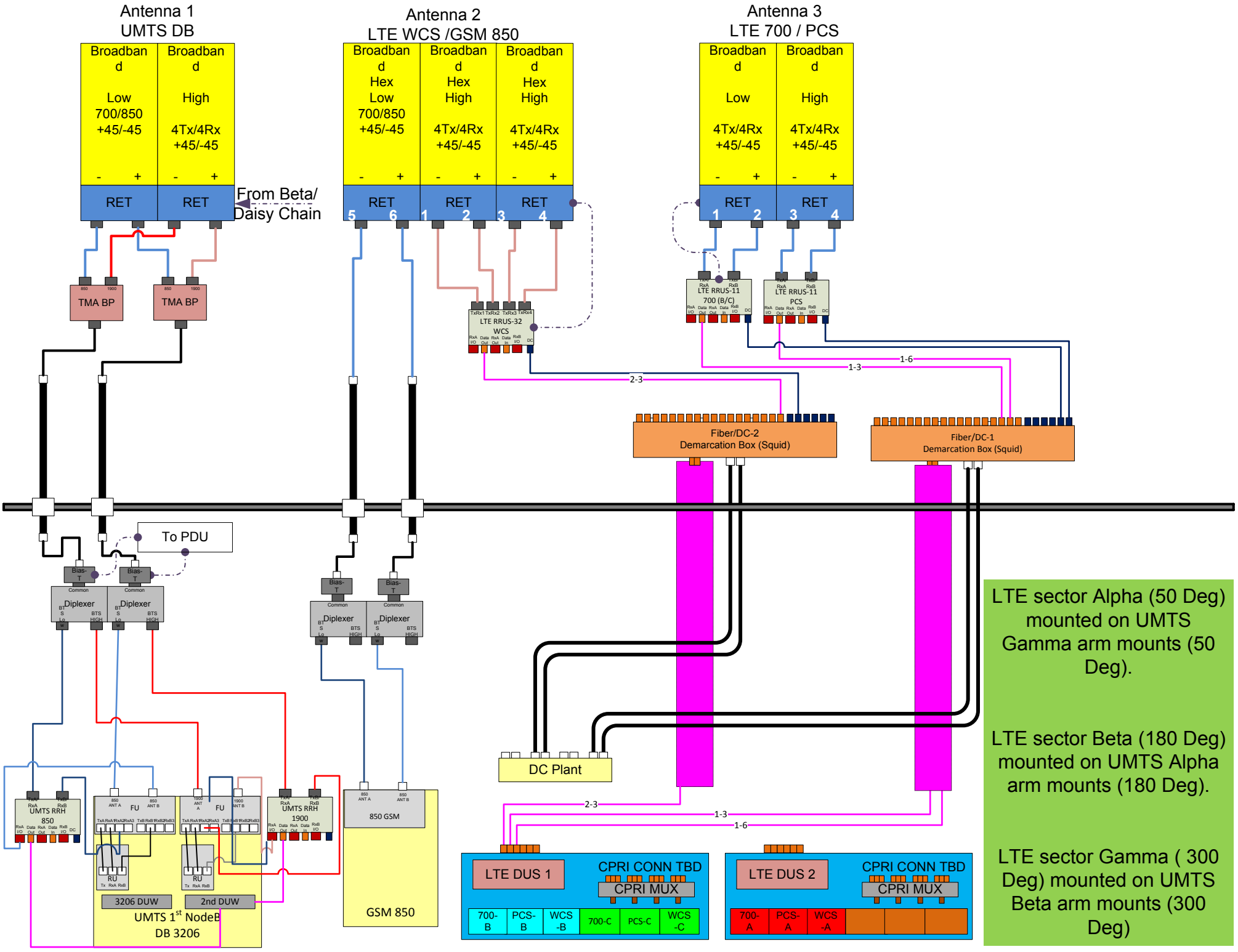


LTE sector Alpha (50 Deg) mounted on UMTS Gamma arm mounts (50 Deg).

LTE sector Beta (180 Deg) mounted on UMTS Alpha arm mounts (180 Deg).

LTE sector Gamma (300 Deg) mounted on UMTS Beta arm mounts (300 Deg)

Diagram - Sector	C	Diagram File Name - CT2037_C_LTE3CWCS_BrStd_Rev1.vsd					
Atoll Site Name -	CTU2037	Location Name -	NEW HAVEN WHEELER ST	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments:							



LTE sector Alpha (50 Deg) mounted on UMTS Gamma arm mounts (50 Deg).

LTE sector Beta (180 Deg) mounted on UMTS Alpha arm mounts (180 Deg).

LTE sector Gamma (300 Deg) mounted on UMTS Beta arm mounts (300 Deg)

WORKFLOW SUMMARY						
Date	FROM State / Status	FROM ATTUID	TO State / Status	TO ATTUID	Operation	Comments
09/17/2015	Preliminary / In Progress	om636a	Preliminary / Submitted for Approval	NA515M	Promote	LTE Preliminary RFDS
09/23/2015	Preliminary / Submitted for Approval	NA515M	Preliminary / Approved	BG144B	Promote	

CENTEK engineering

Centered on Solutions℠

February 11, 2013

Mr. Douglas Roberts
Pinnacle Wireless
800 Phelps Road
Windsor, Connecticut 06095

Re:	Post Modification Report
Project:	AT&T – CT2037 New Haven – Wheeler Street 69 Wheeler Street New Haven, Connecticut
Owner:	Laydon Construction 69 Wheeler Street, New Haven, CT 06512
Engineer:	Stuctural Components 2400 Central Ave. Suite A-1 South, Boulder, CO 80301
Contractor:	Construction Services of Branford, LLC 63-3 North Branford Road, Branford, CT 06405

Centek Project No.: 12033.CO23

Dear Mr. Roberts,

We are providing this "Post Modification Report" with regard to the structural modifications performed at the above referenced project.

The following are the basis for substantiating compliance with tower modification documents prepared by Structural Components (Job #120229) Modification Drawings T-1, PL-1, PL-2, S-1, D-1 thru D-4, D-M19, F-1, M-1 & M-2 all dated 4/11/2012:

- Field observations of post-installed anchor rod installation [refer to FVR dated 12/13/2012].
- Field observations of tower modifications [refer to FVR dated 12/19/2012].
- Field observations of completed site [refer to FVR dated 01/30/13].

The work under this Contract has been reviewed and found, to the Engineer's best knowledge, information and belief, to be completed in general compliance with the above referenced documents prepared by Structural Components.

Sincerely,

STATE OF CONNECTICUT
CARLO F. CENTORE
No. 18884
LICENSED
PROFESSIONAL ENGINEER

Carlo F. Centore, PE
Principal – Structural Engineer

Cc: File
Adrien Paradis –Construction Services of Branford, LLC (via email)

CENTEK engineering
Centered on Solutions℠

63-2 North Branford Road
Branford, Connecticut 06405
(203) 488-0580
Fax (203) 488-8587
www.CentekEng.com

F I E L D V I S I T R E P O R T

DATE: December 13, 2012 **TIME:** 2:00 PM

TO: Pinnacle Wireless **PHONE:** 774.406.9555
ATTN: Doug Roberts **EMAIL:** droberts@nexlinkgs.com

PREPARED BY: Dan Reid **PHONE:** 203.488.0580 ext. 151
EMAIL: dreid@centekeng.com

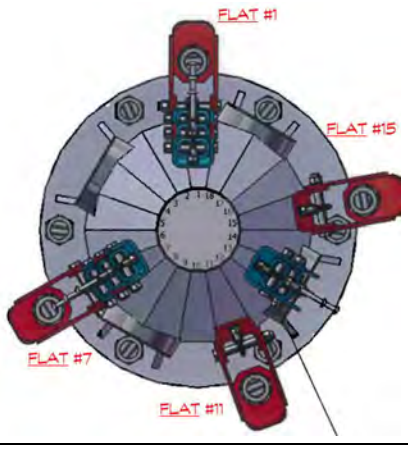
SUBMITTED BY: Carlo F. Centore, PE **PHONE:** 203.488.0580 ext. 122
EMAIL: cfcentore@centekeng.com

CENTEK NO.: 12033.C23

PROJECT NAME: AT&T CT2037 New Haven - Wheeler Street

CC: Adrien Paradis (Construction Services of Branford, LLC)

The following was observed, discussed, reviewed and/or resolved at the site, which requires action by the Contractor unless noted otherwise. Items shall remain on this ongoing report until resolved to the satisfaction of this office.

121312. 1	Purpose of field visit was to confirm compliance with the Structural Components (Job #120229) Anchor Foundation Details Drawing F-1 dated 4/11/2012 for installation of four (4) post-installed anchor rods.	
121312. 2	Weather conditions were clear with an afternoon temperature of 47ºF. The Contractor was on site readying the site for tower base modifications and installation of anchor rods.	
121312. 3	Anchor hole depths where confirmed as 4'-4" @ flats #7 & #11 and as 4'-2½" @ flats #1 & #15. All anchor holes were confirmed @ 3"Ø. The minimum design embedment depth of 4'-9" could not be achieved. Anchor core holes penetrated the bottom of the existing foundation. The EOR was notified of the field condition and verbal authorization to proceed was provided.	

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121312. 4	Anchor hole for anchor @ “Flat #7” (See note **121312.3** above).	
121312. 5	Anchor hole for anchor @ “Flat #11” (See note 121312.3 above).	
121312. 6	Anchor hole for anchor @ “Flat #15” (See note 121312.3 above).	
121312. 7	Anchor hole for anchor @ “Flat #1” (See note **121312.3** above).	

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121312. 8	Anchor rods confirmed as 2¾" Ø x 10'-0" long.	
121312. 9	(See note **121312.8** above)	
121312. 10	The specified/approved Sikadur® 32 Hi-Mod two part epoxy adhesive epoxy adhesive was utilized for setting the anchor rods. Two part adhesive was mixed in a 5 gallon bucket with a power drill mounted mixing bit. All anchor holes were brushed & blown clean prior to filling with adhesive. Adehrance to the manufacturer's installation recommendations was confirmed.	
121312. 11	(See note **121312.10** above)	

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121312. 12	(See note **121312.10** above)	
121312. 13	Anchor @ Flat #1 – adhesive being placed into core hole (See note **121312.10** above for additional info)	
121312. 14	Anchor @ Flat #1 – anchor rod being lowered into place (See note **121312.10** above for additional info)	

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121312. 15	Anchor @ Flat #1 – adhesive being displaced upon lowering of anchor (See note **121312.10** above for additional info)	
121312. 16	Anchor @ Flat #1 – anchor rod temporarily secured with switch blade assembly, assembly to be finalized once epoxy has set. (See note **121312.10** above for additional info)	
121312. 17	Anchor @ Flat #7 – adhesive being placed into core hole. (See note **121312.10** above for additional info.)	

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121312. 18	Anchor @ Flat #7 – anchor rod being lowered into place. (See note **121312.10** above for additional info)	
121312. 19	Anchor @ Flat #7 – anchor rod temporarily secured with switch blade assembly, assembly to be finalized once epoxy has set. (See note **121312.10** above for additional info)	
121312. 20	Installation of two (2) anchor rods confirmed as complete. The Contractor was advised to complete the remaining anchors utilizing the same methodology. Centek to be contacted for scheduling of remaining tower modifications once adhesive is set allowing for a minimum of 48 hours of cure time.	

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F I E L D V I S I T R E P O R T

DATE: December 19, 2012 **TIME:** 10:30 AM

TO: Pinnacle Wireless **PHONE:** 774.406.9555
ATTN: Doug Roberts **EMAIL:** droberts@nexlinkgs.com

PREPARED BY: Carlo F. Centore, PE **PHONE:** 203.488.0580 ext. 122
EMAIL: cfcentore@centekeng.com

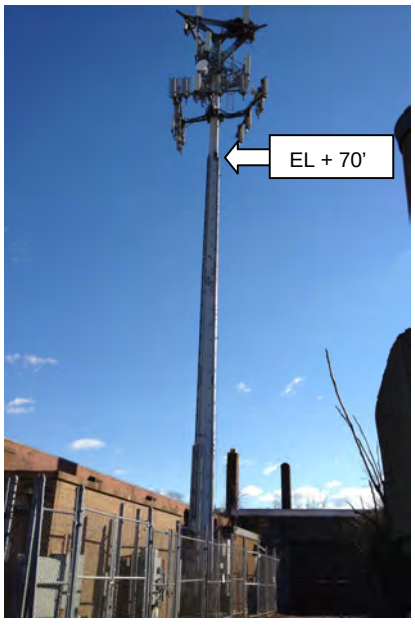
SUBMITTED BY: Carlo F. Centore, PE **PHONE:** 203.488.0580 ext. 122
EMAIL: cfcentore@centekeng.com

CENTEK NO.: 12033.CO23

PROJECT NAME: AT&T CT2037 New Haven - Wheeler Street

CC: Adrien Paradis (Construction Services of Branford, LLC)

The following was observed, discussed, reviewed and/or resolved at the site, which requires action by the Contractor unless noted otherwise. Items shall remain on this ongoing report until resolved to the satisfaction of this office.

121912. 1	Purpose of field visit was to confirm compliance with the Structural Components (Job #120229) Modification Drawings T-1, PL-1, PL-2, S-1, D-1 thru D-4, D-M19, F-1, M-1 & M-2 all dated 4/11/2012 for strucural modifications to the existing monopole.	
121912. 2	Weather conditions were skies and morning temperature of 43ºF.	
121912. 3	Elevation view of the existing 98' monopole structure with post modifications & upgrades installed to EL 70' above top of baseplate as delineated on drawing S-1. Note that platform change out and antenna modifications were not completed as of this visit.	

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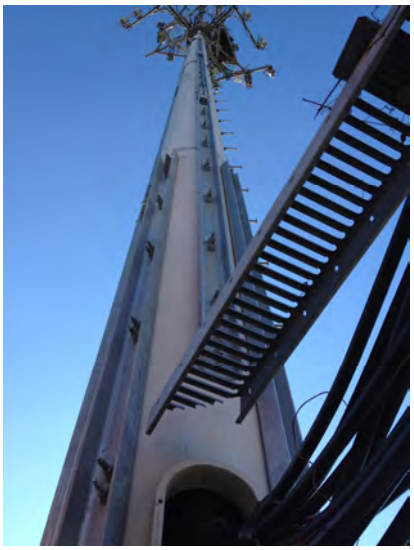
121912. 4	Switchblade base terminations (0' – 20') at four (4) faces confirmed as complete. Reference drawing D-1. Switchblades (20.5' – 70.5') at two (2) faces confirmed as complete. Reference drawing D-2 & D-M19. Switchblades (10' – 70') at one (1) face confirmed as complete. Reference drawing D-3 & D-M19.	
121912. 5	Switchblade splice tubes typical of two (2) ea. at EL's 20.5', 40.5' & 60.5' and typical of one (1) ea. at EL 30.0' & 50.0'. Ajax Bolts & thru-bolt assemblies all tightened to a snug tight condition.	
121912. 6	Switchblade base weldments, typical of four (4), confirmed ass installed per the Structural Components modification drawings.	

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121912. 7	Switchblade base weldments and hardware confirmed to comply with drawing F-1. Anchor rods were tensioned and locked in place. Thru-bolt & Ajax Bolt assemblies all installed to snug tight condition.	
121912. 8	(See note **121912.7** above)	
121912. 9	Stiffener Modification @ Flat 2 In lieu of completely removing the existing stiffeners at Flats 2, 6, 11 & 15, the contractor opted to modify the stiffeners to permit fit-up of the swithchblade base terminations. All exposed metal surfaces were coated with ZRC cold galvanizing.	

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121912. 10	Stiffener Modification @ Flat 6 (See note **121912.9** above)	
121912. 11	Stiffener Modification @ Flat 11 (See note 121912.9 above)	
121912. 12	Stiffener Modification @ Flat 15 (See note 121912.9 above)	
121912. 13	Installation of all specified tower modifications is confirmed as completed. Verbal notification provided to CSB for completion of antenna modifications.	

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F I E L D V I S I T R E P O R T

DATE: January 30, 2013 **TIME:** 1:00 PM

TO: Pinnacle Wireless **PHONE:** 774.406.9555
ATTN: Doug Roberts **EMAIL:** droberts@nexlinkgs.com

PREPARED BY: Carlo F. Centore, PE **PHONE:** 203.488.0580 ext. 122
EMAIL: cfcentoore@cxentekeng.com

SUBMITTED BY: Carlo F. Centore, PE **PHONE:** 203.488.0580 ext. 122
EMAIL: cfcentore@centekeng.com

CENTEK NO.: 12033.CO23

PROJECT NAME: AT&T CT2037 New Haven - Wheeler Street

CC: Adrien Paradis (COnstruction Services of Branford, LLC)

The following was observed, discussed, reviewed and/or resolved at the site, which requires action by the Contractor unless noted otherwise. Items shall remain on this ongoing report until resolved to the satisfaction of this office.

013013. 1	Purpose of field visit was to confirm the completed installation of the antenna platform and AT&T antenna upgrades per Centek drawings T-1, N-1 C-1, C-2, E-1 & E-2 dated 5/13/2012 (Rev. 1).	
013013. 2	Weather conditions were partly cloudy skies with intermittent light drizzle and temperature of 39ºF.	
013013. 3	Elevation view of the existing 98' monopole structure taken post modifications and antenna & equipment upgrades.	

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013013. 4	Antennas, radio equipment placement and platform change out was observed to be consistent with the LTE antenna plan prepared by Centek. T-Arm assembly & equipment radio equipment mounting collar in general conformance with the Structural Components (Job #120229) structural analysis report.	
013013. 5	Coax quantity, size & routing confirmed as consistent with Structural Components (Job #120229) structural analysis report.	
013013. 6	(See note **013013.5** above)	
013013. 7	Installation of all specified tower modifications & tower equipment is confirmed as completed.	

Structural Components
Bringing It All Together.

Structural Components, LLC
2400 Central Ave.
Suite A-1 South
Boulder, CO 80301

Voice: 866-386-7622
Fax: 303-962-3577

April 26, 2012

Jason R. Mead
Centek Engineering, Inc.
63-2 North Branford Rd
Branford, CT 06405

Re: Structural Analysis Report
Structure: 98ft Monopole
Site Address: 69 Wheeler St, New Haven, CT 06512
Lat: 41 17 45.45N, 72 53 52.49W
Site Name: 69 Wheeler St
Site Number: 11118.CO10 – CT2037
SC Number: 120229
Status: **Passes with completed modifications (96% Capacity)**

Dear Mr. Mead:

Per your request, Structural Components, LLC has completed a structural analysis for the above referenced project to verify the tower's compliance to the following design criteria:

Standard:	TIA/EIA-222-F *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures*
Building Code:	2005 Connecticut State Building Code as amended by the 2009 CT State Supplement. (CSBC)
Design Basic Wind Speed without Ice:	90 mph fastest mile (Per Appendix K of the 2005 CT Building Code Supplement)
Design Basic Wind Speed with Ice:	78 mph fastest mile
Ice Thickness:	1/2" radial
Serviceability Basic Wind Speed:	50 mph fastest mile
Allowable Stress Increase:	1.33

Please refer to the following structural analysis report, which gives complete details of the tower loading, results, information provided, modifications required and necessary assumptions.

We trust you find this report satisfactory. Please do not hesitate to contact us if you should have any questions or concerns.

Best Regards,
Structural Components LLC

Ryan Guerrero
5-2-2012

Ryan Guerrero
Structural Engineering Mgr.

Reviewed by:
Carlo F. Centore, P.E.
Centek Engineering, Inc.
License: CT PE #0016694
Expires: 01/31/2013

1 LOADING CONFIGURATION

The following antennas, mounts, transmission lines, and other appurtenances were considered for the structural analysis.

Elev. (ft) [1]	Appurtenance	Line	I/O [2]	Notes
98.0	(6) APX16DWV-16DWVS-E-A20 (6) ATMAA1412	(12) 1-5/8"	I	T-Mobile
97.0	(1) LP Platform			
94.0	**(6) RRUS-11** **(1) DC6 Surge Arrestor** **(1) Tri Bracket**	**(2) #8 copper** **(1) RG6 Fiber**	**I**	**AT&T Proposed**
91.5	**(2) AM-X-CD-16-65-00T-RET** **(1) AM-X-CD-14-65-00T-RET** **(3) Powerwave 7770** **(6) LGP21401** **(3) T-Arm**			
91.5	(3) 7750.00 (6) LGP219 Diplexer	(12) 7/8"	I	AT&T Existing
82.0	(2) ANT-18G-2-C	(1) 2" Conduit (1) ½"	I	Clearwire
80.0	(3) LLPX310R (3) RRUS-11			
80.0	(11) DB844G45ZAXY	(12) 1-5/8"	I	Nextel
78.0	(3) T-Arms			

1) Elevations reference centerline of panel, yagi, and dish antennas, and base of whip antennas, in relation to the base of the tower.
2) All lines are located within the monopole (I) and have been considered as fully shielded from the wind.
3) The loading listed in the above table reflects the final appurtenance configuration as provided by Centek Engineering and may not reflect the current tower loading.
4) The proposed monopole reinforcement has also been included in the wind loading of the tower from 0-70ft.

2 RESULTS

The analysis was performed using tnxTower v6.0.0.8, a structural analysis program developed by Tower Numerics, Inc. specifically for the communication tower industry.

2.1 TOWER MEMBER STRESS LEVELS

The tower has the following stress ratios in its structural members.

Elev. (ft)	Member	Stress Ratio After Modifications
0-98	Pole	0.94
88	Flange/Bolts	0.20
0	Base Plate	0.96
0	Anchor Bolts	0.70
0	Reinforcement	0.54

Stress ratio (SR) criteria:
SR $\leq$ 1.00 is completely within code limits.
SR $\leq$ 1.05 is considered within acceptable tolerance of code limits.
SR > 1.05 is outside acceptable tolerance of code limits and requires structural modifications.

2.2 FOUNDATION REACTIONS

The reactions listed below are for the design wind speed listed. Foundation reactions are actual loads and are not reduced for wind pressures.

Reaction Type	Capacity	No Ice Reaction	Iced Reaction	Foundation Status
Moment (ft-kips)	3079.64	1297	1113	Passes (governed by overturning moment)
Shear (kips)	---	18	15	
Axial (kips)	---	17	20	

2.3 TOWER DEFLECTION

The deflections are listed below for critical tower elevations using the serviceability wind speed listed.

Elev. (ft)	Displacement (in)	Sway (deg)	Twist (deg)
98.0	22.582	2.052	0.002
91.5	19.791	2.039	0.002
82.0	15.859	1.908	0.002

3 PROVIDED INFORMATION AND ASSUMPTIONS

Information about the tower was provided by Centek Engineering.. Structural Components, LLC visited the site on 3/26/2012.

Data	Document	Author	Date	File
Tower	Mapping Report tnxTower Analysis	Structural Components, LLC Centek Engineering, Inc.	03/27/2012 2/20/2012	120229 11118.CO10-CT2037
Existing and Proposed Loads	tnxTower Analysis	Centek Engineering, Inc.	02/20/2012	11118.CO10-CT2037
Foundation	Structural Analysis Report	All Points Technology	12/10/2008	CT198740
Soils	Not Provided	---	---	---

The following assumptions were made in order to complete the analysis. These assumptions must be checked. If they do not accurately represent the existing or proposed tower, foundation, soil, and loading conditions, we must be notified so that we can make the appropriate changes to our analysis, conclusions, and recommendations.

1. The tower and foundation are constructed as shown in the provided drawings, previous structural analysis reports, mapping reports, photos, and/or other documents.
2. The tower and foundation are in good condition with no corrosion, damage or fatiguing which could reduce the carrying capacity of the tower.
3. The tower has been properly maintained in accordance with industry standards.
4. The tower and foundation have not been modified except as indicated in the provided information or in this report.
5. The foundation was properly designed and constructed for the original design reactions.

4 REQUIRED STRUCTURAL MODIFICATIONS

Provided the assumptions outlined are accurate, we recommend the following modifications:

1. Install (4) Switchblade with 2-3/4” anchor rod base terminations from 0-20ft.
2. Install (3) sides of Switchblade monopole reinforcement from 20ft to 70ft.

Once the above upgrades are completed, the tower will be in structural compliance with the proposed antenna installation.

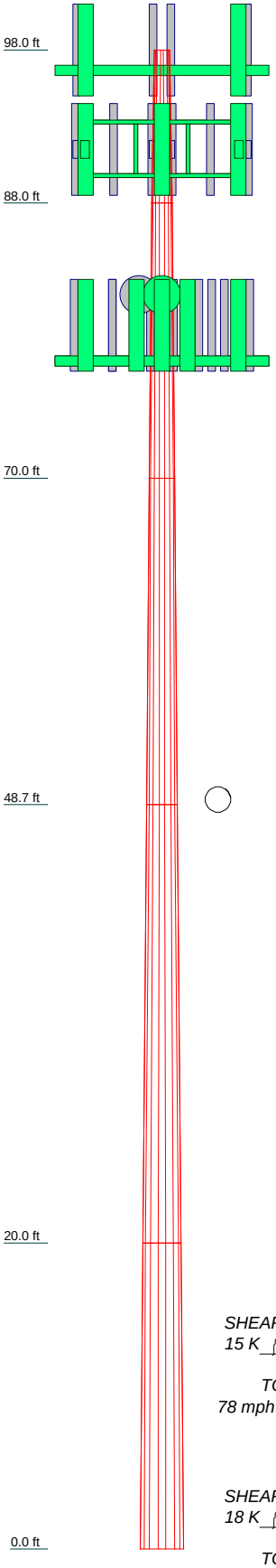
See Appendix C for Modification Drawings.

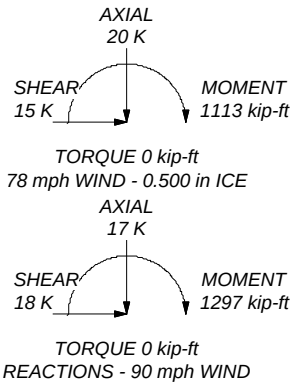
5 CONCLUSIONS

With the proposed loadings listed and the installed required structural modifications as outlined the tower and foundations satisfy the structural strength requirements of the standards and codes listed.

A passing letter of structural compliance with the standards and codes will be provided upon Structural Components review and approval of the completed structure.

Section	Length (ft)	Number of Sides	Thickness (in)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	10.000	18	0.250	12.750	16.500	A572-65	0.4
2	18.000	18	0.188	16.500	20.070		0.7
3	21.320	18	0.324	20.070	24.313		1.6
4	28.680	18	0.349	24.313	30.020		2.9
5	20.000	18	0.380	30.020	34.000		2.6
							8.2





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION
(2) APX16DWV-16DWVS-E-A20 (T-Mobile - Existing)	98
(2) APX16DWV-16DWVS-E-A20 (T-Mobile - Existing)	98
(2) APX16DWV-16DWVS-E-A20 (T-Mobile - Existing)	98
(2) ATMAA1412D-1A20 TMA (T-Mobile - Existing)	98
(2) ATMAA1412D-1A20 TMA (T-Mobile - Existing)	98
(2) ATMAA1412D-1A20 TMA (T-Mobile - Existing)	98
EEI 14-ft Low Profile Platform (T-Mobile - Existing)	97
(2) RRUS-11 (ATI - Proposed)	94
(2) RRUS-11 (ATI - Proposed)	94
(2) RRUS-11 (ATI - Proposed)	94
DC6-48-60-18-8F Surge Arrestor (ATI - Proposed)	94
Valmont Uni-Tri Bracket (ATI - Proposed)	94
AM-X-CD-16-65-00T-RET (ATI - Proposed)	91.5
AM-X-CD-16-65-00T-RET (ATI - Proposed)	91.5
AM-X-CD-14-65-00T-RET (ATI - Proposed)	91.5
7750.00 (ATI - Existing)	91.5

TYPE	ELEVATION
7750.00 (ATI - Existing)	91.5
7750.00 (ATI - Existing)	91.5
7770 (ATI - Existing)	91.5
7770 (ATI - Existing)	91.5
7770 (ATI - Existing)	91.5
(2) LGP21401 TMA (ATI - Existing)	91.5
(2) LGP21401 TMA (ATI - Existing)	91.5
(2) LGP21401 TMA (ATI - Existing)	91.5
(2) LGP21901 Diplexer (ATI - Existing)	91.5
(2) LGP21901 Diplexer (ATI - Existing)	91.5
(2) LGP21901 Diplexer (ATI - Existing)	91.5
Valmont T-Arm (3) (ATI - Existing)	91.5
ANT-18G-2-C (Clearwire - Existing)	82
ANT-18G-2-C (Clearwire - Existing)	82
(4) DB844G45ZAXY (Nextel - Existing)	80
LLPX310R (Clearwire - Existing)	80
LLPX310R (Clearwire - Existing)	80
LLPX310R (Clearwire - Existing)	80
RRUS-11 (Clearwire - Existing)	80
RRUS-11 (Clearwire - Existing)	80
RRUS-11 (Clearwire - Existing)	80
(3) DB844G45ZAXY (Nextel - Existing)	80
(4) DB844G45ZAXY (Nextel - Existing)	80
Valmont T-Arm (3) (Nextel - Existing)	78

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 78 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 50 mph wind.
4. Weld together tower sections have flange connections.
5. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
6. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
7. Welds are fabricated with ER-70S-6 electrodes.
8. TOWER RATING: 93.2%

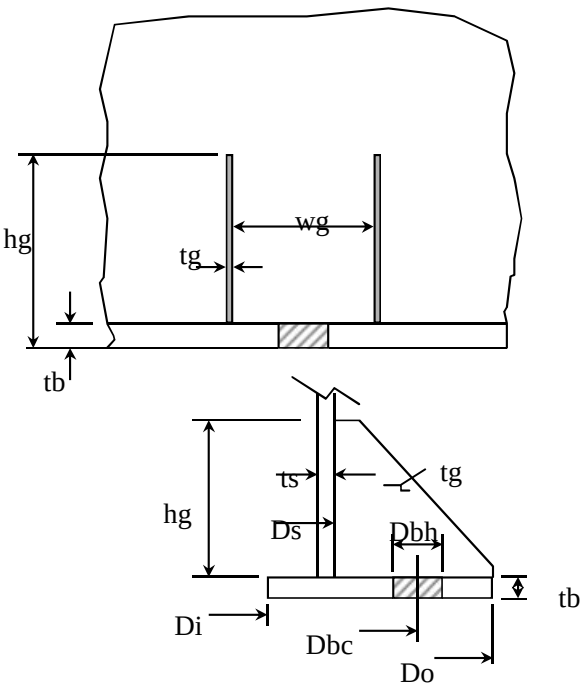
Stuctural Components, LLC
2400 Central Ave. Suite A-1 South
Boulder, CO 80301
Phone: (800) 584-8839
FAX: (303) 962-3577

Job: ***SC #120229***		
Project: ***98-ft EEI Monopole - 69 Wheeler St., New Haven, CT***		
Client: Centek	Drawn by: kjackson	App'd:
Code: TIA/EIA-222-F	Date: 04/26/12	Scale: NTS
Path:		Dwg No. E-1

All-Points Technology Corp., P.C.
P.O. Box 1491
North Conway, NH 03860
(603) 496-5853

Client: **HDG for AT&T** Site No.: **2037**
Job: **New Haven, CT** APT Job No.: **CT198740**
Calculated By: **R. Adair** Date: **10-Dec-08**

General Parameters			
Ds	Diameter of Skirt	34.0	in
Do	Outer Diameter of Base Ring	48.0	in
Di	Inner Diameter of Base Ring	24.0	in
Dbc	Bolt Circle Diameter	42.0	in
Dbolt	Nominal Bolt Diameter	2.25	in
Nbolt	Number of Bolts	6	
Dbh	Diameter of Bolt Hole	2.3750	in
Loadings			
OTM	Overturning Moment	859,610	ft-lbs
V	Vertical Load (+ is Compressive)	11,849	lbs
Material Properties			
Es	Modulus of Elasticity of Steel	29,000,000	psi
Ec	Modulus of Easticity of Concrete	3,000,000	psi
u	Poissons Ratio for Steel	0.30	
Fc(ult)	Ultimate Compressive Strength	4,000	psi
Fc(allow)	Allowable Compressive Strength	4,000	psi
Fbolt	Allowable Bolt Stress	75,000	psi
Fy	Yield Stress of Top & Bottom Plates	60,000	psi
Increase	Increase for Wind or Seismic?	1.33	
Fb	Allow Bending Stress (Fy*0.6)	47,880	psi
Gusset Dimensions			
Ngus	# of Gussets per bolt (0, 1, or 2)	2	
wg	Gusset Spacing	11	in
hg	Height of Gusset	18	in
Program Output			
tb	Minimum Base Plate Thickness	1.462	in
tg	Minimum Gusset Thickness	1.133	in
Bolting	Actual Load/ Allowable Load	0.535	OK
Concrete	Actual Load / Allowable Load	0.427	OK



Calculated Parameters			
n	Es / Ec	9.66666667	
Aroot	Root area of Bolt	3.02	in^2
tt1	Nbolt*Aroot/(3.14159*Dbc)	0.137	in
tt3	(Do-Di)/2	12.0	in
tt2	tt3-tt1	11.863	in

Iteratively Solve for Compressive and Tensile Loads on Compression Plate*

Iteration #	k	Cc	Ct	z	j	fc psi	fs psi	Ft lbs	Fc lbs
1	0.340	1.614	2.354	0.429	0.783	4,000	75,000	307,329	319,178
2	0.132	0.979	2.813	0.473	0.769	714	45,263	312,001	323,850
3	0.231	1.312	2.593	0.452	0.778	1,194	38,463	308,857	320,706
4	0.171	1.121	2.725	0.465	0.773	883	41,300	310,554	322,403
5	0.203	1.226	2.655	0.458	0.776	1,039	39,519	309,437	321,286
6	0.185	1.166	2.695	0.462	0.774	946	40,409	310,059	321,908
7	0.195	1.200	2.673	0.460	0.775	997	39,890	309,690	321,539
8	0.189	1.180	2.686	0.461	0.775	968	40,173	309,901	321,750
9	0.192	1.191	2.679	0.461	0.775	984	40,011	309,782	321,631
10	0.190	1.185	2.683	0.461	0.775	975	40,103	309,849	321,698

*Calculations in this table are based upon Ref. 1:

k = 1 / (1 + (fs/(n*fc))) [Eqn. 10.3]
fc = Fc / (tt2+n*tt1)*r*Cc [Eqn. 10.18]
fs = Ft / (tt1*r*Ct) [Eqn. 10.9]
Ft = (12*OTM - V * z * Dbc) / (j*Dbc) [Eqn. 10.24]
Fc = Ft + V [Eqn. 10.27]

Concrete Bearing Pressure:		==> Bearing Pressure Acceptable	
fcmax	fc*(2*k*Dbc+tt3)/(2*k*Dbc) [Eqn. 10.30]	1707	psi
FcAllow	Allowable Bearing Pressure	4000	psi

Check Bolting:		==> Bolting Acceptable	
Pbolt	fs*Aroot	121,110	lbs
Pallow	Fbolt*Aroot	226,500	lbs

Check Bottom Plate for Compressive Loading - w/ Gussets:			
b	wg	11.000	in
l	(Do-Ds)/2	7.000	in
l/b	Calculated Ratio	0.636	
cc1	lookup from Ref. 1, Table 10.3	0.051	
cc2	lookup from Ref. 1, Table 10.3	0.243	
Mx	cc1*fcmax*b^2 [Table 10.3]	10545.9	
My	-CC2*fcmax*l^2 [Table 10.3]	-20356.5	
Mmax	Maximum of Abs(Mx) or Abs(My)	20356.5	
tb	(6*Mmax/Fb)^0.5 [Eqn. 10.32b]	1.462	in
Check Bottom Plate for Bolt Load - Single Baseplate w/ Gussets:			
b=	wg	11.00	in
l=	(Do-Ds)/2	7	in
b/l	Calculated Ratio	1.57	
Gama1	lookup from Ref. 1, Table 10.6	0.137	
Gama2	lookup from Ref. 1, Table 10.6	0.061	
a	+(Do-Dbc)/2	3	
e	Dimension from bolt ctr to nut flat	1.750	
My	+(Pbolt/(4*PI()))*((1+u)*LN(2*l*SIN(PI()*a/l)/(PI()*e))+1)-(Gama1*Pbolt/(4*PI())) [Eqn. 10.40]	19,707	
tt	(6*Mmax/fb)^0.5 [Eqn. 10.41]	1.571	in
Local Stress in Shell (Single Baseplate w/ Gussets)			
ts	((1.5*Pbolt/Ngus*(Do-Ds)/2)/(PI()*Fb*hg))^0.5 [Jawaad & Faar, Eqn. 12.14]	0.485	in

Check Gusset (Single Baseplate):

x (in)	w(x) (in)	tg (Tens) (in)	tg (Comp) (in)	tg (Max) (in)
0.00	1.00	0.000	0.032	0.032
4.50	2.59	1.133	0.207	1.133
9.00	4.18	0.870	0.167	0.870
13.50	5.76	0.685	0.138	0.685
17.00	7.00	0.585	0.123	0.585
18.00	7.00	0.619	0.128	0.619
			tg min =	**1.133**

Note:

tg(Tens) = 6*Pbolt/Ngus*((Dbc-Ds)/2)*x/(w(x)^2*Fb*hg)
tg(Comp) = 6*fc*wg*(l/2)*x/(Fb*hg*w(x)^2)+fc*wg/(l*Fb)
tg(Max) = Maximum of tg(Tens) and tg(Comp)

All-Points Technology Corp., P.C.
P.O. Box 1491
North Conway, NH 03860
(603) 496-5853

Client:	**Hudson Design Group, LLC**	Site No.:	**2037**
Job:	**New Haven**	Job No.:	**CT198740**
Calculated By:	**R. Adair**	Date:	**10-Dec-08**

Program assumes:

Mat is square in plan view.
Water table is below bottom of mat.

Unit weight of concrete =	150	pcf
Unit weight of soil =	100	pcf

Information to be provided:

Pier is round or square in plan dimension ("R" or "S")	Shape =	s	
OTM = Overturning Moment to be resisted	OTM =	860	ft-kips
P = Download reaction	P =	28.6	kips
V = Shear reaction	V =	11.8	kips
H = Height from ground surface to top of mat (if buried)	H =	1.0	ft.
P_M = Projection of pier above mat	P_M =	2.0	ft.
y = Thickness of mat	y =	3.25	ft.
x = Width of mat	x =	21.63	ft.
d = Diameter of round pier	d =	0.0	ft.
s = Size of square pier	s =	6.0	ft.
Mass of tower and appurtenances (below)			

Results:

Component	Mass		Moment Arm		Moment Resist.	
Pier	10.8	kips	10.81665	ft.	116.8	ft-kips
Overburden	45.8	kips	10.81665	ft.	495.0	ft-kips
Mat	228.2	kips	10.81665	ft.	2467.8	ft-kips
Tower Dead Load		kips	10.81665	ft.	0.0	ft-kips
Antenna Dead Load		kips	10.81665	ft.	0.0	ft-kips

Overturning Moment Resistance =	3079.64	ft-kips	
Factor of Safety =	3.34		SATISFACTORY
Concrete Quantity =	60.3	c.y.	

MODIFICATION DRAWINGS FOR 69 WHEELER ST, CT

at&t

SITE NAME:

69 WHEELER ST

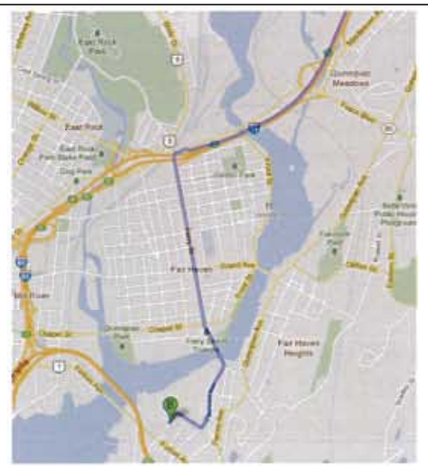
SITE NUMBER:

11118.CO10 - CT2037

SITE ADDRESS:

69 WHEELER ST
NEW HAVEN, CT 06512

VICINITY MAP



APPROVALS

DISCIPLINE	SIGNATURE	DATE
PRE CONSTRUCTION INSPECTION		
ZONING/ PERMITTING		
CONSTRUCTION (AS-BUILT)		
LESEE		

PROJECT SUMMARY

APPLICANT/LESEE:

AT&T MOBILITY
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CA 06067

CONTRACTORS:

CONSTRUCTION:
TBD.

CONSULTANTS:

ENGINEERING:
STRUCTURAL COMPONENTS, LLC
1-866-386-7622
CONTACT: BRAD COOK, P.ENG.

CENTEK ENGINEERING
63-2 NORTH BRANFORD RD
BRANFORD, CT 06405
CONTACT: JASON R MEAD
203-488-0580

TOWER OWNER:

WILLIAM M LAYDON & ELMER F LAYDON
69 WHEELER ST
NEW HAVEN, CT 06512

SHEET INDEX

ARCHITECTURAL:

T-1 TITLE SHEET
GN-1 GENERAL CONSTRUCTION NOTES

STRUCTURAL:

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PL-2 PARTS LIST (CONT'D)
S-1 SPECIFICATIONS

DETAILS:

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D-2 REINFORCEMENT DETAILS (CONT'D)
D-3 REINFORCEMENT DETAILS (CONT'D)
D-4 OBSTRUCTIONS
D-M19 SWITCHBLADE INSTALLATION DETAIL

FOUNDATION:

F-1 ANCHOR FOUNDATION DETAILS

MAINTENANCE:

M-1 MAINTENANCE ISSUES
M-2 MAINTENANCE ISSUES (CONT'D)

DRIVING DIRECTIONS

EXIT BRADLEY INTERNATIONAL AIRPORT ON LOCAL AIRPORT ROADS HEADING NORTHWEST. TAKE SLIGHT LEFT TOWARD SCHOEPHOESTER RD, THEN TURN RIGHT ONTO SCHOEPHOESTER RD. CONTINUE ONTO CT-401 SOUTH. KEEP RIGHT AT THE FORK, FOLLOW SIGNS FOR I-91 S/HARTFORD AND MERGE ONTO I-91 SOUTH. TAKE EXIT 7 TOWARD FERRY ST / FAIR HAVEN. TURN LEFT ONTO MIDDLETOWN AVE. TURN LEFT ONTO FERRY ST. SLIGHT LEFT TO STAY ON FERRY ST. TAKE 2ND RIGHT ONTO FAIRMONT AVE. TAKE THE 1ST RIGHT ONTO FULTON ST. TURN RIGHT ONTO GOODWIN ST, TOWER WILL WE ON THE LEFT.

CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF ALL GOVERNING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUCTED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

SITE INFORMATION

LATITUDE: 41.295958°
LONGITUDE: -72.897914°

JURISDICTION

NEW HAVEN COUNTY, CT

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Centered on Solutions
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(203) 488-8587 Fax
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Branford, CT 06405

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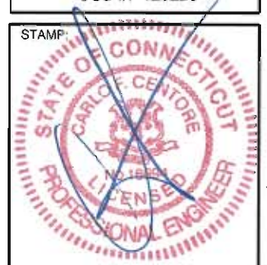
STAMP:



REVISIONS:

NO.	DATE	DESCRIPTION	BY	CHK	APD
0	04/26/12	MODIFICATION DRAWINGS	DT	RM	RG
1					
2					
3					
4					
5					

SITE INFORMATION:

69 WHEELER ST
NEW HAVEN, CT 06512

DESIGN TYPE:

MONOPOLE REINFORCEMENT

SHEET TITLE:

TITLE SHEET

SHEET TITLE: T-1 | REVISION: 0

GENERAL NOTES:

1. THE MODIFICATIONS OUTLINED IN THESE DOCUMENTS WERE DESIGNED IN ACCORDANCE WITH THE TIA/EIA-222-F TOWER CODE
2. PLANS, SECTIONS, AND DETAILS ARE NOT TO BE SCALED FOR DETERMINATION OF QUANTITIES, LENGTHS, OR FIT OF MATERIALS.
3. UNLESS NOTED OTHERWISE = U.N.O.
4. ALL WORK ON THESE DRAWINGS SHALL BE PERFORMED BY A QUALIFIED CONTRACTOR WITH A MINIMUM OF S YEARS OF PAST TOWER EXPERIENCE AND SHALL FOLLOW THE DICTATES OF GOOD CONSTRUCTION PRACTICE WITH WORKING KNOWLEDGE OF THE TIA CODE "STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS".
5. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL CODES AND OSHA SAFETY REGULATIONS AND PERFORMED UNDER NORMAL WEATHER CONDITIONS WITH WINDS NOT IN EXCESS OF 20 MPH.
6. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT ALL EXISTING EQUIPMENT, ANTENNAS, TX AND STRUCTURES. THE CONTRACTOR IS ALSO RESPONSIBLE FOR THE PROTECTION OF WORKERS, PUBLIC AND PRIVATE PROPERTY DURING CONSTRUCTION UP UNTIL COMPLETION OF WORK.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL MEASUREMENTS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE FOR COMPENSATIONS SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN THE DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO THE OWNER/CLIENT FOR CONSIDERATIONS BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREA.
8. ANY SUBSTITUTIONS MUST CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS, AND SHOULD BE SIMILAR TO THOSE SHOWN. ALL SUBSTITUTIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
9. CONTRACTOR'S PROPOSED INSTALLATION SHALL NOT INTERFERE, NOR DENY ACCESS TO ANY EXISTING OPERATIONAL AND SAFETY EQUIPMENT.
10. CONTRACTOR SHALL PROMPTLY REMOVE ANY AND ALL DE8RIS FROM SITE AND RESTORE AS BEST AS POSSIBLE TO PRECONSTRUCTION CONDIITION INCLUDING BUT NOT LIMITED TO ANY DIVETS ON ROADWAY OR SURROUNDING AREA.
11. DIGITAL PHOTOGRAPHS SHALL BE TAKEN OF SITE ACCESS, COMPOUND AND TOWER PRIOR TO CONSTRUCTION, DURING CONSTRUCTION AND POST CONSTRUCTION INCLUDING BUT NOT LIMITED TO ALL REINFORCED AREAS. CLOSE-OUT REPORT SHALL FOLLOW WITHIN 3 BUSINESS DAYS.

PARTS / FABRICATION / SHOP DRAWINGS:

1. ALL PARTS INCLUDED IN THESE DRAWINGS ARE MANUFACTURED AND OR SUPPLIED BY STRUCTURAL COMPONENTS, LLC. PARTS FROM OTHER MANUFACTURER'S ARE NOT TO BE USED UNLESS OTHERWISE AUTHORIZED BY THE STRUCTURAL ENGINEER.
2. ALL FABRICATION / SHOP DRAWINGS ARE TO BE REVIEWED FOR COMPLIANCE TO THE STRUCTURAL DRAWINGS AND SIGNED OFF BY THE STRUCTURAL ENGINEER PRIOR TO FABRICATION.

REINFORCING STEEL:

1. ALL DETAILING, FABRICATION, AND PLACEMENT OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH THE ACI MANUAL OF CONCRETE PRACTICE.
2. REINFORCING BARS SHALL BE DEFORMED AND CONFORM TO ASTM A615-79 AND SHALL BE GRADE 60, EXCEPT TIES WHICH MAY BE GRADE 40.
3. AT REINFORCING STEEL SPLICES IN CONCRETE, LAP BARS 40 DIAMETERS. AT CORNERS, MAKE HORIZONTAL BARS CONTINUOUS OR PROVIDE CORNER BARS.
4. EXCEPT AS NOTED ON THE DRAWINGS, MINIMUM CONCRETE PROTECTION FOR REINFORCEMENT SHALL BE IN ACCORDANCE WITH ACI 318-05/318R-05.
5. NO.5 OR LARGER REINFORCING BARS SHALL NOT BE RE-BENT WITHOUT APPROVAL BY THE STRUCTURAL ENGINEER.
6. WELDING OF REBAR IS STRICTLY PROHIBITED.

STRUCTURAL STEEL:

1. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS - AISC LOAD AND RESISTANCE FACTOR DESIGN SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS, 2005, THE "CODE OF STANDARD PRACTICE", 2005, AND CHAPTER 4 OF THE TIA CODE
2. PRE-QUALIFIED STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING MINIMUM GRADES (SEE FABRICATION DRAWINGS FOR SPECIFIC GRADES FOR SPECIFIC PARTS):
   - CHANNELS & ANGLES ---------- ASTM A36, (FY = 36 KSI)
   - PLATES ---------- A572 GR. 50, (FY = 50 KSI)
   - HSS ---------- ASTM A500 GR. B, (FY = 46 KSI)
   - STEEL PIPE ---------- ASTM A53 GR. B, (FY = 36 KSI)
   - U-BOLTS ---------- ASTM A307, (FY = 36 KSI) w/ LOCKING DEVICE U.N.O.
   - SEE TABLE 5-1 OF THE TIA CODE FOR ADDITIONAL SHAPES AND STANDARDS THAT ARE NOT LISTED ABOVE.
3. NON PRE QUALIFIED STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING STANDARDS AS PER THE TIA CODE
   - THE CARBON EQUIVALENT OF STEEL SHALL NOT EXCEED 0.65 PER SECTION 5.4.2 OF THE TIA CODE
   - ELONGATION OF STEEL SHALL NOT BE LESS THAN 18%
   - TEST REPORTS SHALL BE IN ACCORDANCE WITH ASTM A6 OR A568
   - TOLERANCES SHALL BE IN ACCORDANCE WITH ASTM A6
3. FIELD CUT EDGES, EXCEPT DRILLED HOLES, SHALL BE GROUND SMOOTH.

CORROSION CONTROL:

1. ALL STEEL MEMBERS SHALL HAVE CORROSION CONTROL AS OUTLINED IN THE TIA CODE AND STATED BELOW:
   - STEEL MEMBERS SHALL BE HOT DIPPED GALVANIZED PER ASTM A123
   - FASTENERS AND HARDWARE SHALL BE HOT DIPPED GALVANIZED PER ASTM A153 OR ASTM B695 CLASS 50 (A490 BOLTS SHALL NOT BE HOT DIPPED GALVANIZED)
   - GUYS STANDS SHALL BE PROTECTED IN ACCORDANCE WITH ASTM A475 OR A586 MINIMUM CLASS A COATING
   - GUY ANCHORAGE IN DIRECT CONTACT OF GROUND SHALL BE HOT DIPPED GALVANIZED PER ASTM A123
   - ALL REPAIRS SHALL BE PROTECTED IN ACCORDANCE WITH ASTM A780
2. ALL FIELD CUT SURFACES SHALL BE REPAIRED WITH (2) COATS OF A 95% ZINC RICH PAINT PER ASTM A780 (ZRC PREFERRED).
3. ALL DAMAGED SURFACES, WELDED AREAS AND AUTHORIZED NON-GALVANIZED MEMBERS OR PARTS (EXISTING OR NEW) SHALL BE PAINTED WITH (2) COATS OF ZINC RICH PAINT (ZRC PREFERRED).
4. GUY ANCHOR GALVANIZATION SHALL EXTEND A MIN OF 2" INTO CONCRETE

BOLTS:

1. ALL CONNECTIONS OF STRUCTURAL STEEL MEMBERS SHALL BE MADE USING SPECIFIED HIGH STRENGTH ASTM A325 OR A490 BOLTS WITH THREADS EXCLUDED IN SHEAR PLANE.
2. FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES.
3. ALL BOLTS WITHOUT DTI WASHERS SHALL BE INSTALLED SNUG FIT UNTIL THE SECTION IS FULLY COMPACTED, AND THEN TIGHTENED FURTHER BY AISC - "TURN OF THE NUT", TIGHTENING SHALL PROGRESS SYSTEMATICALLY.
4. ALL BOLTS WITH SQUIRTER DTI WASHERS SHALL BE TIGHTENED UNTIL THE NUMBER OF SQUIRTS IS AT LEAST EQUAL TO THE NUMBER OF BUMPS MINIUS ONE ON THE DTI SQUIRTER WASHER (FOR INSTANCE, A FIVE BUMP DTI SHOULD SQUIRT IN AT LEAST FOUR PLACES).
5. PHOTOS OF THE FULLY ENGAGED SQUIRTER DTI WASHERS MUST BE TAKEN WITH IN 24 HOURS OF INSTALLATION BY THE CONTRACTOR.
6. BOLT LENGTHS UP TO AND INCLUDING FOUR DIAMETERS SHALL BE TENSIONED $^1/_3$ TURN BEYOND SNUG FIT. BOLT LENGTHS OVER 4 DIAMETERS SHALL BE $^1/_2$ TURN BEYOND SNUG FIT.
7. ALL BOLTED CONNECTIONS SHALL USE LOCK WASHERS.

TOLERANCES:

1. CONSTRUCTION OF TOWERS SHALL MEET ALL OF THE TOLERANCE REQUIREMENTS AS OUTLINED IN CHAPTER 6.1.2 OF THE TIA CODE

STRUCTURAL ERECTION AND BRACING REQUIREMENTS:

1. THE STRUCTURAL DRAWINGS ILLUSTRATE THE COMPLETED STRUCTURE WITH ALL ELEMENTS IN THEIR FINAL POSITIONS, PROPERLY SUPPORTED AND BRACED.
2. THE CONTRACTOR, IN THE PROPER SEQUENCE, SHALL PROVIDE SHORING AND BRACING AS MAY BE REQUIRED DURING CONSTRUCTION TO ACHIEVE THE FINAL COMPLETED STRUCTURE.
3. OBSERVATION VISITS TO THE SITE BY THE STRUCTURAL ENGINEER SHALL NOT INCLUDE INSPECTION OF THE SHORING AND BRACING ELEMENTS.
4. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, GUYING, ETC. NECESSARY TO PROVIDE A COMPLETE AND STABLE STRUCTURE AS SHOWN ON THESE DRAWINGS.
5. CONTRACTOR'S PROPOSED INSTALLATION SHALL NOT INTERFERE, NOR DENY ACCESS TO ANY EXISTING OPERATIONAL AND SAFETY EQUIPMENT.

PAINT:

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

PROTECTIVE GROUNDING:

1. GROUNDING OF THE TOWER SHALL BE IN ACCORDANCE WITH CHAPTER 12 OF THE TIA CODE

MAPPING:

1. FIELD MAPPING SHALL BE IN ACCORDANCE WITH CHAPTER 14 OF THE TIA CODE
2. CONTRACTOR SHALL THOROUGHLY INSPECT AND SURVEY EXISTING STRUCTURE TO VERIFY DIMENSIONS, ELEVATIONS, FRAMING, ETC. WHICH AFFECT THE WORK SHOWN ON THE DRAWINGS.
3. REPORT ANY VARIATIONS OR DISCREPANCIES TO THE STRUCTURAL ENGINEER BEFORE PROCEEDING.

MAINTENANCE:

1. A CONTINUOUS INSPECTION OF THE STRUCTURE SHALL BE COMPLETED PER TIA RECOMMENDATIONS AS OUTLINED IN CHAPTER 14 OF THE TIA CODE. ANY DEFECTS SHALL BE REPORTED TO ENSURE THE STRUCTURAL INTEGRITY FOR THE LIFE OF THE STRUCTURE.

AJAX BOLTS:

1. AJAX BOLTS USED FOR STRUCTURAL CONNECTIONS SHALL BE AJAX 'ONESIDE' PC8.8 W/ SLEEVE AND SHALL BE THE SIZE AS SPECIFIED ON THE STRUCTURAL DRAWINGS.
2. ALL AJAX BOLTS SHALL BE INSTALLED AS PER THE MANUFACTURER'S SPECIFICATIONS
3. ALL AJAX BOLTS SHALL RUST PROOF GALVANIZED.
4. AJAX BOLTS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES.

WILLIAMS FORM ALL-THREAD REINFORCING BAR ATTACHMENTS:

1. ALL COUPLERS, NUTS AND LOCK NUTS USED WITH WILLIAMS FORM ALL-THREAD REINFORCING BARS SHALL BE OF THE APPROPRIATE SIZE AND PITCH TO MATCH THE CORRESPONDING BAR SIZE AND SHALL BE MANUFACTURED BY WILLIAMS FORM ENGINEERING CORP.
2. ANCHOR BOLTS ARE TO BE ASTM A615 FOR ALL ALL-THREAD REINFORCING BAR GRADES EXCEPT FOR GRADE 150 WHICH SHALL BE ASTM A722.
3. HEX NUTS AND JAM NUTS ARE TO BE ASTM A108 FOR ALL ALL-THREAD REINFORCING BAR GRADES.
4. HARDENED WASHERS ARE TO BE ASTM F436 FOR ALL ALL-THREAD REINFORCING BAR GRADES.
5. COUPLERS SHALL BE 'STOP-TYPE COUPLING AND ARE TO BE ASTM A108 FOR ALL ALL-THREAD REINFORCING BAR GRADES.

REINFORCEMNT REQUIREMENTS OF EXISTING STRUCTURES:

1. ALL MODIFICATIONS AND REINFORCEMENTS TO THE STRUCTURE ARE BASED ON A RIGOROUS STRUCTURAL ANALYSIS.
2. ALL ADDED STRUCTURAL COMPONENTS HAVE BEEN DESIGN IN ACCORDANCE WITH THE CODES AS STATED ABOVE.
3. ALL ASSUMPTIONS MADE SHALL BE VERIFIED WITH THE STRUCTURAL ENGINEER PRIOR TO CONSTRUCTION.

ANCHOR REINFORCEMENT INSTALLATION:

1. CONTRACTOR SHALL VERIFY THAT DRILLING CLEARANCE AT POLE AND ACCESS IS SATISFACTORY PRIOR TO CONSTRUCTION. ANY OBSTACLES SHALL BE REPORTED IMMEDIATELY TO ENGINEER.
2. DRILL HOLES SHALL BE LOCATED A MINIMUM 6" INSIDE EDGE OF CAISSON OR PIER TO AVOID REBAR CAGE. COMPRESSED AIR SHALL BE USED TO BLOW DEBRIS OUT OF THE NEWLY DRILLED HOLES
3. HOLES IN BASE PLATE SHALL BE DRILLED, NOT TORCHED.
4. PHOTOS SHALL BE TAKEN OF EACH HOLE WITH A TAPE MEASURE INSERTED TO SHOW ACTUAL DEPTH OF HOLE. HOLES SHALL BE NUMBERED WITH A MARKER PER DRAWINGS FOR REFERENCE.
5. A SLOW CURE HIGH STRENGTH EPOXY (MIN 1800 PSI AFTER 48 HOURS) SHALL BE USED TO SET ANCHORS. FOLLOW MANUFACTURERS INSTRUCTIONS.

CENTEK engineering
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Branford, CT 06405
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SUITE A-1 SOUTH
BOULDER, CO 80301
(866) 386 - 7622
JOB #: 120229

STAMP:

REVISIONS:

NO.	DATE	DESCRIPTION	BY	CHK	APD
0	04/11/12	MODIFICATION DRAWINGS	DT	RM	RG
1					
2					
3					
4					
5					

SITE INFORMATION

69 WHEELER ST
NEW HAVEN, CT 06512

DESIGN TYPE:

MONOPOLE REINFORCEMENT

SHEET TITLE:

GENERAL CONSTRUCTION NOTES

SHEET TITLE:	REVISION
GN-1	0

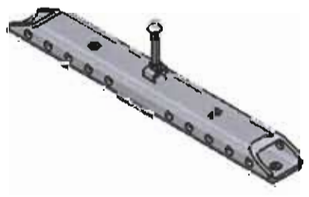
RSB-0132-10
10' SWITCHBLADE
SPLICE - TERM ASSY
QTY: 2
WEIGHT: 214 LBS

RSB-0132-20
20' SWITCHBLADE
SPLICE - TERM ASSY
QTY: 2
WEIGHT: 418 LBS

RSB-0133-20
20' SWITCHBLADE
SPLICE - SPLICE ASSY
QTY: 5
WEIGHT: 423 LBS

RSB-0173-20
20' SWITCHBLADE
BASE TERM - SPLICE ASSY
QTY: 2
WEIGHT: 623 LBS

RSB-0172-20
20' SWITCHBLADE
BASE TERM - TERM ASSY
QTY: 2
WEIGHT: 618 LBS



RSB-0801-01
SWITCHBLADE SPLICE
TUBE
QTY: 8
WEIGHT: 63 LBS

CENTEK engineering
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(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405

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STAMP:

REVISIONS:

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0	04/26/12	MODIFICATION DRAWINGS	DT	RM	RG
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SITE INFORMATION

69 WHEELER ST
NEW HAVEN, CT 06512

DESIGN TYPE

MONOPOLE
REINFORCEMENT

SHEET TITLE:

PARTS LIST

SHEET TITLE: PL-1

REVISION: 0

CP-00685-01
SAFETY CLIMB BASE
TERMINATION ANGLE
QTY: 1
WEIGHT: 2.4 LBS

P202-001-01
SAFETY CLIMB
ANGLE BRACKET
QTY: 4
WEIGHT: 0.63 LBS

RSB-0700-05
2.75" x 10' ANCHOR
ROD ASSEMBLY
QTY: 4
WEIGHT: 235.8 LBS

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JOB #: 120229

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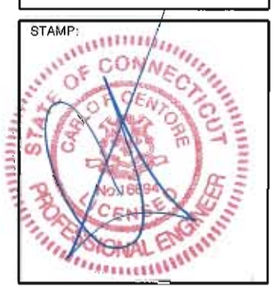

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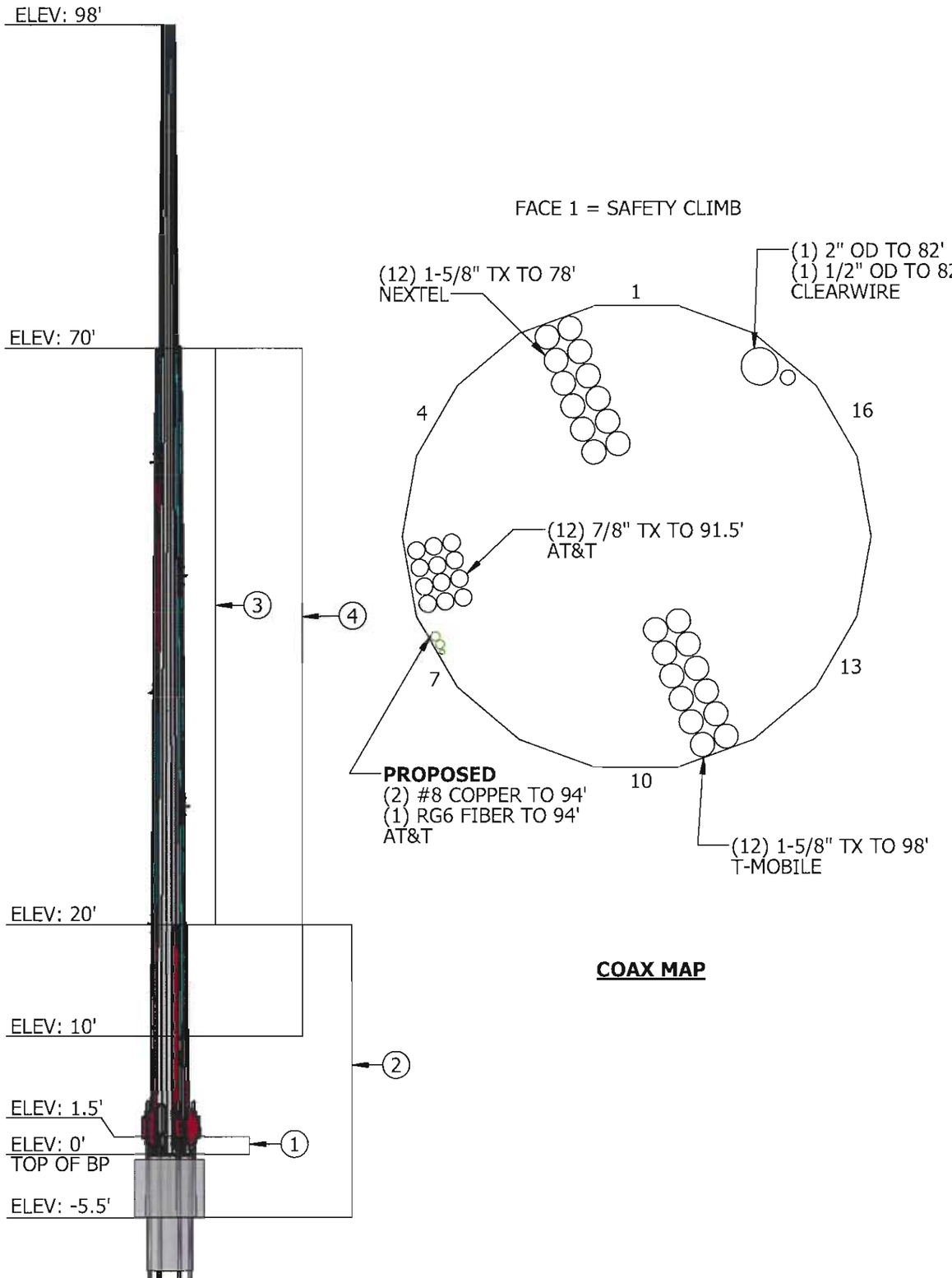
SITE INFORMATION:
69 WHEELER ST
NEW HAVEN, CT 06512

DESIGN TYPE:
MONOPOLE
REINFORCEMENT

SHEET TITLE:
PARTS LIST (CONT'D)

SHEET TITLE:	REVISION:
PL-2	0



COAX MAP

POLE SPECIFICATIONS	
MANUFACTURER	ENGINEERING ENDEAVORS INC 98 FT TAPERED MONOPOLE DESIGN, 18 SIDED
BASE PLATE STEEL	1.50" THICK x 48" OD x 24" ID Fy > 60 KSI
ANCHOR BOLTS	(6) Φ2-1/4" RODS ASTM A615-75

CURRENT STRUCTURAL ANALYSIS	
COMPANY	STRUCTURAL COMPONENTS, LLC
AUTHOR / FILE # / DATE	RYAN GUERRERO / 120229 / 04/13/2012

SHAFT SPECIFICATIONS

SHAFT SECTION	SECTION LENGTH	# SIDES	THICKNESS (IN)	GRADE (KSI)	OVERLAP (IN)	DIAMETER (F/F)	
						BOTTOM	TOP
1	10'	18	1/4"	65	0	16.50"	12.75"
2	18.00'	18	3/16"	65	0	20.07"	16.50"
3	21.32'	18	5/16"	65	0	24.31"	20.07"
4	28.68'	18	5/16"	65	0	30.02"	24.31"
5	20.00'	18	3/8"	65	N/A	34.00"	30.02"

DESIGN SPECIFICATIONS	
CODE	TIA/EIA-222-F (IBC 2003) NEW HAVEN COUNTY, CT
WIND SPEED	90 MPH FASTEST-MILE
ICE LOADING	78 MPH FASTEST MILE, 1/2" RADIAL ICE

EXISTING ANTENNA LIST

ELEV. (FT.)	QTY.	ANTENNAS & MOUNTS	COAX	OWNER
98.0	6	APX16DWV-16DWVS-E-A20	(12) 1-5/8" I	T-MOBILE
	6	ATMAA1412		
97.0	1	LP PLATFORM	---	
91.5	3	7750.00	(12) 7/8"	AT&T
	6	LGP219 DIPLEXER		
82.0	2	ANT-18G-2-C	(1) 2" OD I (1) 1/2" OD I	CLEARWIRE
80.0	3	LLPX310R		
	3	RRUS-11		
	11	DB844G45ZAXY	(12) 1-5/8" I	NEXTEL
78.0	3	T-ARMS		

PROPOSED ANTENNA LIST

ELEV. (FT.)	QTY.	ANTENNAS & MOUNTS	COAX	OWNER
94.0	6	RRUS-11	(2) #8 COPPER I (1) RG6 FIBER I	AT&T
	1	DC-6 SURGE ARRESTOR		
	1	TRI BRACKET		
91.5	2	AM-X-CD-16-65-00T-RET		
	1	AM-X-CD-14-65-00T-RET		
	3	POWERWAVE 7770		
	6	LGP21401		
	3	T-ARMS		

TOWER MODIFICATION SCHEDULE

ITEM	DESCRIPTION	ELEVATION		DWG. NO.
		BOTTOM	TOP	
1	REMOVE (4) BASE STIFFENERS	0.00'	1.50'	D-1
2	INSTALL (4) SB BASE TERMINATIONS	-5.5'	20.50'	D-1, F-1
3	INSTALL (2) SIDES OF SWITCHBLADE FACE 1&7	20.50'	70.50'	D-2, D-M19
4	INSTALL (1) SIDE OF SWITCHBLADE FACE 13	10.00'	70.00'	D-3, D-M19

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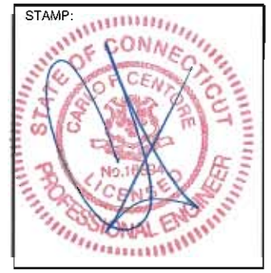
JOB #: 120229

STAMP:



REVISIONS:

NO.	DATE	DESCRIPTION	BY	CHK	APD
0	04/26/12	MODIFICATION DRAWINGS	DT	RM	RG
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SITE INFORMATION:
69 WHEELER ST
NEW HAVEN, CT 06512

DESIGN TYPE
MONOPOLE REINFORCEMENT

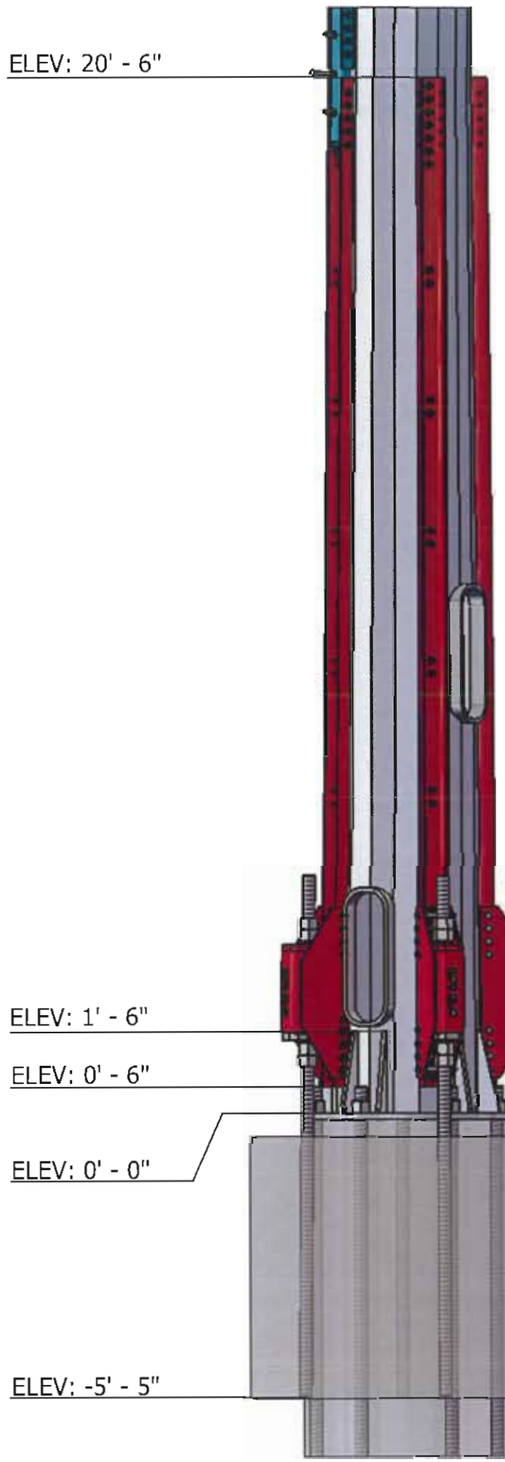
SHEET TITLE:
SPECIFICATIONS

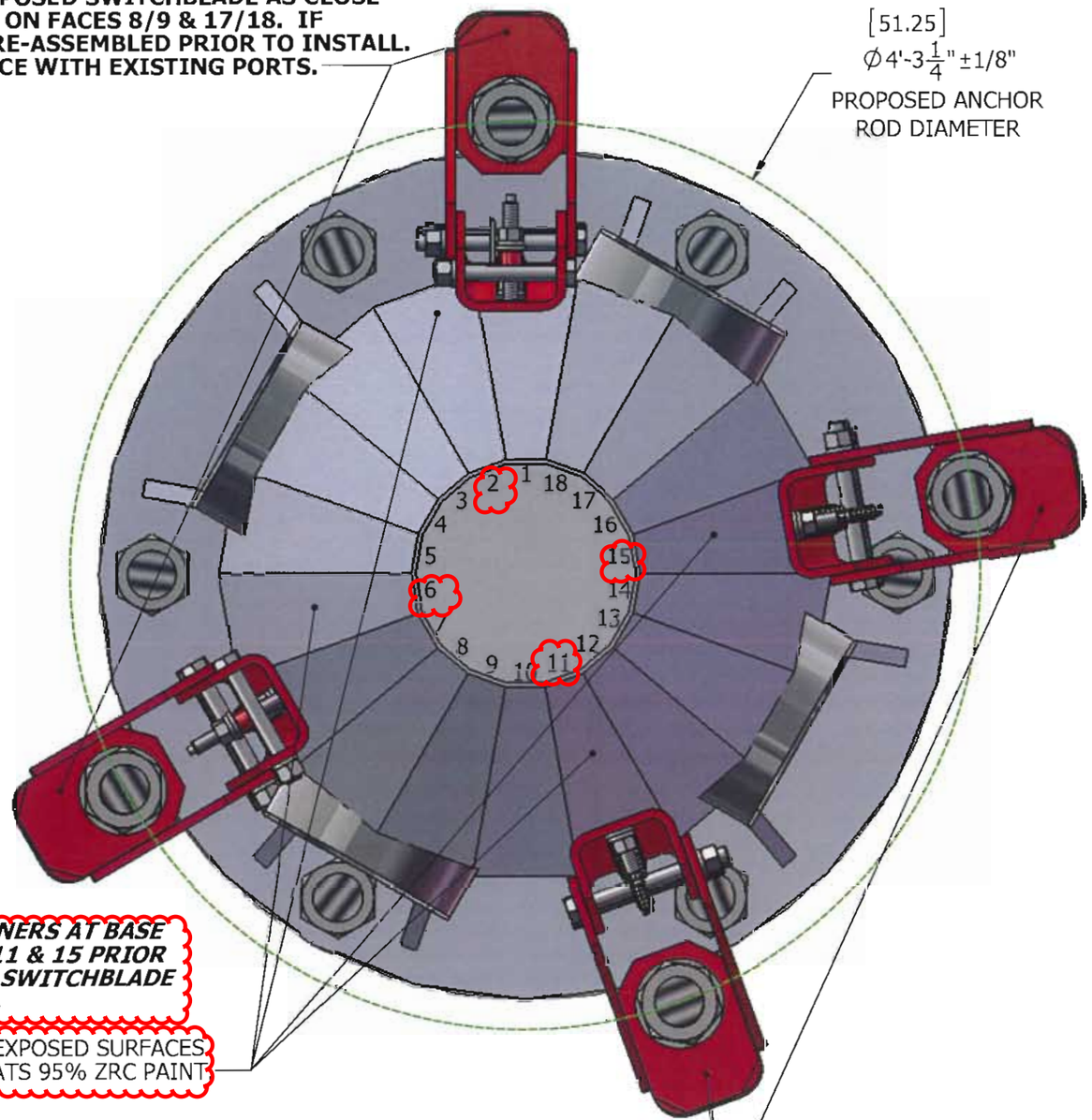
SHEET TITLE: S-1
REVISION: 0

INSTALL (2) SIDES OF SWITCHBLADE BASE TERMINATION USING (2) **RSB-0173-20** BASE TERM - SPLICE ON FACES 1 & 7. ENSURE THAT THE CORRECT PARTS ARE USED ON THESE FACES PRIOR TO MOUNTING.

REFER TO SHEET F-1 FOR INSTALLATION DETAILS

PRE-ASSEMBLE BASE TERMINATIONS PRIOR TO MOUNTING TO TOWER. LOCATE PROPOSED SWITCHBLADE AS CLOSE TO THE EXISTING PORTS ON FACES 8/9 & 17/18. IF SWITCHBLADE IS NOT PRE-ASSEMBLED PRIOR TO INSTALL. MAY CAUSE INTERFERENCE WITH EXISTING PORTS.





REMOVE STIFFENERS AT BASE ON FACES 2, 6, 11 & 15 PRIOR TO INSTALLING SWITCHBLADE TERMINATIONS.

COLD GALV. ANY EXPOSED SURFACES WITH MIN (2) COATS 95% ZRC PAINT

INSTALL (2) SIDES OF SWITCHBLADE BASE TERMINATION USING (2) **RSB-0172-20** BASE TERM - TERM ON FACES 11 & 15. ENSURE THAT THE CORRECT PARTS ARE USED ON THESE FACES PRIOR TO MOUNTING.

SWITCHBLADE BASE TERMINATION DETAIL

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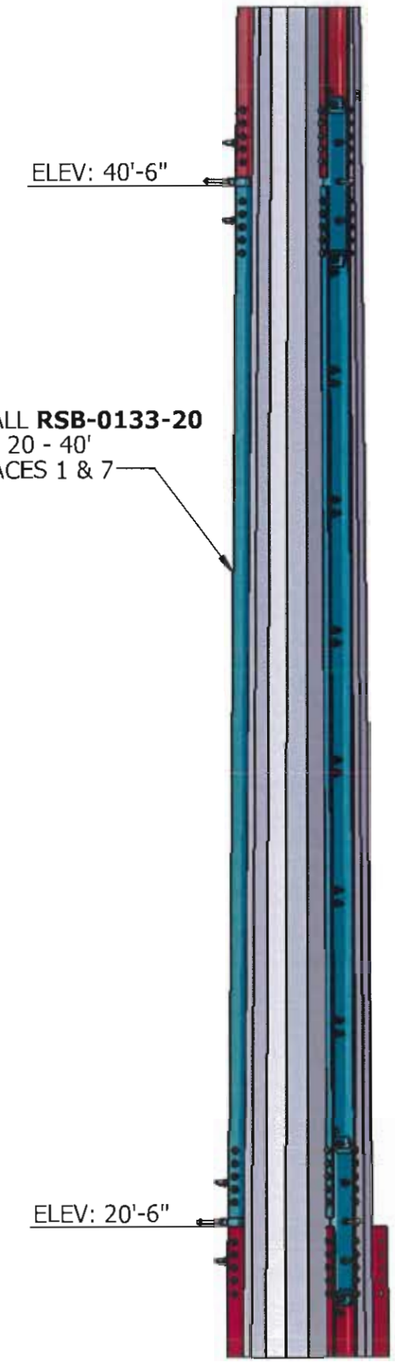
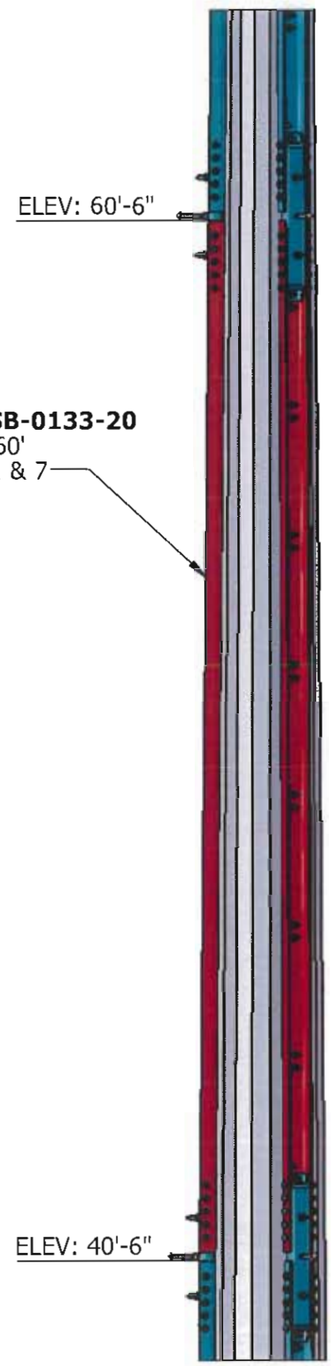
SITE INFORMATION
69 WHEELER ST
NEW HAVEN, CT 06512

DESIGN TYPE:
MONOPOLE REINFORCEMENT

SHEET TITLE:
REINFORCEMENT DETAILS

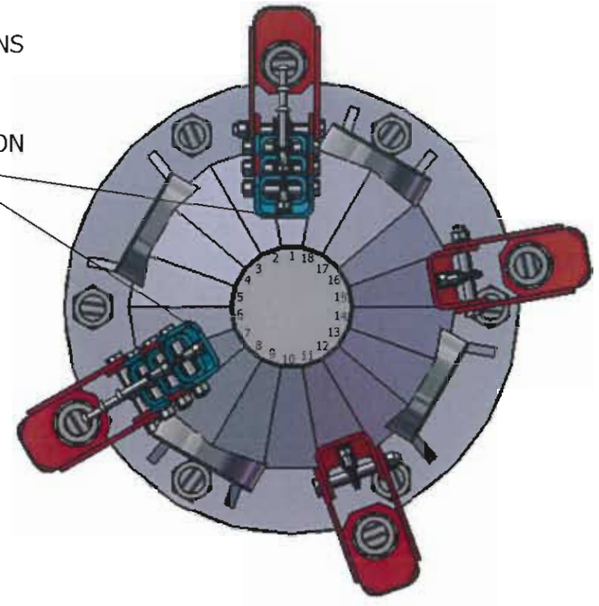
SHEET TITLE: D-1 | REVISION: 0

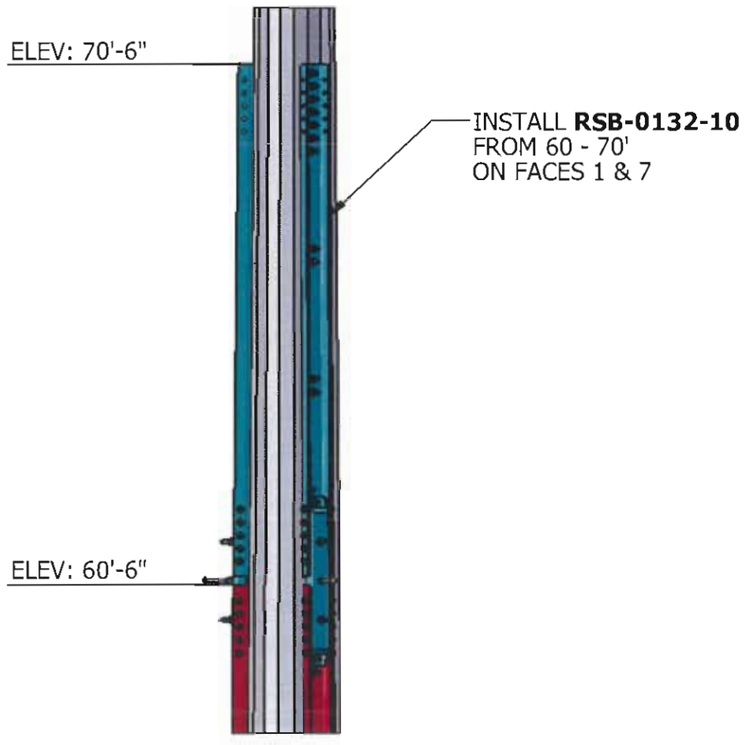




INSTALL SWITCHBLADE
AT DETAILED ELEVATIONS
ON FACES 1 & 7.

REFER TO SHEET
D-M19 FOR INSTALLATION
INSTRUCTIONS.





SWITCHBLADE INSTALLATION DETAILS FOR FACES 1 & 7

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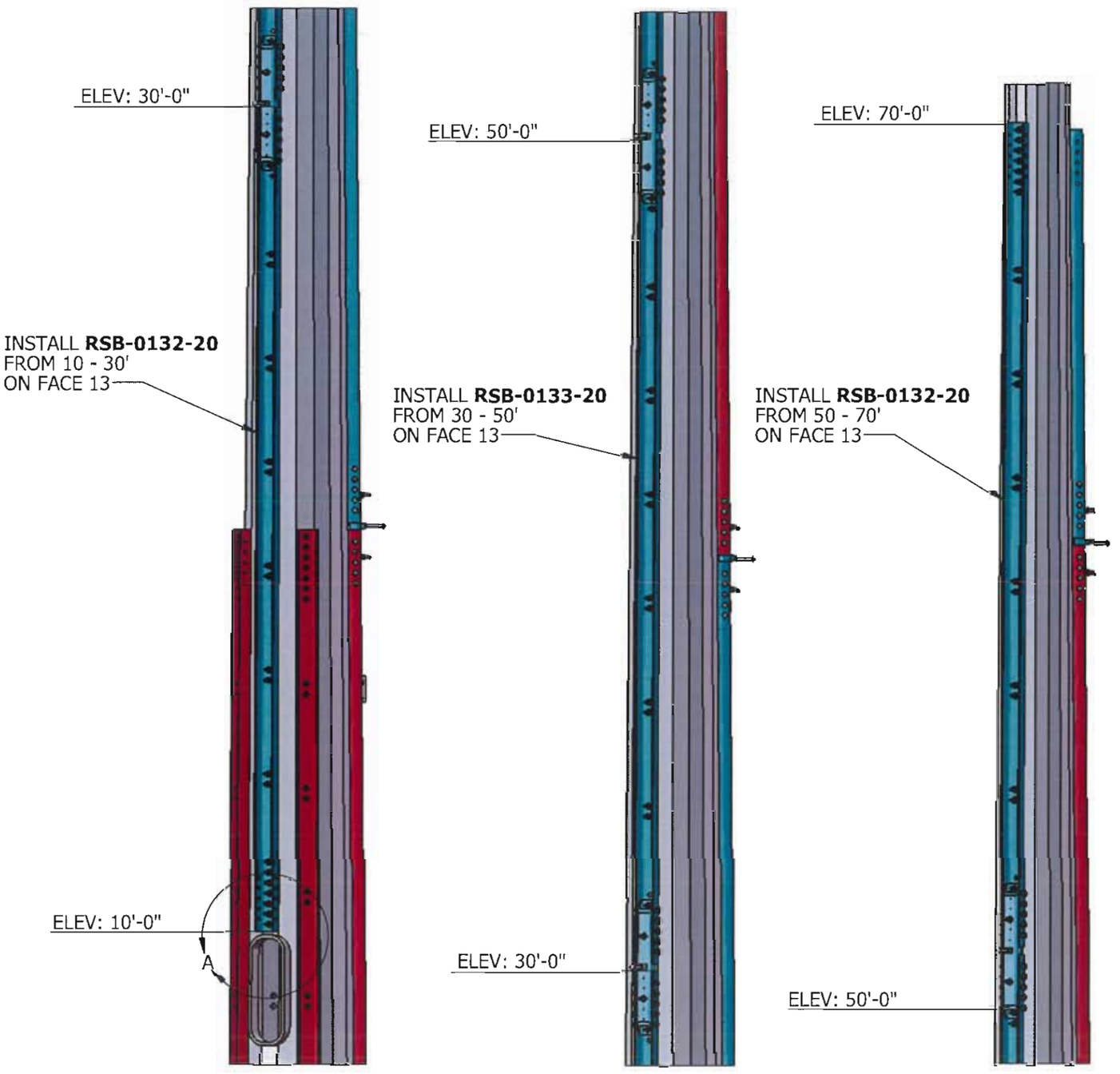
SITE INFORMATION:
69 WHEELER ST
NEW HAVEN, CT 06512

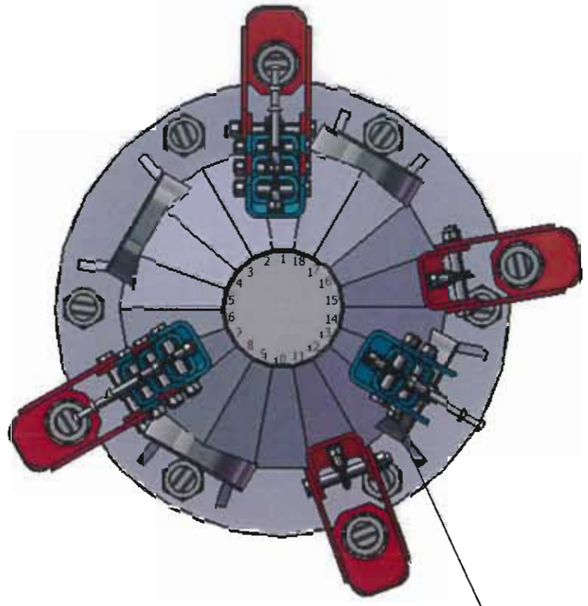
DESIGN TYPE:
MONOPOLE
REINFORCEMENT

SHEET TITLE
DETAILS (CONT'D)

SHEET TITLE: D-2

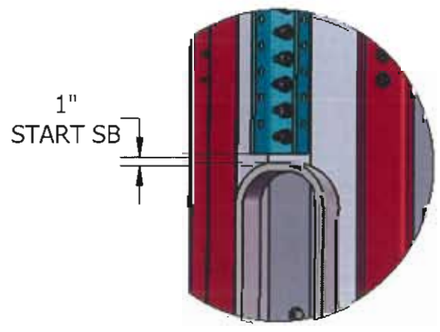
REVISION: 0





INSTALL SWITCHBLADE
AT DETAILED ELEVATIONS
ON FACE 13.

REFER TO SHEET
D-M19 FOR INSTALLATION
INSTRUCTIONS.



DETAIL A
SCALE 2 : 35

SWITCHBLADE INSTALLATION DETAILS FOR FACE 13

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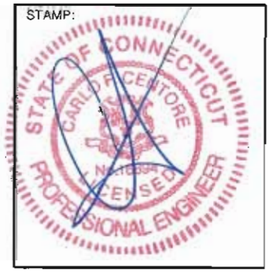

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SITE INFORMATION
69 WHEELER ST
NEW HAVEN, CT 06512

DESIGN TYPE:
MONOPOLE
REINFORCEMENT

SHEET TITLE:
DETAILS (CONT'D)

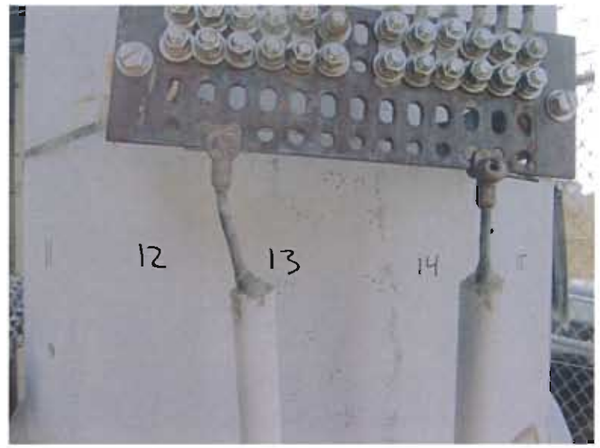
SHEET TITLE:	REVISION
D-3	0

OBSTRUCTION: STIFFENERS AT TOWER BASE ON FACES 2, 6, 11 & 15.

SOLUTION: REMOVE STIFFENERS AND COAT EXPOSED SURFACES WITH MIN. (2) COATS 95% ZRC PAINT.

OBSTRUCTION: ICE BRIDGE ON FACE 11.

SOLUTION: TRIM / COPE BRIDGE AS NECESSARY AROUND PROPOSED REINFORCEMENT. COAT AFFECTED AREAS WITH MIN. (2) COATS 95% ZRC PAINT.



OBSTRUCTION: GROUNDING PLATE.

SOLUTION: LOOSEN AND ROTATE PLATE AS NECESSARY TO AVOID INTERFERENCE WITH PROPOSED SWITCHBLADE INSTALLATION.

GRIND SAFETY CLIMB GUIDES OFF FACE 1 BETWEEN 0 - 70'

USE **P202-001-01** BRACKET TO REINSTALL GUIDES ON SWITCHBLADE. USE SUPPLIED Ø3/8" HARDWARE TO REATTACH SAFETY CLIMB GUIDE AND:
(1) Ø7/8" LOCKWASHER
(1) AJAX NUT

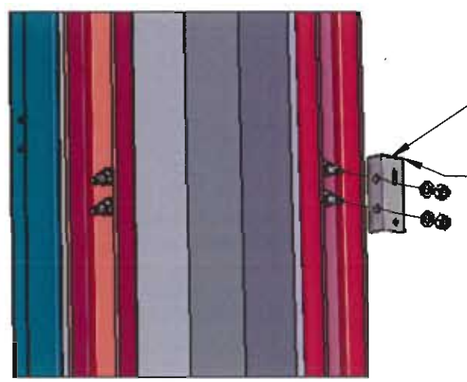
TO SECURE TO SWITCHBLADE

OBSTRUCTION: SAFETY CLIMB ON FACE 1 FROM 0 - 70'.

SOLUTION: USE SUPPLIED TERMINATION BRACKET AND REMOUNT EXISTIING TERMINATION TO SWITCHBLADE. GRIND EXISTING FLANGE ATTACHMENT OFF TOWER, COLD GALV. ALL EXPOSED SURFACES WITH MIN. (2) COATS 95% ZRC PAINT.

REINSTALL TERMINATION USING:
(1) **CP-00685-01**
(2) Ø7/8" LOCKWASHERS
(2) AJAX NUTS

INSTALL SAFETY CLIMB AS CLOSE TO THE EXISTING POSITION AS POSSIBLE, ATTACH TO DOUBLE AJAX ON SWITCHBLADE ASSEMBLY AFTER SWTICHBLADE IS INSTALLED.



INSTALL SAFETY CLIMB TERMINATION TO SLOTTED SIDE OF PART.

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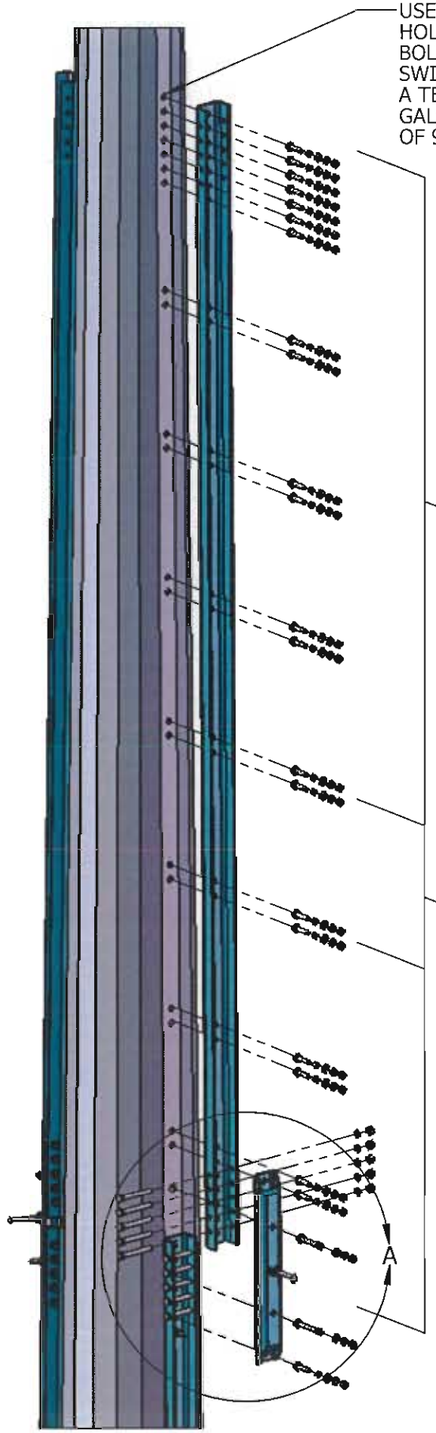
0	04/11/12	MODIFICATION DRAWINGS			

SITE INFORMATION:
69 WHEELER ST
NEW HAVEN, CT 06512

DESIGN TYPE:
MONOPOLE REINFORCEMENT

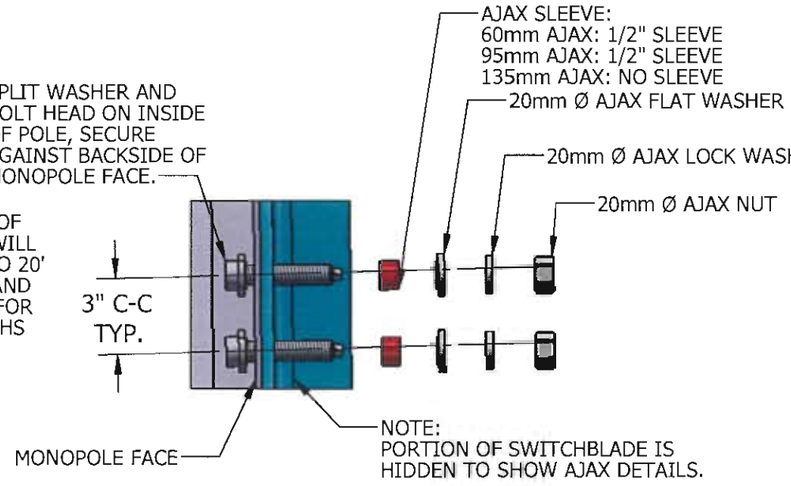
SHEET TITLE:
OBSTRUCTIONS

SHEET TITLE: D-4 REVISION: 0

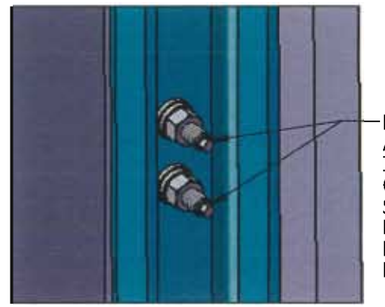


SWITCHBLADE (SPLICE - TERMINATION) INSTALLATION DETAIL

AJAX BOLT INSTALLATION INSTRUCTIONS:
PLACE ASSEMBLED BOLT IN SHOWN ORDER ON AJAX TOOL WITH SPLIT WASHER FOLDED AROUND THE THIN NECK ON THE TOOL. GUIDE THE BOLT THROUGH THE HOLE AND TWIST TO ENGAGE THE SPLIT WASHER AGAINST THE BACK FACE OF THE POLE. SLIDE SLEEVE INTO HOLE AND THE REST OF THE HARDWARE ONTO THE BOLT. HAND TIGHTEN NUT WHILE HOLDING BOLT WITH AJAX TOOL.

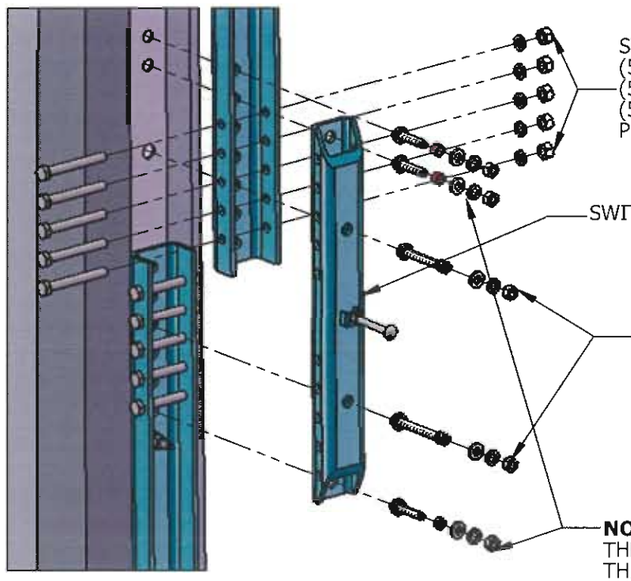


AJAX CONNECTION DETAIL EXPLODED VIEW

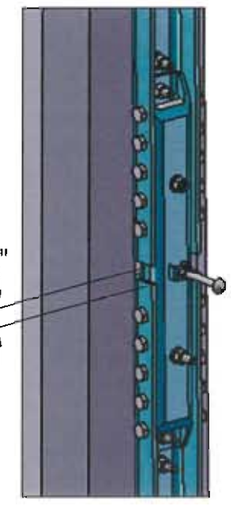


REMOVE AJAX TOOL AND PRE-TENSION INDIVIDUAL PARTS OF AJAX BOLTS. SEE SHEET GN-1 FOR TIGHTENING PROCEDURE OF AJAX BOLTS.

AJAX CONNECTION DETAIL



DETAIL A
SPLICE CONNECTION EXPLODED DETAIL



SPLICE CONNECTION ASSEMBLED DETAIL

TYPICAL

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0	2/15/10	SWITCHBLADE DETAIL DRAWING	RM	ES	BC
1	5/11/10	UPDATED DETAIL	MY	ES	BC
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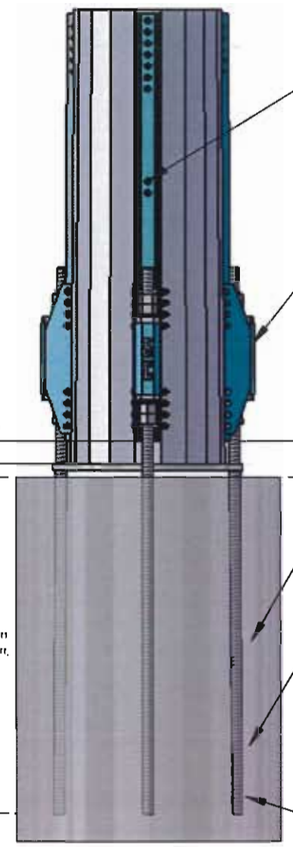
FILE NAME
D-M19 - SwitchBlade Install Details (Splice - Term.)_R1

DESIGN TYPE
MONOPOLE REINFORCEMENT

SHEET TITLE:
SWITCHBLADE INSTALLATION DETAIL

SHEET TITLE: D-M19 | REVISION: 1

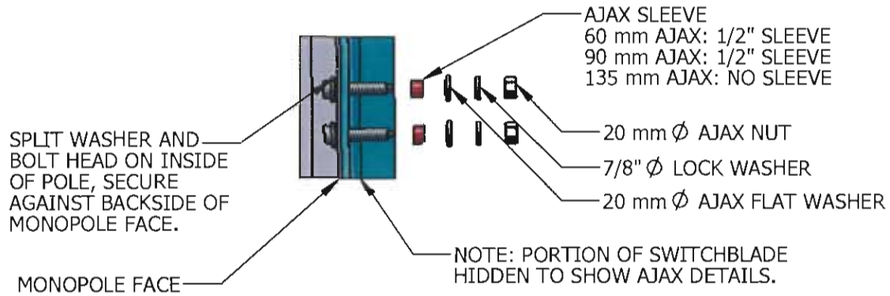


SWITCHBLADE FOUNDATION DETAIL

ANCHOR ROD INSTALLATION NOTES:

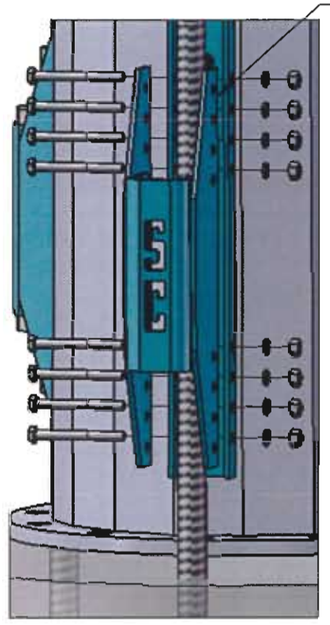
1. HOLES SHALL BE FREE OF DEBRIS AND MOISTURE; CLEAN WITH VACUUM WHEN NECESSARY.
2. REFER TO MANUFACTURERS INSTRUCTIONS FOR ALLOWABLE INSTALLATION TEMPERATURE RANGE FOR SIKADUR. MIN 40 °F AMBIENT/SUBSTRATE TEMPERATURE, NO MAX TEMPERATURE LIMIT.
3. AFTER CORING IS FINISHED, COMPLETE TAPE DROPS WITH PHOTOS FOR EACH HOLE. INSTALL ROD INTO HOLE TO ENSURE NO OBSTRUCTIONS, REMOVE, INSTALL EPOXY AND REINSTALL ROD.
4. APPROXIMATE EPOXY AMOUNTS BASED ON 3" Ø CORE AND 2-3/4" Ø ROD: 5' CORE = 0.61 GAL/ AR.
5. REFER TO GN-1 FOR ADDITIONAL NOTES.

AJAX BOLT INSTALLATION INSTRUCTIONS:
AJAX BOLTS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS. PLACE ASSEMBLED BOLT IN SHOWN ORDER ON AJAX TOOL WITH SPLIT WASHER FOLDED AROUND THE THIN NECK ON THE TOOL. GUIDE THE BOLT THROUGH THE HOLE AND TWIST TO ENGAGE THE SPLIT WASHER AGAINST THE BACK FACE OF THE POLE. SLIDE SLEEVE INTO HOLE AND THE REST OF THE HARDWARE ONTO THE BOLT. HAND TIGHTEN NUT WHILE HOLDING BOLT WITH AJAX TOOL. FOR FINAL TIGHTENING, APPLY 270 FT-LB OF TORQUE OR ROTATE NUT 1/2 TURN PAST THE SNUG-TIGHT CONDITION.



AJAX CONNECTION DETAIL EXPLODED VIEW

AFTER INSTALLATION REMOVE AJAX TOOL AND PRE-TENSION INDIVIDUAL PARTS OF AJAX BOLTS. SEE SHEET GN-1 FOR TIGHTENING PROCEDURE OF AJAX BOLTS.



NOTE:
ANCHOR RODS SHOULD BE INSTALLED AFTER ALL AJAX BOLTS TO ENSURE PROPER CLEARANCE FOR AJAX TOOL AND TIGHTENING.

SWITCHBLADE INSTALL DETAIL EXPLODED VIEW

HARDWARE INSTALL DETAIL EXPLODED VIEW

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STATE OF CONNECTICUT
CARLO A. CENTORE
LICENSED
PROFESSIONAL ENGINEER

REVISIONS:

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3					
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SITE INFORMATION
ANCHOR DETAIL F-M08
DESIGN TYPE:
MONOPOLE REINFORCEMENT
SHEET TITLE:
ANCHOR FOUNDATION DETAILS
SHEET TITLE: F-1
REVISION: 0

ISSUE #1: LARGE BIRD NEST ON TOP OF TOWER.

RECOMMENDATION: REMOVE NEST IF FOUND TO BE UNINHABITED.

ISSUE #2: SAFETY CLIMB OBSTRUCTED BY MOUNT AT 79'

RECOMMENDATION: INSTALL COMPETENT CLIMBER SIGN AT BASE OF TOWER.

ISSUE #3: NO LOCK ON (2) COMPOUND GATES.

RECOMMENDATION: INSTALL LOCKS ON BOTH GATES.

ISSUE #4:TRASH AND DEBRIS AROUND COMPOUND.

RECOMMENDATION: REMOVE TRASH AND PROPERLY DISPOSE.

ISSUE #5: PAINT PEELING AROUND BASE OF TOWER.

RECOMMENDATION: REMOVE PAINT FROM AFFECTED AREAS USING WIRE BRUSH OR SIMILAR, REPAINT SURFACE WITH MIN. (2) COATS SIMILAR COLOR.

ISSUE #6: GROUT CHIPPING BELOW TOWER BASE PLATE.

RECOMMENDATION: REPAIR CHIPS WITH MIN. 4000 PSI NON-SHRINK GROUT & MONITOR GROUT FOR FURTHER CRACKING.

CENTEK engineering
Centered on Solutions
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405

www.CentekEng.com

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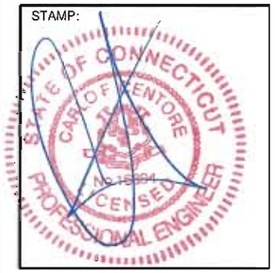
2400 CENTRAL AVE
SUITE A-1 SOUTH
BOULDER, CO 80301
(866) 386 - 7622

JOB #: 120229

STAMP:



REVISIONS:

NO.	DATE	DESCRIPTION	BY	CHK	APD
0	04/11/12	MODIFICATION DRAWINGS	DT	RM	RG
1					
2					
3					
4					
5					

SITE INFORMATION:

69 WHEELER ST
NEW HAVEN, CT 06512

DESIGN TYPE:

MONOPOLE REINFORCEMENT

SHEET TITLE:

MAINTENANCE ISSUES

SHEET TITLE	REVISION
M-1	0

ISSUE #7: LIGHTNING ROD IS NOT THE TALLEST APPURTENANCE ON THE TOWER.

RECOMMENDATION: MOVE EXISTING LIGHTNING ROD TO TOP OF TOWER.

ISSUE #8: NO LOCKING DEVICE ON ANCHOR RODS.

RECOMMENDATION: INSTALL 2ND NUT ON TOP OF EXISTING ANCHOR ROD NUT.

ISSUE #9: MISSING STEP PEG AT 70'.

RECOMMENDATION: INSTALL NEW STEP PEG TO EXISTING BRACKET AT 70'.

ISSUE #10: LEVEL II RUST ON PORTS AT 70'-6".

RECOMMENDATION: REMOVE RUST WITH WIRE BRUSH OR SIMILAR. COLD GALV. AFFECTED AREAS WITH MIN. (2) COATS 95% ZRC PAINT.

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REVISIONS:

NO.	DATE	DESCRIPTION	BY	CHK	APD
0	04/11/12	MODIFICATION DRAWINGS	DT	RM	RG
1					
2					
3					
4					
5					

SITE INFORMATION:
69 WHEELER ST
NEW HAVEN, CT 06512

DESIGN TYPE:
MONOPOLE REINFORCEMENT

SHEET TITLE:
MAINTENANCE ISSUES (CONT'D)

SHEET TITLE: M-2

REVISION: 0

PROJECT INFORMATION

SCOPE OF WORK:
- AT&T ANTENNAS: (1) NEW ANTENNA PER SECTOR, FOR A TOTAL (3) NEW ANTENNAS. (2) EXISTING ANTENNAS PER SECTOR FOR 3 SECTORS, FOR A TOTAL OF (6) EXISTING ANTENNAS TO REMAIN. (1) EXISTING ANTENNA PER SECTOR FOR (3) SECTORS, FOR A TOTAL OF (3) EXISTING ANTENNAS TO BE REMOVED.
- AT&T RRUs: (1) NEW RRUs PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW RRUs; (2) EXISTING RRU PER SECTOR TO BE REUSED, FOR A TOTAL OF (6) EXISTING RRUs.
- AT&T SQUID: (1) NEW DC6 SURGE, FOR A TOTAL OF (1) NEW SQUID, (1) EXISTING DC-6 SURGE PROTECTOR, FOR A TOTAL OF (1) EXISTING SQUID TO REMAIN.
- AT&T CABLES: (1) NEW FIBER TRUNK & (2) NEW DC TRUNKS.

SITE ADDRESS:	69 WHEELER STREET NEW HAVEN, CT 06512
LATITUDE:	41.2959919 41° 17' 45.57"N
LONGITUDE:	-72.897942 -72° 53' 52.59"W
USID:	61168
TOWER OWNER:	LANDMARK DIVIDEND, LLC
TYPE OF SITE:	MONOPOLE/INDOOR EQUIPMENT
MONOPOLE HEIGHT:	98'-0"±
RAD CENTER:	91'-0"±
CURRENT USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY
PROPOSED USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

DRAWING INDEX

		REV.
T-1	TITLE SHEET	0
GN-1	GROUNDING & GENERAL NOTES	0
A-1	COMPOUND LAYOUT	0
A-2	EQUIPMENT LAYOUTS	0
A-3	ANTENNA LAYOUTS & ELEVATIONS	0
A-4	DETAILS	0
G-1	GROUNDING, ONE-LINE DIAGRAM & DETAILS	0

APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE SUBCONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN, ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AMD MAY IMPOSE CHANGES OR SITE MODIFICATIONS.

DISCIPLINE:	NAME:	
SITE ACQUISITION:		
CONSTRUCTION MANAGER:		
AT&T PROJECT MANAGER:		

at&t MOBILITY

FA CODE: 10035247
SITE NUMBER: CT2037
SITE NAME: NEW HAVEN WHEELER ST

VICINITY MAP

1.) START OUT GOING WEST ON COCHITUATE RD/MA-30 TOWARD BURR ST. (0.02 MI) 2.) MAKE A U-TURN AT BURR ST ONTO COCHITUATE RD/MA-30. (0.05 MI) 3.) MERGE ONTO I-90 W/MASSACHUSETTS TPKE W (PORTIONS TOLL). (38.8 MI) 4.) MERGE ONTO I-84 W/WILBUR CROSS HWY S VIA EXIT 9 TOWARD US-20/HARTFORD/NEW YORK CITY (PORTIONS TOLL) (CROSSING INTO CONNECTICUT). (41.7 MI) 5.) KEEP LEFT TO TAKE CT-15 S/WILBUR CROSS HWY S VIA EXIT 57 TOWARD I-91 S/CHARTER OAK BR/NY CITY. (2.0 MI) 6.) MERGE ONTO I-91 S VIA EXIT 86 TOWARD NEW HAVEN/NY CITY. (36.2 MI) 7.) TAKE THE HAMILTON ST EXIT, EXIT 2 (0.3 MI) 8.) STAY STRAIGHT TO GO ONTO IVES PL. (0.1 MI) 9.) TURN RIGHT ONTO EAST ST. 10.) TAKE THE 2ND LEFT ONTO WATER ST/US-1 N. 11.) CONTINUE TO FOLLOW US-1 N. (0.7 MI) 12.) TAKE THE 1ST LEFT ONTO WHEELER ST. 13.) ARRIVE 69 WHEELER ST ON THE RIGHT

PROJECT TEAM

CLIENT REPRESENTATIVE
COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617-639-4908
EMAIL: dcooper@empiretelecomm.com

SITE ACQUISITION:
COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617-639-4908
EMAIL: dcooper@empiretelecomm.com

COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617-639-4908
EMAIL: dcooper@empiretelecomm.com

ENGINEERING:
COMPANY: COM-EX CONSULTANTS, LLC
ADDRESS: 115 ROUTE 46, SUITE E39, MOUNTAIN LAKES, NJ 07046
CONTACT: NICHOLAS D. BARILE, P.E.
PHONE: 862-209-4300
EMAIL: nbarile@comexconsultants.com

RF ENGINEER:
COMPANY: AT&T MOBILITY - NEW ENGLAND
ADDRESS: 550 COCHITUATE ROAD, SUITE 550 13 & 14, FRAMINGHAM, MA 01701
CONTACT: CAMERON SYME
PHONE: 508-596-7146
EMAIL: cs6970@att.com

CONSTRUCTION MANAGEMENT:
COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: GRZEGORZ "GREG" DORMAN
PHONE: 484-683-1750
EMAIL: gdorman@empiretelecomm.com

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY, AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CONNECTICUT ONE CALL SYSTEM, INC. 1-800-922-4455 STOP - CALL BEFORE YOU DIG!

CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800-922-4455 OR DIAL 811

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PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CTU2037
SITE NAME: NEW HAVEN WHEELER ST

69 WHEELER STREET
NEW HAVEN, CT 06512
NEW HAVEN COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/29/16	ISSUED AS FINAL	NJM	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: CJT

SEAL: STATE OF CONNECTICUT, NICHOLAS D. BARILE, 28301, REGISTERED PROFESSIONAL ENGINEER, PROFESSIONAL ENGINEER, CT

AT&T

DRAWING TITLE: TITLE SHEET

JOB NUMBER	DRAWING NUMBER	REV
15178-EMP	T-1	0

GROUNDING NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-3PS-EG00-0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.

13. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV-G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').

14. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE ½" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   - CONTRACTOR – EMPIRE TELECOM
   - SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   - OWNER – AT&T MOBILITY
   - OEM – ORIGINAL EQUIPMENT MANUFACTURER

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR (EMPIRE TELECOM).

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR

9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

14. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy=36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."

16. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

17. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

18. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

19. SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
   - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
   - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
   - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS

20. SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
   - AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
   - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, THIRTEENTH EDITION
   - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
   - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
   - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
   - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
   - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVELY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
   - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS

21. FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

22. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

23. INFORMATION SHOWN ON THIS SET OF PLANS TAKEN FROM DRAWINGS PREPARED BY CENTEK ENGINEERING FOR A RECENT UPGRADE DATED 05/03/2012. CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.

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16 ESQUIRE ROAD
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SITE NUMBER: CTU2037
SITE NAME: NEW HAVEN WHEELER ST

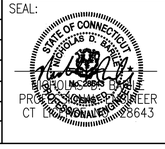
69 WHEELER STREET
NEW HAVEN, CT 06512
NEW HAVEN COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/29/16	ISSUED AS FINAL	NJM	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: CJT

SEAL:

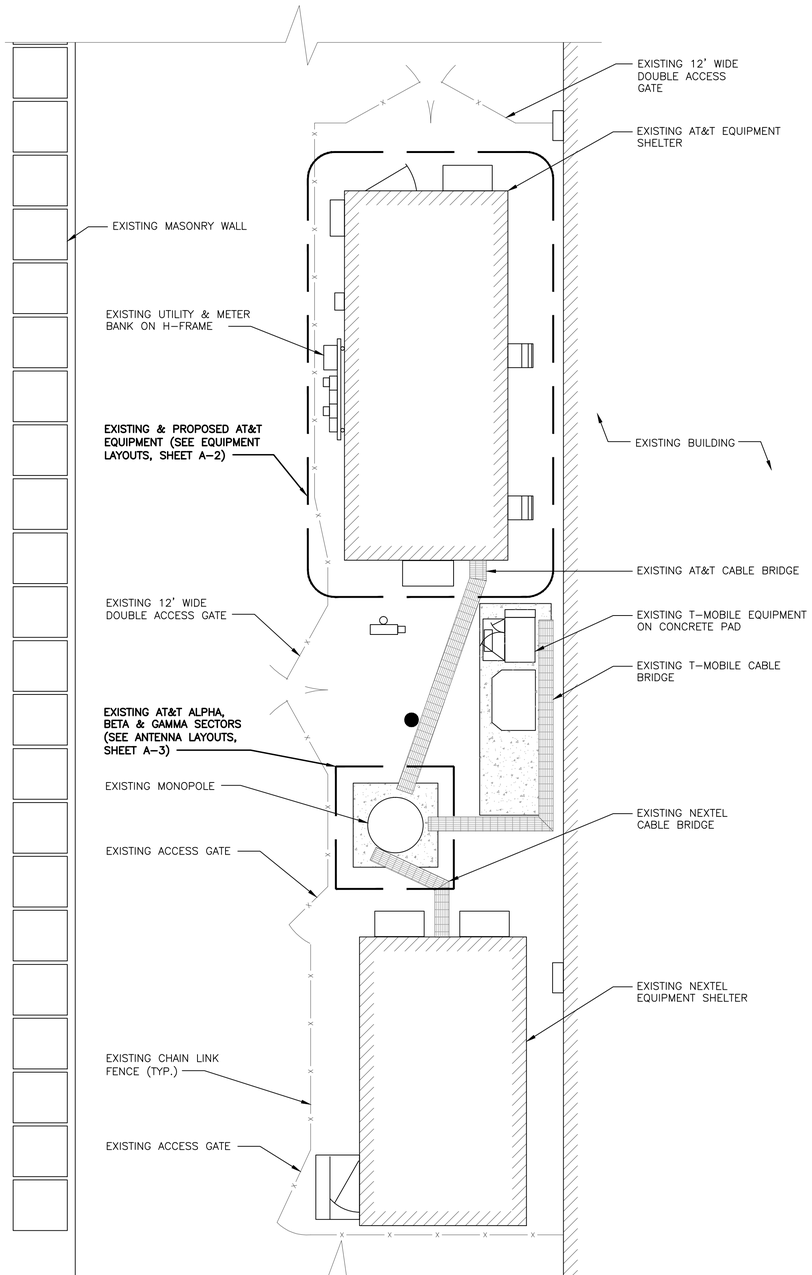


PRINCIPAL ENGINEER
CT LICENSE NO. 23643

AT&T

DRAWING TITLE:
GROUNDING & GENERAL NOTES

JOB NUMBER	DRAWING NUMBER	REV
15178-EMP	GN-1	0

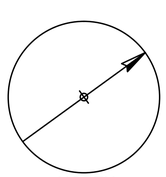


COMPOUND LAYOUT

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

0 4 8 16

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



NOTE:
CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

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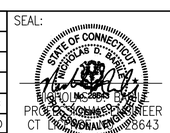
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: CJT

SEAL:

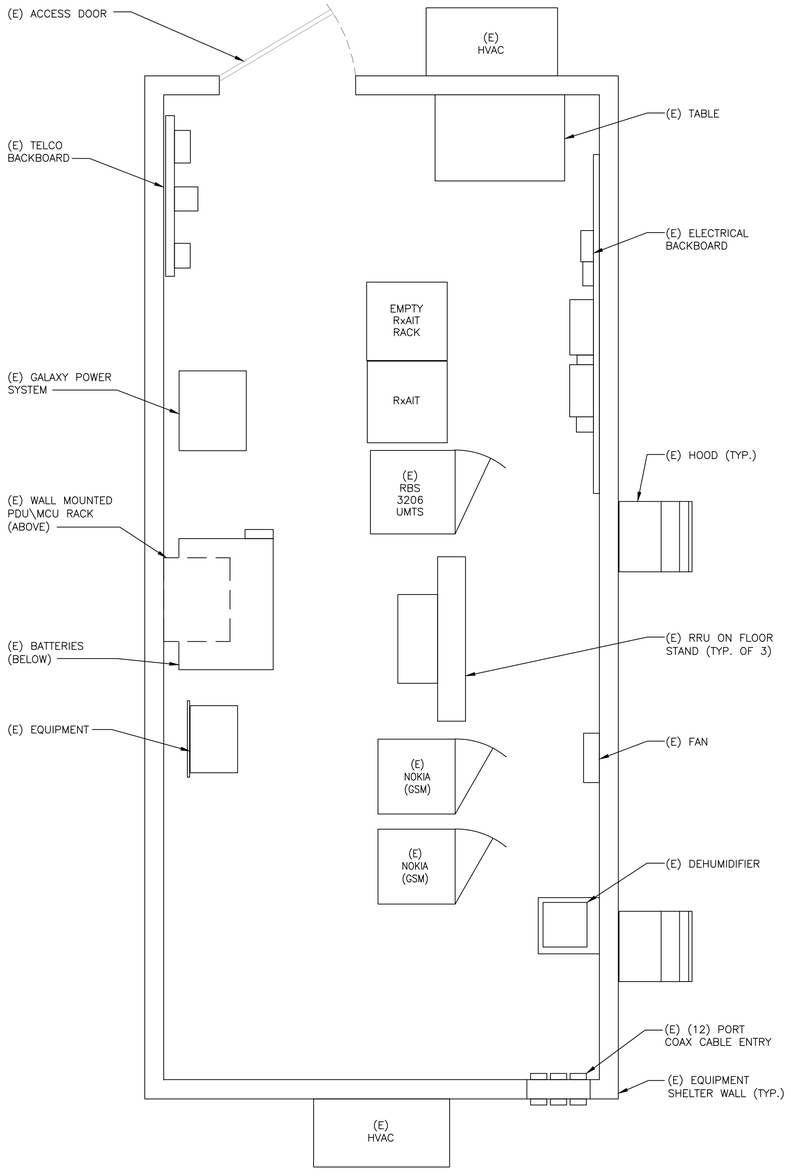


PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:
COMPOUND LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
15178-EMP	A-1	0



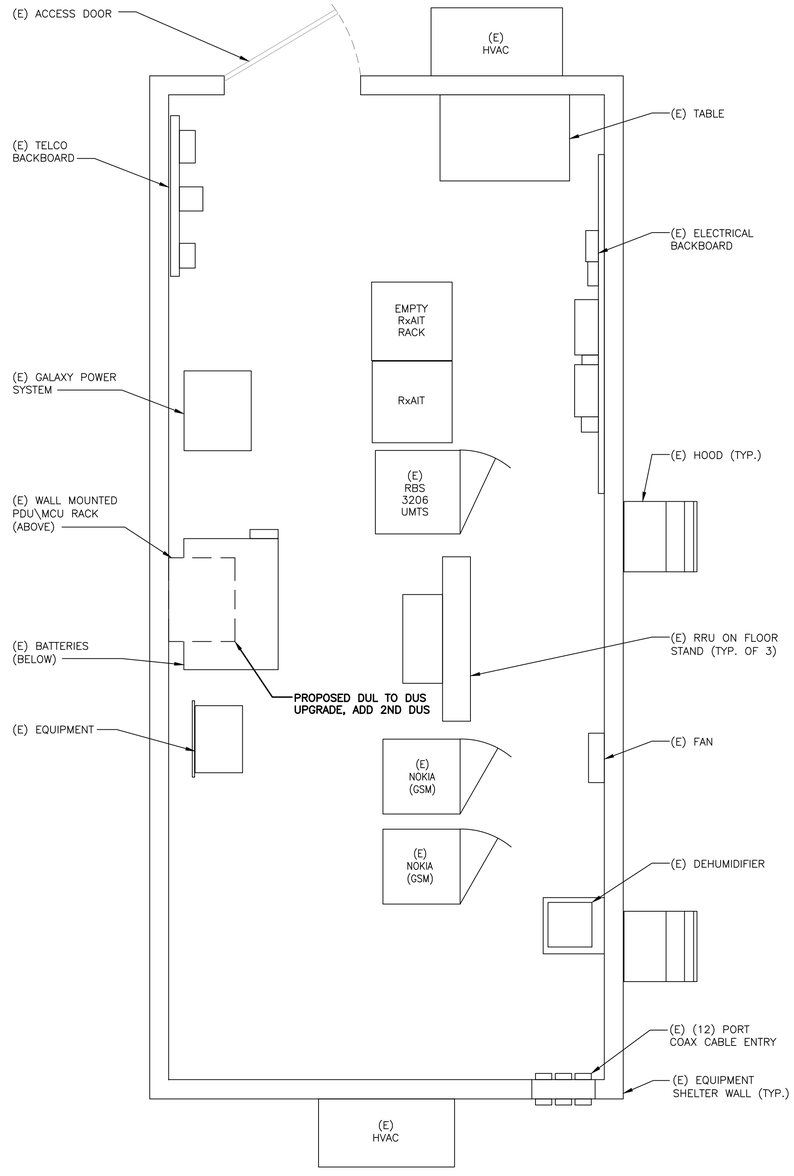
EXISTING EQUIPMENT LAYOUT

SCALE: 1" = 2'-0"

2 0 1 2 4 8

(IN FEET)
1/2 Inch = 1 Foot

NORTH



PROPOSED EQUIPMENT LAYOUT

SCALE: 1" = 2'-0"

2 0 1 2 4 8

(IN FEET)
1/2 Inch = 1 Foot

NORTH

COM-EX Consultants
115 ROUTE 46
SUITE E39
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PHONE: 862.209.4300
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EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CTU2037
SITE NAME: NEW HAVEN WHEELER ST

69 WHEELER STREET
NEW HAVEN, CT 06512
NEW HAVEN COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/29/16	ISSUED AS FINAL	NJM	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: CJT

SEAL:
STATE OF CONNECTICUT
NICHOLAS D. BARTLETT
LICENSED PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

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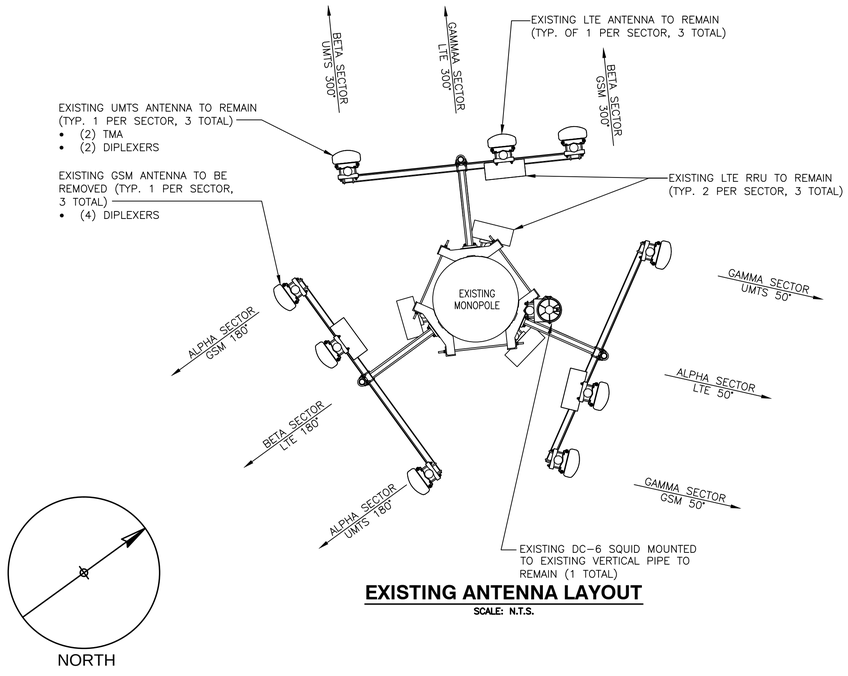
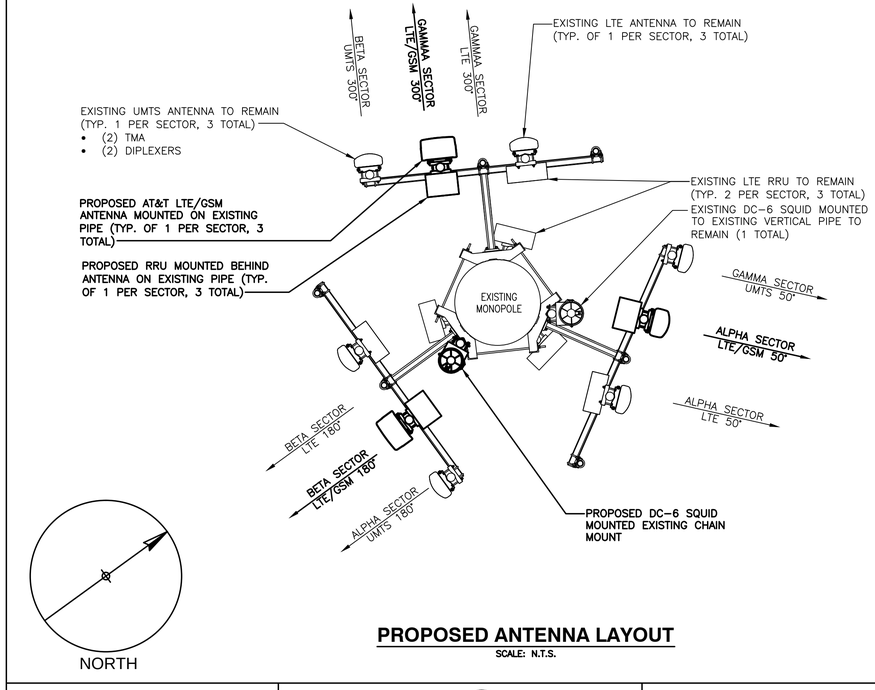
DRAWING TITLE:
EQUIPMENT LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
15178-EMP	A-2	0



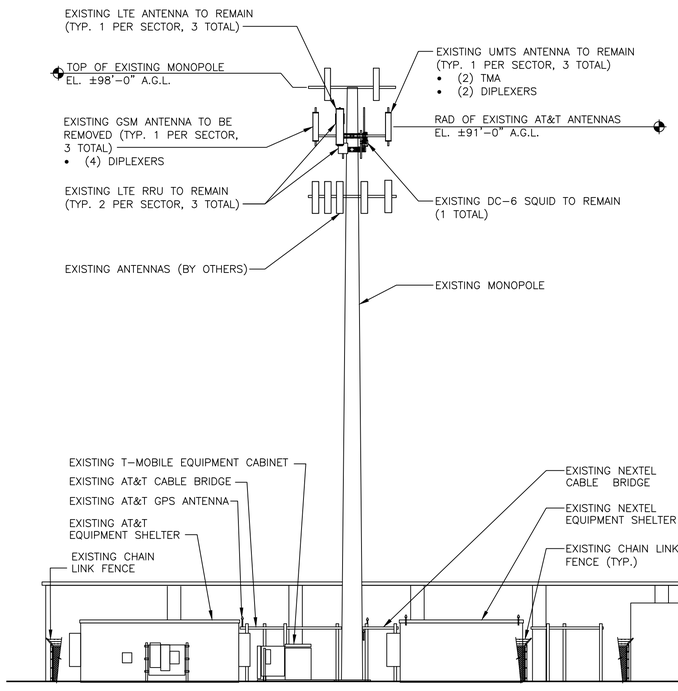
EXISTING ANTENNA LAYOUT

SCALE: N.T.S.



PROPOSED ANTENNA LAYOUT

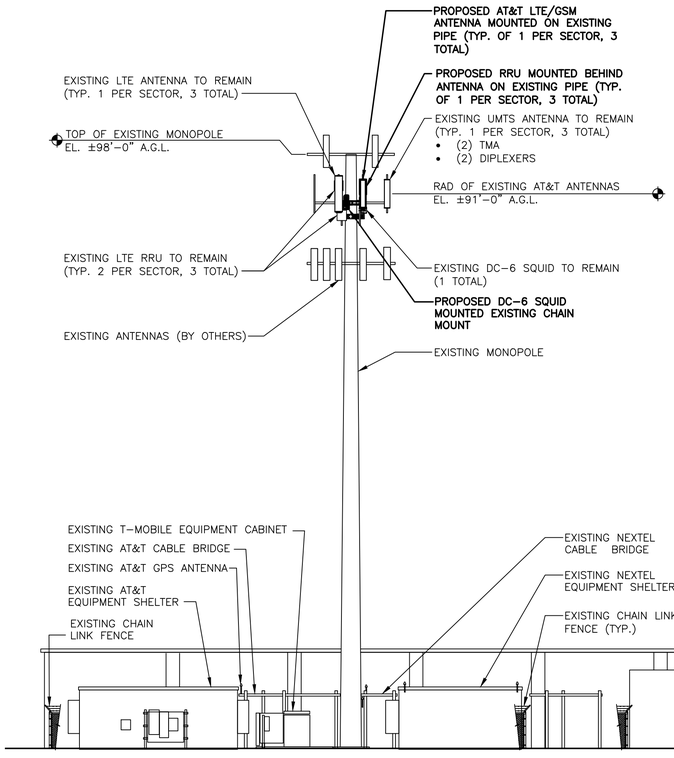
SCALE: N.T.S.



EXISTING TOWER ELEVATION

SCALE: NTS

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.



PROPOSED TOWER ELEVATION

SCALE: NTS

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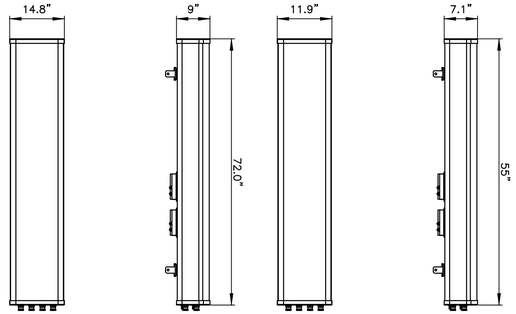
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: CJT

SEAL:
STATE OF CONNECTICUT
NICHOLAS D. BARTOLOMEO
LICENSED PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER
CT 29643

AT&T

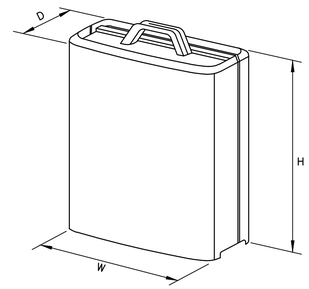
DRAWING TITLE:
ANTENNA LAYOUTS & ELEVATIONS

JOB NUMBER	DRAWING NUMBER	REV
15178-EMP	A-3	0



MANUFACTURER	CCI	ANDREW
MODEL	HPA–65R–BUU–H6	SBNHH–1D65A
WEIGHT	50.7 LBS	33.5 LBS

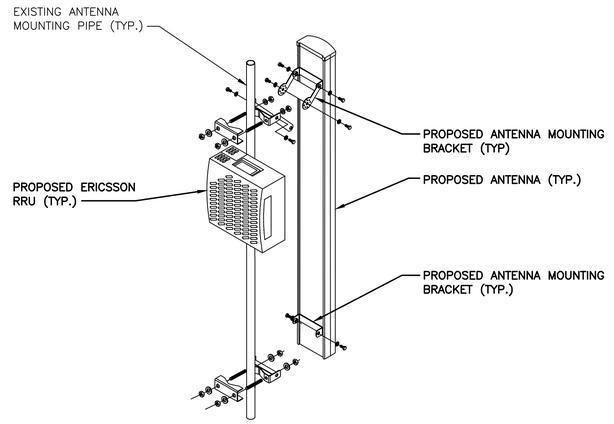
LTE ANTENNA DETAIL
SCALE: N.T.S.



MODEL	L x W x H	WEIGHT
*RRUS–11	19.69" x 16.97" x 7.17"	50.7 LBS
RRUS–32	29.9"x13.3"x9.5"	77 LBS

*DENOTES EXISTING.

RRUS DETAIL
SCALE: N.T.S.



ANTENNA AND RRU MOUNTING DETAIL
SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7750	57"x11"x5"
	A2	–	–	–
	A3	KMW	AM–X–CD–14–65–00T–RET	48"x11.8"x5.9"
	A4	POWERWAVE	7750	57"x11"x5"
BETA	B1	POWERWAVE	7750	57"x11"x5"
	B2	–	–	–
	B3	KMW	AM–X–CD–16–65–00T–RET	72"x11.8"x5.9"
	B4	POWERWAVE	7750	57"x11"x5"
GAMMA	G1	POWERWAVE	7750	57"x11"x5"
	G2	–	–	–
	G3	KMW	AM–X–CD–16–65–00T–RET	72"x11.8"x5.9"
	G4	POWERWAVE	7750	57"x11"x5"

FINAL ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7750	57"x11"x5"
	A2	**ANDREW**	**SBNHH–1D65A**	**55"x11.9"x7.1"**
	A3	KMW	AM–X–CD–14–65–00T–RET	48"x11.8"x5.9"
	A4	–	–	–
BETA	B1	POWERWAVE	7750	57"x11"x5"
	B2	**CCI**	**HPA–65R–BUU–H6**	**72"x14.8"x9"**
	B3	KMW	AM–X–CD–16–65–00T–RET	72"x11.8"x5.9"
	B4	–	–	–
GAMMA	G1	POWERWAVE	7750	57"x11"x5"
	G2	**CCI**	**HPA–65R–BUU–H6**	**72"x14.8"x9"**
	G3	KMW	AM–X–CD–16–65–00T–RET	72"x11.8"x5.9"
	G4	–	–	–

PROPOSED RRU SCHEDULE

SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	**ERICSSON**	**RRUS–32**	**29.9"x13.3"x9.5"**	–	–
	ERICSSON	RRUS–11 (EXISTING)	19.7"x16.9"x7.2"	–	–
	ERICSSON	RRUS–11 (EXISTING)	19.7"x16.9"x7.2"		
BETA	**ERICSSON**	**RRUS–32**	**29.9"x13.3"x9.5"**	–	–
	ERICSSON	RRUS–11 (EXISTING)	19.7"x16.9"x7.2"	–	–
	ERICSSON	RRUS–11 (EXISTING)	19.7"x16.9"x7.2"		
GAMMA	**ERICSSON**	**RRUS–32**	**29.9"x13.3"x9.5"**	–	–
	ERICSSON	RRUS–11 (EXISTING)	19.7"x16.9"x7.2"	–	–
	ERICSSON	RRUS–11 (EXISTING)	19.7"x16.9"x7.2"		

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NEW HAVEN COUNTY

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FRAMINGHAM, MA 01701

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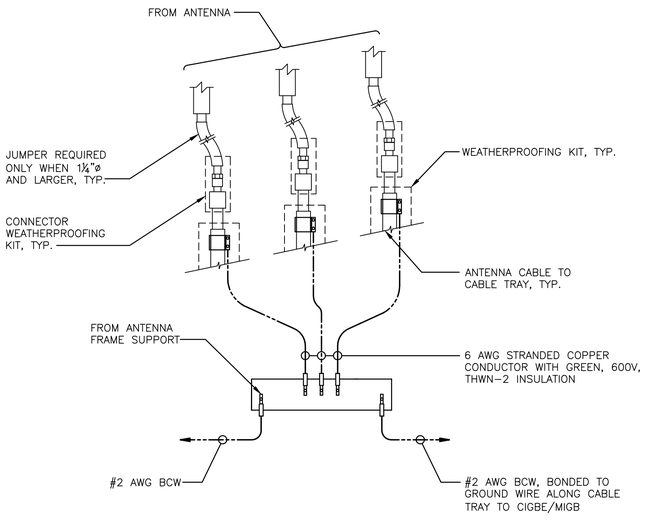
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: CJT

SEAL:
STATE OF CONNECTICUT
NICHOLAS D. BARTELT
LICENSED PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

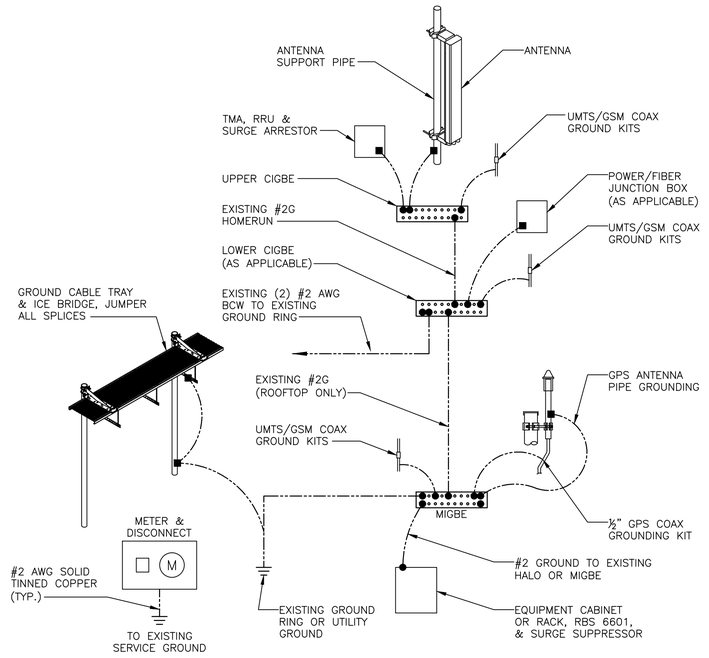
DRAWING TITLE:
DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15178–EMP	A–4	0



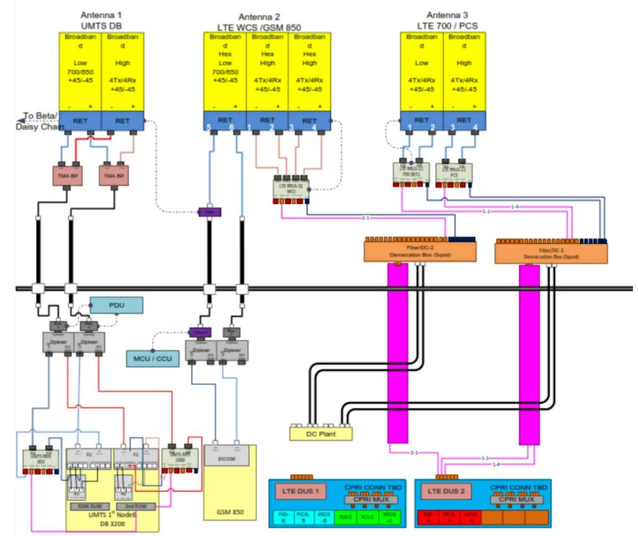
GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



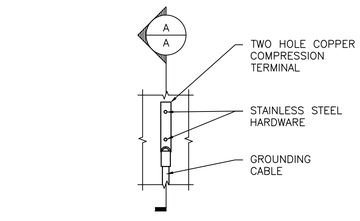
GROUNDING RISER DIAGRAM

SCALE: N.T.S.

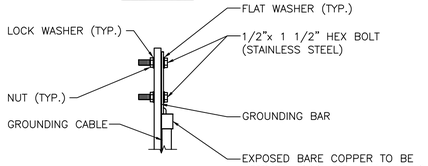


TYPICAL PLUMBING DIAGRAM (PER SECTOR)

SCALE: N.T.S.



ELEVATION



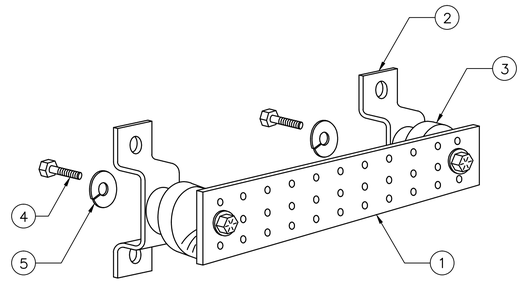
SECTION "A–A"

NOTE:

1. "DOUBLING UP" OR "STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



ITEM NO.	QTY.	DESCRIPTION
1	1	SOLID GROUND BAR (20"x 4"x ¼")
2	2	WALL MOUNTING BRACKET
3	2	INSULATORS
4	4	⅝"–11x1" H.H.C.S.
5	4	⅝" LOCK WASHER

NOTES:

EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION

SECTION "P" – SURGE PRODUCERS
- CABLE ENTRY PORTS (HATCH PLATES) (#2)
- GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
- +24V POWER SUPPLY RETURN BAR (#2)
- –48V POWER SUPPLY RETURN BAR (#2)
- RECTIFIER FRAMES

SECTION "A" – SURGE ABSORBERS
- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
- BUILDING STEEL (IF AVAILABLE) (#2)

GROUND BAR DETAIL

SCALE: N.T.S.

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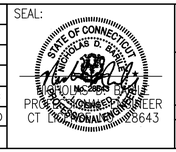

PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:
GROUNDING, ONE–LINE DIAGRAM & DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15178–EMP	G–1	0