Michael Gentile, Site Acquisition
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02739
Mobile: (508) 844-9813
mgentile@clinellc.com

January 9, 2019

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

RE: Notice of Exempt Modification // Site Number: CT2286
160 Deer Run Road, Wilton, CT (Site Name: Wilton – Deer Run Rd.)
N 41.24131944 // W -73.46988055

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains nine (9) antennas at the 110-foot level of the existing 120-foot lattice tower at 160 Deer Run Road. The tower is owned by SBA Communications. The property is owned by Westport Broadcasting Co. LLC. AT&T now intends to replace three (3) antennas for its LTE upgrade. These antennas would be installed at the 110-foot level of the tower. AT&T also intends to install one (1) sector mount for antennas, six (6) small RRUS (radios), as well as one (1) DC Surge Arrestor and associated two (2) DC and one (1) Fiber cables.

AT&T was originally approved for nine (9) antennas on June 20, 2011.

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 Lynne Vanderslice, First Selectwoman for the Town of Wilton, as well as the tower owner, SBA Communications, and the Ground Owner, Westport Broadcasting Co. LLC.

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 September 19, 2018, by Hudson Design Engineering, a structural analysis dated December 19, 2018 by FDH Infrastructure Services, a Mount Analysis dated August 29, 2018, by Hudson Design Engineering and an Emissions Analysis Report dated November 5, 2018, by Centerline Communications, LLC.

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.

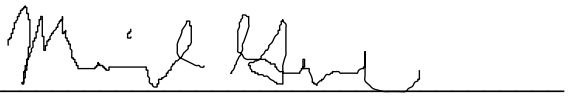
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

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 FDH Infrastructure Services, dated December 19, 2018 and a Mount analysis by Hudson Design Engineering, dated November 5, 2018.

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
750 West Center Street, Suite 301
West Bridgewater, MA 02739
Mobile: (508) 844-9813
mgentile@centerlincommunications.com

cc: Lynne Vanderslice, First Selectwoman, Town of Wilton, CT - as elected official
SBA Communications - as tower owner
Building & Zoning, Town of Wilton
Westport Broadcasting Co. LLC - as property owner

JOSEPH SERBIN
6073430588
CENTERLINE COMMUNICATIONS
1471 COUNTY ROAD 32
GREENE NY 13778

1 LBS

1 OF 1

DWT: 12,12,1

SHIP TO:
ATTN: BUILDING/ZONING
TOWN OF WILTON
238 DANBURY ROAD
WILTON CT 06897

CT 069 9-04

UPS GROUND

TRACKING #: 1Z 9Y4 503 43 2924 5371

BILLING: P/P

Reference #1: CT2286 - CSC to Building.Zoning

XOL 19.01.24 NV45 06.0A 10/2018

JOSEPH SERBIN
6073430588
CENTERLINE COMMUNICATIONS
1471 COUNTY ROAD 32
GREENE NY 13778

1 LBS

1 OF 1

DWT: 12,12,1

SHIP TO:
ATTN: OWNER
WESTPORT BROADCASTING CO LLC
160 DEER RUN ROAD
WILTON CT 06897

CT 069 9-04

UPS GROUND

TRACKING #: 1Z 9Y4 503 43 2824 5980

BILLING: P/P

Reference #1: CT2286 - CSC to Owner

XOL 19.01.24 NV45 06.0A 10/2018

JOSEPH SERBIN
6073430588
CENTERLINE COMMUNICATIONS
1471 COUNTY ROAD 32
GREENE NY 13778

1 LBS

1 OF 1

DWT: 12,12,1

SHIP TO:
MELANIE A. BACHMAN
CONNECTICUT SITING COUNCIL
10 FRANKLIN SQUARE
NEW BRITAIN CT 06051

CT 067 9-06

UPS GROUND

TRACKING #: 1Z 9Y4 503 43 1819 0361

BILLING: P/P

Reference #1: CT2286 - CSC Filing to CSC

XOL 19.01.24 NV45 06.0A 10/2018

JOSEPH SERBIN
6073430588
CENTERLINE COMMUNICATIONS
1471 COUNTY ROAD 32
GREENE NY 13778

1 LBS

1 OF 1

DWT: 12,12,1

SHIP TO:
CARLA SHORTER
5612269476
SBA COMMUNICATIONS CORPORATION
8051 CONGRESS AVENUE
BOCA RATON FL 33487

FL 332 6-07

UPS GROUND
TRACKING #: 1Z 9Y4 503 43 1626 5374

BILLING: P/P

Reference #1: CT2286 - CSC to Tower Owner

XOL 19.01.24 NV45 06.0A 10/2018

JOSEPH SERBIN
6073430588
CENTERLINE COMMUNICATIONS
1471 COUNTY ROAD 32
GREENE NY 13778

1 LBS

1 OF 1

DWT: 12,12,1

SHIP TO:
ATTN: FIRST SELECTWOMAN
TOWN OF WILTON
238 DANBURY ROAD
WILTON CT 06897

CT 069 9-04

UPS GROUND

TRACKING #: 1Z 9Y4 503 43 0934 2384

BILLING: P/P

Reference #1: CT2286 - CSC to Selectwoman

XOL 19.01.24 NV45 06.0A 10/2018

Town of Wilton, CT

Property Listing Report

Map Block Lot **81-28** Account **001780**

Property Information

Property Location	160 DEER RUN RD
Owner	WESTPORT BROADCASTING CO LLC
Co-Owner	
Mailing Address	PO BOX 1041 VIRGINIA BEACH VA 23451
Land Use	5-1 Vacant Res
Land Class	R
Zoning Code	R-2
Census Tract	
Sub Lot	

Neighborhood	05
Acreage	2
Utilities	
Lot Setting/Desc	Above Street
Survey Map	
Foundation	1

Photo

Sketch

Primary Construction Details

Year Built		Bedrooms		Exterior Walls	
Stories		Full Bathrooms		Interior Walls	
Building Style		Half Bathrooms		Heating Type	
Building Use		Bath Style		Heating Fuel	
Building Condition		Kitchen Style		AC Type	
Floors		Roof Style		Gross Bldg Area	
Total Rooms		Roof Cover		Total Living Area	

Report Created On **1/9/2019**

Town of Wilton, CT

Property Listing Report | Map Block Lot **81-28** | Account **001780**

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	0	0
Extras	0	0
Outbuildings	286800	200760
Land	506200	354340
Total	793000	555100

Outbuilding and Extra Items

Type	Description
Fence 6'	180 L.F.
Patio	892 S.F.
Shed Good	476 S.F.
CELL TOWER	1 UNITS

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area		0

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
WESTPORT BROADCASTING CO LLC	1081/0146	2/11/1998	400000
FLAMM, DONALD	0177/0277	6/27/1972	50000

Report Created On 1/9/2019

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT2286

FA#: 10092833

Wilton Deer Run Road
160 Deer Run Road
Wilton, CT 06897

November 5, 2018

Centerline Communications Project Number: 950012-180

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**18.81 %**

November 5, 2018

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

Emissions Analysis for Site: **CT2286 – Wilton Deer Run Road**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **160 Deer Run Road, Wilton, 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 population 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 population 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.

Population 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 performed for the proposed AT&T Wireless antenna facility located at **160 Deer Run Road, Wilton, 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
LTE	700 MHz	2	40
LTE	850 MHz	2	40
5G	850 MHz	2	25
LTE	1900 MHz (PCS)	4	40

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz and 1900 MHz (PCS) 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Powerwave 7770	110
A	2	Powerwave P65-16-XLH-RR	110
A	3	Kathrein 800-10965	110
B	1	Powerwave 7770	110
B	2	Powerwave P65-16-XLH-RR	110
B	3	Kathrein 800-10965	110
C	1	Powerwave 7770	110
C	2	Powerwave P65-16-XLH-RR	110
C	3	Kathrein 800-10965	110

Table 2: Antenna Data

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

RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.49
Antenna A2	Powerwave P65-16-XLH-RR	700 MHz	12.7	2	80	1,489.67	1.06
Antenna A3	Kathrein 800-10965	850 MHz / 1900 MHz (PCS)	13.45 / 15.65	8	290	8,753.54	3.64
						Sector A Composite MPE%	**5.19**
Antenna B1	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.49
Antenna B2	Powerwave P65-16-XLH-RR	700 MHz	12.7	2	80	1,489.67	1.06
Antenna B3	Kathrein 800-10965	850 MHz / 1900 MHz (PCS)	13.45 / 15.65	8	290	8,753.54	3.64
						Sector B Composite MPE%	**5.19**
Antenna C1	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.49
Antenna C2	Powerwave P65-16-XLH-RR	700 MHz	12.7	2	80	1,489.67	1.06
Antenna C3	Kathrein 800-10965	850 MHz / 1900 MHz (PCS)	13.45 / 15.65	8	290	8,753.54	3.64
					850 MHz / 1900 MHz (PCS)	Sector C Composite MPE%	**5.19**

Table 3: AT&T Emissions Levels

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max Per Sector Value	**5.19 %**
Verizon Wireless	6.95 %
T-Mobile	2.24 %
Sprint	1.13 %
Existing various antennas	3.30 %
Site Total MPE %:	**18.81 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	5.19 %
AT&T Sector B Total:	5.19 %
AT&T Sector C Total:	5.19 %
Site Total:	18.81 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector (s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

AT&T _ Frequency Band / Technology Max Power Values (Per Sector)	# 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 – Antenna 1	2	414.12	110	2.75	850 MHz	567	0.49%
AT&T 700 MHz LTE UMTS – Antenna 2	2	744.83	110	4.95	700 MHz	467	1.06%
AT&T 850 MHz LTE UMTS – Antenna 3	2	885.24	110	5.88	850 MHz	567	1.04%
AT&T 850 MHz 5G UMTS – Antenna 3	2	553.27	110	3.68	850 MHz	567	0.65%
AT&T 1900 MHz (PCS) LTE UMTS – Antenna 3	4	1,469.13	110	19.53	1900 MHz (PCS)	1000	1.95%
						Total:	**5.19%**

Table 6: AT&T Maximum Sector MPE Power Values

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population 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 population exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	5.19 %
Sector B:	5.19 %
Sector C:	5.19 %
AT&T Maximum Total (per sector):	5.19 %
Site Total:	18.81 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **18.81 %** of the allowable FCC established general population 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
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767

FDH INFRASTRUCTURE SERVICES
ENGINEERING INNOVATION

Structural Analysis for
SBA Network Services, Inc.

120.0' Self-Support Tower (120.0' AGL)

SBA Site Name: Wilton, CT / Optasite
SBA Site ID: CT98078-L-02
AT&T Site Name: #2286 Wilton-Deer Run Road (CT)
AT&T Site ID: CT2286
Site Address: 160 Deer Run Rd, Wilton, CT 06897

FDH Infrastructure Services, LLC Project Number 18TBQD1400

Analysis Results

Tower Components	97.6%	Sufficient
Foundation	31.1%	Sufficient

Prepared By:

Mahir A. Mohamed, EI
Project Engineer I

Reviewed By:

Dennis D. Abel, PE
Chief Engineer
CT License No. 23247

FDH Infrastructure Services, LLC
6521 Meridien Drive
Raleigh, NC, 27616
(919) 755-1012
Structural@fdh-is.com

12-19-2018

December 19, 2018

Prepared pursuant to the ANSI/TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas and the 2018 Connecticut State Building Code

TABLE OF CONTENTS

EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Infrastructure Services, LLC performed a structural analysis of the existing Self-Support Tower located in Wilton, CT to determine whether the tower is structurally adequate to support the antenna configuration in place per Table 1 pursuant to the ANSI/TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas and the 2015 International Building Code (IBC). Information pertaining to the antenna loading, current tower geometry, member sizes, and below grade parameters was obtained from:

Source	Document Type	Reference	Date
World Tower	Tower & Foundation Drawings	Drawing No. Q06515	October 16, 2006
FDH Infrastructure Services,Inc.	Tower Mapping	Project No. 18TBQN1500	December 12, 2018
JGI Eastern,Inc.	Geotechnical Report	Project No. 06517G	August 31, 2006
FDH Velocitel	Previous Structural Analysis	Project No. 17PSUO1400	January 17, 2017
SBA Network Services,Inc.			

This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 120 mph without ice converted to a nominal 3-second gust wind speed of 93 mph without ice per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. A basic design wind speed of 50 mph with 3/4" radial ice was used in this analysis. Ice is considered to increase with height. Exposure Category B with a maximum topographic factor, Kzt, of 1, Risk Category II, and Spectral Response Accelerations of Ss=0.231 and S1=0.068 were used in this analysis.

Note: Per Section 2.7.3 of the ANSI/TIA-222-G Standard, the seismic/earthquake loading effects can be ignored if the spectral response acceleration at short periods (S_S) is less than or equal to 1.00. The tower's location mandates a design S_S of less than 1.00, thus seismic loading was not considered as part of the analysis of this structure.

Conclusions

With the antenna configuration in place per Table 1 we have determined the tower stress level to be sufficient and the foundation(s) to be sufficient pursuant to the requirements stipulated by ANSI/TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas and the 2018 International Building Code (IBC) provided the Recommendations listed below are satisfied. For a more detailed description of the analysis of the tower, see the Results section of this report.

Our structural analysis has been performed assuming all information provided to FDH Infrastructure Services, LLC is accurate (i.e., the structure member information, tower layout, existing antenna loading, and proposed antenna loading) and that the tower has been properly erected and maintained per the original design drawings.

Recommendations

To ensure the requirements of the current analysis standards are met with the antenna configuration in place per Table 1, we have the following recommendations:

1. Feed lines to be installed as shown in Figure 1 in the Appendix.
2. RRU/RRH Stipulation: The equipment may be installed in any arrangement as determined by the client.
3. The existing TMAs should be installed directly behind the proposed/existing panel antennas.

APPURTENANCE LISTING

The antennas and equipment, with their corresponding feed lines, considered for this analysis are shown in Table 1. If the actual layout determined in the field deviates from the layout, FDH Infrastructure Services, LLC should be contacted to perform a revised analysis.

Table 1 - Appurtenance Loading

Existing Loading:

Antenna Elevation (ft)	Description	Feed Lines	Carrier	Mount Elevation (ft)	Mount Type
126.5	(2) 3" Ø x 12'Omni	(2) 7/8"	---	122	(3) 2.4" Ø x 7' Pipe Mounts
121	(3) Ericsson KRY 112 144/1	(6) 1-5/8" (1) 1-1/4" Hybrid	T-Mobile	118	(3) 6.7'x 1' T-Arms
120	(3) Commscope LNX-6515DS-VTM				
119.5	(3) Ericsson Air 21 B4A/B2P (3) Ericsson Air 21 B2A/B4P				
118	(3) Ericsson S11B12				
107.5	(6) Powerwave 7770	(12) 1-5/8" (1) 3" Flex (1) 5/16" (2) 3/4" DC (1) 3/8" Fiber	AT&T	107	(3) 6'x1' Face Mounts
107	(3) Powerwave P65-16-XLH-RR (6) Ericsson RRUS-11				
106	(12) Powerwave LGP 21401 (1) Andrew E15Z01P13				
102	(1) Raycap DC6-48-60-18-8F				
99.5	(2) Raycap RC2DC-3315-PF48 (3) Alcatel Lucent B66A RRH4x45	(12) 1-5/8" (2) 1-5/8" Hybrid	Verizon	96.5	(3) 10'x2' T-Frames
99	(6) Andrew SBNHH-1D85B				
98	(6) RFS RDR6004 (3) RFS 80090/8				
97	(3) Alcatel Lucent B13 RRH4x30-4R				
86	(3) 60"x12"x4.5" Panels	(9) 1-5/8" (2) 1-1/2"	Sprint	86	(3) 2.7' Stand-Offs
57	(1) Scala PR-850	(1) 7/8"		57	Direct
	(1) Scala PR-850	(2) 7/8"		55	(1) 1.9"x9.8' Pipe Mount
51	(1) Scala PR-850				

Proposed Carrier Final Loading:

Antenna Elevation (ft)	Description	Feed Lines	Carrier	Mount Elevation (ft)	Mount Type
110	(3) Powerwave 7770 (3) Kathrein 800-10965 (3) Powerwave P65-16-XLH-RR (6) Powerwave LGP 21401 (3) Powerwave TT19-08BP111-001 (3) Ericsson RRUS-11 (3) Ericsson RRUS 4478 B5 (3) Ericsson RRUS 4415 B25 (2) Raycap DC6-48-60-18-8F	(12) 1-5/8" (4) 3/4" DC (2) 3/8" Fiber (1) 3" Flex	AT&T	110	(3) 12' Sector Mounts [Sabre P/N: C10857001C]

RESULTS

The following material grades for individual members were used for analysis:

Table 2 - Material Grade

Member Type	Material Grade
Legs	A572-50
Bracing	A36
Anchor Rods	A449

Table 3 and Table 4 display the summary of capacities for the analyzed structure and its additional components. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. Table 5 displays the maximum dish rotations at service winds speeds.

If the assumptions outlined in this report differ from actual field conditions, FDH Infrastructure Services, LLC should be contacted to perform a revised analysis. Furthermore, as no information pertaining to the allowable twist and sway requirements for the appurtenances was provided, deflection and rotation were not taken into consideration when performing this analysis.

See the Appendix for detailed modeling information.

Table 3 - Structure Member Capacities

Section No.	Elevation (ft.)	Component Type	Size	% Capacity	Pass / Fail
T1	120 - 100	Leg	1 3/4	63.3	Pass
T2	100 - 80	Leg	2 1/2	55.4	Pass
T3	80 - 60	Leg	2 3/4	62.5	Pass
T4	60 - 40	Leg	3	65.0	Pass
T5	40 - 20	Leg	3 1/4	63.8	Pass
T6	20 - 0	Leg	3 1/2	60.7	Pass
T1	120 - 100	Diagonal	L2x2x3/16	24.2 37.8 (b)	Pass
T2	100 - 80	Diagonal	L2x2x3/16	49.5 77.2 (b)	Pass
T3	80 - 60	Diagonal	L2x2x3/16	39.3 50.7 (b)	Pass
T4	60 - 40	Diagonal	L2x2x3/16	59.8	Pass
T5	40 - 20	Diagonal	L3x3x1/4	38.3 52.6 (b)	Pass
T6	20 - 0	Diagonal	L3x3x1/4	44.0 51.3 (b)	Pass
T5	40 - 20	Secondary Horizontal	L2x2x1/8	71.1	Pass
T6	20 - 0	Secondary Horizontal	L2x2x1/8	97.6	Pass
T1	120 - 100	Top Girt	L2x2x1/8	8.6 9.0 (b)	Pass
T3	80 - 60	Top Girt	L2x2x1/8	4.7 5.1 (b)	Pass

Table 4 – Additional Structure Component Capacities

Elevation (ft.)	Component	% Capacity	Pass / Fail	Notes
0	Anchor Rods	62.7	Pass	-
0	Base Foundation (Soil Interaction)	30.9	Pass	-
0	Base Foundation (Structural)	31.1	Pass	-

Table 5 - Maximum Dish Rotations at Service Wind Speeds

Centerline Elevation (ft.)	Dish	Tilt (deg)*	Twist (deg)*
57	(2) Scala PR-850	0.0903	0.0196
51	(1) Scala PR-850	0.0794	0.0159

*Allowable tilt and twist to be reviewed by the carrier

GENERAL COMMENTS

This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading information) modeled. If there are substantial modifications to be made or the assumptions made in this analysis are not accurate, FDH Infrastructure Services, LLC should be notified immediately to perform a revised analysis.

LIMITATIONS

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of this report. All opinions and conclusions are subject to revision based upon receipt of new or additional/updated information. All services are provided exercising a level of care and diligence equivalent to the standard and care of our profession. No other warranty or guarantee, expressed or implied, is offered. Our services are confidential in nature and we will not release this report to any other party without the client's consent. The use of this engineering work is limited to the express purpose for which it was commissioned and it may not be reused, copied, or distributed for any other purpose without the written consent of FDH Infrastructure Services, LLC.

APPENDIX

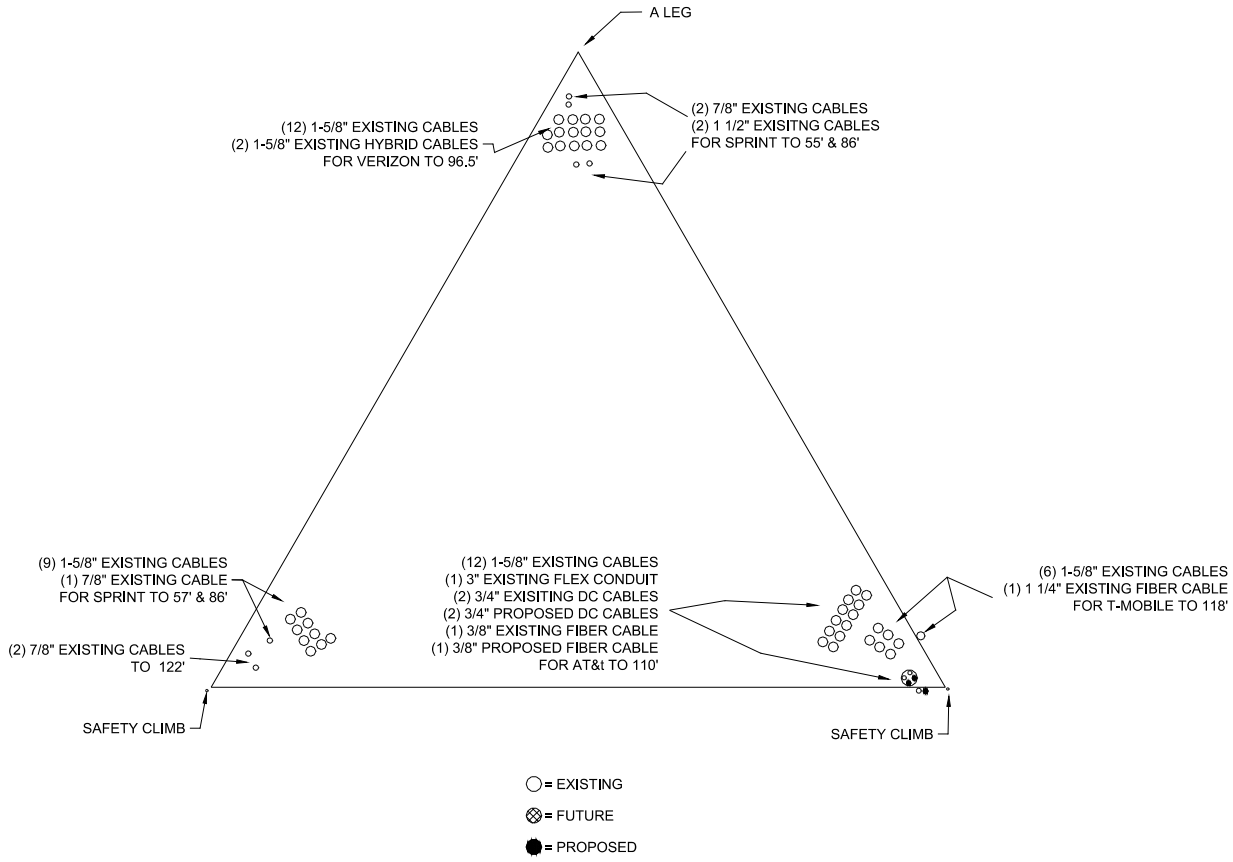
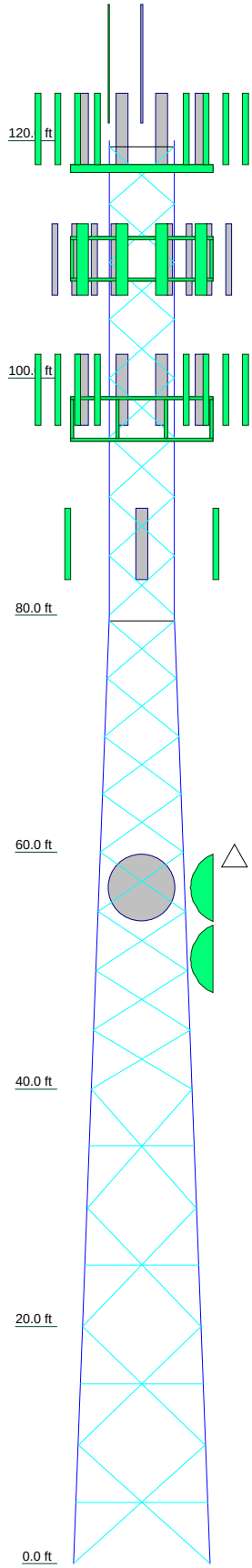


Figure 1- Feed Line Layout



Section		T1	T2	T3	T4	T5	T6		
Legs		SR 1 3/4	SR 2 1/2	SR 2 3/4	SR 3	SR 3 1/4	SR 3 1/2		
Leg Grade		A572-50							
Diagonals		L2x2x3/16				L3x3x1/4			
Diagonal Grade		A36							
Top Girts		L2x2x1/8	N.A.	L2x2x1/8	4 @ 5	N.A.	4 @ 10		
Sec. Horizontals		N.A.				L2x2x1/8			
Face Width (ft)	11.5	5.5			7	8.5	10		
# Panels @ (ft)		4 @ 4.875	4 @ 5	4 @ 4.875	4 @ 5	4 @ 10			
Weight (K)	11.6	0.9	1.4	1.7	2.0	2.6	2.9		

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
3"x12' Omni	122	RRUS-11	110
3"x12' Omni	122	RRUS-11	110
2.4" x 7' Pipe Mount	122	RRUS 4478 B5	110
2.4" x 7' Pipe Mount	122	RRUS 4478 B5	110
2.4" x 7' Pipe Mount	122	RRUS 4478 B5	110
Lightning Rod	120	RRUS 4415 B25	110
KRY 112 144/1	118	RRUS 4415 B25	110
KRY 112 144/1	118	RRUS 4415 B25	110
KRY 112 144/1	118	DC6-48-60-18-8F	110
LNX-6515DS-VTM w/ Mount Pipe	118	DC6-48-60-18-8F	110
LNX-6515DS-VTM w/ Mount Pipe	118	(3) 12' Sector Mounts [Sabre C10857001C]	110
LNX-6515DS-VTM w/ Mount Pipe	118		
AIR 21 B2A/B4P w/Mount Pipe	118	RC2DC-3315-PF-48	96.5
AIR 21 B2A/B4P w/Mount Pipe	118	RC2DC-3315-PF-48	96.5
AIR 21 B2A/B4P w/Mount Pipe	118	B66A RRH4X45	96.5
AIR 21 B4A/B2P w/Mount Pipe	118	B66A RRH4X45	96.5
AIR 21 B4A/B2P w/Mount Pipe	118	B66A RRH4X45	96.5
AIR 21 B4A/B2P w/Mount Pipe	118	(2) SBNHH-1D85B w/Mount Pipe	96.5
S11B12	118	(2) SBNHH-1D85B w/Mount Pipe	96.5
S11B12	118	(2) SBNHH-1D85B w/Mount Pipe	96.5
S11B12	118	(2) FDR6004/6	96.5
Mount Pipe	118	(2) FDR6004/6	96.5
Mount Pipe	118	(2) FDR6004/6	96.5
Mount Pipe	118	80090-8	96.5
(3) 6.7' x 1' T-Arms	118	80090-8	96.5
7770 w/Mount Pipe	110	80090-8	96.5
7770 w/Mount Pipe	110	B13 RRH 4x30-4R	96.5
7770 w/Mount Pipe	110	B13 RRH 4x30-4R	96.5
800 10965 w/ Mount Pipe	110	B13 RRH 4x30-4R	96.5
800 10965 w/ Mount Pipe	110	(4) Mount Pipe	96.5
800 10965 w/ Mount Pipe	110	(4) Mount Pipe	96.5
P65-16-XLH-RR w/ Mount Pipe	110	(4) Mount Pipe	96.5
P65-16-XLH-RR w/ Mount Pipe	110	(3) 10' x 2' T-Arms	96.5
P65-16-XLH-RR w/ Mount Pipe	110	60" x 12" x 5" w/ Mount Pipe	86
(2) LGP21401 TMA	110	60" x 12" x 5" w/ Mount Pipe	86
(2) LGP21401 TMA	110	60" x 12" x 5" w/ Mount Pipe	86
(2) LGP21401 TMA	110	(3) 2.7' StandOffs	86
TT19-08BP111-001	110	PR-850	57
TT19-08BP111-001	110	1.9"Ø x 9.8' Pipe Mount	55
TT19-08BP111-001	110	PR-850	55
RRUS-11	110	PR-850	55

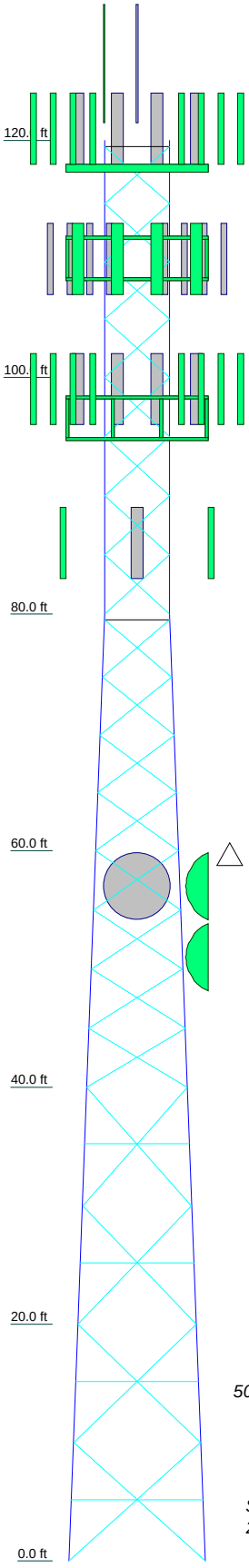
MATERIAL STRENGTH

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

FDH Infrastructure Services,Inc
6521 Meridien Drive, Suite 107
Raleigh, North Carolina 27616
Phone: 9197551012
FAX: 9197551031
FDH-IS

Job: ***Wilton Tower, CT98078-L***			
Project: ***18TBQD1400***			
Client: SBA Network Services, Inc.	Drawn by: Mahir A. Mohamed, E	App'd:	
Code: TIA-222-G	Date: 12/19/18	Scale: NTS	
Path:		Dwg No. E-1	

Section	Legs	Leg Grade	Diagonals	Diagonal Grade	Top Girts	Sec. Horizontals	Face Width (ft)	# Panels @ (ft)	Weight (K)
T1	SR 1 3/4	A572-50	L2x2x3/16	A36	L2x2x1/8	N.A.	5.5	4 @ 4.875	0.9
T2	SR 2 1/2				N.A.			4 @ 5	1.4
T3	SR 2 3/4				L2x2x1/8			4 @ 4.875	1.7
T4	SR 3						7	4 @ 5	2.0
T5	SR 3 1/4		L3x3x1/4		N.A.	L2x2x1/8	8.5		2.6
T6	SR 3 1/2						10	4 @ 10	2.9
							11.5		11.6



MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 97.6%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 189 K
SHEAR: 15 K

UPLIFT: -163 K
SHEAR: 13 K

AXIAL 82 K
SHEAR 7 K
MOMENT 584 kip-ft

TORQUE 5 kip-ft
50 mph WIND - 0.7500 in ICE

AXIAL 31 K
SHEAR 24 K
MOMENT 1775 kip-ft

TORQUE 15 kip-ft
REACTIONS - 93 mph WIND

FDH Infrastructure Services,Inc
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Raleigh, North Carolina 27616
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FAX: 9197551031
FDH-IS

Job: ***Wilton Tower, CT98078-L***			
Project: ***18TBQD1400***			
Client: SBA Network Services, Inc.	Drawn by: Mahir A. Mohamed, E	App'd:	
Code: TIA-222-G	Date: 12/19/18	Scale: NTS	
Path:		Dwg No. E-1	

FDH Infrastructure Services,Inc.
6521 Meridien Drive, Suite 107
Raleigh, North Carolina 27616
Phone: 9197551012
FAX: 9197551031

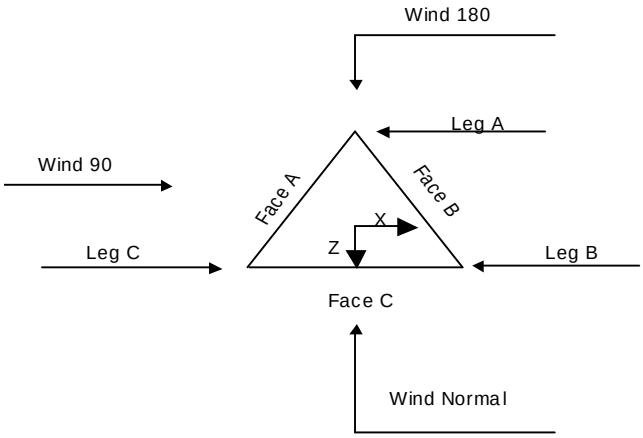
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 120.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 5.50 ft at the top and 11.50 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Fairfield County, Connecticut.
ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
Basic wind speed of 93 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
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		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	120.00-100.00			5.50	1	20.00
T2	100.00-80.00			5.50	1	20.00
T3	80.00-60.00			5.50	1	20.00
T4	60.00-40.00			7.00	1	20.00
T5	40.00-20.00			8.50	1	20.00
T6	20.00-0.00			10.00	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	120.00-100.00	4.88	X Brace	No	No	6.0000	0.0000
T2	100.00-80.00	5.00	X Brace	No	No	0.0000	0.0000
T3	80.00-60.00	4.88	X Brace	No	No	6.0000	0.0000
T4	60.00-40.00	5.00	X Brace	No	No	0.0000	0.0000
T5	40.00-20.00	10.00	X Brace	No	Yes	0.0000	0.0000
T6	20.00-0.00	10.00	X Brace	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 120.00-100.00	Solid Round	1 3/4	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T2 100.00-80.00	Solid Round	2 1/2	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T3 80.00-60.00	Solid Round	2 3/4	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T4 60.00-40.00	Solid Round	3	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T5 40.00-20.00	Solid Round	3 1/4	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T6 20.00-0.00	Solid Round	3 1/2	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 120.00-100.00	Equal Angle	L2x2x1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T3 80.00-60.00	Equal Angle	L2x2x1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T5 40.00-20.00	Equal Angle	L2x2x1/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T6 20.00-0.00	Equal Angle	L2x2x1/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T2	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000

Tower Elevation ft	Gusset Area (per face) ft²	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
100.00-80.00			(36 ksi)						
T3 80.00-60.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
			(36 ksi)						
T4 60.00-40.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
			(36 ksi)						
T5 40.00-20.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
			(36 ksi)						
T6 20.00-0.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
			(36 ksi)						

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	Yes	Yes	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T6 20.00-0.00	Yes	Yes	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
120.00-100.00														
T2	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
100.00-80.00														
T3 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 120.00-100.00	Flange	0.7500 A325N	4	0.6250 A325N	1	0.3750 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 100.00-80.00	Flange	0.7500 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 80.00-60.00	Flange	1.0000 A325N	4	0.6250 A325N	1	0.3750 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 60.00-40.00	Flange	1.0000 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 40.00-20.00	Flange	1.0000 A325N	6	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	1	0.6250 A325N	0
T6 20.00-0.00	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	1	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
***													
Safety Line 3/8	B	No	No	Ar (CaAa)	118.00 - 0.00	0.0000	0.5	1	1	0.0000	0.3750		0.22
***													
***													
1-5/8"	A	No	No	Ar (CaAa)	118.00 - 0.00	-85.0000	0	6	2	0.5000	1.9800		0.82
1-1/4"	B	No	No	Ar (CaAa)	118.00 - 0.00	0.0000	0.4	1	1	0.5000	1.5500		0.66
T-Brackets	A	No	No	Af (CaAa)	110.00 - 8.50	-100.0000	0	1	1	1.0000	1.0000		4.20
***													
1-5/8"	A	No	No	Ar (CaAa)	110.00 - 0.00	-75.0000	0	12	6	0.5000	1.9800		0.82
3"	C	No	No	Ar (CaAa)	110.00 - 0.00	-0.5000	-0.43	1	1	0.5000	3.0100		1.78
3/4"	C	No	No	Ar (CaAa)	110.00 - 0.00	-0.5000	-0.43	4	4	0.5000	3.0100		1.78
3/8"	C	No	No	Ar (CaAa)	110.00 - 0.00	0.0000	-0.45	2	2	0.0000	0.3750		0.18
***													
1-5/8"	C	No	No	Ar (CaAa)	96.50 - 9.50	-90.0000	0	14	4	0.5000	1.9800		0.82
T-Brackets	C	No	No	Af (CaAa)	95.00 - 9.50	-100.0000	0	1	1	1.0000	1.0000		4.20
***													
1-5/8"	B	No	No	Ar (CaAa)	86.00 - 9.00	-85.0000	0	9	4	0.5000	1.9800		0.82
7/8"	B	No	No	Ar (CaAa)	57.00 - 9.00	-90.0000	0	1	1	0.5000	1.1100		0.54

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
7/8"	B	No	No	Ar (CaAa)	120.00 - 9.00	-95.0000	0	2	2	0.5000	1.1100		0.54
7/8"	C	No	No	Ar (CaAa)	55.00 - 9.50	-95.0000	0.02	2	1	0.5000	1.1100		0.54
7/8"	C	No	No	Ar (CaAa)	86.00 - 9.50	-83.0000	0	2	2	0.5000	1.1100		0.54
T-Brackets	B	No	No	Af (CaAa)	95.00 - 8.50	-100.0000	0	1	1	1.0000	1.0000		4.20
***													

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight plf
***								
***								

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 K
T1	120.00-100.00	A	0.000	0.000	46.811	0.000	0.23
		B	0.000	0.000	7.905	0.000	0.04
		C	0.000	0.000	15.800	0.000	0.09
T2	100.00-80.00	A	0.000	0.000	74.613	0.000	0.38
		B	0.000	0.000	21.482	0.000	0.15
		C	0.000	0.000	81.170	0.000	0.44
T3	80.00-60.00	A	0.000	0.000	74.613	0.000	0.38
		B	0.000	0.000	47.263	0.000	0.27
		C	0.000	0.000	94.813	0.000	0.52
T4	60.00-40.00	A	0.000	0.000	74.613	0.000	0.38
		B	0.000	0.000	49.150	0.000	0.28
		C	0.000	0.000	98.143	0.000	0.54
T5	40.00-20.00	A	0.000	0.000	74.613	0.000	0.38
		B	0.000	0.000	49.483	0.000	0.28
		C	0.000	0.000	99.253	0.000	0.54
T6	20.00-0.00	A	0.000	0.000	73.197	0.000	0.34
		B	0.000	0.000	29.032	0.000	0.16
		C	0.000	0.000	67.118	0.000	0.37

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 K
T1	120.00-100.00	A	1.692	0.000	0.000	58.496	0.000	1.07
		B		0.000	0.000	34.596	0.000	0.40
		C		0.000	0.000	35.992	0.000	0.51
T2	100.00-80.00	A	1.658	0.000	0.000	90.470	0.000	1.68
		B		0.000	0.000	55.570	0.000	0.80
		C		0.000	0.000	121.635	0.000	2.05
T3	80.00-60.00	A	1.617	0.000	0.000	89.746	0.000	1.65
		B		0.000	0.000	85.609	0.000	1.34
		C		0.000	0.000	143.644	0.000	2.36
T4	60.00-40.00	A	1.564	0.000	0.000	88.805	0.000	1.61
		B		0.000	0.000	91.420	0.000	1.40
		C		0.000	0.000	155.282	0.000	2.47
T5	40.00-20.00	A	1.486	0.000	0.000	87.437	0.000	1.55
		B		0.000	0.000	90.355	0.000	1.35
		C		0.000	0.000	156.485	0.000	2.42
T6	20.00-0.00	A	1.331	0.000	0.000	81.044	0.000	1.37
		B		0.000	0.000	53.886	0.000	0.75
		C		0.000	0.000	109.908	0.000	1.56

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	120.00-100.00	14.4513	11.8406	13.1905	12.3911
T2	100.00-80.00	12.9862	3.6266	12.2167	5.3430
T3	80.00-60.00	7.6747	3.5011	7.9606	4.0123
T4	60.00-40.00	7.8204	2.7065	7.8713	2.8890
T5	40.00-20.00	7.9904	2.4532	8.7318	2.8288
T6	20.00-0.00	11.8847	5.1756	13.8625	6.1986

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	2	Safety Line 3/8	100.00 - 118.00	0.6000	0.6000
T1	5	1-5/8"	100.00 - 118.00	0.6000	0.6000
T1	6	1-1/4"	100.00 - 118.00	0.6000	0.6000
T1	9	T-Brackets	100.00 - 110.00	0.6000	0.6000
T1	11	1-5/8"	100.00 - 110.00	0.6000	0.6000
T1	12	3"	100.00 - 110.00	0.6000	0.6000
T1	13	3/4"	100.00 - 110.00	0.6000	0.6000
T1	14	3/8"	100.00 - 110.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	21	7/8"	100.00 - 120.00	0.6000	0.6000
T2	2	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T2	5	1-5/8"	80.00 - 100.00	0.6000	0.6000
T2	6	1-1/4"	80.00 - 100.00	0.6000	0.6000
T2	9	T-Brackets	80.00 - 100.00	0.6000	0.6000
T2	11	1-5/8"	80.00 - 100.00	0.6000	0.6000
T2	12	3"	80.00 - 100.00	0.6000	0.6000
T2	13	3/4"	80.00 - 100.00	0.6000	0.6000
T2	14	3/8"	80.00 - 100.00	0.6000	0.6000
T2	16	1-5/8"	80.00 - 96.50	0.6000	0.6000
T2	17	T-Brackets	80.00 - 95.00	0.6000	0.6000
T2	19	1-5/8"	80.00 - 86.00	0.6000	0.6000
T2	21	7/8"	80.00 - 100.00	0.6000	0.6000
T2	23	7/8"	80.00 - 86.00	0.6000	0.6000
T2	24	T-Brackets	80.00 - 95.00	0.6000	0.6000
T3	2	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000
T3	5	1-5/8"	60.00 - 80.00	0.6000	0.6000
T3	6	1-1/4"	60.00 - 80.00	0.6000	0.6000
T3	9	T-Brackets	60.00 - 80.00	0.6000	0.6000
T3	11	1-5/8"	60.00 - 80.00	0.6000	0.6000
T3	12	3"	60.00 - 80.00	0.6000	0.6000
T3	13	3/4"	60.00 - 80.00	0.6000	0.6000
T3	14	3/8"	60.00 - 80.00	0.6000	0.6000
T3	16	1-5/8"	60.00 - 80.00	0.6000	0.6000
T3	17	T-Brackets	60.00 - 80.00	0.6000	0.6000
T3	19	1-5/8"	60.00 - 80.00	0.6000	0.6000
T3	21	7/8"	60.00 - 80.00	0.6000	0.6000
T3	23	7/8"	60.00 - 80.00	0.6000	0.6000
T3	24	T-Brackets	60.00 - 80.00	0.6000	0.6000
T4	2	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T4	5	1-5/8"	40.00 - 60.00	0.6000	0.6000
T4	6	1-1/4"	40.00 - 60.00	0.6000	0.6000
T4	9	T-Brackets	40.00 - 60.00	0.6000	0.6000
T4	11	1-5/8"	40.00 - 60.00	0.6000	0.6000
T4	12	3"	40.00 - 60.00	0.6000	0.6000
T4	13	3/4"	40.00 - 60.00	0.6000	0.6000
T4	14	3/8"	40.00 - 60.00	0.6000	0.6000
T4	16	1-5/8"	40.00 - 60.00	0.6000	0.6000
T4	17	T-Brackets	40.00 - 60.00	0.6000	0.6000
T4	19	1-5/8"	40.00 - 60.00	0.6000	0.6000
T4	20	7/8"	40.00 - 57.00	0.6000	0.6000
T4	21	7/8"	40.00 - 60.00	0.6000	0.6000
T4	22	7/8"	40.00 - 55.00	0.6000	0.6000
T4	23	7/8"	40.00 - 60.00	0.6000	0.6000
T4	24	T-Brackets	40.00 - 60.00	0.6000	0.6000
T5	2	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T5	5	1-5/8"	20.00 - 40.00	0.6000	0.6000
T5	6	1-1/4"	20.00 - 40.00	0.6000	0.6000
T5	9	T-Brackets	20.00 - 40.00	0.6000	0.6000
T5	11	1-5/8"	20.00 - 40.00	0.6000	0.6000
T5	12	3"	20.00 - 40.00	0.6000	0.6000
T5	13	3/4"	20.00 - 40.00	0.6000	0.6000
T5	14	3/8"	20.00 - 40.00	0.6000	0.6000
T5	16	1-5/8"	20.00 - 40.00	0.6000	0.6000
T5	17	T-Brackets	20.00 - 40.00	0.6000	0.6000
T5	19	1-5/8"	20.00 - 40.00	0.6000	0.6000
T5	20	7/8"	20.00 - 40.00	0.6000	0.6000
T5	21	7/8"	20.00 - 40.00	0.6000	0.6000
T5	22	7/8"	20.00 - 40.00	0.6000	0.6000
T5	23	7/8"	20.00 - 40.00	0.6000	0.6000
T5	24	T-Brackets	20.00 - 40.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	2	Safety Line 3/8	0.00 - 20.00	0.6000	0.6000
T6	5	1-5/8"	0.00 - 20.00	0.6000	0.6000
T6	6	1-1/4"	0.00 - 20.00	0.6000	0.6000
T6	9	T-Brackets	8.50 - 20.00	0.6000	0.6000
T6	11	1-5/8"	0.00 - 20.00	0.6000	0.6000
T6	12	3"	0.00 - 20.00	0.6000	0.6000
T6	13	3/4"	0.00 - 20.00	0.6000	0.6000
T6	14	3/8"	0.00 - 20.00	0.6000	0.6000
T6	16	1-5/8"	9.50 - 20.00	0.6000	0.6000
T6	17	T-Brackets	9.50 - 20.00	0.6000	0.6000
T6	19	1-5/8"	9.00 - 20.00	0.6000	0.6000
T6	20	7/8"	9.00 - 20.00	0.6000	0.6000
T6	21	7/8"	9.00 - 20.00	0.6000	0.6000
T6	22	7/8"	9.50 - 20.00	0.6000	0.6000
T6	23	7/8"	9.50 - 20.00	0.6000	0.6000
T6	24	T-Brackets	8.50 - 20.00	0.6000	0.6000

Discrete Tower Loads

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 K
Lightning Rod	C	None		0.0000	120.00	No Ice	0.25	0.25	0.03
						1/2" Ice	0.66	0.66	0.03
						1" Ice	0.97	0.97	0.04
***									
3"x12' Omni	A	From Leg	0.00 0.00 4.50	0.0000	122.00	No Ice 1/2" Ice 1" Ice	3.60 4.83 6.08	3.60 4.83 6.08	0.03 0.05 0.08
3"x12' Omni	C	From Leg	0.00 0.00 4.50	0.0000	122.00	No Ice 1/2" Ice 1" Ice	3.60 4.83 6.08	3.60 4.83 6.08	0.03 0.05 0.08
2.4" x 7' Pipe Mount	A	From Leg	0.00 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice 1" Ice	1.68 2.41 2.83	1.68 2.41 2.83	0.05 0.06 0.08
2.4" x 7' Pipe Mount	B	From Leg	0.00 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice 1" Ice	1.68 2.41 2.83	1.68 2.41 2.83	0.05 0.06 0.08
2.4" x 7' Pipe Mount	C	From Leg	0.00 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice 1" Ice	1.68 2.41 2.83	1.68 2.41 2.83	0.05 0.06 0.08
***									
KRY 112 144/1	A	From Leg	4.00 0.00 3.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.35 0.43 0.51	0.16 0.22 0.28	0.01 0.01 0.02
KRY 112 144/1	B	From Leg	4.00 0.00 3.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.35 0.43 0.51	0.16 0.22 0.28	0.01 0.01 0.02
KRY 112 144/1	C	From Leg	4.00 0.00 3.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.35 0.43 0.51	0.16 0.22 0.28	0.01 0.01 0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	11.68 12.40 13.14	9.84 11.37 12.91	0.08 0.17 0.27
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	11.68 12.40 13.14	9.84 11.37 12.91	0.08 0.17 0.27
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	11.68 12.40 13.14	9.84 11.37 12.91	0.08 0.17 0.27
AIR 21 B2A/B4P w/Mount Pipe	A	From Leg	4.00 0.00 1.50	0.0000	118.00	No Ice 1/2" Ice 1" Ice	7.09 7.78 8.37	6.02 7.17 8.03	0.12 0.18 0.25
AIR 21 B2A/B4P w/Mount Pipe	B	From Leg	4.00 0.00 1.50	0.0000	118.00	No Ice 1/2" Ice 1" Ice	7.09 7.78 8.37	6.02 7.17 8.03	0.12 0.18 0.25
AIR 21 B2A/B4P w/Mount Pipe	C	From Leg	4.00 0.00 1.50	0.0000	118.00	No Ice 1/2" Ice 1" Ice	7.09 7.78 8.37	6.02 7.17 8.03	0.12 0.18 0.25
AIR 21 B4A/B2P w/Mount Pipe	A	From Leg	4.00 0.00 1.50	0.0000	118.00	No Ice 1/2" Ice 1" Ice	7.09 7.78 8.37	6.02 7.17 8.03	0.12 0.18 0.24
AIR 21 B4A/B2P w/Mount Pipe	B	From Leg	4.00 0.00 1.50	0.0000	118.00	No Ice 1/2" Ice 1" Ice	7.09 7.78 8.37	6.02 7.17 8.03	0.12 0.18 0.24
AIR 21 B4A/B2P w/Mount Pipe	C	From Leg	4.00 0.00 1.50	0.0000	118.00	No Ice 1/2" Ice 1" Ice	7.09 7.78 8.37	6.02 7.17 8.03	0.12 0.18 0.24
S11B12	A	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.83 3.04 3.26	1.18 1.33 1.48	0.05 0.07 0.10
S11B12	B	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.83 3.04 3.26	1.18 1.33 1.48	0.05 0.07 0.10
S11B12	C	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.83 3.04 3.26	1.18 1.33 1.48	0.05 0.07 0.10
Mount Pipe	A	From Leg	0.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.20 1.50 1.81	1.20 1.50 1.81	0.02 0.03 0.04
Mount Pipe	B	From Leg	0.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.20 1.50 1.81	1.20 1.50 1.81	0.02 0.03 0.04
Mount Pipe	C	From Leg	0.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.20 1.50 1.81	1.20 1.50 1.81	0.02 0.03 0.04
(3) 6.7' x 1' T-Arms	C	None		0.0000	118.00	No Ice 1/2" Ice 1" Ice	11.59 15.44 19.29	11.59 15.44 19.29	0.77 0.99 1.21
***									
7770 w/Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	6.20 6.76 7.27	4.94 5.86 6.64	0.07 0.12 0.19
7770 w/Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	6.20 6.76 7.27	4.94 5.86 6.64	0.07 0.12 0.19
7770 w/Mount Pipe	C	From Face	4.00 0.00	0.0000	110.00	No Ice 1/2" Ice	6.20 6.76	4.94 5.86	0.07 0.12

FDH Infrastructure Services,Inc.
6521 Meridien Drive, Suite 107
Raleigh, North Carolina 27616
Phone: 9197551012
FAX: 9197551031

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 K
			0.00			1" Ice	7.27	6.64	0.19
800 10965 w/ Mount Pipe	A	From Face	4.00	0.0000	110.00	No Ice	14.05	7.63	0.14
			0.00			1/2" Ice	14.69	8.90	0.23
			0.00			1" Ice	15.30	9.96	0.34
800 10965 w/ Mount Pipe	B	From Face	4.00	0.0000	110.00	No Ice	14.05	7.63	0.14
			0.00			1/2" Ice	14.69	8.90	0.23
			0.00			1" Ice	15.30	9.96	0.34
800 10965 w/ Mount Pipe	C	From Face	4.00	0.0000	110.00	No Ice	14.05	7.63	0.14
			0.00			1/2" Ice	14.69	8.90	0.23
			0.00			1" Ice	15.30	9.96	0.34
P65-16-XLH-RR w/ Mount Pipe	A	From Face	4.00	0.0000	110.00	No Ice	8.37	6.36	0.08
			0.00			1/2" Ice	8.93	7.54	0.14
			0.00			1" Ice	9.46	8.43	0.22
P65-16-XLH-RR w/ Mount Pipe	B	From Face	4.00	0.0000	110.00	No Ice	8.37	6.36	0.08
			0.00			1/2" Ice	8.93	7.54	0.14
			0.00			1" Ice	9.46	8.43	0.22
P65-16-XLH-RR w/ Mount Pipe	C	From Face	4.00	0.0000	110.00	No Ice	8.37	6.36	0.08
			0.00			1/2" Ice	8.93	7.54	0.14
			0.00			1" Ice	9.46	8.43	0.22
(2) LGP21401 TMA	A	From Face	4.00	0.0000	110.00	No Ice	0.82	0.35	0.02
			0.00			1/2" Ice	0.94	0.44	0.02
			0.00			1" Ice	1.06	0.54	0.03
(2) LGP21401 TMA	B	From Face	4.00	0.0000	110.00	No Ice	0.82	0.35	0.02
			0.00			1/2" Ice	0.94	0.44	0.02
			0.00			1" Ice	1.06	0.54	0.03
(2) LGP21401 TMA	C	From Face	4.00	0.0000	110.00	No Ice	0.82	0.35	0.02
			0.00			1/2" Ice	0.94	0.44	0.02
			0.00			1" Ice	1.06	0.54	0.03
TT19-08BP111-001	A	From Face	4.00	0.0000	110.00	No Ice	0.55	0.45	0.02
			0.00			1/2" Ice	0.65	0.53	0.02
			0.00			1" Ice	0.75	0.63	0.03
TT19-08BP111-001	B	From Face	4.00	0.0000	110.00	No Ice	0.55	0.45	0.02
			0.00			1/2" Ice	0.65	0.53	0.02
			0.00			1" Ice	0.75	0.63	0.03
TT19-08BP111-001	C	From Face	4.00	0.0000	110.00	No Ice	0.55	0.45	0.02
			0.00			1/2" Ice	0.65	0.53	0.02
			0.00			1" Ice	0.75	0.63	0.03
RRUS-11	A	From Face	4.00	0.0000	110.00	No Ice	2.52	1.07	0.06
			0.00			1/2" Ice	2.72	1.21	0.07
			0.00			1" Ice	2.92	1.36	0.10
RRUS-11	B	From Face	4.00	0.0000	110.00	No Ice	2.52	1.07	0.06
			0.00			1/2" Ice	2.72	1.21	0.07
			0.00			1" Ice	2.92	1.36	0.10
RRUS-11	C	From Face	4.00	0.0000	110.00	No Ice	2.52	1.07	0.06
			0.00			1/2" Ice	2.72	1.21	0.07
			0.00			1" Ice	2.92	1.36	0.10
RRUS 4478 B5	A	From Face	4.00	0.0000	110.00	No Ice	1.84	1.06	0.06
			0.00			1/2" Ice	2.01	1.20	0.08
			0.00			1" Ice	2.19	1.34	0.09
RRUS 4478 B5	B	From Face	4.00	0.0000	110.00	No Ice	1.84	1.06	0.06
			0.00			1/2" Ice	2.01	1.20	0.08
			0.00			1" Ice	2.19	1.34	0.09
RRUS 4478 B5	C	From Face	4.00	0.0000	110.00	No Ice	1.84	1.06	0.06
			0.00			1/2" Ice	2.01	1.20	0.08
			0.00			1" Ice	2.19	1.34	0.09
RRUS 4415 B25	A	From Face	4.00	0.0000	110.00	No Ice	1.64	0.68	0.04
			0.00			1/2" Ice	1.80	0.79	0.06

FDH Infrastructure Services,Inc.
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Raleigh, North Carolina 27616
Phone: 9197551012
FAX: 9197551031

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 K
			0.00			1" Ice	1.97	0.91	0.07
RRUS 4415 B25	B	From Face	4.00	0.0000	110.00	No Ice	1.64	0.68	0.04
			0.00			1/2" Ice	1.80	0.79	0.06
			0.00			1" Ice	1.97	0.91	0.07
RRUS 4415 B25	C	From Face	4.00	0.0000	110.00	No Ice	1.64	0.68	0.04
			0.00			1/2" Ice	1.80	0.79	0.06
			0.00			1" Ice	1.97	0.91	0.07
DC6-48-60-18-8F	A	From Face	0.50	0.0000	110.00	No Ice	1.21	1.21	0.03
			0.00			1/2" Ice	1.89	1.89	0.05
			0.00			1" Ice	2.11	2.11	0.08
DC6-48-60-18-8F	B	From Face	0.50	0.0000	110.00	No Ice	1.21	1.21	0.03
			0.00			1/2" Ice	1.89	1.89	0.05
			0.00			1" Ice	2.11	2.11	0.08
(3) 12' Sector Mounts [Sabre C10857001C]	C	None		0.0000	110.00	No Ice	15.85	15.85	1.50
						1/2" Ice	20.80	20.80	1.95
						1" Ice	25.75	25.75	2.40
***									
RC2DC-3315-PF-48	A	From Leg	4.00	0.0000	96.50	No Ice	2.52	1.77	0.04
			0.00			1/2" Ice	2.73	1.95	0.06
			3.00			1" Ice	2.95	2.14	0.09
RC2DC-3315-PF-48	B	From Leg	4.00	0.0000	96.50	No Ice	2.52	1.77	0.04
			0.00			1/2" Ice	2.73	1.95	0.06
			3.00			1" Ice	2.95	2.14	0.09
B66A RRH4X45	A	From Leg	4.00	0.0000	96.50	No Ice	2.58	1.63	0.06
			0.00			1/2" Ice	2.79	1.81	0.08
			3.00			1" Ice	3.01	2.00	0.10
B66A RRH4X45	B	From Leg	4.00	0.0000	96.50	No Ice	2.58	1.63	0.06
			0.00			1/2" Ice	2.79	1.81	0.08
			3.00			1" Ice	3.01	2.00	0.10
B66A RRH4X45	C	From Leg	4.00	0.0000	96.50	No Ice	2.58	1.63	0.06
			0.00			1/2" Ice	2.79	1.81	0.08
			3.00			1" Ice	3.01	2.00	0.10
(2) SBNHH-1D85B w/Mount Pipe	A	From Leg	4.00	0.0000	96.50	No Ice	8.47	7.44	0.08
			0.00			1/2" Ice	9.00	8.47	0.16
			2.50			1" Ice	9.53	9.37	0.24
(2) SBNHH-1D85B w/Mount Pipe	B	From Leg	4.00	0.0000	96.50	No Ice	8.47	7.44	0.08
			0.00			1/2" Ice	9.00	8.47	0.16
			2.50			1" Ice	9.53	9.37	0.24
(2) SBNHH-1D85B w/Mount Pipe	C	From Leg	4.00	0.0000	96.50	No Ice	8.47	7.44	0.08
			0.00			1/2" Ice	9.00	8.47	0.16
			2.50			1" Ice	9.53	9.37	0.24
(2) FDR6004/6	A	From Leg	4.00	0.0000	96.50	No Ice	0.25	0.08	0.00
			0.00			1/2" Ice	0.31	0.12	0.00
			1.00			1" Ice	0.39	0.17	0.01
(2) FDR6004/6	B	From Leg	4.00	0.0000	96.50	No Ice	0.25	0.08	0.00
			0.00			1/2" Ice	0.31	0.12	0.00
			1.00			1" Ice	0.39	0.17	0.01
(2) FDR6004/6	C	From Leg	4.00	0.0000	96.50	No Ice	0.25	0.08	0.00
			0.00			1/2" Ice	0.31	0.12	0.00
			1.00			1" Ice	0.39	0.17	0.01
80090-8	A	From Leg	4.00	0.0000	96.50	No Ice	8.14	6.61	0.23
			0.00			1/2" Ice	8.72	7.19	0.28
			1.00			1" Ice	9.31	7.77	0.33
80090-8	B	From Leg	4.00	0.0000	96.50	No Ice	8.14	6.61	0.23
			0.00			1/2" Ice	8.72	7.19	0.28
			1.00			1" Ice	9.31	7.77	0.33
80090-8	C	From Leg	4.00	0.0000	96.50	No Ice	8.14	6.61	0.23

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 K
			0.00			1/2" Ice	8.72	7.19	0.28
			1.00			1" Ice	9.31	7.77	0.33
B13 RRH 4x30-4R	A	From Leg	4.00	0.0000	96.50	No Ice	2.13	1.59	0.06
			0.00			1/2" Ice	2.32	1.76	0.08
			0.00			1" Ice	2.52	1.94	0.10
B13 RRH 4x30-4R	B	From Leg	4.00	0.0000	96.50	No Ice	2.13	1.59	0.06
			0.00			1/2" Ice	2.32	1.76	0.08
			0.00			1" Ice	2.52	1.94	0.10
B13 RRH 4x30-4R	C	From Leg	4.00	0.0000	96.50	No Ice	2.13	1.59	0.06
			0.00			1/2" Ice	2.32	1.76	0.08
			0.00			1" Ice	2.52	1.94	0.10
(4) Mount Pipe	A	From Leg	0.00	0.0000	96.50	No Ice	1.20	1.20	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.81	1.81	0.04
(4) Mount Pipe	B	From Leg	0.00	0.0000	96.50	No Ice	1.20	1.20	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.81	1.81	0.04
(4) Mount Pipe	C	From Leg	0.00	0.0000	96.50	No Ice	1.20	1.20	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.81	1.81	0.04
(3) 10' x 2' T-Arms	C	None		0.0000	96.50	No Ice	17.87	17.87	0.80
						1/2" Ice	25.31	25.31	1.16
						1" Ice	32.75	32.75	1.52
***									
60" x 12" x 5" w/ Mount Pipe	A	From Leg	4.00	0.0000	86.00	No Ice	6.74	5.07	0.07
			0.00			1/2" Ice	7.37	6.01	0.13
			0.00			1" Ice	7.96	6.80	0.19
60" x 12" x 5" w/ Mount Pipe	B	From Leg	4.00	0.0000	86.00	No Ice	6.74	5.07	0.07
			0.00			1/2" Ice	7.37	6.01	0.13
			0.00			1" Ice	7.96	6.80	0.19
60" x 12" x 5" w/ Mount Pipe	C	From Leg	4.00	0.0000	86.00	No Ice	6.74	5.07	0.07
			0.00			1/2" Ice	7.37	6.01	0.13
			0.00			1" Ice	7.96	6.80	0.19
(3) 2.7' StandOffs	C	None		0.0000	86.00	No Ice	6.18	6.18	0.33
						1/2" Ice	8.56	8.56	0.40
						1" Ice	10.94	10.94	0.47
***									
1.9"Ø x 9.8' Pipe Mount	B	From Leg	0.00	0.0000	55.00	No Ice	1.65	1.65	0.02
			0.00			1/2" Ice	2.67	2.67	0.04
			0.00			1" Ice	3.71	3.71	0.06
***									
***									

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 K
PR-850	A	Grid	From	0.50	0.0000		57.00	5.67	No Ice	25.22	0.04

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
			Leg	0.00					1/2" Ice	25.97	0.17
				0.00					1" Ice	26.71	0.30
**											
PR-850	B	Grid	From	0.50	10.0000		55.00	5.67	No Ice	25.22	0.04
			Leg	0.00					1/2" Ice	25.97	0.17
				2.00					1" Ice	26.71	0.30
PR-850	B	Grid	From	0.50	25.0000		55.00	5.67	No Ice	25.22	0.04
			Leg	0.00					1/2" Ice	25.97	0.17
				-4.00					1" Ice	26.71	0.30
**											

Tower Pressures - No Ice

G_H = 0.850

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg % %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
T1	110.00	1.016	19	112.917	A	10.432	5.833	5.833	35.86	46.811	0.000
120.00-100.00					B	10.432	5.833		35.86	7.905	0.000
					C	10.432	5.833		35.86	15.800	0.000
T2	90.00	0.959	18	114.167	A	9.549	8.333	8.333	46.60	74.613	0.000
100.00-80.00					B	9.549	8.333		46.60	21.482	0.000
					C	9.549	8.333		46.60	81.170	0.000
T3 80.00-60.00	70.00	0.892	17	129.587	A	11.091	9.175	9.175	45.27	74.613	0.000
					B	11.091	9.175		45.27	47.263	0.000
					C	11.091	9.175		45.27	94.813	0.000
T4 60.00-40.00	50.00	0.811	15	160.004	A	11.909	10.009	10.009	45.67	74.613	0.000
					B	11.909	10.009		45.67	49.150	0.000
					C	11.909	10.009		45.67	98.143	0.000
T5 40.00-20.00	30.00	0.701	13	190.420	A	16.223	10.843	10.843	40.06	74.613	0.000
					B	16.223	10.843		40.06	49.483	0.000
					C	16.223	10.843		40.06	99.253	0.000
T6 20.00-0.00	10.00	0.7	13	220.837	A	17.776	11.678	11.678	39.65	73.197	0.000
					B	17.776	11.678		39.65	29.032	0.000
					C	17.776	11.678		39.65	67.118	0.000

Tower Pressure - With Ice

G_H = 0.850

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg % %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
T1	110.00	1.016	6	1.6919	118.556	A	10.432	34.763	17.113	37.86	58.496	0.000
120.00-100.00						B	10.432	34.763		37.86	34.596	0.000
						C	10.432	34.763		37.86	35.992	0.000
T2 100.00-80.00	90.00	0.959	5	1.6583	119.694	A	9.549	35.224	19.389	43.30	90.470	0.000
						B	9.549	35.224		43.30	55.570	0.000
						C	9.549	35.224		43.30	121.635	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T3 80.00-60.00	70.00	0.892	5	1.6171	134.981	A	11.091	37.903	19.966	40.75	89.746	0.000
						B	11.091	37.903		40.75	85.609	0.000
						C	11.091	37.903		40.75	143.644	0.000
T4 60.00-40.00	50.00	0.811	4	1.5636	165.219	A	11.909	39.065	20.443	40.11	88.805	0.000
						B	11.909	39.065		40.11	91.420	0.000
						C	11.909	39.065		40.11	155.282	0.000
T5 40.00-20.00	30.00	0.701	4	1.4858	195.377	A	16.223	38.307	20.758	38.07	87.437	0.000
						B	16.223	38.307		38.07	90.355	0.000
						C	16.223	38.307		38.07	156.485	0.000
T6 20.00-0.00	10.00	0.7	4	1.3312	225.278	A	17.776	37.881	20.561	36.94	81.044	0.000
						B	17.776	37.881		36.94	53.886	0.000
						C	17.776	37.881		36.94	109.908	0.000

Tower Pressure - Service

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	110.00	1.016	8	112.917	A	10.432	5.833	5.833	35.86	46.811	0.000
120.00-100.00					B	10.432	5.833		35.86	7.905	0.000
					C	10.432	5.833		35.86	15.800	0.000
T2	90.00	0.959	8	114.167	A	9.549	8.333	8.333	46.60	74.613	0.000
100.00-80.00					B	9.549	8.333		46.60	21.482	0.000
					C	9.549	8.333		46.60	81.170	0.000
T3 80.00-60.00	70.00	0.892	7	129.587	A	11.091	9.175	9.175	45.27	74.613	0.000
					B	11.091	9.175		45.27	47.263	0.000
					C	11.091	9.175		45.27	94.813	0.000
T4 60.00-40.00	50.00	0.811	6	160.004	A	11.909	10.009	10.009	45.67	74.613	0.000
					B	11.909	10.009		45.67	49.150	0.000
					C	11.909	10.009		45.67	98.143	0.000
T5 40.00-20.00	30.00	0.701	5	190.420	A	16.223	10.843	10.843	40.06	74.613	0.000
					B	16.223	10.843		40.06	49.483	0.000
					C	16.223	10.843		40.06	99.253	0.000
T6 20.00-0.00	10.00	0.7	5	220.837	A	17.776	11.678	11.678	39.65	73.197	0.000
					B	17.776	11.678		39.65	29.032	0.000
					C	17.776	11.678		39.65	67.118	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.36	0.95	A	0.144	2.794	19	1	1	13.739	1.08	54.17	C
120.00-100.00			B	0.144	2.794		1	1	13.739			
			C	0.144	2.794		1	1	13.739			
T2	0.97	1.44	A	0.157	2.747	18	1	1	14.285	1.60	80.04	A
100.00-80.00			B	0.157	2.747		1	1	14.285			
			C	0.157	2.747		1	1	14.285			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T3	1.17	1.71	A	0.156	2.748	17	1	1	16.305	1.75	87.57	A
80.00-60.00			B	0.156	2.748		1	1	16.305			
			C	0.156	2.748		1	1	16.305			
T4	1.20	1.98	A	0.137	2.82	15	1	1	17.578	1.69	84.66	A
60.00-40.00			B	0.137	2.82		1	1	17.578			
			C	0.137	2.82		1	1	17.578			
T5	1.20	2.59	A	0.142	2.801	13	1	1	22.369	1.62	80.97	A
40.00-20.00			B	0.142	2.801		1	1	22.369			
			C	0.142	2.801		1	1	22.369			
T6 20.00-0.00	0.88	2.94	A	0.133	2.834	13	1	1	24.386	1.49	74.57	A
			B	0.133	2.834		1	1	24.386			
			C	0.133	2.834		1	1	24.386			
Sum Weight:	5.78	11.60						OTM	534.00 kip-ft	9.24		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.36	0.95	A	0.144	2.794	19	0.8	1	11.653	0.99	49.44	A
120.00-100.00			B	0.144	2.794		0.8	1	11.653			
			C	0.144	2.794		0.8	1	11.653			
T2	0.97	1.44	A	0.157	2.747	18	0.8	1	12.375	1.52	76.01	B
100.00-80.00			B	0.157	2.747		0.8	1	12.375			
			C	0.157	2.747		0.8	1	12.375			
T3	1.17	1.71	A	0.156	2.748	17	0.8	1	14.087	1.66	83.21	B
80.00-60.00			B	0.156	2.748		0.8	1	14.087			
			C	0.156	2.748		0.8	1	14.087			
T4	1.20	1.98	A	0.137	2.82	15	0.8	1	15.196	1.61	80.30	B
60.00-40.00			B	0.137	2.82		0.8	1	15.196			
			C	0.137	2.82		0.8	1	15.196			
T5	1.20	2.59	A	0.142	2.801	13	0.8	1	19.125	1.52	75.88	B
40.00-20.00			B	0.142	2.801		0.8	1	19.125			
			C	0.142	2.801		0.8	1	19.125			
T6 20.00-0.00	0.88	2.94	A	0.133	2.834	13	0.8	1	20.831	1.38	68.93	B
			B	0.133	2.834		0.8	1	20.831			
			C	0.133	2.834		0.8	1	20.831			
Sum Weight:	5.78	11.60						OTM	501.71 kip-ft	8.68		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.36	0.95	A	0.144	2.794	19	0.85	1	12.174	1.04	51.80	B

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
120.00-100.00			B	0.144	2.794		0.85	1	12.174			
			C	0.144	2.794		0.85	1	12.174			
T2	0.97	1.44	A	0.157	2.747	18	0.85	1	12.852	1.58	79.03	B
100.00-80.00			B	0.157	2.747		0.85	1	12.852			
			C	0.157	2.747		0.85	1	12.852			
T3	1.17	1.71	A	0.156	2.748	17	0.85	1	14.641	1.72	85.91	B
80.00-60.00			B	0.156	2.748		0.85	1	14.641			
			C	0.156	2.748		0.85	1	14.641			
T4	1.20	1.98	A	0.137	2.82	15	0.85	1	15.791	1.65	82.66	B
60.00-40.00			B	0.137	2.82		0.85	1	15.791			
			C	0.137	2.82		0.85	1	15.791			
T5	1.20	2.59	A	0.142	2.801	13	0.85	1	19.936	1.56	78.20	B
40.00-20.00			B	0.142	2.801		0.85	1	19.936			
			C	0.142	2.801		0.85	1	19.936			
T6 20.00-0.00	0.88	2.94	A	0.133	2.834	13	0.85	1	21.720	1.44	71.77	B
			B	0.133	2.834		0.85	1	21.720			
			C	0.133	2.834		0.85	1	21.720			
Sum Weight:	5.78	11.60						OTM	520.41 kip-ft	8.99		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	1.98	3.18	A	0.381	2.102	6	1	1	32.274	0.60	30.07	C
120.00-100.00			B	0.381	2.102		1	1	32.274			
			C	0.381	2.102		1	1	32.274			
T2	4.53	3.56	A	0.374	2.118	5	1	1	31.579	0.85	42.46	C
100.00-80.00			B	0.374	2.118		1	1	31.579			
			C	0.374	2.118		1	1	31.579			
T3	5.35	4.04	A	0.363	2.142	5	1	1	34.629	0.91	45.67	C
80.00-60.00			B	0.363	2.142		1	1	34.629			
			C	0.363	2.142		1	1	34.629			
T4	5.47	4.36	A	0.309	2.274	4	1	1	35.411	0.88	43.99	C
60.00-40.00			B	0.309	2.274		1	1	35.411			
			C	0.309	2.274		1	1	35.411			
T5	5.32	5.24	A	0.279	2.353	4	1	1	38.928	0.79	39.64	C
40.00-20.00			B	0.279	2.353		1	1	38.928			
			C	0.279	2.353		1	1	38.928			
T6 20.00-0.00	3.68	5.44	A	0.247	2.446	4	1	1	39.910	0.68	34.02	C
			B	0.247	2.446		1	1	39.910			
			C	0.247	2.446		1	1	39.910			
Sum Weight:	26.33	25.83						OTM	281.11 kip-ft	4.72		

Tower Forces - With Ice - Wind 60 To Face

FDH Infrastructure Services,Inc.
6521 Meridien Drive, Suite 107
Raleigh, North Carolina 27616
Phone: 9197551012
FAX: 9197551031

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	1.98	3.18	A	0.381	2.102	6	0.8	1	30.187	0.58	29.04	A
120.00-100.00			B	0.381	2.102		0.8	1	30.187			
			C	0.381	2.102		0.8	1	30.187			
T2	4.53	3.56	A	0.374	2.118	5	0.8	1	29.669	0.83	41.57	A
100.00-80.00			B	0.374	2.118		0.8	1	29.669			
			C	0.374	2.118		0.8	1	29.669			
T3	5.35	4.04	A	0.363	2.142	5	0.8	1	32.411	0.89	44.69	A
80.00-60.00			B	0.363	2.142		0.8	1	32.411			
			C	0.363	2.142		0.8	1	32.411			
T4	5.47	4.36	A	0.309	2.274	4	0.8	1	33.029	0.86	42.98	A
60.00-40.00			B	0.309	2.274		0.8	1	33.029			
			C	0.309	2.274		0.8	1	33.029			
T5	5.32	5.24	A	0.279	2.353	4	0.8	1	35.683	0.77	38.41	A
40.00-20.00			B	0.279	2.353		0.8	1	35.683			
			C	0.279	2.353		0.8	1	35.683			
T6 20.00-0.00	3.68	5.44	A	0.247	2.446	4	0.8	1	36.354	0.65	32.62	A
			B	0.247	2.446		0.8	1	36.354			
			C	0.247	2.446		0.8	1	36.354			
Sum Weight:	26.33	25.83						OTM	273.82 kip-ft	4.59		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	1.98	3.18	A	0.381	2.102	6	0.85	1	30.709	0.58	29.16	B
120.00-100.00			B	0.381	2.102		0.85	1	30.709			
			C	0.381	2.102		0.85	1	30.709			
T2	4.53	3.56	A	0.374	2.118	5	0.85	1	30.147	0.84	41.88	B
100.00-80.00			B	0.374	2.118		0.85	1	30.147			
			C	0.374	2.118		0.85	1	30.147			
T3	5.35	4.04	A	0.363	2.142	5	0.85	1	32.966	0.90	44.80	B
80.00-60.00			B	0.363	2.142		0.85	1	32.966			
			C	0.363	2.142		0.85	1	32.966			
T4	5.47	4.36	A	0.309	2.274	4	0.85	1	33.625	0.86	43.19	B
60.00-40.00			B	0.309	2.274		0.85	1	33.625			
			C	0.309	2.274		0.85	1	33.625			
T5	5.32	5.24	A	0.279	2.353	4	0.85	1	36.494	0.77	38.71	B
40.00-20.00			B	0.279	2.353		0.85	1	36.494			
			C	0.279	2.353		0.85	1	36.494			
T6 20.00-0.00	3.68	5.44	A	0.247	2.446	4	0.85	1	37.243	0.66	33.07	B
			B	0.247	2.446		0.85	1	37.243			
			C	0.247	2.446		0.85	1	37.243			
Sum Weight:	26.33	25.83						OTM	275.30 kip-ft	4.62		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.36	0.95	A	0.144	2.794	8	1	1	13.739	0.45	22.55	C
120.00-100.00			B	0.144	2.794		1	1	13.739			
			C	0.144	2.794		1	1	13.739			
T2	0.97	1.44	A	0.157	2.747	8	1	1	14.285	0.67	33.31	A
100.00-80.00			B	0.157	2.747		1	1	14.285			
			C	0.157	2.747		1	1	14.285			
T3	1.17	1.71	A	0.156	2.748	7	1	1	16.305	0.73	36.45	A
80.00-60.00			B	0.156	2.748		1	1	16.305			
			C	0.156	2.748		1	1	16.305			
T4	1.20	1.98	A	0.137	2.82	6	1	1	17.578	0.70	35.24	A
60.00-40.00			B	0.137	2.82		1	1	17.578			
			C	0.137	2.82		1	1	17.578			
T5	1.20	2.59	A	0.142	2.801	5	1	1	22.369	0.67	33.70	A
40.00-20.00			B	0.142	2.801		1	1	22.369			
			C	0.142	2.801		1	1	22.369			
T6 20.00-0.00	0.88	2.94	A	0.133	2.834	5	1	1	24.386	0.62	31.04	A
			B	0.133	2.834		1	1	24.386			
			C	0.133	2.834		1	1	24.386			
Sum Weight:	5.78	11.60						OTM	222.27 kip-ft	3.85		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.36	0.95	A	0.144	2.794	8	0.8	1	11.653	0.41	20.58	A
120.00-100.00			B	0.144	2.794		0.8	1	11.653			
			C	0.144	2.794		0.8	1	11.653			
T2	0.97	1.44	A	0.157	2.747	8	0.8	1	12.375	0.63	31.64	B
100.00-80.00			B	0.157	2.747		0.8	1	12.375			
			C	0.157	2.747		0.8	1	12.375			
T3	1.17	1.71	A	0.156	2.748	7	0.8	1	14.087	0.69	34.64	B
80.00-60.00			B	0.156	2.748		0.8	1	14.087			
			C	0.156	2.748		0.8	1	14.087			
T4	1.20	1.98	A	0.137	2.82	6	0.8	1	15.196	0.67	33.42	B
60.00-40.00			B	0.137	2.82		0.8	1	15.196			
			C	0.137	2.82		0.8	1	15.196			
T5	1.20	2.59	A	0.142	2.801	5	0.8	1	19.125	0.63	31.58	B
40.00-20.00			B	0.142	2.801		0.8	1	19.125			
			C	0.142	2.801		0.8	1	19.125			
T6 20.00-0.00	0.88	2.94	A	0.133	2.834	5	0.8	1	20.831	0.57	28.69	B
			B	0.133	2.834		0.8	1	20.831			
			C	0.133	2.834		0.8	1	20.831			
Sum Weight:	5.78	11.60						OTM	208.83 kip-ft	3.61		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.36	0.95	A	0.144	2.794	8	0.85	1	12.174	0.43	21.56	B
120.00-100.00			B	0.144	2.794		0.85	1	12.174			
			C	0.144	2.794		0.85	1	12.174			
T2	0.97	1.44	A	0.157	2.747	8	0.85	1	12.852	0.66	32.90	B
100.00-80.00			B	0.157	2.747		0.85	1	12.852			
			C	0.157	2.747		0.85	1	12.852			
T3	1.17	1.71	A	0.156	2.748	7	0.85	1	14.641	0.72	35.76	B
80.00-60.00			B	0.156	2.748		0.85	1	14.641			
			C	0.156	2.748		0.85	1	14.641			
T4	1.20	1.98	A	0.137	2.82	6	0.85	1	15.791	0.69	34.40	B
60.00-40.00			B	0.137	2.82		0.85	1	15.791			
			C	0.137	2.82		0.85	1	15.791			
T5	1.20	2.59	A	0.142	2.801	5	0.85	1	19.936	0.65	32.55	B
40.00-20.00			B	0.142	2.801		0.85	1	19.936			
			C	0.142	2.801		0.85	1	19.936			
T6 20.00-0.00	0.88	2.94	A	0.133	2.834	5	0.85	1	21.720	0.60	29.87	B
			B	0.133	2.834		0.85	1	21.720			
			C	0.133	2.834		0.85	1	21.720			
Sum Weight:	5.78	11.60						OTM	216.61 kip-ft	3.74		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	7.81					
Bracing Weight	3.78					
Total Member Self-Weight	11.60			1.89	-7.82	
Total Weight	26.03			1.89	-7.82	
Wind 0 deg - No Ice		-0.05	-14.57	-1088.57	-4.93	9.10
Wind 30 deg - No Ice		6.94	-12.09	-911.73	-532.63	7.98
Wind 60 deg - No Ice		11.73	-6.76	-512.04	-899.54	5.52
Wind 90 deg - No Ice		13.75	0.04	4.44	-1048.91	3.09
Wind 120 deg - No Ice		12.72	7.40	553.00	-956.68	-1.70
Wind 150 deg - No Ice		7.27	12.57	943.40	-551.77	-7.72
Wind 180 deg - No Ice		0.06	13.98	1058.51	-11.19	-9.04
Wind 210 deg - No Ice		-6.92	12.13	917.19	516.27	-8.02
Wind 240 deg - No Ice		-12.19	7.06	533.05	909.90	-5.57
Wind 270 deg - No Ice		-13.75	-0.07	-1.97	1033.60	-3.15
Wind 300 deg - No Ice		-12.22	-7.10	-532.04	912.36	1.59
Wind 330 deg - No Ice		-7.23	-12.56	-939.02	534.04	7.68
Member Ice	14.23					
Total Weight Ice	76.93			12.63	-39.22	
Wind 0 deg - Ice		-0.23	-7.33	-530.25	-26.81	4.55
Wind 30 deg - Ice		3.33	-6.18	-447.44	-292.05	4.44
Wind 60 deg - Ice		5.91	-3.38	-242.26	-484.08	3.19
Wind 90 deg - Ice		6.85	0.01	13.47	-554.27	2.05
Wind 120 deg - Ice		6.14	3.71	286.56	-496.77	-0.21
Wind 150 deg - Ice		3.53	6.29	479.16	-303.13	-3.18

Load Case	*Vertical Forces K*	*Sum of Forces X K*	*Sum of Forces Z K*	*Sum of Overturning Moments, M_x kip-ft*	*Sum of Overturning Moments, M_z kip-ft*	*Sum of Torques kip-ft*
Wind 180 deg - Ice		0.01	7.15	545.73	-39.94	-4.87
Wind 210 deg - Ice		-3.38	6.16	471.80	216.29	-4.66
Wind 240 deg - Ice		-6.09	3.50	274.37	415.56	-3.25
Wind 270 deg - Ice		-6.95	-0.24	-0.49	481.22	-1.11
Wind 300 deg - Ice		-6.09	-3.66	-257.93	415.92	1.07
Wind 330 deg - Ice		-3.70	-6.26	-452.25	233.88	3.35
Total Weight	26.03			1.89	-7.82	
Wind 0 deg - Service		-0.02	-6.07	-454.09	0.63	3.79
Wind 30 deg - Service		2.89	-5.03	-380.49	-219.02	3.32
Wind 60 deg - Service		4.88	-2.81	-214.12	-371.74	2.30
Wind 90 deg - Service		5.72	0.02	0.85	-433.91	1.29
Wind 120 deg - Service		5.29	3.08	229.18	-395.52	-0.71
Wind 150 deg - Service		3.02	5.23	391.68	-226.98	-3.21
Wind 180 deg - Service		0.02	5.82	439.59	-1.98	-3.76
Wind 210 deg - Service		-2.88	5.05	380.77	217.57	-3.34
Wind 240 deg - Service		-5.07	2.94	220.88	381.41	-2.32
Wind 270 deg - Service		-5.72	-0.03	-1.82	432.90	-1.31
Wind 300 deg - Service		-5.08	-2.95	-222.45	382.44	0.66
Wind 330 deg - Service		-3.01	-5.23	-391.85	224.97	3.19

Load Combinations

Comb. No.	*Description*
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp

Comb. No.	Description
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	120 - 100	Leg	Max Tension	15	14.27	-0.02	-0.10
			Max. Compression	10	-19.22	-0.10	-0.06
			Max. Mx	8	-2.78	0.69	0.03
			Max. My	14	-2.06	0.02	0.70
			Max. Vy	8	0.71	-0.04	0.00
			Max. Vx	2	-0.73	-0.00	0.04
		Diagonal	Max Tension	12	2.97	0.00	0.00
			Max. Compression	24	-3.02	0.00	0.00
			Max. Mx	31	0.71	0.03	-0.00
			Max. My	8	-2.76	-0.00	-0.01
			Max. Vy	31	-0.02	0.03	-0.00
			Max. Vx	8	0.00	-0.00	-0.01
		Top Girt	Max Tension	11	0.37	0.00	0.00
			Max. Compression	14	-0.40	0.00	0.00
			Max. Mx	26	-0.05	-0.04	0.00
			Max. My	4	-0.00	0.00	0.00
			Max. Vy	26	0.03	0.00	0.00
			Max. Vx	4	-0.00	0.00	0.00
T2	100 - 80	Leg	Max Tension	15	52.25	-0.05	-0.32
			Max. Compression	10	-62.35	0.57	0.34
			Max. Mx	20	-3.71	-0.62	-0.01
			Max. My	3	-60.05	-0.08	-0.68
			Max. Vy	8	0.67	-0.40	-0.01
			Max. Vx	2	-0.71	0.01	0.42
		Diagonal	Max Tension	24	6.08	0.00	0.00
			Max. Compression	24	-6.18	0.00	0.00
			Max. Mx	31	1.25	0.03	-0.00
			Max. My	4	-4.88	-0.01	-0.01
			Max. Vy	31	-0.02	0.03	-0.00
			Max. Vx	4	0.00	-0.01	-0.01
T3	80 - 60	Leg	Max Tension	15	84.79	-0.04	0.01
			Max. Compression	10	-98.21	0.16	0.02
			Max. Mx	11	-68.05	1.21	0.03
			Max. My	16	-5.78	-0.03	0.69
			Max. Vy	3	-3.78	1.21	-0.20

FDH Infrastructure Services,Inc.
6521 Meridien Drive, Suite 107
Raleigh, North Carolina 27616
Phone: 9197551012
FAX: 9197551031

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	16	-2.18	-0.03	0.69
		Diagonal	Max Tension	24	4.37	0.00	0.00
			Max. Compression	24	-4.55	0.00	0.00
			Max. Mx	31	1.02	0.03	0.00
			Max. My	12	-4.50	-0.01	0.01
			Max. Vy	31	-0.03	0.03	0.00
			Max. Vx	12	-0.00	0.00	0.00
		Top Girt	Max Tension	11	0.13	0.00	0.00
			Max. Compression	22	-0.23	0.00	0.00
			Max. Mx	26	-0.08	-0.04	0.00
			Max. My	34	-0.08	0.00	0.00
			Max. Vy	26	0.03	0.00	0.00
			Max. Vx	34	-0.00	0.00	0.00
T4	60 - 40	Leg	Max Tension	15	112.28	-0.14	0.00
			Max. Compression	10	-129.36	-0.04	0.01
			Max. Mx	31	-57.59	0.21	-0.00
			Max. My	5	-6.00	-0.00	-0.25
			Max. Vy	14	0.14	-0.20	0.06
			Max. Vx	2	0.19	-0.12	-0.22
		Diagonal	Max Tension	24	4.78	0.00	0.00
			Max. Compression	24	-4.85	0.00	0.00
			Max. Mx	31	0.77	0.04	0.00
			Max. My	2	-4.39	-0.00	-0.01
			Max. Vy	29	0.03	0.03	-0.00
			Max. Vx	33	-0.00	0.00	0.00
T5	40 - 20	Leg	Max Tension	23	134.11	0.38	-0.01
			Max. Compression	10	-154.63	-0.40	0.00
			Max. Mx	10	-154.42	0.74	0.00
			Max. My	4	-8.94	-0.09	-0.65
			Max. Vy	10	-0.28	0.74	0.00
			Max. Vx	4	-0.19	-0.09	-0.65
		Diagonal	Max Tension	25	6.25	0.07	0.01
			Max. Compression	24	-6.54	0.00	0.00
			Max. Mx	12	1.37	0.11	0.02
			Max. My	12	-6.50	-0.04	0.04
			Max. Vy	31	-0.05	0.09	-0.01
			Max. Vx	12	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	10	3.19	0.01	-0.01
			Max. Compression	10	-3.19	0.00	0.00
			Max. Mx	34	-0.04	0.03	0.00
			Max. My	14	-0.28	0.01	0.01
			Max. Vy	28	0.03	0.03	0.00
			Max. Vx	14	-0.00	0.00	0.00
T6	20 - 0	Leg	Max Tension	23	157.39	0.45	-0.00
			Max. Compression	10	-181.75	0.00	0.00
			Max. Mx	10	-168.50	0.85	-0.00
			Max. My	4	-10.43	-0.10	-0.79
			Max. Vy	10	0.31	0.85	-0.00
			Max. Vx	4	0.22	-0.10	-0.79
		Diagonal	Max Tension	25	6.16	0.06	-0.01
			Max. Compression	24	-6.38	0.00	0.00
			Max. Mx	32	1.36	0.11	-0.00
			Max. My	12	-6.24	-0.02	0.03
			Max. Vy	33	0.05	0.11	0.01
			Max. Vx	12	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	10	3.54	0.01	-0.01
			Max. Compression	10	-3.54	0.00	0.00
			Max. Mx	34	-0.08	0.04	0.00
			Max. My	14	-0.37	0.01	0.01

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	28	0.03	0.03	0.00
			Max. Vx	14	-0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	181.00	12.30	-6.59
	Max. H_x	18	181.00	12.30	-6.59
	Max. H_z	7	-158.74	-11.07	5.87
	Min. Vert	7	-158.74	-11.07	5.87
	Min. H_x	7	-158.74	-11.07	5.87
	Min. H_z	18	181.00	12.30	-6.59
Leg B	Max. Vert	10	188.60	-12.52	-7.40
	Max. H_x	23	-163.09	11.23	6.64
	Max. H_z	25	-143.06	9.31	7.00
	Min. Vert	23	-163.09	11.23	6.64
	Min. H_x	10	188.60	-12.52	-7.40
	Min. H_z	12	163.49	-10.06	-7.54
Leg A	Max. Vert	2	186.33	0.74	14.40
	Max. H_x	22	96.44	1.58	7.21
	Max. H_z	2	186.33	0.74	14.40
	Min. Vert	15	-162.79	-0.74	-12.93
	Min. H_x	11	-81.25	-1.55	-6.73
	Min. H_z	15	-162.79	-0.74	-12.93

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	26.03	0.00	0.00	1.89	-7.82	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	31.24	-0.08	-23.32	-1752.06	-4.83	14.62
0.9 Dead+1.6 Wind 0 deg - No Ice	23.43	-0.08	-23.32	-1749.98	-2.46	14.61
1.2 Dead+1.6 Wind 30 deg - No Ice	31.24	11.10	-19.35	-1467.61	-853.83	12.83
0.9 Dead+1.6 Wind 30 deg - No Ice	23.43	11.10	-19.35	-1465.94	-850.16	12.82
1.2 Dead+1.6 Wind 60 deg - No Ice	31.24	18.77	-10.81	-824.59	-1444.17	8.88
0.9 Dead+1.6 Wind 60 deg - No Ice	23.43	18.77	-10.81	-823.90	-1439.61	8.87
1.2 Dead+1.6 Wind 90 deg - No Ice	31.24	22.00	0.07	6.37	-1684.46	4.95
0.9 Dead+1.6 Wind 90 deg - No Ice	23.43	22.00	0.07	5.80	-1679.53	4.95
1.2 Dead+1.6 Wind 120 deg - No Ice	31.24	20.35	11.84	888.89	-1535.96	-2.74
0.9 Dead+1.6 Wind 120 deg - No Ice	23.43	20.35	11.84	886.97	-1531.28	-2.74

FDH Infrastructure Services,Inc.
6521 Meridien Drive, Suite 107
Raleigh, North Carolina 27616
Phone: 9197551012
FAX: 9197551031

Load Combination	*Vertical*	*Shear$_x$*	*Shear$_z$*	*Overturning Moment, M$_x$*	*Overturning Moment, M$_z$*	*Torque*
	K	*K*	*K*	*kip-ft*	*kip-ft*	*kip-ft*
1.2 Dead+1.6 Wind 150 deg - No Ice	31.24	11.63	20.12	1516.97	-884.57	-12.39
0.9 Dead+1.6 Wind 150 deg - No Ice	23.43	11.63	20.12	1514.10	-880.87	-12.38
1.2 Dead+1.6 Wind 180 deg - No Ice	31.24	0.09	22.37	1702.25	-14.89	-14.53
0.9 Dead+1.6 Wind 180 deg - No Ice	23.43	0.09	22.37	1699.09	-12.51	-14.51
1.2 Dead+1.6 Wind 210 deg - No Ice	31.24	-11.08	19.40	1474.89	833.73	-12.89
0.9 Dead+1.6 Wind 210 deg - No Ice	23.43	-11.08	19.40	1472.07	834.82	-12.88
1.2 Dead+1.6 Wind 240 deg - No Ice	31.24	-19.50	11.30	856.85	1467.03	-8.95
0.9 Dead+1.6 Wind 240 deg - No Ice	23.43	-19.50	11.30	854.98	1467.16	-8.94
1.2 Dead+1.6 Wind 270 deg - No Ice	31.24	-22.01	-0.11	-3.91	1666.09	-5.06
0.9 Dead+1.6 Wind 270 deg - No Ice	23.43	-22.01	-0.11	-4.48	1665.92	-5.05
1.2 Dead+1.6 Wind 300 deg - No Ice	31.24	-19.55	-11.36	-856.73	1470.96	2.56
0.9 Dead+1.6 Wind 300 deg - No Ice	23.43	-19.55	-11.36	-856.01	1471.09	2.56
1.2 Dead+1.6 Wind 330 deg - No Ice	31.24	-11.57	-20.10	-1511.46	862.28	12.32
0.9 Dead+1.6 Wind 330 deg - No Ice	23.43	-11.57	-20.10	-1509.75	863.33	12.31
1.2 Dead+1.0 Ice+1.0 Temp	82.14	0.00	0.00	13.25	-41.54	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	82.14	-0.23	-7.33	-537.95	-29.07	4.62
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	82.14	3.33	-6.18	-453.89	-298.40	4.52
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	82.14	5.91	-3.38	-245.61	-493.35	3.25
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	82.14	6.85	0.01	14.10	-564.64	2.07
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	82.14	6.14	3.71	291.38	-506.21	-0.23
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	82.14	3.53	6.29	486.96	-309.57	-3.23
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	82.14	0.01	7.15	554.57	-42.31	-4.94
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	82.14	-3.38	6.16	479.52	217.91	-4.73
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	82.14	-6.09	3.50	279.07	420.22	-3.31
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	82.14	-6.95	-0.24	0.03	486.90	-1.13
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	82.14	-6.09	-3.66	-261.41	420.56	1.08
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	82.14	-3.70	-6.26	-458.76	235.67	3.40
Dead+Wind 0 deg - Service	26.03	-0.02	-6.07	-454.02	-6.67	3.80
Dead+Wind 30 deg - Service	26.03	2.89	-5.03	-380.09	-227.31	3.33
Dead+Wind 60 deg - Service	26.03	4.88	-2.81	-212.98	-380.73	2.31
Dead+Wind 90 deg - Service	26.03	5.72	0.02	2.97	-443.17	1.29
Dead+Wind 120 deg - Service	26.03	5.29	3.08	232.32	-404.58	-0.71
Dead+Wind 150 deg - Service	26.03	3.02	5.23	395.54	-235.30	-3.22
Dead+Wind 180 deg - Service	26.03	0.02	5.82	443.69	-9.29	-3.78
Dead+Wind 210 deg - Service	26.03	-2.88	5.05	384.61	211.25	-3.35

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 240 deg - Service	26.03	-5.07	2.94	223.99	375.84	-2.33
Dead+Wind 270 deg - Service	26.03	-5.72	-0.03	0.29	427.57	-1.32
Dead+Wind 300 deg - Service	26.03	-5.08	-2.95	-221.34	376.86	0.67
Dead+Wind 330 deg - Service	26.03	-3.01	-5.23	-391.49	218.67	3.20

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-26.03	0.00	0.00	26.03	0.00	0.000%
2	-0.08	-31.24	-23.32	0.08	31.24	23.32	0.000%
3	-0.08	-23.43	-23.32	0.08	23.43	23.32	0.000%
4	11.10	-31.24	-19.35	-11.10	31.24	19.35	0.000%
5	11.10	-23.43	-19.35	-11.10	23.43	19.35	0.000%
6	18.77	-31.24	-10.81	-18.77	31.24	10.81	0.000%
7	18.77	-23.43	-10.81	-18.77	23.43	10.81	0.000%
8	22.00	-31.24	0.07	-22.00	31.24	-0.07	0.000%
9	22.00	-23.43	0.07	-22.00	23.43	-0.07	0.000%
10	20.35	-31.24	11.84	-20.35	31.24	-11.84	0.000%
11	20.35	-23.43	11.84	-20.35	23.43	-11.84	0.000%
12	11.63	-31.24	20.12	-11.63	31.24	-20.12	0.000%
13	11.63	-23.43	20.12	-11.63	23.43	-20.12	0.000%
14	0.09	-31.24	22.37	-0.09	31.24	-22.37	0.000%
15	0.09	-23.43	22.37	-0.09	23.43	-22.37	0.000%
16	-11.08	-31.24	19.40	11.08	31.24	-19.40	0.000%
17	-11.08	-23.43	19.40	11.08	23.43	-19.40	0.000%
18	-19.50	-31.24	11.30	19.50	31.24	-11.30	0.000%
19	-19.50	-23.43	11.30	19.50	23.43	-11.30	0.000%
20	-22.01	-31.24	-0.11	22.01	31.24	0.11	0.000%
21	-22.01	-23.43	-0.11	22.01	23.43	0.11	0.000%
22	-19.55	-31.24	-11.36	19.55	31.24	11.36	0.000%
23	-19.55	-23.43	-11.36	19.55	23.43	11.36	0.000%
24	-11.57	-31.24	-20.10	11.57	31.24	20.10	0.000%
25	-11.57	-23.43	-20.10	11.57	23.43	20.10	0.000%
26	0.00	-82.14	0.00	0.00	82.14	0.00	0.000%
27	-0.23	-82.14	-7.33	0.23	82.14	7.33	0.000%
28	3.33	-82.14	-6.18	-3.33	82.14	6.18	0.000%
29	5.91	-82.14	-3.38	-5.91	82.14	3.38	0.000%
30	6.85	-82.14	0.01	-6.85	82.14	-0.01	0.000%
31	6.14	-82.14	3.71	-6.14	82.14	-3.71	0.000%
32	3.53	-82.14	6.29	-3.53	82.14	-6.29	0.000%
33	0.01	-82.14	7.15	-0.01	82.14	-7.15	0.000%
34	-3.38	-82.14	6.16	3.38	82.14	-6.16	0.000%
35	-6.09	-82.14	3.50	6.09	82.14	-3.50	0.000%
36	-6.95	-82.14	-0.24	6.95	82.14	0.24	0.000%
37	-6.09	-82.14	-3.66	6.09	82.14	3.66	0.000%
38	-3.70	-82.14	-6.26	3.70	82.14	6.26	0.000%
39	-0.02	-26.03	-6.07	0.02	26.03	6.07	0.000%
40	2.89	-26.03	-5.03	-2.89	26.03	5.03	0.000%
41	4.88	-26.03	-2.81	-4.88	26.03	2.81	0.000%
42	5.72	-26.03	0.02	-5.72	26.03	-0.02	0.000%
43	5.29	-26.03	3.08	-5.29	26.03	-3.08	0.000%
44	3.02	-26.03	5.23	-3.02	26.03	-5.23	0.000%
45	0.02	-26.03	5.82	-0.02	26.03	-5.82	0.000%
46	-2.88	-26.03	5.05	2.88	26.03	-5.05	0.000%
47	-5.07	-26.03	2.94	5.07	26.03	-2.94	0.000%
48	-5.72	-26.03	-0.03	5.72	26.03	0.03	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
49	-5.08	-26.03	-2.95	5.08	26.03	2.95	0.000%
50	-3.01	-26.03	-5.23	3.01	26.03	5.23	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000365
3	Yes	4	0.00000001	0.00000404
4	Yes	4	0.00000001	0.00000680
5	Yes	4	0.00000001	0.00000630
6	Yes	4	0.00000001	0.00000787
7	Yes	4	0.00000001	0.00000697
8	Yes	4	0.00000001	0.00000636
9	Yes	4	0.00000001	0.00000587
10	Yes	4	0.00000001	0.00000375
11	Yes	4	0.00000001	0.00000415
12	Yes	4	0.00000001	0.00000689
13	Yes	4	0.00000001	0.00000640
14	Yes	4	0.00000001	0.00000838
15	Yes	4	0.00000001	0.00000746
16	Yes	4	0.00000001	0.00000680
17	Yes	4	0.00000001	0.00000630
18	Yes	4	0.00000001	0.00000326
19	Yes	4	0.00000001	0.00000362
20	Yes	4	0.00000001	0.00000623
21	Yes	4	0.00000001	0.00000577
22	Yes	4	0.00000001	0.00000837
23	Yes	4	0.00000001	0.00000748
24	Yes	4	0.00000001	0.00000671
25	Yes	4	0.00000001	0.00000626
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00001071
28	Yes	4	0.00000001	0.00001107
29	Yes	4	0.00000001	0.00001130
30	Yes	4	0.00000001	0.00001122
31	Yes	4	0.00000001	0.00001114
32	Yes	4	0.00000001	0.00001123
33	Yes	4	0.00000001	0.00001127
34	Yes	4	0.00000001	0.00001092
35	Yes	4	0.00000001	0.00001042
36	Yes	4	0.00000001	0.00001025
37	Yes	4	0.00000001	0.00001049
38	Yes	4	0.00000001	0.00001050
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000001
41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00000001
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000001

50	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	120 - 100	2.499	43	0.1722	0.0432
T2	100 - 80	1.792	43	0.1609	0.0425
T3	80 - 60	1.137	43	0.1336	0.0337
T4	60 - 40	0.628	43	0.0959	0.0215
T5	40 - 20	0.274	43	0.0605	0.0103
T6	20 - 0	0.073	43	0.0283	0.0046

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
122.00	3"x12' Omni	43	2.499	0.1722	0.0432	557727
120.00	Lightning Rod	43	2.499	0.1722	0.0432	557727
118.00	KRY 112 144/1	43	2.428	0.1714	0.0433	557727
110.00	7770 w/Mount Pipe	43	2.144	0.1679	0.0436	278865
96.50	RC2DC-3315-PF-48	43	1.671	0.1574	0.0416	81879
86.00	60" x 12" x 5" w/ Mount Pipe	43	1.322	0.1434	0.0370	36710
57.00	PR-850	43	0.565	0.0903	0.0196	31605
55.00	1.9"Ø x 9.8' Pipe Mount	43	0.525	0.0866	0.0183	31567
51.00	PR-850	43	0.450	0.0794	0.0159	31465

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	120 - 100	9.469	10	0.6496	0.1664
T2	100 - 80	6.802	10	0.6080	0.1638
T3	80 - 60	4.323	10	0.5057	0.1298
T4	60 - 40	2.390	10	0.3636	0.0826
T5	40 - 20	1.044	10	0.2296	0.0395
T6	20 - 0	0.280	10	0.1076	0.0176

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
122.00	3"x12' Omni	10	9.469	0.6496	0.1664	159326

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
120.00	Lightning Rod	10	9.469	0.6496	0.1664	159326
118.00	KRY 112 144/1	10	9.200	0.6468	0.1669	159326
110.00	7770 w/Mount Pipe	10	8.128	0.6338	0.1679	79663
96.50	RC2DC-3315-PF-48	10	6.345	0.5949	0.1601	22553
86.00	60" x 12" x 5" w/ Mount Pipe	10	5.023	0.5427	0.1426	9836
57.00	PR-850	10	2.151	0.3425	0.0754	8352
55.00	1.9"Ø x 9.8' Pipe Mount	10	1.999	0.3287	0.0706	8338
51.00	PR-850	10	1.713	0.3015	0.0613	8303

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	120	Leg	A325N	0.7500	4	3.57	29.82	0.120	1	Bolt Tension
		Diagonal	A325N	0.6250	1	2.97	7.88	0.378	1	Member Block Shear
		Top Girt	A325N	0.3750	1	0.40	4.47	0.090	1	Bolt Shear
T2	100	Leg	A325N	0.7500	4	13.06	29.82	0.438	1	Bolt Tension
		Diagonal	A325N	0.6250	1	6.08	7.88	0.772	1	Member Block Shear
T3	80	Leg	A325N	1.0000	4	21.20	53.01	0.400	1	Bolt Tension
		Diagonal	A325N	0.6250	1	4.37	8.63	0.507	1	Member Block Shear
		Top Girt	A325N	0.3750	1	0.23	4.47	0.051	1	Bolt Shear
T4	60	Leg	A325N	1.0000	4	28.07	53.01	0.529	1	Bolt Tension
		Diagonal	A325N	0.6250	1	4.78	8.63	0.553	1	Member Block Shear
T5	40	Leg	A325N	1.0000	6	22.32	53.01	0.421	1	Bolt Tension
		Diagonal	A325N	0.6250	1	6.54	12.43	0.526	1	Bolt Shear
T6	20	Diagonal	A325N	0.6250	1	6.38	12.43	0.513	1	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	1 3/4	20.00	4.88	133.7 K=1.00	2.4053	-19.22	30.39	0.633 [1]
T2	100 - 80	2 1/2	20.00	5.00	96.0 K=1.00	4.9087	-62.35	112.60	0.554 [1]
T3	80 - 60	2 3/4	20.02	4.88	85.2 K=1.00	5.9396	-98.21	157.26	0.625 [1]
T4	60 - 40	3	20.02	5.00	80.1 K=1.00	7.0686	-129.36	199.04	0.650 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T5	40 - 20	3 1/4	20.02	5.20	76.8 K=1.00	8.2958	-154.63	242.55	0.638 [1]
T6	20 - 0	3 1/2	20.02	5.17	70.9 K=1.00	9.6211	-181.76	299.63	0.607 [1]

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	L2x2x3/16	7.35	3.43	108.4 K=1.04	0.7150	-3.02	12.48	0.242 [1]
T2	100 - 80	L2x2x3/16	7.43	3.43	108.3 K=1.04	0.7150	-6.18	12.49	0.495 [1]
T3	80 - 60	L2x2x3/16	8.38	4.00	121.7 K=1.00	0.7150	-4.18	10.62	0.393 [1]
T4	60 - 40	L2x2x3/16	9.70	4.65	141.5 K=1.00	0.7150	-4.82	8.06	0.598 [1]
T5	40 - 20	L3x3x1/4	13.88	6.87	139.3 K=1.00	1.4400	-6.43	16.78	0.383 [1]
T6	20 - 0	L3x3x1/4	14.96	7.39	149.8 K=1.00	1.4400	-6.38	14.50	0.440 [1]

[1] $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T5	40 - 20	L2x2x1/8	9.61	9.34	156.3 K=0.87	0.4844	-3.19	4.48	0.711 [1]
T6	20 - 0	L2x2x1/8	11.11	10.82	173.7 K=0.84	0.4844	-3.54	3.63	0.976 [1]

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	L2x2x1/8	5.50	5.06	152.8 K=1.00	0.4844	-0.40	4.69	0.086 [1]
T3	80 - 60	L2x2x1/8	5.54	5.02	151.4	0.4844	-0.23	4.77	0.047 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
					K=1.00				

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	1 3/4	20.00	4.88	133.7	2.4053	14.27	108.24	0.132 [1]
T2	100 - 80	2 1/2	20.00	5.00	96.0	4.9087	52.25	220.89	0.237 [1]
T3	80 - 60	2 3/4	20.02	4.88	85.2	5.9396	84.79	267.28	0.317 [1]
T4	60 - 40	3	20.02	5.00	80.1	7.0686	112.28	318.09	0.353 [1]
T5	40 - 20	3 1/4	20.02	4.81	71.0	8.2958	134.11	373.31	0.359 [1]
T6	20 - 0	3 1/2	20.02	4.84	66.3	9.6211	157.39	432.95	0.364 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	L2x2x3/16	7.35	3.43	69.6	0.4308	2.97	18.74	0.159 [1]
T2	100 - 80	L2x2x3/16	7.43	3.43	69.5	0.4308	6.08	18.74	0.324 [1]
T3	80 - 60	L2x2x3/16	7.52	3.57	72.7	0.4308	4.37	18.74	0.233 [1]
T4	60 - 40	L2x2x3/16	9.70	4.65	93.6	0.4308	4.78	18.74	0.255 [1]
T5	40 - 20	L3x3x1/4	13.88	6.87	90.5	0.9394	6.25	40.86	0.153 [1]
T6	20 - 0	L3x3x1/4	14.41	7.12	93.8	0.9394	6.16	40.86	0.151 [1]

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T5	40 - 20	L2x2x1/8	9.61	9.34	179.0	0.4844	3.19	15.69	0.203 [1]
T6	20 - 0	L2x2x1/8	11.11	10.82	207.3	0.4844	3.54	15.69	0.226 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	L2x2x1/8	5.50	5.06	102.6	0.3164	0.37	13.76	0.027 [1]
T3	80 - 60	L2x2x1/8	5.54	5.02	101.7	0.3164	0.13	13.76	0.010 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	120 - 100	Leg	1 3/4	2	-19.22	30.39	63.3	Pass
T2	100 - 80	Leg	2 1/2	32	-62.35	112.60	55.4	Pass
T3	80 - 60	Leg	2 3/4	59	-98.21	157.26	62.5	Pass
T4	60 - 40	Leg	3	89	-129.36	199.04	65.0	Pass
T5	40 - 20	Leg	3 1/4	116	-154.63	242.55	63.8	Pass
T6	20 - 0	Leg	3 1/2	137	-181.76	299.63	60.7	Pass
T1	120 - 100	Diagonal	L2x2x3/16	10	-3.02	12.48	24.2 37.8 (b)	Pass
T2	100 - 80	Diagonal	L2x2x3/16	37	-6.18	12.49	49.5 77.2 (b)	Pass
T3	80 - 60	Diagonal	L2x2x3/16	67	-4.18	10.62	39.3 50.7 (b)	Pass
T4	60 - 40	Diagonal	L2x2x3/16	94	-4.82	8.06	59.8	Pass
T5	40 - 20	Diagonal	L3x3x1/4	121	-6.43	16.78	38.3 52.6 (b)	Pass
T6	20 - 0	Diagonal	L3x3x1/4	142	-6.38	14.50	44.0 51.3 (b)	Pass
T5	40 - 20	Secondary Horizontal	L2x2x1/8	124	-3.19	4.48	71.1	Pass
T6	20 - 0	Secondary Horizontal	L2x2x1/8	146	-3.54	3.63	97.6	Pass
T1	120 - 100	Top Girt	L2x2x1/8	4	-0.40	4.69	8.6 9.0 (b)	Pass
T3	80 - 60	Top Girt	L2x2x1/8	63	-0.23	4.77	4.7 5.1 (b)	Pass
						Summary		
						Leg (T4)	65.0	Pass
						Diagonal (T2)	77.2	Pass
						Secondary Horizontal (T6)	97.6	Pass
						Top Girt (T1)	9.0	Pass
						Bolt Checks	77.2	Pass
						RATING =	**97.6**	**Pass**

Project Information

Site ID	CT98078-L
Site Name	Wilton Tower
App. Number	99550, v1

Tower Information

Tower Type	Self Support
TIA-222 Rev	G

☐ Apply TIA-222-H Section 15.5

Applied Loads

	Comp.	Uplift
Axial (k)	189.00	163.00
Shear (k)	15.00	13.00

Anchor Rod Data

Quantity:	6
Diameter (in):	1
Material Grade:	A449
Grout Considered:	No
l_{ar} (in):	1
Eta Factor, η:	0.5
Thread Type:	N-Included
Configuration:	Symmetrical

Anchor Rod Results

Axial, Pu_c (kips)	31.50
Shear, Vu (kips)	2.50
Moment, Mu (kip-in)	-
Axial Cap., φPn_t (kips)	58.18
Shear Cap., ϕVn (kips)	-
Moment Cap., ϕMn (kip-in)	-
Stress Rating	62.7%

Pass

Pier and Pad Foundation

Site ID:	CT98078-L
Site Name:	Wilton Tower
App. Number:	99550, v1

TIA-222 Revision:	G
Tower Type:	Self Support

Top & Bot. Pad Rein. Different?:	☐
Block Foundation?:	☐

Superstructure Analysis Reactions

Compression, P_{comp}:	189	kips
Compression Shear, Vu_comp:	15	kips
Uplift, P_{uplift}:	163	kips
Uplift Shear, V_{u_uplift}:	13	kips
Tower Height, **H**:	120	ft
Base Face Width, **BW**:	11.5	ft
BP Dist. Above Fdn, bp_{dist}:	2	in

Foundation Analysis Checks

	Capacity	Demand	Rating	Check
Uplift (kips)	527.75	163.00	**30.9%**	**Pass**
Lateral (Sliding) (kips)	160.67	13.00	**8.1%**	**Pass**
Bearing Pressure (ksf)	9.77	1.83	**18.7%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	845.67	105.00	**12.4%**	**Pass**
*Pier Flexure (Tension) (kip*ft)*	591.54	91.00	**15.4%**	**Pass**
Pier Compression (kip)	3374.26	197.91	**5.9%**	**Pass**
*Pad Flexure (kip*ft)*	2102.07	322.17	**15.3%**	**Pass**
Pad Shear - 1-way (kips)	361.68	64.34	**17.8%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.051	**31.1%**	**Pass**

Soil Rating:	**30.9%**
Structural Rating:	**31.1%**

Pier Properties

Pier Shape:	Circular	
Pier Diameter, **dpier**:	3	ft
Ext. Above Grade, **E**:	0.5	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	16	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	10	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties

Depth, **D**:	8.5	ft
Pad Width, **W**:	19	ft
Pad Thickness, **T**:	2	ft
Pad Rebar Size (Bottom), **Sp**:	9	
Pad Rebar Quantity (Bottom), **mp**:	26	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties

Rebar Grade, **Fy**:	60000	psi
Concrete Compressive Strength, **F'c**:	3000	psi
Dry Concrete Density, **δc**:	150	pcf

Soil Properties

Total Soil Unit Weight, **γ**:	120	pcf
Ultimate Net Bearing, Qnet:	12.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, **ϕ**:	30	degrees
SPT Blow Count, N_{blows}:	8	
Base Friction, **μ**:	0.5	
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	n/a	ft

<--Toggle between Gross and Net

August 29, 2018

CENTERLINE at&t

Centerline Communications, LLC
97 Ryan Drive Suite 1
Raynham, MA 02767

RE:		
	Site Number:	CT2286 (LTE 2C-3C)
	FA Number:	10092833
	PACE Number:	MRCTB031625
	PT Number:	2051A0GJYP
	Site Name:	WILTON DEER RUN ROAD
	Site Address:	160 Deer Run Road Wilton, CT 06897

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by Centerline Communications, LLC to perform a mount analysis on the proposed AT&T antenna/RRH mount to determine its capability of supporting the following loading:

- (3) 7770.00 Antennas (55.0"x11.0"x5.0" - Wt. = 35 lbs. /each)
- (3) P65-16-XLH-RR Antennas (72.0"x12.0"x6.0"– Wt. = 53 lbs. /each)
- (3) RRUS-11 RRH's (19.7"x17.0"x7.2" – Wt. = 51 lbs. /each)
- (6) LGP21401 TMA's (14.4"x9.0"x2.7" – Wt. = 19 lbs. /each)
- (1) Squid Surge Arrestor (24.0"x9.7"Φ – Wt. = 33 lbs.) (tower mounted)
- **(3) 800-10965 Antennas (78.7"x20.0"x6.9"– Wt. = 109 lbs. /each)**
- **(3) 4478 B5 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**
- **(3) 4415 B25 RRH's (15.0"x13.2"x5.4" – Wt. = 44 lbs. /each)**
- **(1) Squid Surge Arrestor (24.0"x9.7"Φ – Wt. = 33 lbs.) (tower mounted)**

**Proposed equipment shown in bold*

Fabrication drawings prepared by Sabre Industries Towers and Poles, P/N C10857001C, dated December 22, 2015 were available for the proposed mount. HDG's subconsultant, ProVertic LLC, conducted a survey climb and mapping of the existing AT&T antenna mounts on August 15, 2018.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-G, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2012 with 2005 Connecticut Supplement with 2016 Amendments, and AT&T Mount Technical Directive – R7.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-G Annex B, the max basic wind speed for this site is equal to 110 mph with a max basic wind speed with ice of 50 mph. Per the AT&T Mount Technical Directive and Appendix N of the Connecticut State Building Code, an ultimate wind speed of 120 mph converted to a nominal wind speed of 93 mph was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban and wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 3; tower is located at the upper half of a hill.
- The mount has been analyzed with load combinations consisting of 250 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 4.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The proposed mount is secured to the existing tower with brackets and thru bolts. The connection is considered OK by visual inspection.

Based on our evaluation, we have determined that the proposed mount **IS CAPABLE** of supporting the proposed installation.

- **Install new 12' HD V-Boom Sector Mount by Sabre Industries Towers and Poles, P/N C10857001C (typ. of 1 per sector, total of 3).**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Proposed Mount Rating	73	LC36	57%	**PASS**

Reference Documents:

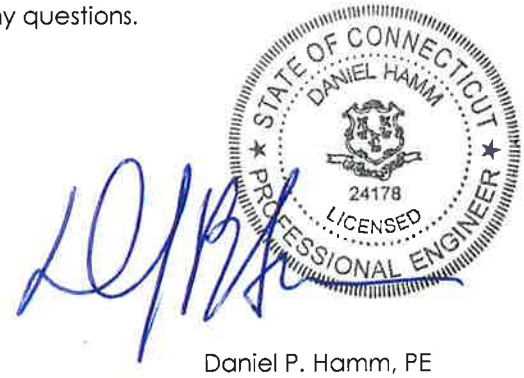
- Fabrication drawings prepared by Sabre Industries Towers and Poles dated December 22, 2015.

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The existing mount has been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG performed a localized analysis on the mount itself and not on the supporting tower structure.

Please feel free to contact our office should you have any questions.

Respectfully Submitted,
Hudson Design Group LLC



Michael Cabral
Structural Dept. Head

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:
(Existing mount to be removed)

p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Drive, N. Andover, MA 01845
p: 413.588.8139 f: 413.517.0590 a: 116 Pleasant Street, Ste 302, Easthampton, MA 01027

p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Drive, N. Andover, MA 01845
p: 413.588.8139 f: 413.517.0590 a: 116 Pleasant Street, Ste 302, Easthampton, MA 01027

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 8/29/2018
Project Name: WILTON DEER RUN ROAD
Project Number: CT2286
Designed By: JN **Checked By**: MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\ (z/z_g)^{2/\alpha}$

		z=	110 (ft)
		z_g=	1200 (ft)
K_z=	**1.016**	α=	7.0

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_e
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.4 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_e K_t/K_h)]^2$

$K_h = e^{(f*z/H)}$

K_{zt}=	**1.061934961**	K_h=	15.638172
		K_e=	0.9 (from Table 2-4)
(If Category 1 then K_{zt} =1.0)		K_t=	0.53 (from Table 2-5)
		f=	2 (from Table 2-5)
Category=	**3**	z=	110
		H=	80 (Ht. of the crest above surrounding terrain)
		K_{zt}=	1.06
		K_{iz} =	1.13 (from Sec. 2.6.8)

2.6.8 Design Ice Thickness

Max Ice Thickness = t_i = 0.75 in

$t_{iz} = 2.0*t_i*I*K_{iz}*(Kzt)^{0.35}$ t_{iz} = 1.73 in

Date: 8/29/2018
Project Name: WILTON DEER RUN ROAD
Project Number: CT2286
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

2.6.7 Gust Effect Factor

2.6.7.1 Self Supporting Lattice Structures

Gh = 1.0 Latticed Structures > 600 ft

Gh = 0.85 Latticed Structures 450 ft or less

Gh = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h= 121 Gh= 0.85

2.6.7.2 Guyed Masts Gh= 0.85

2.6.7.3 Pole Structures Gh= 1.1

2.6.9 Appurtenances Gh= 1.0

2.6.7.4 Structures Supported on Other Structures
(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

Gh= 1.35 **Gh= 1.00**

2.6.9.2 Design Wind Force on Appurtenances

State Code Ultimate Design Wind Speed: V_{ult} = 120 mph

Nomial Design Wind Speed, $V_{asd} = V_{ult}\sqrt{(0.6)}$ V_{asd} = 93 mph

V_{asd} per the AT&T Mount Technical Directive and Connecticut Supplement, Latest Addition.
Per TIA-222-G, V_{min} = 90 mph V_{max} = 110 mph

$F = q_z * Gh * (EPA)_A$

$q_z = 0.00256 * K_z * K_{zt} * K_d * V_{max}^2 * I$

		K_z=	1.016
		K_{zt}=	1.1
q_z=	**22.66**	K_d=	0.95
$q_{z\,(ice)}$=	**6.56**	V_{asd}=	93 mph
$q_{z\,(30)}$=	**2.36**	$V_{max\,(ice)}$=	50 mph
		V_{30}=	30 mph
		I=	1.0

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95

Date: 8/29/2018
Project Name: WILTON DEER RUN ROAD
Project Number: CT2286
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

Determine Ca:

Table 2-8

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Round	C < 32 (Subcritical)	0.7	0.8	1.2
	32 ≤ C ≤ 64 (Transitional)	$3.76/(C^{0.485})$	$3.37/(C^{0.415})$	$38.4/(C^{1.0})$
	C > 64 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = **1.73 in** | **Angle = 0 (deg)** | **Equivalent Angle = 180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
7770.00 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	**125**	**50**	**13**
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	6.00	1.36	**184**	**72**	**19**
800-10965 Antenna	78.7	20.0	6.9	10.93	3.94	1.26	**313**	**111**	**33**
RRUS-11 RRH	19.7	17.0	7.2	2.33	1.16	1.20	**63**	**26**	**7**
RRUS-11 RRH (Shielded)	19.7	5.0	7.2	0.68	3.94	1.26	**20**	**11**	**2**
4478 B5 RRH	18.1	13.4	8.3	1.68	1.35	1.20	**46**	**20**	**5**
4478 B5 RRH (Shielded)	18.1	0.0	8.3	0.00	0.00	1.20	**0**	**0**	**0**
4415 B25 RRH	15.0	13.2	5.4	1.38	1.14	1.20	**37**	**17**	**4**
4415 B25 RRH (Shielded)	15.0	0.0	5.4	0.00	0.00	1.20	**0**	**0**	**0**
LGP21401 TMA	14.4	9.0	2.7	0.90	1.60	1.20	**24**	**12**	**3**
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	**26**	**12**	**3**

Date: 8/29/2018
Project Name: WILTON DEER RUN ROAD
Project Number: CT2286
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.73	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770.00 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	125	66	110
P65-16-XLH-RR Antenr	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	184	107	165
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	313	132	268
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	63	27	54
RRUS-11 RRH (Shielde	19.7	8.5	7.2	1.16	0.99	2.32	2.74	1.20	1.21	32	27	30
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.19	1.20	1.20	46	28	41
4478 B5 RRH (Shielded	18.1	6.7	8.3	0.84	1.04	2.70	2.19	1.21	1.20	23	28	24
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	37	15	32
4415 B25 RRH (Shielde	15.0	6.6	5.4	0.69	0.56	2.27	2.78	1.20	1.21	19	15	18
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	24	8	20

WIND LOADS WITH ICE:

7770.00 Antenna	58.5	14.5	8.5	5.87	3.43	4.04	6.91	1.27	1.40	49	31	44
P65-16-XLH-RR Antenr	75.5	15.5	9.5	8.10	4.95	4.88	7.98	1.31	1.43	69	47	64
800-10965 Antenna	82.2	23.5	10.4	13.38	5.91	3.50	7.93	1.24	1.43	109	55	96
RRUS-11 RRH	23.2	20.5	10.7	3.29	1.71	1.13	2.17	1.20	1.20	26	13	23
RRUS-11 RRH (Shielde	23.2	10.2	10.7	1.64	1.71	2.26	2.17	1.20	1.20	13	13	13
4478 B5 RRH	21.6	16.9	11.7	2.52	1.75	1.28	1.84	1.20	1.20	20	14	18
4478 B5 RRH (Shielded	21.6	8.4	11.7	1.26	1.75	2.56	1.84	1.20	1.20	10	14	11
4415 B25 RRH	18.5	16.7	8.9	2.13	1.13	1.11	2.08	1.20	1.20	17	9	15
4415 B25 RRH (Shielde	18.5	8.3	8.9	1.07	1.13	2.22	2.08	1.20	1.20	8	9	9
LGP21401 TMA	17.9	12.5	6.2	1.54	0.76	1.43	2.90	1.20	1.22	12	6	11

WIND LOADS AT 30 MPH:

7770.00 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	13	7	11
P65-16-XLH-RR Antenr	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	19	11	17
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	33	14	28
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	7	3	6
RRUS-11 RRH (Shielde	19.7	8.5	7.2	1.16	0.99	2.32	2.74	1.20	1.21	3	3	3
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.19	1.20	1.20	5	3	4
4478 B5 RRH (Shielded	18.1	6.7	8.3	0.84	1.04	2.70	2.19	1.21	1.20	2	3	3
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	4	2	3
4415 B25 RRH (Shielde	15.0	6.6	5.4	0.69	0.56	2.27	2.78	1.20	1.21	2	2	2
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	3	1	2

Date: 8/29/2018
Project Name: WILTON DEER RUN ROAD
Project Number: CT2286
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.73	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770.00 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	125	66	81
P65-16-XLH-RR Antenr	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	184	107	126
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	313	132	177
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	63	27	36
RRUS-11 RRH (Shielde	19.7	12.8	7.2	1.74	0.99	1.55	2.74	1.20	1.21	47	27	32
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.19	1.20	1.20	46	28	33
4478 B5 RRH (Shielded	18.1	10.1	8.3	1.26	1.04	1.80	2.19	1.20	1.20	34	28	30
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	37	15	21
4415 B25 RRH (Shielde	15.0	9.9	5.4	1.03	0.56	1.52	2.78	1.20	1.21	28	15	19
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	24	8	12

WIND LOADS WITH ICE:

7770.00 Antenna	58.5	14.5	8.5	5.87	3.43	4.04	6.91	1.27	1.40	49	31	36
P65-16-XLH-RR Antenr	75.5	15.5	9.5	8.10	4.95	4.88	7.98	1.31	1.43	69	47	52
800-10965 Antenna	82.2	23.5	10.4	13.38	5.91	3.50	7.93	1.24	1.43	109	55	69
RRUS-11 RRH	23.2	20.5	10.7	3.29	1.71	1.13	2.17	1.20	1.20	26	13	17
RRUS-11 RRH (Shielde	23.2	15.3	10.7	2.47	1.71	1.51	2.17	1.20	1.20	19	13	15
4478 B5 RRH	21.6	16.9	11.7	2.52	1.75	1.28	1.84	1.20	1.20	20	14	15
4478 B5 RRH (Shielded	21.6	12.6	11.7	1.89	1.75	1.71	1.84	1.20	1.20	15	14	14
4415 B25 RRH	18.5	16.7	8.9	2.13	1.13	1.11	2.08	1.20	1.20	17	9	11
4415 B25 RRH (Shielde	18.5	12.5	8.9	1.60	1.13	1.48	2.08	1.20	1.20	13	9	10
LGP21401 TMA	17.9	12.5	6.2	1.54	0.76	1.43	2.90	1.20	1.22	12	6	8

WIND LOADS AT 30 MPH:

7770.00 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	13	7	8
P65-16-XLH-RR Antenr	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	19	11	13
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	33	14	18
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	7	3	4
RRUS-11 RRH (Shielde	19.7	12.8	7.2	1.74	0.99	1.55	2.74	1.20	1.21	5	3	3
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.19	1.20	1.20	5	3	3
4478 B5 RRH (Shielded	18.1	10.1	8.3	1.26	1.04	1.80	2.19	1.20	1.20	4	3	3
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	4	2	2
4415 B25 RRH (Shielde	15.0	9.9	5.4	1.03	0.56	1.52	2.78	1.20	1.21	3	2	2
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	3	1	1

Date: 8/29/2018
Project Name: WILTON DEER RUN ROAD
Project Number: CT2286
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 90 (deg) | Ice Thickness = 1.73 in. | Equivalent Angle = 270 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770.00 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	125	66	66
P65-16-XLH-RR Antenr	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	184	107	107
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	313	132	132
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	63	27	27
RRUS-11 RRH (Shielde	19.7	5.0	7.2	0.68	0.99	3.94	2.74	1.26	1.21	20	27	27
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.19	1.20	1.20	46	28	28
4478 B5 RRH (Shielded	18.1	0.0	8.3	0.00	1.04	0.00	2.19	1.20	1.20	0	28	28
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	37	15	15
4415 B25 RRH (Shielde	15.0	0.0	5.4	0.00	0.56	0.00	2.78	1.20	1.21	0	15	15
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	24	8	8

WIND LOADS WITH ICE:

7770.00 Antenna	58.5	14.5	8.5	5.87	3.43	4.04	6.91	1.27	1.40	49	31	31
P65-16-XLH-RR Antenr	75.5	15.5	9.5	8.10	4.95	4.88	7.98	1.31	1.43	69	47	47
800-10965 Antenna	82.2	23.5	10.4	13.38	5.91	3.50	7.93	1.24	1.43	109	55	55
RRUS-11 RRH	23.2	20.5	10.7	3.29	1.71	1.13	2.17	1.20	1.20	26	13	13
RRUS-11 RRH (Shielde	23.2	8.5	10.7	1.36	1.71	2.74	2.17	1.21	1.20	11	13	13
4478 B5 RRH	21.6	16.9	11.7	2.52	1.75	1.28	1.84	1.20	1.20	20	14	14
4478 B5 RRH (Shielded	21.6	3.5	11.7	0.52	1.75	6.24	1.84	1.37	1.20	5	14	14
4415 B25 RRH	18.5	16.7	8.9	2.13	1.13	1.11	2.08	1.20	1.20	17	9	9
4415 B25 RRH (Shielde	18.5	3.5	8.9	0.44	1.13	5.34	2.08	1.33	1.20	4	9	9
LGP21401 TMA	17.9	12.5	6.2	1.54	0.76	1.43	2.90	1.20	1.22	12	6	6

WIND LOADS AT 30 MPH:

7770.00 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	13	7	7
P65-16-XLH-RR Antenr	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	19	11	11
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	33	14	14
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	7	3	3
RRUS-11 RRH (Shielde	19.7	5.0	7.2	0.68	0.99	3.94	2.74	1.26	1.21	2	3	3
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.19	1.20	1.20	5	3	3
4478 B5 RRH (Shielded	18.1	0.0	8.3	0.00	1.04	0.00	2.19	1.20	1.20	0	3	3
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	4	2	2
4415 B25 RRH (Shielde	15.0	0.0	5.4	0.00	0.56	0.00	2.78	1.20	1.21	0	2	2
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	3	1	1

Date: 8/29/2018
Project Name: WILTON DEER RUN ROAD
Project Number: CT2286
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 120 (deg) | Ice Thickness = 1.73 in. | Equivalent Angle = 300 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770.00 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	125	66	81
P65-16-XLH-RR Antenr	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	184	107	126
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	313	132	177
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	63	27	36
RRUS-11 RRH (Shielde	19.7	12.8	7.2	1.74	0.99	1.55	2.74	1.20	1.21	47	27	32
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.19	1.20	1.20	46	28	33
4478 B5 RRH (Shielded	18.1	10.1	8.3	1.26	1.04	1.80	2.19	1.20	1.20	34	28	30
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	37	15	21
4415 B25 RRH (Shielde	15.0	9.9	5.4	1.03	0.56	1.52	2.78	1.20	1.21	28	15	19
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	24	8	12

WIND LOADS WITH ICE:

7770.00 Antenna	58.5	14.5	8.5	5.87	3.43	4.04	6.91	1.27	1.40	49	31	36
P65-16-XLH-RR Antenr	75.5	15.5	9.5	8.10	4.95	4.88	7.98	1.31	1.43	69	47	52
800-10965 Antenna	82.2	23.5	10.4	13.38	5.91	3.50	7.93	1.24	1.43	109	55	69
RRUS-11 RRH	23.2	20.5	10.7	3.29	1.71	1.13	2.17	1.20	1.20	26	13	17
RRUS-11 RRH (Shielde	23.2	15.3	10.7	2.47	1.71	1.51	2.17	1.20	1.20	19	13	15
4478 B5 RRH	21.6	16.9	11.7	2.52	1.75	1.28	1.84	1.20	1.20	20	14	15
4478 B5 RRH (Shielded	21.6	12.6	11.7	1.89	1.75	1.71	1.84	1.20	1.20	15	14	14
4415 B25 RRH	18.5	16.7	8.9	2.13	1.13	1.11	2.08	1.20	1.20	17	9	11
4415 B25 RRH (Shielde	18.5	12.5	8.9	1.60	1.13	1.48	2.08	1.20	1.20	13	9	10
LGP21401 TMA	17.9	12.5	6.2	1.54	0.76	1.43	2.90	1.20	1.22	12	6	8

WIND LOADS AT 30 MPH:

7770.00 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	13	7	8
P65-16-XLH-RR Antenr	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	19	11	13
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	33	14	18
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	7	3	4
RRUS-11 RRH (Shielde	19.7	12.8	7.2	1.74	0.99	1.55	2.74	1.20	1.21	5	3	3
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.19	1.20	1.20	5	3	3
4478 B5 RRH (Shielded	18.1	10.1	8.3	1.26	1.04	1.80	2.19	1.20	1.20	4	3	3
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	4	2	2
4415 B25 RRH (Shielde	15.0	9.9	5.4	1.03	0.56	1.52	2.78	1.20	1.21	3	2	2
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	3	1	1

Date: 8/29/2018
Project Name: WILTON DEER RUN ROAD
Project Number: CT2286
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.73	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770.00 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	125	66	110
P65-16-XLH-RR Antenr	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	184	107	165
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	313	132	268
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	63	27	54
RRUS-11 RRH (Shielde	19.7	8.5	7.2	1.16	0.99	2.32	2.74	1.20	1.21	32	27	30
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.19	1.20	1.20	46	28	41
4478 B5 RRH (Shielded	18.1	6.7	8.3	0.84	1.04	2.70	2.19	1.21	1.20	23	28	24
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	37	15	32
4415 B25 RRH (Shielde	15.0	6.6	5.4	0.69	0.56	2.27	2.78	1.20	1.21	19	15	18
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	24	8	20

WIND LOADS WITH ICE:

7770.00 Antenna	58.5	14.5	8.5	5.87	3.43	4.04	6.91	1.27	1.40	49	31	44
P65-16-XLH-RR Antenr	75.5	15.5	9.5	8.10	4.95	4.88	7.98	1.31	1.43	69	47	64
800-10965 Antenna	82.2	23.5	10.4	13.38	5.91	3.50	7.93	1.24	1.43	109	55	96
RRUS-11 RRH	23.2	20.5	10.7	3.29	1.71	1.13	2.17	1.20	1.20	26	13	23
RRUS-11 RRH (Shielde	23.2	10.2	10.7	1.64	1.71	2.26	2.17	1.20	1.20	13	13	13
4478 B5 RRH	21.6	16.9	11.7	2.52	1.75	1.28	1.84	1.20	1.20	20	14	18
4478 B5 RRH (Shielded	21.6	8.4	11.7	1.26	1.75	2.56	1.84	1.20	1.20	10	14	11
4415 B25 RRH	18.5	16.7	8.9	2.13	1.13	1.11	2.08	1.20	1.20	17	9	15
4415 B25 RRH (Shielde	18.5	8.3	8.9	1.07	1.13	2.22	2.08	1.20	1.20	8	9	9
LGP21401 TMA	17.9	12.5	6.2	1.54	0.76	1.43	2.90	1.20	1.22	12	6	11

WIND LOADS AT 30 MPH:

7770.00 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	13	7	11
P65-16-XLH-RR Antenr	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	19	11	17
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	33	14	28
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	7	3	6
RRUS-11 RRH (Shielde	19.7	8.5	7.2	1.16	0.99	2.32	2.74	1.20	1.21	3	3	3
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.19	1.20	1.20	5	3	4
4478 B5 RRH (Shielded	18.1	6.7	8.3	0.84	1.04	2.70	2.19	1.21	1.20	2	3	3
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	4	2	3
4415 B25 RRH (Shielde	15.0	6.6	5.4	0.69	0.56	2.27	2.78	1.20	1.21	2	2	2
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	3	1	2

Date: 8/29/2018
Project Name: WILTON DEER RUN ROAD
Project Number: CT2286
Designed By: JN **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.73 in.
Density of ice: 56 pcf

7770.00 Antenna

Weight of ice based on total radial SF area:

Height (in):	55.0	
Width (in):	11.0	
Depth (in):	5.0	
Total weight of ice on object:		134 lbs
Weight of object:	35 lbs	
Combined weight of ice and object:		169 lbs

P65-16-XLH-RR Antenna

Weight of ice based on total radial SF area:

Height (in):	72.0	
Width (in):	12.0	
Depth (in):	6.0	
Total weight of ice on object:		192 lbs
Weight of object:	53 lbs	
Combined weight of ice and object:		245 lbs

800-10965 Antenna

Weight of ice based on total radial SF area:

Height (in):	78.7	
Width (in):	20.0	
Depth (in):	6.9	
Total weight of ice on object:		317 lbs
Weight of object:	109 lbs	
Combined weight of ice and object:		426 lbs

RRUS-11 RRH

Weight of ice based on total radial SF area:

Height (in):	19.7	
Width (in):	17.0	
Depth (in):	7.2	
Total weight of ice on object:		70 lbs
Weight of object:	51 lbs	
Combined weight of ice and object:		121 lbs

4478 B5 RRH

Weight of ice based on total radial SF area:

Height (in):	18.1	
Width (in):	13.4	
Depth (in):	8.3	
Total weight of ice on object:		56 lbs
Weight of object:	60 lbs	
Combined weight of ice and object:		116 lbs

4415 B25 RRH

Weight of ice based on total radial SF area:

Height (in):	15.0	
Width (in):	13.2	
Depth (in):	5.4	
Total weight of ice on object:		42 lbs
Weight of object:	44 lbs	
Combined weight of ice and object:		86 lbs

LGP21401 TMA

Weight of ice based on total radial SF area:

Height (in):	14.4	
Width (in):	9.0	
Depth (in):	2.7	
Total weight of ice on object:		28 lbs
Weight of object:	19 lbs	
Combined weight of ice and object:		47 lbs

Squid Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	24.0	
Diameter(in):	9.7	
Total weight of ice on object:		48 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		81 lbs

3/4" Round Bar

Per foot weight of ice:

diameter (in):	0.75	
Per foot weight of ice on object:		5 plf

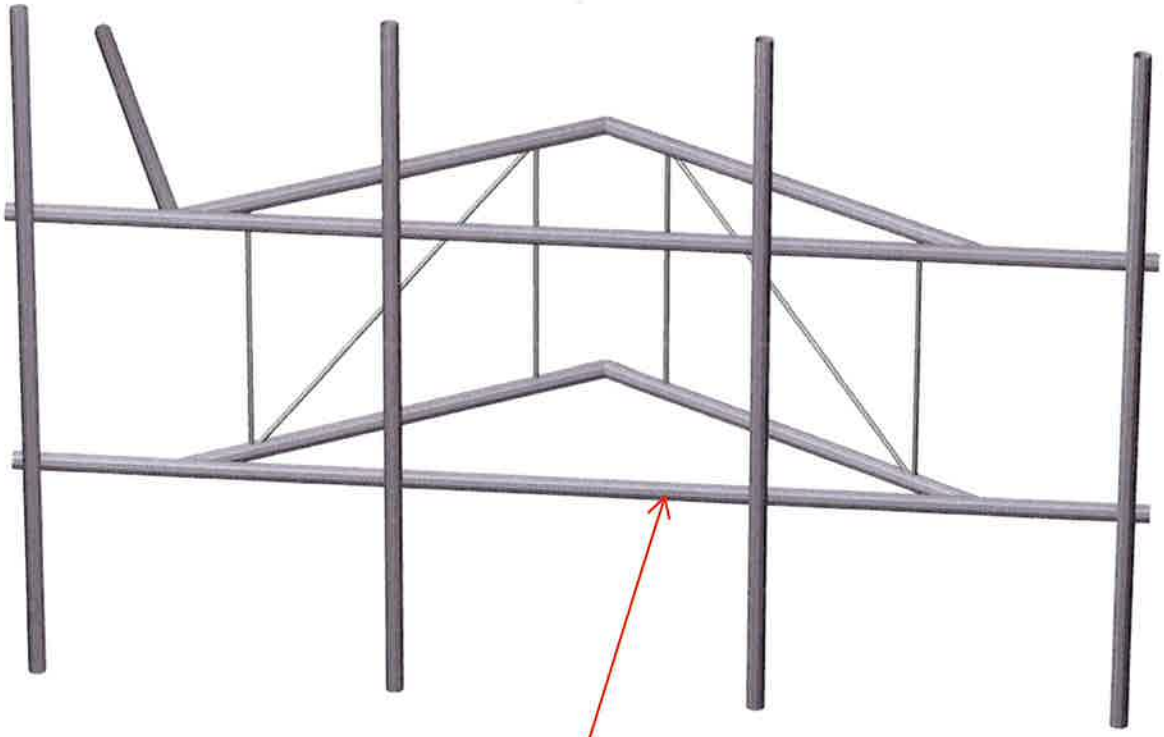
2" pipe

Per foot weight of ice:

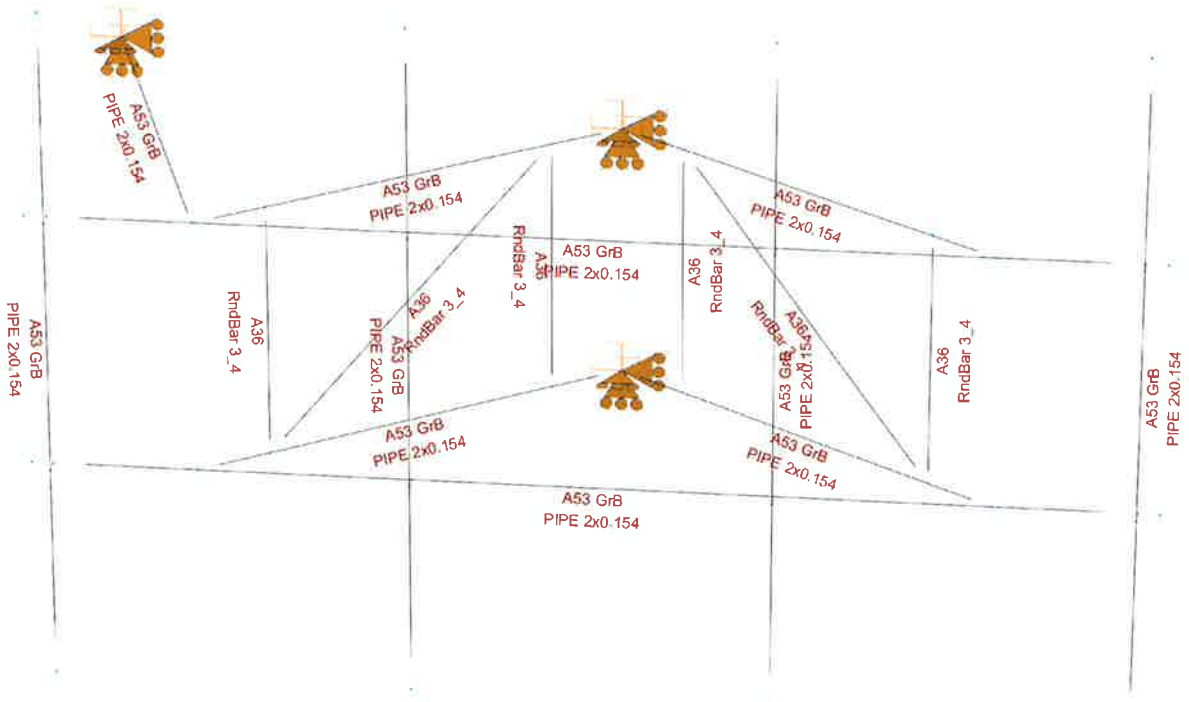
diameter (in):	2.38	
Per foot weight of ice on object:		9 plf

HUDSON
Design Group LLC

Mount Calculations
(Proposed Conditions)

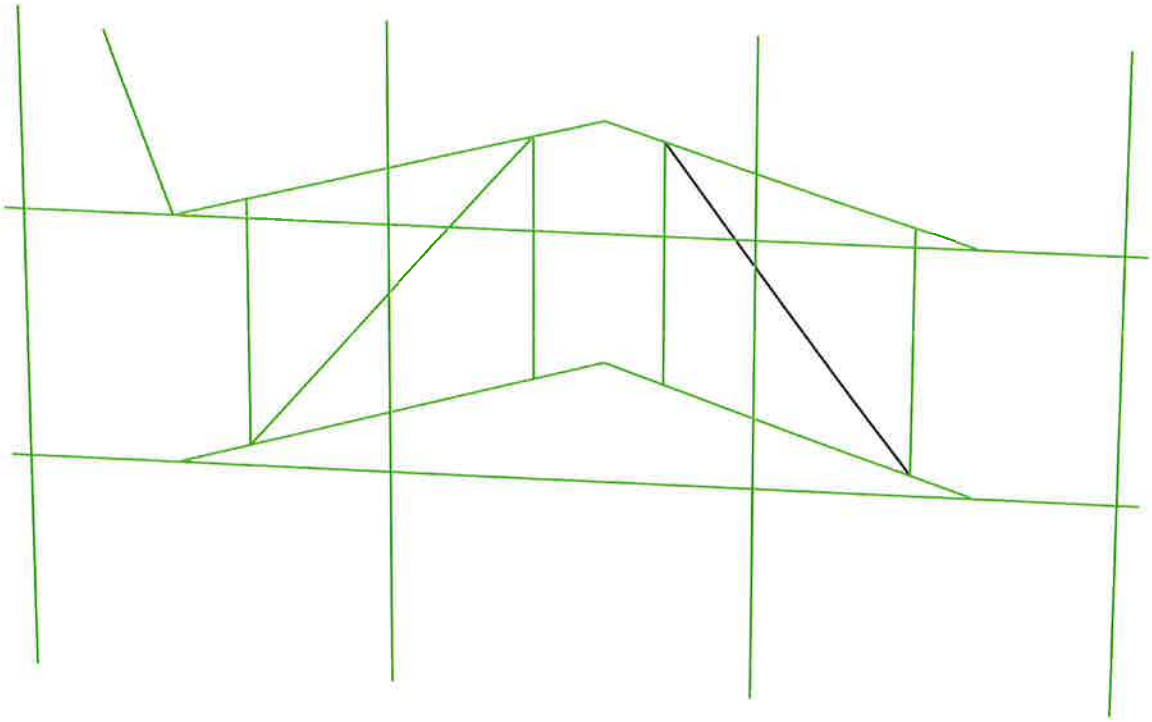


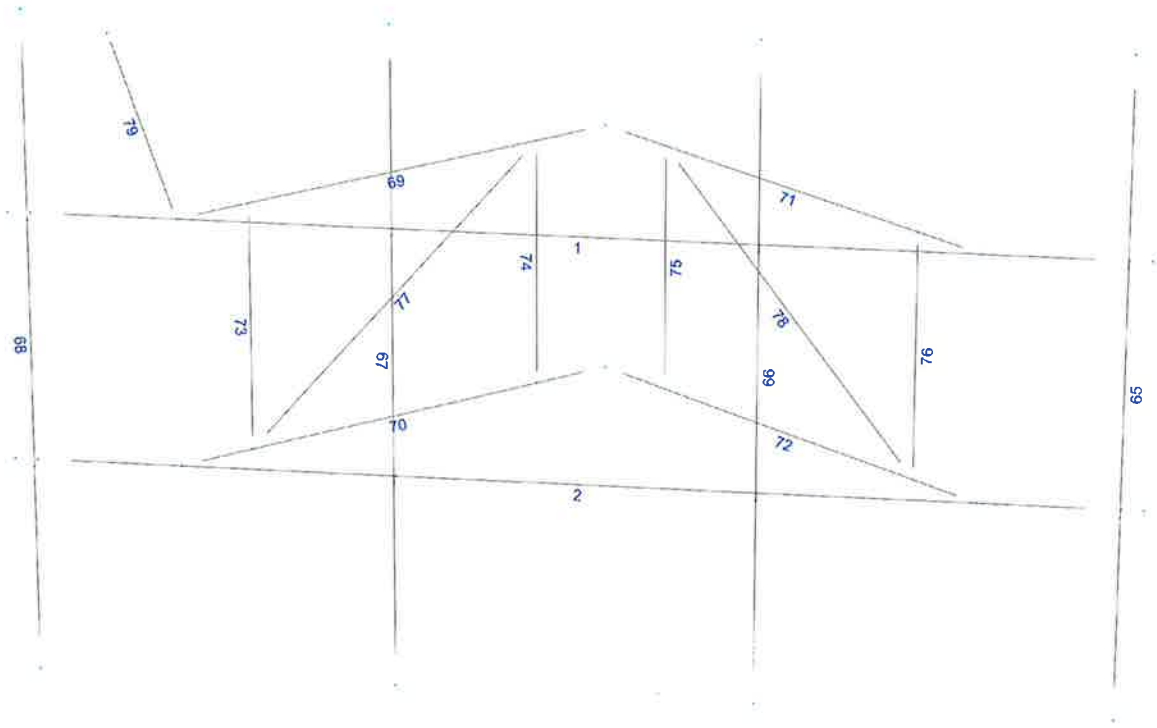
INSTALL NEW 12' HD V-BOOM SECTOR MOUNT BY SABRE INDUSTRIES TOWERS AND POLES P/N C10857001C (TYP. OF 1 PER SECTOR, TOTAL OF 3).

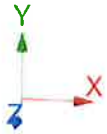

A53 GrB
PIPE 2x0.154
A36
RndBar 3_4
Y
X
Z

Design status

- Not designed
- Error on design
- Design O.K.
- With warnings




69
71
1
74
75
77
73
78
67
76
66
68
65
70
72
2


Y
X
Z

Current Date: 8/29/2018 8:35 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2286\CT2286 (LTE 2C-3C).etz\

Load data

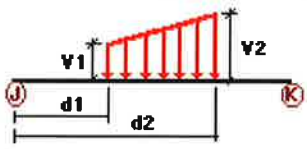
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND
LL1	250 lb Live Load on Left End	No	LL
LL2	250 lb Live Load on Center	No	LL
LL3	250 lb Live Load on Right End	No	LL
LLa1	250 lb Live Load on Antenna 1	No	LL
LLa2	250 lb Live Load on Antenna 2	No	LL
LLa3	250 lb Live Load on Antenna 3	No	LL

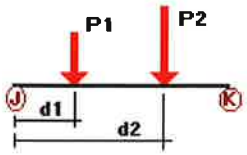
Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	1	z	-0.005	0.00	0.00	No	0.00	No
	2	z	-0.005	0.00	0.00	No	0.00	No
	67	z	-0.005	0.00	0.00	No	0.00	No
	69	z	-0.005	0.00	0.00	No	0.00	No
	70	z	-0.005	0.00	0.00	No	0.00	No
	71	z	-0.005	0.00	0.00	No	0.00	No
	72	z	-0.005	0.00	0.00	No	0.00	No
	73	z	-0.002	0.00	0.00	No	0.00	No
	74	z	-0.002	0.00	0.00	No	0.00	No
	75	z	-0.002	0.00	0.00	No	0.00	No
	76	z	-0.002	0.00	0.00	No	0.00	No
	77	z	-0.002	0.00	0.00	No	0.00	No
	78	z	-0.002	0.00	0.00	No	0.00	No
	79	z	-0.005	0.00	0.00	No	0.00	No
W30	1	z	-0.005	0.00	0.00	No	0.00	No
	2	z	-0.005	0.00	0.00	No	0.00	No
	65	z	-0.005	0.00	0.00	No	0.00	No
	66	z	-0.005	0.00	0.00	No	0.00	No
	67	z	-0.005	0.00	0.00	No	0.00	No
	68	z	-0.005	0.00	0.00	No	0.00	No
	69	z	-0.005	0.00	0.00	No	0.00	No
	70	z	-0.005	0.00	0.00	No	0.00	No
	71	z	-0.005	0.00	0.00	No	0.00	No
	72	z	-0.005	0.00	0.00	No	0.00	No
	73	z	-0.002	0.00	0.00	No	0.00	No
	74	z	-0.002	0.00	0.00	No	0.00	No
	75	z	-0.002	0.00	0.00	No	0.00	No
	76	z	-0.002	0.00	0.00	No	0.00	No
	77	z	-0.002	0.00	0.00	No	0.00	No
	78	z	-0.002	0.00	0.00	No	0.00	No
	79	z	-0.005	0.00	0.00	No	0.00	No
W60	1	x	-0.005	0.00	0.00	No	0.00	No
	2	x	-0.005	0.00	0.00	No	0.00	No
	65	x	-0.005	0.00	0.00	No	0.00	No
	66	x	-0.005	0.00	0.00	No	0.00	No
	67	x	-0.005	0.00	0.00	No	0.00	No
	68	x	-0.005	0.00	0.00	No	0.00	No
	69	x	-0.005	0.00	0.00	No	0.00	No
	70	x	-0.005	0.00	0.00	No	0.00	No
	71	x	-0.005	0.00	0.00	No	0.00	No
	72	x	-0.005	0.00	0.00	No	0.00	No
	73	x	-0.002	0.00	0.00	No	0.00	No
	74	x	-0.002	0.00	0.00	No	0.00	No
	75	x	-0.002	0.00	0.00	No	0.00	No
	76	x	-0.002	0.00	0.00	No	0.00	No
	77	x	-0.002	0.00	0.00	No	0.00	No
	78	x	-0.002	0.00	0.00	No	0.00	No
	79	x	-0.005	0.00	0.00	No	0.00	No
W90	65	x	-0.005	0.00	0.00	No	0.00	No
	66	x	-0.005	0.00	0.00	No	0.00	No
	67	x	-0.005	0.00	0.00	No	0.00	No
	68	x	-0.005	0.00	0.00	No	0.00	No
	69	x	-0.005	0.00	0.00	No	0.00	No
	70	x	-0.005	0.00	0.00	No	0.00	No
	71	x	-0.005	0.00	0.00	No	0.00	No
	72	x	-0.005	0.00	0.00	No	0.00	No
	73	x	-0.002	0.00	0.00	No	0.00	No
	74	x	-0.002	0.00	0.00	No	0.00	No
	75	x	-0.002	0.00	0.00	No	0.00	No
	76	x	-0.002	0.00	0.00	No	0.00	No

	77	x	-0.002	0.00	0.00	No	0.00	No
	78	x	-0.002	0.00	0.00	No	0.00	No
	79	x	-0.005	0.00	0.00	No	0.00	No
W120	1	x	-0.005	0.00	0.00	No	0.00	No
	2	x	-0.005	0.00	0.00	No	0.00	No
	65	x	-0.005	0.00	0.00	No	0.00	No
	66	x	-0.005	0.00	0.00	No	0.00	No
	67	x	-0.005	0.00	0.00	No	0.00	No
	68	x	-0.005	0.00	0.00	No	0.00	No
	69	x	-0.005	0.00	0.00	No	0.00	No
	70	x	-0.005	0.00	0.00	No	0.00	No
	71	x	-0.005	0.00	0.00	No	0.00	No
	72	x	-0.005	0.00	0.00	No	0.00	No
	73	x	-0.002	0.00	0.00	No	0.00	No
	74	x	-0.002	0.00	0.00	No	0.00	No
	75	x	-0.002	0.00	0.00	No	0.00	No
	76	x	-0.002	0.00	0.00	No	0.00	No
	77	x	-0.002	0.00	0.00	No	0.00	No
	78	x	-0.002	0.00	0.00	No	0.00	No
	79	x	-0.005	0.00	0.00	No	0.00	No
W150	1	z	0.005	0.00	0.00	No	0.00	No
	2	z	0.005	0.00	0.00	No	0.00	No
	65	z	0.005	0.00	0.00	No	0.00	No
	66	z	0.005	0.00	0.00	No	0.00	No
	67	z	0.005	0.00	0.00	No	0.00	No
	68	z	0.005	0.00	0.00	No	0.00	No
	69	z	0.005	0.00	0.00	No	0.00	No
	70	z	0.005	0.00	0.00	No	0.00	No
	71	z	0.005	0.00	0.00	No	0.00	No
	72	z	0.005	0.00	0.00	No	0.00	No
	73	z	0.002	0.00	0.00	No	0.00	No
	74	z	0.002	0.00	0.00	No	0.00	No
	75	z	0.002	0.00	0.00	No	0.00	No
	76	z	0.002	0.00	0.00	No	0.00	No
	77	z	0.002	0.00	0.00	No	0.00	No
	78	z	0.002	0.00	0.00	No	0.00	No
	79	z	0.005	0.00	0.00	No	0.00	No
Di	1	y	-0.009	0.00	0.00	No	0.00	No
	2	y	-0.009	0.00	0.00	No	0.00	No
	65	y	-0.009	0.00	0.00	No	0.00	No
	66	y	-0.009	0.00	0.00	No	0.00	No
	67	y	-0.009	0.00	0.00	No	0.00	No
	68	y	-0.009	0.00	0.00	No	0.00	No
	69	y	-0.009	0.00	0.00	No	0.00	No
	70	y	-0.009	0.00	0.00	No	0.00	No
	71	y	-0.009	0.00	0.00	No	0.00	No
	72	y	-0.009	0.00	0.00	No	0.00	No
	73	y	-0.005	0.00	0.00	No	0.00	No
	74	y	-0.005	0.00	0.00	No	0.00	No
	75	y	-0.005	0.00	0.00	No	0.00	No
	76	y	-0.005	0.00	0.00	No	0.00	No
	77	y	-0.005	0.00	0.00	No	0.00	No
	78	y	-0.005	0.00	0.00	No	0.00	No
	79	y	-0.009	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	65	y	-0.018	1.75	No
		y	-0.018	6.25	No
		y	-0.038	4.00	No
	66	y	-0.027	1.00	No
		y	-0.027	7.00	No
		y	-0.051	1.25	No
	68	y	-0.055	1.00	No
		y	-0.055	7.00	No
		y	-0.06	4.00	No
		y	-0.044	6.50	No
Wo	65	z	-0.063	1.75	No
		z	-0.063	6.25	No
	66	z	-0.093	1.00	No
		z	-0.093	7.00	No
		z	-0.02	1.25	No
	68	z	-0.157	1.00	No
		z	-0.157	7.00	No
W30	65	2	-0.056	1.75	No
		2	-0.056	6.25	No
		2	-0.02	4.00	No
	66	2	-0.083	1.00	No
		2	-0.083	7.00	No
		2	-0.03	1.25	No
	68	2	-0.134	1.00	No
		2	-0.134	7.00	No
		2	-0.024	4.00	No
		2	-0.018	6.50	No
W60	65	2	-0.041	1.75	No
		2	-0.041	6.25	No
		2	-0.012	4.00	No
	66	2	-0.063	1.00	No
		2	-0.063	7.00	No
		2	-0.032	1.25	No
	68	2	-0.089	1.00	No
		2	-0.089	7.00	No
		2	-0.03	4.00	No
		2	-0.019	6.50	No
W90	65	x	-0.034	1.75	No
		x	-0.034	6.25	No
		x	-0.008	4.00	No
	66	x	-0.054	1.00	No
		x	-0.054	7.00	No
		x	-0.027	1.25	No
	68	x	-0.067	1.00	No
		x	-0.067	7.00	No
		x	-0.028	4.00	No
		x	-0.015	6.50	No
W120	65	3	0.041	1.75	No
		3	0.041	6.25	No
		3	0.012	4.00	No
	66	3	0.063	1.00	No
		3	0.063	7.00	No
		3	0.032	1.25	No
	68	3	0.089	1.00	No

		3	0.089	7.00	No
		3	0.03	4.00	No
		3	0.019	6.50	No
W150	65	3	0.056	1.75	No
		3	0.056	6.25	No
		3	0.02	4.00	No
	66	3	0.083	1.00	No
		3	0.083	7.00	No
		3	0.03	1.25	No
	68	3	0.134	1.00	No
		3	0.134	7.00	No
		3	0.024	4.00	No
		3	0.018	6.50	No
Di	65	y	-0.067	1.75	No
		y	-0.067	6.25	No
		y	-0.056	4.00	No
	66	y	-0.096	1.00	No
		y	-0.096	7.00	No
		y	-0.07	1.25	No
	68	y	-0.159	1.00	No
		y	-0.159	7.00	No
		y	-0.056	4.00	No
		y	-0.042	6.50	No
WI0	65	z	-0.026	1.75	No
		z	-0.026	6.25	No
		z	-0.012	4.00	No
	66	z	-0.036	1.00	No
		z	-0.036	7.00	No
		z	-0.026	1.25	No
	68	z	-0.056	1.00	No
		z	-0.056	7.00	No
		z	-0.02	4.00	No
		z	-0.017	6.50	No
WI30	65	2	-0.023	1.75	No
		2	-0.023	6.25	No
		2	-0.011	4.00	No
	66	2	-0.032	1.00	No
		2	-0.032	7.00	No
		2	-0.023	1.25	No
	68	2	-0.048	1.00	No
		2	-0.048	7.00	No
		2	-0.018	4.00	No
		2	-0.015	6.50	No
WI60	65	2	-0.018	1.75	No
		2	-0.018	6.25	No
		2	-0.008	4.00	No
	66	2	-0.027	1.00	No
		2	-0.027	7.00	No
		2	-0.017	1.25	No
	68	2	-0.035	1.00	No
		2	-0.035	7.00	No
		2	-0.015	4.00	No
		2	-0.011	6.50	No
WI90	65	x	-0.016	1.75	No
		x	-0.016	6.25	No
		x	-0.006	4.00	No
	66	x	-0.024	1.00	No
		x	-0.024	7.00	No
		x	-0.013	1.25	No
	68	x	-0.028	1.00	No

		x	-0.028	7.00	No
		x	-0.014	4.00	No
		x	-0.009	6.50	No
WI120	65	3	0.018	1.75	No
		3	0.018	6.25	No
		3	0.008	4.00	No
	66	3	0.027	1.00	No
		3	0.027	7.00	No
		3	0.017	1.25	No
	68	3	0.035	1.00	No
		3	0.035	7.00	No
		3	0.015	4.00	No
		3	0.011	6.50	No
WI150	65	3	0.023	1.75	No
		3	0.023	6.25	No
		3	0.011	4.00	No
	66	3	0.032	1.00	No
		3	0.032	7.00	No
		3	0.023	1.25	No
	68	3	0.048	1.00	No
		3	0.048	7.00	No
		3	0.018	4.00	No
		3	0.015	6.50	No
WL0	65	z	-0.007	1.75	No
		z	-0.007	6.25	No
		z	-0.003	4.00	No
	66	z	-0.01	1.00	No
		z	-0.01	7.00	No
		z	-0.007	1.25	No
	68	z	-0.017	1.00	No
		z	-0.017	7.00	No
		z	-0.005	4.00	No
		z	-0.004	6.50	No
WL30	65	2	-0.006	1.75	No
		2	-0.006	6.25	No
		2	-0.003	4.00	No
	66	2	-0.009	1.00	No
		2	-0.009	7.00	No
		2	-0.006	1.25	No
	68	2	-0.014	1.00	No
		2	-0.014	7.00	No
		2	-0.005	4.00	No
		2	-0.004	6.50	No
WL60	65	2	-0.005	1.75	No
		2	-0.005	6.25	No
		2	-0.002	4.00	No
	66	2	-0.007	1.00	No
		2	-0.007	7.00	No
		2	-0.004	1.25	No
	68	2	-0.01	1.00	No
		2	-0.01	7.00	No
		2	-0.004	4.00	No
		2	-0.003	6.50	No
WL90	65	x	-0.004	1.75	No
		x	-0.004	6.25	No
		x	-0.001	4.00	No
	66	x	-0.006	1.00	No
		x	-0.006	7.00	No
		x	-0.003	1.25	No
	68	x	-0.007	1.00	No

		x	-0.007	7.00	No
		x	-0.003	4.00	No
		x	-0.002	6.50	No
WL120	65	3	0.005	1.75	No
		3	0.005	6.25	No
		3	0.002	4.00	No
	66	3	0.007	1.00	No
		3	0.007	7.00	No
		3	0.004	1.25	No
	68	3	0.01	1.00	No
		3	0.01	7.00	No
		3	0.004	4.00	No
		3	0.003	6.50	No
WL150	65	3	0.006	1.75	No
		3	0.006	6.25	No
		3	0.003	4.00	No
	66	3	0.009	1.00	No
		3	0.009	7.00	No
		3	0.006	1.25	No
	68	3	0.014	1.00	No
		3	0.014	7.00	No
		3	0.005	4.00	No
		3	0.004	6.50	No
LL1	1	y	-0.25	0.00	Yes
LL2	1	y	-0.25	50.00	Yes
LL3	1	y	-0.25	100.00	Yes
LLa1	65	y	-0.25	50.00	Yes
LLa2	66	y	-0.25	50.00	Yes
LLa3	68	y	-0.25	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00
LL1	250 lb Live Load on Left End	No	0.00	0.00	0.00

LL2	250 lb Live Load on Center	No	0.00	0.00	0.00
LL3	250 lb Live Load on Right End	No	0.00	0.00	0.00
LLa1	250 lb Live Load on Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load on Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load on Antenna 3	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00
WI0	0.00	0.00	0.00
WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00
WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LL3	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00

Current Date: 8/29/2018 8:35 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2286\CT2286 (LTE 2C-3C).etz\

Steel Code Check

Report: Summary - For all selected load conditions

Load conditions to be included in design :

LC1=1.2D+1.6Wo
LC2=1.2D+1.6W30
LC3=1.2D+1.6W60
LC4=1.2D+1.6W90
LC5=1.2D+1.6W120
LC6=1.2D+1.6W150
LC7=1.2D-1.6Wo
LC8=1.2D-1.6W30
LC9=1.2D-1.6W60
LC10=1.2D-1.6W90
LC11=1.2D-1.6W120
LC12=1.2D-1.6W150
LC13=0.9D+1.6Wo
LC14=0.9D+1.6W30
LC15=0.9D+1.6W60
LC16=0.9D+1.6W90
LC17=0.9D+1.6W120
LC18=0.9D+1.6W150
LC19=0.9D-1.6Wo
LC20=0.9D-1.6W30
LC21=0.9D-1.6W60
LC22=0.9D-1.6W90
LC23=0.9D-1.6W120
LC24=0.9D-1.6W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=0.9D
LC38=1.2D+1.6LL1
LC39=1.2D+1.6LL2
LC40=1.2D+1.6LL3
LC41=1.2D+WL0+LLa1
LC42=1.2D+WL30+LLa1
LC43=1.2D+WL60+LLa1
LC44=1.2D+WL90+LLa1
LC45=1.2D+WL120+LLa1
LC46=1.2D+WL150+LLa1
LC47=1.2D-WL0+LLa1
LC48=1.2D-WL30+LLa1
LC49=1.2D-WL60+LLa1
LC50=1.2D-WL90+LLa1
LC51=1.2D-WL120+LLa1
LC52=1.2D-WL150+LLa1
LC53=1.2D+WL0+LLa2

LC54=1.2D+WL30+LLa2
LC55=1.2D+WL60+LLa2
LC56=1.2D+WL90+LLa2
LC57=1.2D+WL120+LLa2
LC58=1.2D+WL150+LLa2
LC59=1.2D-WL0+LLa2
LC60=1.2D-WL30+LLa2
LC61=1.2D-WL60+LLa2
LC62=1.2D-WL90+LLa2
LC63=1.2D-WL120+LLa2
LC64=1.2D-WL150+LLa2
LC65=1.2D+WL0+LLa3
LC66=1.2D+WL30+LLa3
LC67=1.2D+WL60+LLa3
LC68=1.2D+WL90+LLa3
LC69=1.2D+WL120+LLa3
LC70=1.2D+WL150+LLa3
LC71=1.2D-WL0+LLa3
LC72=1.2D-WL30+LLa3
LC73=1.2D-WL60+LLa3
LC74=1.2D-WL90+LLa3
LC75=1.2D-WL120+LLa3
LC76=1.2D-WL150+LLa3

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 2x0.154	1	LC1 at 14.29%	0.43	OK	
			LC10 at 14.29%	0.24	OK	
			LC11 at 84.82%	0.19	OK	
			LC12 at 84.82%	0.31	OK	
			LC13 at 14.29%	0.42	OK	
			LC14 at 14.29%	0.40	OK	
			LC15 at 14.29%	0.28	OK	
			LC16 at 84.82%	0.17	OK	
			LC17 at 84.82%	0.22	OK	
			LC18 at 84.82%	0.30	OK	
			LC19 at 14.29%	0.43	OK	
			LC2 at 14.29%	0.42	OK	
			LC20 at 14.29%	0.46	OK	
			LC21 at 14.29%	0.37	OK	
			LC22 at 14.29%	0.21	OK	
			LC23 at 14.29%	0.18	OK	
			LC24 at 14.29%	0.29	OK	
			LC25 at 2.68%	0.28	OK	Eq. H1-1b
			LC26 at 2.68%	0.26	OK	
			LC27 at 15.18%	0.26	OK	
			LC28 at 15.18%	0.28	OK	
			LC29 at 14.29%	0.32	OK	
			LC3 at 14.29%	0.30	OK	
			LC30 at 14.29%	0.33	OK	
			LC31 at 14.29%	0.39	OK	
			LC32 at 14.29%	0.37	OK	
			LC33 at 14.29%	0.35	OK	
			LC34 at 15.18%	0.31	OK	
			LC35 at 15.18%	0.29	OK	
			LC36 at 15.18%	0.29	OK	
			LC37 at 15.18%	0.09	OK	
			LC38 at 14.29%	0.28	OK	
			LC39 at 50.00%	0.27	OK	Eq. H1-1b
			LC4 at 84.82%	0.20	OK	
			LC40 at 84.82%	0.23	OK	
			LC41 at 84.82%	0.17	OK	
			LC42 at 84.82%	0.17	OK	
			LC43 at 84.82%	0.17	OK	
			LC44 at 84.82%	0.17	OK	

	LC45 at 84.82%	0.18	OK	
	LC46 at 84.82%	0.18	OK	
	LC47 at 84.82%	0.18	OK	
	LC48 at 84.82%	0.17	OK	
	LC49 at 84.82%	0.17	OK	
	LC5 at 84.82%	0.24	OK	
	LC50 at 84.82%	0.17	OK	
	LC51 at 84.82%	0.17	OK	
	LC52 at 84.82%	0.17	OK	
	LC53 at 84.82%	0.18	OK	
	LC54 at 84.82%	0.19	OK	
	LC55 at 84.82%	0.19	OK	
	LC56 at 84.82%	0.19	OK	
	LC57 at 84.82%	0.20	OK	
	LC58 at 84.82%	0.20	OK	
	LC59 at 84.82%	0.21	OK	
	LC6 at 84.82%	0.33	OK	Eq. H1-1b
	LC60 at 84.82%	0.20	OK	
	LC61 at 84.82%	0.20	OK	
	LC62 at 84.82%	0.19	OK	
	LC63 at 84.82%	0.18	OK	
	LC64 at 84.82%	0.18	OK	
	LC65 at 2.68%	0.20	OK	
	LC66 at 2.68%	0.20	OK	
	LC67 at 2.68%	0.20	OK	
	LC68 at 14.29%	0.20	OK	
	LC69 at 14.29%	0.22	OK	
	LC7 at 14.29%	0.46	OK	
	LC70 at 14.29%	0.22	OK	
	LC71 at 14.29%	0.24	OK	
	LC72 at 14.29%	0.23	OK	
	LC73 at 14.29%	0.22	OK	
	LC74 at 14.29%	0.21	OK	
	LC75 at 2.68%	0.20	OK	
	LC76 at 2.68%	0.20	OK	
	LC8 at 14.29%	**0.49**	**OK**	Eq. H1-1b
	LC9 at 14.29%	0.40	OK	
2	LC1 at 14.29%	0.36	OK	
	LC10 at 14.29%	0.21	OK	
	LC11 at 14.29%	0.33	OK	
	LC12 at 14.29%	0.41	OK	Eq. H1-1b
	LC13 at 14.29%	0.33	OK	
	LC14 at 14.29%	0.27	OK	
	LC15 at 85.71%	0.18	OK	
	LC16 at 2.68%	0.18	OK	
	LC17 at 14.29%	0.19	OK	
	LC18 at 15.18%	0.32	OK	
	LC19 at 15.18%	0.43	OK	
	LC2 at 84.82%	0.29	OK	
	LC20 at 15.18%	0.43	OK	
	LC21 at 15.18%	0.28	OK	
	LC22 at 14.29%	0.15	OK	
	LC23 at 14.29%	0.30	OK	
	LC24 at 14.29%	0.39	OK	
	LC25 at 14.29%	0.36	OK	
	LC26 at 15.18%	0.34	OK	
	LC27 at 15.18%	0.34	OK	
	LC28 at 15.18%	0.33	OK	
	LC29 at 15.18%	0.32	OK	
	LC3 at 84.82%	0.21	OK	
	LC30 at 15.18%	0.31	OK	
	LC31 at 15.18%	0.33	OK	Eq. H1-1b
	LC32 at 15.18%	0.33	OK	

	LC33 at 15.18%	0.33	OK	
	LC34 at 15.18%	0.34	OK	
	LC35 at 15.18%	0.35	OK	
	LC36 at 15.18%	0.36	OK	
	LC37 at 15.18%	0.10	OK	
	LC38 at 15.18%	0.26	OK	
	LC39 at 15.18%	0.26	OK	
	LC4 at 2.68%	0.20	OK	
	LC40 at 84.82%	0.22	OK	
	LC41 at 84.82%	0.18	OK	
	LC42 at 84.82%	0.18	OK	
	LC43 at 84.82%	0.18	OK	
	LC44 at 84.82%	0.18	OK	
	LC45 at 84.82%	0.18	OK	
	LC46 at 84.82%	0.18	OK	
	LC47 at 84.82%	0.17	OK	
	LC48 at 84.82%	0.17	OK	
	LC49 at 84.82%	0.17	OK	
	LC5 at 14.29%	0.21	OK	
	LC50 at 84.82%	0.17	OK	
	LC51 at 84.82%	0.18	OK	
	LC52 at 84.82%	0.18	OK	
	LC53 at 84.82%	0.21	OK	
	LC54 at 84.82%	0.21	OK	
	LC55 at 84.82%	0.21	OK	
	LC56 at 84.82%	0.20	OK	
	LC57 at 84.82%	0.20	OK	
	LC58 at 84.82%	0.20	OK	
	LC59 at 84.82%	0.19	OK	
	LC6 at 15.18%	0.35	OK	
	LC60 at 84.82%	0.19	OK	
	LC61 at 84.82%	0.19	OK	
	LC62 at 84.82%	0.20	OK	
	LC63 at 84.82%	0.20	OK	
	LC64 at 84.82%	0.20	OK	
	LC65 at 14.29%	0.22	OK	
	LC66 at 2.68%	0.22	OK	
	LC67 at 2.68%	0.22	OK	
	LC68 at 15.18%	0.21	OK	
	LC69 at 15.18%	0.21	OK	
	LC7 at 15.18%	**0.46**	**OK**	Eq. H1-1b
	LC70 at 15.18%	0.21	OK	
	LC71 at 15.18%	0.21	OK	
	LC72 at 15.18%	0.21	OK	
	LC73 at 15.18%	0.21	OK	
	LC74 at 15.18%	0.21	OK	
	LC75 at 15.18%	0.22	OK	
	LC76 at 14.29%	0.22	OK	
	LC8 at 15.18%	0.46	OK	
	LC9 at 15.18%	0.30	OK	
65	LC1 at 66.67%	0.12	OK	
	LC10 at 31.25%	0.13	OK	
	LC11 at 31.25%	0.12	OK	
	LC12 at 31.25%	0.11	OK	
	LC13 at 66.67%	0.11	OK	
	LC14 at 66.67%	0.14	OK	
	LC15 at 66.67%	0.11	OK	
	LC16 at 68.75%	0.08	OK	
	LC17 at 31.25%	0.09	OK	
	LC18 at 31.25%	0.12	OK	
	LC19 at 68.75%	0.09	OK	
	LC2 at 66.67%	0.14	OK	
	LC20 at 31.25%	0.11	OK	

LC21 at 31.25%	0.12	OK	
LC22 at 31.25%	0.12	OK	
LC23 at 31.25%	0.11	OK	
LC24 at 31.25%	0.09	OK	
LC25 at 31.25%	0.13	OK	
LC26 at 31.25%	0.12	OK	
LC27 at 31.25%	0.12	OK	
LC28 at 66.67%	0.12	OK	
LC29 at 66.67%	0.13	OK	
LC3 at 66.67%	0.11	OK	
LC30 at 66.67%	0.13	OK	
LC31 at 31.25%	0.14	OK	
LC32 at 31.25%	0.16	OK	
LC33 at 31.25%	0.15	OK	
LC34 at 31.25%	0.15	OK	
LC35 at 31.25%	0.15	OK	
LC36 at 31.25%	0.15	OK	
LC37 at 31.25%	0.04	OK	
LC38 at 31.25%	0.07	OK	
LC39 at 66.67%	0.05	OK	
LC4 at 31.25%	0.08	OK	
LC40 at 31.25%	**0.33**	**OK**	Eq. H1-1b
LC41 at 31.25%	0.19	OK	
LC42 at 31.25%	0.19	OK	
LC43 at 31.25%	0.19	OK	
LC44 at 31.25%	0.19	OK	
LC45 at 31.25%	0.19	OK	
LC46 at 31.25%	0.19	OK	
LC47 at 31.25%	0.19	OK	
LC48 at 31.25%	0.20	OK	
LC49 at 31.25%	0.20	OK	
LC5 at 31.25%	0.10	OK	
LC50 at 31.25%	0.20	OK	
LC51 at 31.25%	0.19	OK	
LC52 at 31.25%	0.20	OK	
LC53 at 66.67%	0.05	OK	
LC54 at 66.67%	0.05	OK	
LC55 at 66.67%	0.05	OK	
LC56 at 31.25%	0.05	OK	
LC57 at 31.25%	0.05	OK	
LC58 at 31.25%	0.05	OK	
LC59 at 31.25%	0.05	OK	
LC6 at 31.25%	0.12	OK	
LC60 at 31.25%	0.05	OK	
LC61 at 31.25%	0.05	OK	
LC62 at 31.25%	0.04	OK	
LC63 at 66.67%	0.04	OK	
LC64 at 66.67%	0.04	OK	
LC65 at 31.25%	0.06	OK	
LC66 at 31.25%	0.06	OK	
LC67 at 31.25%	0.06	OK	
LC68 at 31.25%	0.06	OK	
LC69 at 31.25%	0.06	OK	
LC7 at 68.75%	0.09	OK	
LC70 at 31.25%	0.06	OK	
LC71 at 31.25%	0.06	OK	
LC72 at 31.25%	0.07	OK	
LC73 at 31.25%	0.06	OK	
LC74 at 31.25%	0.06	OK	
LC75 at 31.25%	0.06	OK	
LC76 at 31.25%	0.06	OK	
LC8 at 31.25%	0.12	OK	
LC9 at 31.25%	0.14	OK	

66	LC1 at 29.17%	0.27	OK	
	LC10 at 31.25%	0.23	OK	
	LC11 at 29.17%	0.18	OK	
	LC12 at 29.17%	0.21	OK	
	LC13 at 29.17%	0.27	OK	
	LC14 at 31.25%	0.27	OK	
	LC15 at 31.25%	0.27	OK	
	LC16 at 31.25%	0.25	OK	
	LC17 at 29.17%	0.18	OK	
	LC18 at 29.17%	0.21	OK	
	LC19 at 29.17%	0.27	OK	
	LC2 at 31.25%	0.27	OK	
	LC20 at 31.25%	0.25	OK	
	LC21 at 31.25%	0.26	OK	
	LC22 at 31.25%	0.23	OK	
	LC23 at 29.17%	0.18	OK	
	LC24 at 29.17%	0.21	OK	
	LC25 at 66.67%	0.12	OK	
	LC26 at 31.25%	0.11	OK	
	LC27 at 66.67%	0.10	OK	
	LC28 at 31.25%	0.08	OK	
	LC29 at 31.25%	0.10	OK	
	LC3 at 31.25%	**0.28**	**OK**	Eq. H1-1b
	LC30 at 31.25%	0.11	OK	
	LC31 at 31.25%	0.13	OK	
	LC32 at 31.25%	0.10	OK	
	LC33 at 31.25%	0.10	OK	
	LC34 at 31.25%	0.07	OK	
	LC35 at 66.67%	0.09	OK	
	LC36 at 66.67%	0.09	OK	
	LC37 at 31.25%	0.02	OK	
	LC38 at 31.25%	0.04	OK	
	LC39 at 31.25%	0.19	OK	
	LC4 at 31.25%	0.26	OK	
	LC40 at 66.67%	0.04	OK	
	LC41 at 66.67%	0.05	OK	
	LC42 at 66.67%	0.05	OK	
	LC43 at 66.67%	0.04	OK	
	LC44 at 31.25%	0.04	OK	
	LC45 at 31.25%	0.05	OK	
	LC46 at 31.25%	0.05	OK	
	LC47 at 31.25%	0.05	OK	
	LC48 at 31.25%	0.05	OK	
	LC49 at 31.25%	0.04	OK	
	LC5 at 29.17%	0.18	OK	
	LC50 at 31.25%	0.04	OK	
	LC51 at 66.67%	0.04	OK	
	LC52 at 66.67%	0.04	OK	
	LC53 at 66.67%	0.07	OK	
	LC54 at 31.25%	0.08	OK	
	LC55 at 31.25%	0.07	OK	
	LC56 at 31.25%	0.07	OK	
	LC57 at 31.25%	0.07	OK	
	LC58 at 31.25%	0.07	OK	
	LC59 at 31.25%	0.07	OK	
	LC6 at 29.17%	0.21	OK	
	LC60 at 31.25%	0.07	OK	
	LC61 at 31.25%	0.07	OK	
	LC62 at 31.25%	0.06	OK	
	LC63 at 66.67%	0.06	OK	
	LC64 at 66.67%	0.07	OK	
	LC65 at 66.67%	0.03	OK	
	LC66 at 66.67%	0.03	OK	
	LC67 at 66.67%	0.03	OK	

	LC68 at 31.25%	0.03	OK	
	LC69 at 31.25%	0.03	OK	
	LC7 at 29.17%	0.27	OK	Eq. H1-1b
	LC70 at 31.25%	0.04	OK	
	LC71 at 31.25%	0.04	OK	
	LC72 at 31.25%	0.03	OK	
	LC73 at 31.25%	0.03	OK	
	LC74 at 31.25%	0.03	OK	
	LC75 at 66.67%	0.03	OK	
	LC76 at 66.67%	0.03	OK	
	LC8 at 31.25%	0.25	OK	
	LC9 at 31.25%	0.25	OK	
67	LC1 at 66.67%	0.08	OK	
	LC10 at 31.25%	0.17	OK	
	LC11 at 31.25%	0.12	OK	
	LC12 at 66.67%	0.08	OK	
	LC13 at 66.67%	0.08	OK	
	LC14 at 66.67%	0.14	OK	
	LC15 at 31.25%	0.15	OK	
	LC16 at 31.25%	0.12	OK	
	LC17 at 31.25%	0.07	OK	
	LC18 at 66.67%	0.04	OK	
	LC19 at 66.67%	0.11	OK	
	LC2 at 66.67%	0.13	OK	
	LC20 at 66.67%	0.19	OK	
	LC21 at 31.25%	0.19	OK	
	LC22 at 31.25%	0.16	OK	
	LC23 at 31.25%	0.11	OK	
	LC24 at 66.67%	0.07	OK	
	LC25 at 66.67%	0.06	OK	
	LC26 at 66.67%	0.06	OK	
	LC27 at 66.67%	0.06	OK	
	LC28 at 31.25%	0.06	OK	
	LC29 at 31.25%	0.07	OK	
	LC3 at 31.25%	0.14	OK	
	LC30 at 31.25%	0.07	OK	
	LC31 at 66.67%	0.11	OK	
	LC32 at 66.67%	0.12	OK	
	LC33 at 66.67%	0.11	OK	
	LC34 at 31.25%	0.10	OK	
	LC35 at 31.25%	0.09	OK	
	LC36 at 31.25%	0.09	OK	
	LC37 at 31.25%	0.02	OK	
	LC38 at 31.25%	0.05	OK	
	LC39 at 31.25%	**0.21**	**OK**	Eq. H1-1b
	LC4 at 31.25%	0.11	OK	
	LC40 at 31.25%	0.04	OK	
	LC41 at 66.67%	0.02	OK	
	LC42 at 66.67%	0.02	OK	
	LC43 at 66.67%	0.02	OK	
	LC44 at 31.25%	0.02	OK	
	LC45 at 31.25%	0.02	OK	
	LC46 at 31.25%	0.02	OK	
	LC47 at 31.25%	0.02	OK	
	LC48 at 31.25%	0.03	OK	
	LC49 at 31.25%	0.02	OK	
	LC5 at 31.25%	0.06	OK	
	LC50 at 31.25%	0.02	OK	
	LC51 at 31.25%	0.02	OK	
	LC52 at 31.25%	0.02	OK	
	LC53 at 31.25%	0.09	OK	
	LC54 at 31.25%	0.09	OK	
	LC55 at 31.25%	0.09	OK	

	LC56 at 31.25%	0.10	OK	
	LC57 at 31.25%	0.10	OK	
	LC58 at 31.25%	0.10	OK	
	LC59 at 31.25%	0.11	OK	
	LC6 at 31.25%	0.05	OK	
	LC60 at 31.25%	0.11	OK	
	LC61 at 31.25%	0.11	OK	
	LC62 at 31.25%	0.11	OK	
	LC63 at 31.25%	0.10	OK	
	LC64 at 31.25%	0.10	OK	
	LC65 at 31.25%	0.04	OK	
	LC66 at 31.25%	0.04	OK	
	LC67 at 31.25%	0.04	OK	
	LC68 at 31.25%	0.04	OK	
	LC69 at 31.25%	0.04	OK	
	LC7 at 66.67%	0.12	OK	
	LC70 at 31.25%	0.04	OK	
	LC71 at 31.25%	0.04	OK	
	LC72 at 31.25%	0.05	OK	
	LC73 at 31.25%	0.04	OK	
	LC74 at 31.25%	0.04	OK	
	LC75 at 31.25%	0.04	OK	
	LC76 at 31.25%	0.04	OK	
	LC8 at 66.67%	0.19	OK	Eq. H1-1b
	LC9 at 31.25%	0.20	OK	
68	LC1 at 68.75%	**0.43**	**OK**	Eq. H1-1b
	LC10 at 68.75%	0.24	OK	
	LC11 at 68.75%	0.23	OK	
	LC12 at 68.75%	0.31	OK	
	LC13 at 68.75%	0.43	OK	
	LC14 at 68.75%	0.31	OK	
	LC15 at 31.25%	0.28	OK	
	LC16 at 31.25%	0.26	OK	
	LC17 at 31.25%	0.23	OK	
	LC18 at 68.75%	0.31	OK	
	LC19 at 68.75%	0.43	OK	
	LC2 at 31.25%	0.34	OK	
	LC20 at 31.25%	0.36	OK	
	LC21 at 31.25%	0.28	OK	
	LC22 at 68.75%	0.24	OK	
	LC23 at 68.75%	0.23	OK	
	LC24 at 68.75%	0.31	OK	
	LC25 at 31.25%	0.36	OK	
	LC26 at 31.25%	0.39	OK	
	LC27 at 31.25%	0.38	OK	
	LC28 at 31.25%	0.38	OK	
	LC29 at 31.25%	0.37	OK	
	LC3 at 31.25%	0.32	OK	
	LC30 at 31.25%	0.37	OK	
	LC31 at 31.25%	0.33	OK	
	LC32 at 66.67%	0.33	OK	
	LC33 at 66.67%	0.33	OK	
	LC34 at 66.67%	0.33	OK	
	LC35 at 66.67%	0.33	OK	
	LC36 at 66.67%	0.34	OK	Eq. H1-1b
	LC37 at 31.25%	0.11	OK	
	LC38 at 31.25%	0.40	OK	Eq. H1-1b
	LC39 at 31.25%	0.10	OK	
	LC4 at 31.25%	0.30	OK	
	LC40 at 31.25%	0.16	OK	
	LC41 at 31.25%	0.16	OK	
	LC42 at 31.25%	0.16	OK	
	LC43 at 31.25%	0.16	OK	

	LC44 at 31.25%	0.16	OK	
	LC45 at 31.25%	0.16	OK	
	LC46 at 31.25%	0.16	OK	
	LC47 at 31.25%	0.15	OK	
	LC48 at 66.67%	0.14	OK	
	LC49 at 31.25%	0.14	OK	
	LC5 at 31.25%	0.26	OK	
	LC50 at 31.25%	0.14	OK	
	LC51 at 31.25%	0.14	OK	
	LC52 at 31.25%	0.14	OK	
	LC53 at 31.25%	0.13	OK	
	LC54 at 31.25%	0.14	OK	
	LC55 at 31.25%	0.13	OK	
	LC56 at 31.25%	0.13	OK	
	LC57 at 31.25%	0.13	OK	
	LC58 at 31.25%	0.13	OK	
	LC59 at 31.25%	0.12	OK	
	LC6 at 68.75%	0.31	OK	
	LC60 at 66.67%	0.12	OK	
	LC61 at 66.67%	0.12	OK	
	LC62 at 31.25%	0.12	OK	
	LC63 at 31.25%	0.12	OK	
	LC64 at 66.67%	0.12	OK	
	LC65 at 31.25%	0.28	OK	
	LC66 at 31.25%	0.29	OK	
	LC67 at 31.25%	0.28	OK	
	LC68 at 31.25%	0.28	OK	
	LC69 at 31.25%	0.28	OK	
	LC7 at 68.75%	0.43	OK	
	LC70 at 31.25%	0.28	OK	
	LC71 at 31.25%	0.27	OK	
	LC72 at 31.25%	0.26	OK	
	LC73 at 31.25%	0.26	OK	
	LC74 at 31.25%	0.26	OK	
	LC75 at 31.25%	0.27	OK	
	LC76 at 31.25%	0.26	OK	
	LC8 at 31.25%	0.38	OK	
	LC9 at 31.25%	0.30	OK	
69	LC1 at 0.00%	0.17	OK	Eq. H1-1b
	LC10 at 100.00%	0.15	OK	
	LC11 at 100.00%	0.17	OK	
	LC12 at 16.67%	0.16	OK	Eq. H1-1b
	LC13 at 0.00%	0.16	OK	
	LC14 at 16.67%	0.11	OK	
	LC15 at 16.67%	0.12	OK	
	LC16 at 100.00%	0.11	OK	
	LC17 at 100.00%	0.15	OK	
	LC18 at 100.00%	0.13	OK	
	LC19 at 100.00%	0.16	OK	
	LC2 at 16.67%	0.14	OK	
	LC20 at 16.67%	0.17	OK	
	LC21 at 16.67%	0.17	OK	
	LC22 at 100.00%	0.12	OK	
	LC23 at 100.00%	0.14	OK	
	LC24 at 16.67%	0.13	OK	
	LC25 at 100.00%	0.37	OK	
	LC26 at 100.00%	0.37	OK	
	LC27 at 100.00%	0.37	OK	
	LC28 at 100.00%	0.37	OK	
	LC29 at 100.00%	0.38	OK	
	LC3 at 16.67%	0.15	OK	
	LC30 at 100.00%	0.38	OK	
	LC31 at 100.00%	**0.39**	**OK**	Eq. H1-1b

	LC32 at 100.00%	0.39	OK
	LC33 at 100.00%	0.38	OK
	LC34 at 100.00%	0.37	OK
	LC35 at 100.00%	0.37	OK
	LC36 at 100.00%	0.37	OK
	LC37 at 100.00%	0.11	OK
	LC38 at 100.00%	0.26	OK
	LC39 at 100.00%	0.22	OK
	LC4 at 100.00%	0.15	OK
	LC40 at 100.00%	0.13	OK
	LC41 at 100.00%	0.14	OK
	LC42 at 100.00%	0.14	OK
	LC43 at 100.00%	0.14	OK
	LC44 at 100.00%	0.14	OK
	LC45 at 100.00%	0.14	OK
	LC46 at 100.00%	0.14	OK
	LC47 at 100.00%	0.14	OK
	LC48 at 100.00%	0.14	OK
	LC49 at 100.00%	0.14	OK
	LC5 at 100.00%	0.19	OK
	LC50 at 100.00%	0.14	OK
	LC51 at 100.00%	0.14	OK
	LC52 at 100.00%	0.14	OK
	LC53 at 100.00%	0.17	OK
	LC54 at 100.00%	0.17	OK
	LC55 at 100.00%	0.17	OK
	LC56 at 100.00%	0.17	OK
	LC57 at 100.00%	0.17	OK
	LC58 at 100.00%	0.17	OK
	LC59 at 100.00%	0.18	OK
	LC6 at 100.00%	0.17	OK
	LC60 at 100.00%	0.18	OK
	LC61 at 100.00%	0.17	OK
	LC62 at 100.00%	0.17	OK
	LC63 at 100.00%	0.17	OK
	LC64 at 100.00%	0.17	OK
	LC65 at 100.00%	0.22	OK
	LC66 at 100.00%	0.22	OK
	LC67 at 100.00%	0.22	OK
	LC68 at 100.00%	0.22	OK
	LC69 at 100.00%	0.22	OK
	LC7 at 100.00%	0.20	OK
	LC70 at 100.00%	0.23	OK
	LC71 at 100.00%	0.23	OK
	LC72 at 100.00%	0.23	OK
	LC73 at 100.00%	0.23	OK
	LC74 at 100.00%	0.22	OK
	LC75 at 100.00%	0.22	OK
	LC76 at 100.00%	0.22	OK
	LC8 at 16.67%	0.19	OK
	LC9 at 16.67%	0.19	OK
70	LC1 at 16.67%	0.22	OK
	LC10 at 100.00%	0.26	OK
	LC11 at 100.00%	0.26	OK
	LC12 at 100.00%	0.22	OK
	LC13 at 16.67%	0.19	OK
	LC14 at 16.67%	0.19	OK
	LC15 at 16.67%	0.17	OK
	LC16 at 100.00%	0.17	OK
	LC17 at 100.00%	0.17	OK
	LC18 at 0.00%	0.19	OK
	LC19 at 0.00%	0.22	OK
	LC2 at 16.67%	0.22	OK

LC20 at 100.00%	0.19	OK	
LC21 at 100.00%	0.21	OK	
LC22 at 100.00%	0.23	OK	
LC23 at 100.00%	0.23	OK	
LC24 at 100.00%	0.18	OK	
LC25 at 16.67%	**0.38**	**OK**	Eq. H1-1b
LC26 at 16.67%	0.33	OK	Eq. H1-1b
LC27 at 16.67%	0.33	OK	
LC28 at 16.67%	0.33	OK	
LC29 at 16.67%	0.32	OK	
LC3 at 16.67%	0.21	OK	
LC30 at 16.67%	0.32	OK	
LC31 at 100.00%	0.33	OK	
LC32 at 100.00%	0.33	OK	
LC33 at 100.00%	0.33	OK	
LC34 at 100.00%	0.33	OK	
LC35 at 100.00%	0.33	OK	
LC36 at 100.00%	0.33	OK	Eq. H1-1b
LC37 at 16.67%	0.10	OK	
LC38 at 16.67%	0.30	OK	
LC39 at 100.00%	0.20	OK	
LC4 at 100.00%	0.20	OK	
LC40 at 16.67%	0.13	OK	
LC41 at 16.67%	0.13	OK	
LC42 at 16.67%	0.13	OK	
LC43 at 16.67%	0.13	OK	
LC44 at 16.67%	0.13	OK	
LC45 at 16.67%	0.13	OK	
LC46 at 16.67%	0.13	OK	
LC47 at 16.67%	0.13	OK	
LC48 at 16.67%	0.13	OK	
LC49 at 16.67%	0.13	OK	
LC5 at 16.67%	0.20	OK	
LC50 at 16.67%	0.13	OK	
LC51 at 16.67%	0.13	OK	
LC52 at 16.67%	0.13	OK	
LC53 at 100.00%	0.15	OK	
LC54 at 100.00%	0.15	OK	
LC55 at 100.00%	0.15	OK	
LC56 at 100.00%	0.15	OK	
LC57 at 100.00%	0.15	OK	
LC58 at 100.00%	0.15	OK	
LC59 at 100.00%	0.15	OK	
LC6 at 0.00%	0.20	OK	
LC60 at 100.00%	0.15	OK	
LC61 at 100.00%	0.15	OK	
LC62 at 100.00%	0.15	OK	
LC63 at 100.00%	0.15	OK	
LC64 at 100.00%	0.15	OK	
LC65 at 16.67%	0.23	OK	
LC66 at 16.67%	0.23	OK	
LC67 at 16.67%	0.23	OK	
LC68 at 16.67%	0.23	OK	
LC69 at 16.67%	0.23	OK	
LC7 at 0.00%	0.22	OK	Eq. H1-1b
LC70 at 16.67%	0.23	OK	
LC71 at 16.67%	0.23	OK	
LC72 at 16.67%	0.23	OK	
LC73 at 16.67%	0.23	OK	
LC74 at 16.67%	0.23	OK	
LC75 at 16.67%	0.23	OK	
LC76 at 16.67%	0.23	OK	
LC8 at 100.00%	0.23	OK	
LC9 at 100.00%	0.24	OK	

71	LC1 at 100.00%	0.17	OK	
	LC10 at 100.00%	0.09	OK	
	LC11 at 100.00%	0.11	OK	
	LC12 at 100.00%	0.13	OK	
	LC13 at 0.00%	0.15	OK	
	LC14 at 0.00%	0.16	OK	
	LC15 at 0.00%	0.13	OK	
	LC16 at 100.00%	0.12	OK	
	LC17 at 100.00%	0.13	OK	
	LC18 at 100.00%	0.15	OK	
	LC19 at 100.00%	0.13	OK	
	LC2 at 100.00%	0.18	OK	
	LC20 at 16.67%	0.12	OK	
	LC21 at 14.58%	0.09	OK	
	LC22 at 16.67%	0.06	OK	
	LC23 at 100.00%	0.08	OK	
	LC24 at 100.00%	0.11	OK	
	LC25 at 100.00%	0.31	OK	
	LC26 at 100.00%	0.31	OK	
	LC27 at 100.00%	0.31	OK	
	LC28 at 100.00%	0.32	OK	
	LC29 at 100.00%	0.32	OK	
	LC3 at 100.00%	0.15	OK	
	LC30 at 100.00%	**0.32**	**OK**	Eq. H1-1b
	LC31 at 100.00%	0.31	OK	
	LC32 at 100.00%	0.31	OK	
	LC33 at 100.00%	0.31	OK	
	LC34 at 100.00%	0.31	OK	
	LC35 at 100.00%	0.31	OK	
	LC36 at 100.00%	0.30	OK	
	LC37 at 100.00%	0.09	OK	
	LC38 at 100.00%	0.10	OK	
	LC39 at 100.00%	0.19	OK	
	LC4 at 100.00%	0.15	OK	
	LC40 at 100.00%	0.24	OK	
	LC41 at 100.00%	0.19	OK	
	LC42 at 100.00%	0.19	OK	
	LC43 at 100.00%	0.19	OK	
	LC44 at 100.00%	0.19	OK	
	LC45 at 100.00%	0.19	OK	
	LC46 at 100.00%	0.19	OK	
	LC47 at 100.00%	0.19	OK	
	LC48 at 100.00%	0.19	OK	
	LC49 at 100.00%	0.19	OK	
	LC5 at 100.00%	0.15	OK	
	LC50 at 100.00%	0.19	OK	
	LC51 at 100.00%	0.19	OK	
	LC52 at 100.00%	0.19	OK	
	LC53 at 100.00%	0.18	OK	
	LC54 at 100.00%	0.19	OK	
	LC55 at 100.00%	0.19	OK	
	LC56 at 100.00%	0.19	OK	
	LC57 at 100.00%	0.19	OK	
	LC58 at 100.00%	0.19	OK	
	LC59 at 100.00%	0.18	OK	
	LC6 at 100.00%	0.18	OK	
	LC60 at 100.00%	0.18	OK	
	LC61 at 100.00%	0.18	OK	
	LC62 at 100.00%	0.18	OK	
	LC63 at 100.00%	0.18	OK	
	LC64 at 100.00%	0.18	OK	
	LC65 at 100.00%	0.11	OK	
	LC66 at 100.00%	0.11	OK	

	LC67 at 100.00%	0.11	OK	
	LC68 at 100.00%	0.11	OK	
	LC69 at 100.00%	0.11	OK	
	LC7 at 100.00%	0.16	OK	
	LC70 at 100.00%	0.11	OK	
	LC71 at 100.00%	0.11	OK	
	LC72 at 100.00%	0.11	OK	
	LC73 at 100.00%	0.11	OK	
	LC74 at 100.00%	0.11	OK	
	LC75 at 100.00%	0.11	OK	
	LC76 at 100.00%	0.11	OK	
	LC8 at 100.00%	0.14	OK	
	LC9 at 16.67%	0.10	OK	
72	LC1 at 100.00%	0.14	OK	
	LC10 at 100.00%	0.18	OK	
	LC11 at 100.00%	0.16	OK	
	LC12 at 100.00%	0.18	OK	
	LC13 at 100.00%	0.11	OK	
	LC14 at 100.00%	0.20	OK	
	LC15 at 100.00%	0.24	OK	
	LC16 at 100.00%	0.20	OK	
	LC17 at 100.00%	0.14	OK	
	LC18 at 100.00%	0.12	OK	
	LC19 at 0.00%	0.08	OK	
	LC2 at 100.00%	0.22	OK	
	LC20 at 100.00%	0.13	OK	
	LC21 at 100.00%	0.17	OK	
	LC22 at 100.00%	0.15	OK	
	LC23 at 100.00%	0.13	OK	
	LC24 at 100.00%	0.16	OK	
	LC25 at 100.00%	0.28	OK	
	LC26 at 100.00%	0.28	OK	Eq. H1-1b
	LC27 at 100.00%	0.28	OK	
	LC28 at 100.00%	0.28	OK	
	LC29 at 100.00%	0.27	OK	
	LC3 at 100.00%	0.26	OK	
	LC30 at 100.00%	0.27	OK	
	LC31 at 100.00%	0.31	OK	
	LC32 at 100.00%	**0.32**	**OK**	Eq. H1-1b
	LC33 at 100.00%	0.31	OK	
	LC34 at 100.00%	0.27	OK	
	LC35 at 100.00%	0.27	OK	
	LC36 at 100.00%	0.27	OK	
	LC37 at 100.00%	0.08	OK	
	LC38 at 100.00%	0.11	OK	
	LC39 at 100.00%	0.17	OK	
	LC4 at 100.00%	0.22	OK	
	LC40 at 16.67%	0.25	OK	Eq. H1-1b
	LC41 at 16.67%	0.18	OK	
	LC42 at 16.67%	0.18	OK	
	LC43 at 16.67%	0.18	OK	
	LC44 at 16.67%	0.18	OK	
	LC45 at 16.67%	0.18	OK	
	LC46 at 16.67%	0.18	OK	
	LC47 at 16.67%	0.17	OK	
	LC48 at 16.67%	0.17	OK	
	LC49 at 16.67%	0.17	OK	
	LC5 at 100.00%	0.14	OK	
	LC50 at 16.67%	0.18	OK	
	LC51 at 16.67%	0.18	OK	
	LC52 at 16.67%	0.18	OK	
	LC53 at 100.00%	0.16	OK	
	LC54 at 100.00%	0.16	OK	

	LC55 at 100.00%	0.16	OK	
	LC56 at 100.00%	0.16	OK	
	LC57 at 100.00%	0.16	OK	
	LC58 at 100.00%	0.16	OK	
	LC59 at 100.00%	0.16	OK	
	LC6 at 100.00%	0.14	OK	
	LC60 at 100.00%	0.16	OK	
	LC61 at 100.00%	0.16	OK	
	LC62 at 100.00%	0.16	OK	
	LC63 at 100.00%	0.16	OK	
	LC64 at 100.00%	0.16	OK	
	LC65 at 100.00%	0.10	OK	
	LC66 at 100.00%	0.10	OK	
	LC67 at 100.00%	0.10	OK	
	LC68 at 100.00%	0.10	OK	
	LC69 at 100.00%	0.10	OK	
	LC7 at 100.00%	0.09	OK	
	LC70 at 100.00%	0.10	OK	
	LC71 at 100.00%	0.10	OK	
	LC72 at 100.00%	0.11	OK	
	LC73 at 100.00%	0.10	OK	
	LC74 at 100.00%	0.10	OK	
	LC75 at 100.00%	0.10	OK	
	LC76 at 100.00%	0.10	OK	
	LC8 at 100.00%	0.15	OK	
	LC9 at 100.00%	0.19	OK	
79	LC1 at 0.00%	0.13	OK	
	LC10 at 0.00%	0.10	OK	
	LC11 at 100.00%	0.11	OK	
	LC12 at 0.00%	0.10	OK	
	LC13 at 0.00%	0.12	OK	
	LC14 at 0.00%	0.09	OK	
	LC15 at 0.00%	0.11	OK	
	LC16 at 0.00%	0.05	OK	
	LC17 at 0.00%	0.08	OK	
	LC18 at 0.00%	0.08	OK	
	LC19 at 0.00%	0.10	OK	
	LC2 at 0.00%	0.09	OK	
	LC20 at 0.00%	0.11	OK	
	LC21 at 0.00%	0.14	OK	
	LC22 at 0.00%	0.10	OK	
	LC23 at 100.00%	0.10	OK	
	LC24 at 0.00%	0.10	OK	
	LC25 at 100.00%	0.13	OK	
	LC26 at 100.00%	0.12	OK	
	LC27 at 100.00%	0.12	OK	
	LC28 at 100.00%	0.12	OK	
	LC29 at 100.00%	0.12	OK	
	LC3 at 0.00%	0.11	OK	
	LC30 at 100.00%	0.12	OK	
	LC31 at 100.00%	0.14	OK	
	LC32 at 100.00%	0.14	OK	Eq. H1-1b
	LC33 at 100.00%	0.14	OK	
	LC34 at 100.00%	0.13	OK	
	LC35 at 100.00%	0.12	OK	
	LC36 at 100.00%	0.13	OK	
	LC37 at 100.00%	0.04	OK	
	LC38 at 100.00%	0.11	OK	
	LC39 at 100.00%	0.04	OK	
	LC4 at 0.00%	0.05	OK	
	LC40 at 100.00%	0.04	OK	
	LC41 at 100.00%	0.05	OK	
	LC42 at 100.00%	0.04	OK	

		LC43 at 100.00%	0.04	OK	
		LC44 at 100.00%	0.04	OK	
		LC45 at 100.00%	0.04	OK	
		LC46 at 100.00%	0.04	OK	
		LC47 at 100.00%	0.05	OK	
		LC48 at 100.00%	0.05	OK	
		LC49 at 100.00%	0.05	OK	
		LC5 at 0.00%	0.07	OK	
		LC50 at 100.00%	0.05	OK	
		LC51 at 100.00%	0.04	OK	
		LC52 at 100.00%	0.05	OK	
		LC53 at 100.00%	0.04	OK	
		LC54 at 100.00%	0.04	OK	
		LC55 at 100.00%	0.04	OK	
		LC56 at 100.00%	0.04	OK	
		LC57 at 100.00%	0.04	OK	
		LC58 at 100.00%	0.04	OK	
		LC59 at 100.00%	0.05	OK	
		LC6 at 0.00%	0.08	OK	
		LC60 at 100.00%	0.05	OK	
		LC61 at 100.00%	0.05	OK	
		LC62 at 100.00%	0.05	OK	
		LC63 at 100.00%	0.04	OK	
		LC64 at 100.00%	0.04	OK	
		LC65 at 100.00%	0.08	OK	
		LC66 at 100.00%	0.08	OK	
		LC67 at 100.00%	0.08	OK	
		LC68 at 100.00%	0.08	OK	
		LC69 at 100.00%	0.08	OK	
		LC7 at 0.00%	0.09	OK	
		LC70 at 100.00%	0.08	OK	
		LC71 at 100.00%	0.09	OK	
		LC72 at 100.00%	0.09	OK	
		LC73 at 100.00%	0.08	OK	
		LC74 at 100.00%	0.08	OK	
		LC75 at 100.00%	0.08	OK	
		LC76 at 100.00%	0.08	OK	
		LC8 at 0.00%	0.12	OK	
		LC9 at 0.00%	**0.14**	**OK**	Eq. H1-1b
RndBar 3_4	**73**	LC1 at 100.00%	0.19	OK	
		LC10 at 100.00%	0.20	OK	
		LC11 at 100.00%	0.21	OK	
		LC12 at 100.00%	0.31	OK	
		LC13 at 100.00%	0.14	OK	
		LC14 at 0.00%	0.17	OK	
		LC15 at 0.00%	0.14	OK	
		LC16 at 0.00%	0.12	OK	
		LC17 at 0.00%	0.11	OK	
		LC18 at 100.00%	0.09	OK	
		LC19 at 0.00%	0.13	OK	
		LC2 at 0.00%	0.14	OK	
		LC20 at 0.00%	0.18	OK	
		LC21 at 0.00%	0.18	OK	
		LC22 at 0.00%	0.17	OK	
		LC23 at 100.00%	0.17	OK	
		LC24 at 100.00%	0.18	OK	
		LC25 at 100.00%	0.56	OK	
		LC26 at 100.00%	0.54	OK	
		LC27 at 100.00%	0.54	OK	
		LC28 at 100.00%	0.54	OK	
		LC29 at 100.00%	0.54	OK	
		LC3 at 0.00%	0.17	OK	
		LC30 at 100.00%	0.53	OK	

	LC31 at 0.00%	0.55	OK	
	LC32 at 0.00%	0.56	OK	
	LC33 at 0.00%	0.56	OK	
	LC34 at 0.00%	0.56	OK	
	LC35 at 100.00%	0.56	OK	
	LC36 at 100.00%	**0.57**	**OK**	Eq. H1-1a
	LC37 at 100.00%	0.12	OK	
	LC38 at 100.00%	0.45	OK	
	LC39 at 100.00%	0.28	OK	
	LC4 at 0.00%	0.15	OK	
	LC40 at 100.00%	0.14	OK	
	LC41 at 100.00%	0.15	OK	
	LC42 at 100.00%	0.15	OK	
	LC43 at 100.00%	0.15	OK	
	LC44 at 100.00%	0.15	OK	
	LC45 at 100.00%	0.15	OK	
	LC46 at 100.00%	0.15	OK	
	LC47 at 100.00%	0.15	OK	
	LC48 at 100.00%	0.15	OK	
	LC49 at 100.00%	0.15	OK	
	LC5 at 0.00%	0.14	OK	
	LC50 at 100.00%	0.15	OK	
	LC51 at 100.00%	0.15	OK	
	LC52 at 100.00%	0.15	OK	
	LC53 at 100.00%	0.18	OK	
	LC54 at 100.00%	0.17	OK	
	LC55 at 100.00%	0.17	OK	
	LC56 at 100.00%	0.17	OK	
	LC57 at 100.00%	0.17	OK	
	LC58 at 100.00%	0.17	OK	
	LC59 at 100.00%	0.17	OK	
	LC6 at 100.00%	0.12	OK	
	LC60 at 100.00%	0.18	OK	
	LC61 at 100.00%	0.18	OK	
	LC62 at 100.00%	0.18	OK	
	LC63 at 100.00%	0.18	OK	
	LC64 at 100.00%	0.18	OK	
	LC65 at 100.00%	0.33	OK	Eq. H1-1a
	LC66 at 100.00%	0.33	OK	
	LC67 at 100.00%	0.33	OK	
	LC68 at 100.00%	0.33	OK	
	LC69 at 100.00%	0.37	OK	
	LC7 at 0.00%	0.17	OK	
	LC70 at 100.00%	0.36	OK	
	LC71 at 100.00%	0.37	OK	
	LC72 at 100.00%	0.37	OK	
	LC73 at 100.00%	0.37	OK	
	LC74 at 100.00%	0.37	OK	
	LC75 at 100.00%	0.37	OK	
	LC76 at 100.00%	0.37	OK	
	LC8 at 0.00%	0.21	OK	
	LC9 at 0.00%	0.20	OK	
74	LC1 at 100.00%	0.14	OK	
	LC10 at 100.00%	0.15	OK	
	LC11 at 100.00%	0.14	OK	
	LC12 at 100.00%	0.13	OK	
	LC13 at 100.00%	0.10	OK	
	LC14 at 100.00%	0.11	OK	
	LC15 at 100.00%	0.10	OK	
	LC16 at 100.00%	0.11	OK	
	LC17 at 100.00%	0.11	OK	
	LC18 at 100.00%	0.12	OK	
	LC19 at 100.00%	0.12	OK	

LC2 at 100.00%	0.14	OK	
LC20 at 100.00%	0.11	OK	
LC21 at 100.00%	0.12	OK	
LC22 at 100.00%	0.11	OK	
LC23 at 100.00%	0.11	OK	
LC24 at 100.00%	0.10	OK	
LC25 at 100.00%	0.38	OK	
LC26 at 100.00%	0.38	OK	
LC27 at 100.00%	0.38	OK	
LC28 at 100.00%	0.39	OK	
LC29 at 100.00%	0.39	OK	
LC3 at 100.00%	0.14	OK	
LC30 at 100.00%	0.39	OK	
LC31 at 100.00%	**0.39**	**OK**	Eq. H1-1a
LC32 at 100.00%	0.39	OK	
LC33 at 100.00%	0.39	OK	
LC34 at 100.00%	0.39	OK	
LC35 at 100.00%	0.38	OK	
LC36 at 100.00%	0.38	OK	
LC37 at 100.00%	0.11	OK	
LC38 at 100.00%	0.31	OK	
LC39 at 100.00%	0.24	OK	Eq. H1-1a
LC4 at 100.00%	0.14	OK	
LC40 at 100.00%	0.13	OK	
LC41 at 100.00%	0.14	OK	
LC42 at 100.00%	0.14	OK	
LC43 at 100.00%	0.14	OK	
LC44 at 100.00%	0.14	OK	
LC45 at 100.00%	0.14	OK	
LC46 at 100.00%	0.14	OK	
LC47 at 100.00%	0.14	OK	
LC48 at 100.00%	0.14	OK	
LC49 at 100.00%	0.14	OK	
LC5 at 100.00%	0.15	OK	
LC50 at 100.00%	0.14	OK	
LC51 at 100.00%	0.14	OK	
LC52 at 100.00%	0.14	OK	
LC53 at 100.00%	0.16	OK	
LC54 at 100.00%	0.16	OK	
LC55 at 100.00%	0.16	OK	
LC56 at 100.00%	0.16	OK	
LC57 at 100.00%	0.16	OK	
LC58 at 100.00%	0.16	OK	
LC59 at 100.00%	0.16	OK	
LC6 at 100.00%	0.16	OK	
LC60 at 100.00%	0.16	OK	
LC61 at 100.00%	0.16	OK	
LC62 at 100.00%	0.16	OK	
LC63 at 100.00%	0.16	OK	
LC64 at 100.00%	0.16	OK	
LC65 at 100.00%	0.24	OK	
LC66 at 100.00%	0.24	OK	
LC67 at 100.00%	0.24	OK	
LC68 at 100.00%	0.25	OK	
LC69 at 100.00%	0.25	OK	
LC7 at 100.00%	0.16	OK	
LC70 at 100.00%	0.25	OK	
LC71 at 100.00%	0.25	OK	
LC72 at 100.00%	0.25	OK	
LC73 at 100.00%	0.25	OK	
LC74 at 100.00%	0.25	OK	
LC75 at 100.00%	0.25	OK	
LC76 at 100.00%	0.24	OK	
LC8 at 100.00%	0.15	OK	

	LC9 at 100.00%	0.15	OK	
75	LC1 at 100.00%	0.12	OK	
	LC10 at 100.00%	0.08	OK	
	LC11 at 100.00%	0.09	OK	
	LC12 at 100.00%	0.10	OK	
	LC13 at 100.00%	0.09	OK	
	LC14 at 100.00%	0.10	OK	
	LC15 at 100.00%	0.10	OK	
	LC16 at 100.00%	0.10	OK	
	LC17 at 100.00%	0.09	OK	
	LC18 at 100.00%	0.08	OK	
	LC19 at 100.00%	0.06	OK	
	LC2 at 100.00%	0.13	OK	
	LC20 at 0.00%	0.05	OK	
	LC21 at 100.00%	0.05	OK	
	LC22 at 100.00%	0.05	OK	
	LC23 at 100.00%	0.06	OK	
	LC24 at 100.00%	0.07	OK	
	LC25 at 0.00%	0.32	OK	
	LC26 at 100.00%	0.30	OK	Eq. H1-1a
	LC27 at 0.00%	**0.32**	**OK**	Eq. H1-1a
	LC28 at 0.00%	0.32	OK	
	LC29 at 0.00%	0.31	OK	
	LC3 at 100.00%	0.13	OK	
	LC30 at 0.00%	0.31	OK	
	LC31 at 0.00%	0.31	OK	
	LC32 at 0.00%	0.30	OK	
	LC33 at 0.00%	0.31	OK	
	LC34 at 0.00%	0.31	OK	
	LC35 at 0.00%	0.31	OK	
	LC36 at 0.00%	0.31	OK	
	LC37 at 100.00%	0.08	OK	
	LC38 at 100.00%	0.09	OK	
	LC39 at 100.00%	0.16	OK	
	LC4 at 100.00%	0.12	OK	
	LC40 at 100.00%	0.27	OK	
	LC41 at 100.00%	0.19	OK	
	LC42 at 100.00%	0.20	OK	
	LC43 at 100.00%	0.19	OK	
	LC44 at 100.00%	0.19	OK	
	LC45 at 100.00%	0.19	OK	
	LC46 at 100.00%	0.19	OK	
	LC47 at 100.00%	0.19	OK	
	LC48 at 100.00%	0.19	OK	
	LC49 at 100.00%	0.19	OK	
	LC5 at 100.00%	0.11	OK	
	LC50 at 100.00%	0.19	OK	
	LC51 at 100.00%	0.19	OK	
	LC52 at 100.00%	0.19	OK	
	LC53 at 100.00%	0.15	OK	
	LC54 at 100.00%	0.15	OK	
	LC55 at 100.00%	0.15	OK	
	LC56 at 100.00%	0.15	OK	
	LC57 at 100.00%	0.15	OK	
	LC58 at 100.00%	0.15	OK	
	LC59 at 100.00%	0.15	OK	
	LC6 at 100.00%	0.11	OK	
	LC60 at 100.00%	0.15	OK	
	LC61 at 100.00%	0.15	OK	
	LC62 at 100.00%	0.15	OK	
	LC63 at 100.00%	0.15	OK	
	LC64 at 100.00%	0.15	OK	
	LC65 at 100.00%	0.10	OK	

	LC66 at 100.00%	0.10	OK	
	LC67 at 100.00%	0.10	OK	
	LC68 at 100.00%	0.10	OK	
	LC69 at 100.00%	0.10	OK	
	LC7 at 100.00%	0.08	OK	
	LC70 at 100.00%	0.10	OK	
	LC71 at 100.00%	0.09	OK	
	LC72 at 100.00%	0.09	OK	
	LC73 at 100.00%	0.09	OK	
	LC74 at 100.00%	0.09	OK	
	LC75 at 100.00%	0.10	OK	
	LC76 at 100.00%	0.10	OK	
	LC8 at 100.00%	0.07	OK	
	LC9 at 100.00%	0.07	OK	
76	LC1 at 100.00%	0.15	OK	
	LC10 at 0.00%	0.11	OK	
	LC11 at 100.00%	0.12	OK	
	LC12 at 100.00%	0.13	OK	
	LC13 at 100.00%	0.13	OK	
	LC14 at 100.00%	0.17	OK	
	LC15 at 0.00%	0.15	OK	
	LC16 at 0.00%	0.13	OK	
	LC17 at 0.00%	0.10	OK	
	LC18 at 0.00%	0.08	OK	
	LC19 at 100.00%	0.06	OK	
	LC2 at 100.00%	0.18	OK	
	LC20 at 100.00%	0.12	OK	
	LC21 at 0.00%	0.09	OK	
	LC22 at 0.00%	0.09	OK	
	LC23 at 0.00%	0.09	OK	
	LC24 at 100.00%	0.11	OK	
	LC25 at 100.00%	**0.39**	**OK**	Eq. H1-1a
	LC26 at 100.00%	0.39	OK	
	LC27 at 100.00%	0.38	OK	
	LC28 at 100.00%	0.38	OK	
	LC29 at 100.00%	0.37	OK	
	LC3 at 0.00%	0.17	OK	
	LC30 at 100.00%	0.37	OK	
	LC31 at 100.00%	0.36	OK	
	LC32 at 100.00%	0.32	OK	
	LC33 at 100.00%	0.37	OK	
	LC34 at 100.00%	0.37	OK	
	LC35 at 100.00%	0.38	OK	
	LC36 at 100.00%	0.38	OK	
	LC37 at 100.00%	0.08	OK	
	LC38 at 100.00%	0.09	OK	
	LC39 at 100.00%	0.15	OK	
	LC4 at 0.00%	0.14	OK	
	LC40 at 100.00%	0.36	OK	Eq. H1-1a
	LC41 at 100.00%	0.27	OK	
	LC42 at 100.00%	0.27	OK	
	LC43 at 100.00%	0.27	OK	
	LC44 at 100.00%	0.27	OK	
	LC45 at 100.00%	0.27	OK	
	LC46 at 100.00%	0.27	OK	
	LC47 at 100.00%	0.27	OK	
	LC48 at 100.00%	0.27	OK	
	LC49 at 100.00%	0.27	OK	
	LC5 at 100.00%	0.11	OK	
	LC50 at 100.00%	0.27	OK	
	LC51 at 100.00%	0.27	OK	
	LC52 at 100.00%	0.27	OK	
	LC53 at 100.00%	0.17	OK	

	LC54 at 100.00%	0.16	OK	
	LC55 at 100.00%	0.16	OK	
	LC56 at 100.00%	0.16	OK	
	LC57 at 100.00%	0.16	OK	
	LC58 at 100.00%	0.16	OK	
	LC59 at 100.00%	0.16	OK	
	LC6 at 0.00%	0.10	OK	
	LC60 at 100.00%	0.16	OK	
	LC61 at 100.00%	0.16	OK	
	LC62 at 100.00%	0.16	OK	
	LC63 at 100.00%	0.16	OK	
	LC64 at 100.00%	0.16	OK	
	LC65 at 100.00%	0.11	OK	
	LC66 at 100.00%	0.10	OK	
	LC67 at 100.00%	0.10	OK	
	LC68 at 100.00%	0.10	OK	
	LC69 at 100.00%	0.10	OK	
	LC7 at 100.00%	0.07	OK	
	LC70 at 100.00%	0.10	OK	
	LC71 at 100.00%	0.10	OK	
	LC72 at 100.00%	0.10	OK	
	LC73 at 100.00%	0.10	OK	
	LC74 at 100.00%	0.10	OK	
	LC75 at 100.00%	0.10	OK	
	LC76 at 100.00%	0.10	OK	
	LC8 at 100.00%	0.10	OK	
	LC9 at 0.00%	0.10	OK	
77	LC1 at 100.00%	0.17	OK	
	LC10 at 100.00%	0.14	OK	
	LC11 at 100.00%	0.12	OK	
	LC12 at 100.00%	0.15	OK	
	LC13 at 100.00%	0.14	OK	
	LC14 at 100.00%	0.15	OK	
	LC15 at 100.00%	0.09	OK	
	LC16 at 0.00%	0.09	OK	
	LC17 at 0.00%	0.09	OK	
	LC18 at 100.00%	0.11	OK	
	LC19 at 100.00%	0.12	OK	
	LC2 at 100.00%	0.17	OK	
	LC20 at 100.00%	0.12	OK	
	LC21 at 100.00%	0.14	OK	
	LC22 at 100.00%	0.12	OK	
	LC23 at 0.00%	0.10	OK	
	LC24 at 100.00%	0.13	OK	
	LC25 at 100.00%	0.34	OK	
	LC26 at 100.00%	0.34	OK	
	LC27 at 100.00%	0.34	OK	
	LC28 at 100.00%	0.34	OK	
	LC29 at 100.00%	0.35	OK	
	LC3 at 100.00%	0.11	OK	
	LC30 at 100.00%	0.35	OK	
	LC31 at 100.00%	**0.36**	**OK**	Eq. H1-1a
	LC32 at 100.00%	0.35	OK	
	LC33 at 100.00%	0.35	OK	
	LC34 at 100.00%	0.35	OK	
	LC35 at 100.00%	0.34	OK	
	LC36 at 100.00%	0.34	OK	
	LC37 at 100.00%	0.07	OK	
	LC38 at 100.00%	0.18	OK	
	LC39 at 0.00%	0.13	OK	
	LC4 at 0.00%	0.10	OK	
	LC40 at 100.00%	0.09	OK	
	LC41 at 100.00%	0.09	OK	

	LC42 at 100.00%	0.09	OK	
	LC43 at 100.00%	0.09	OK	
	LC44 at 100.00%	0.09	OK	
	LC45 at 100.00%	0.09	OK	
	LC46 at 100.00%	0.09	OK	
	LC47 at 100.00%	0.10	OK	
	LC48 at 100.00%	0.09	OK	
	LC49 at 100.00%	0.09	OK	
	LC5 at 0.00%	0.10	OK	
	LC50 at 100.00%	0.09	OK	
	LC51 at 100.00%	0.09	OK	
	LC52 at 100.00%	0.09	OK	
	LC53 at 0.00%	0.10	OK	
	LC54 at 0.00%	0.10	OK	
	LC55 at 0.00%	0.10	OK	
	LC56 at 0.00%	0.10	OK	
	LC57 at 0.00%	0.10	OK	
	LC58 at 0.00%	0.10	OK	
	LC59 at 0.00%	0.10	OK	
	LC6 at 100.00%	0.13	OK	
	LC60 at 0.00%	0.10	OK	
	LC61 at 0.00%	0.10	OK	
	LC62 at 0.00%	0.10	OK	
	LC63 at 0.00%	0.10	OK	
	LC64 at 0.00%	0.10	OK	
	LC65 at 0.00%	0.15	OK	
	LC66 at 0.00%	0.15	OK	
	LC67 at 0.00%	0.15	OK	
	LC68 at 0.00%	0.15	OK	
	LC69 at 0.00%	0.15	OK	
	LC7 at 100.00%	0.15	OK	
	LC70 at 0.00%	0.15	OK	
	LC71 at 100.00%	0.15	OK	
	LC72 at 0.00%	0.15	OK	
	LC73 at 0.00%	0.15	OK	
	LC74 at 0.00%	0.15	OK	
	LC75 at 0.00%	0.15	OK	
	LC76 at 0.00%	0.15	OK	
	LC8 at 100.00%	0.14	OK	
	LC9 at 100.00%	0.16	OK	
78	LC1 at 100.00%	0.13	With warnings	
	LC10 at 0.00%	0.07	With warnings	
	LC11 at 100.00%	0.07	With warnings	
	LC12 at 100.00%	0.12	With warnings	
	LC13 at 100.00%	0.11	With warnings	
	LC14 at 100.00%	0.11	With warnings	
	LC15 at 0.00%	0.10	With warnings	
	LC16 at 0.00%	0.10	With warnings	
	LC17 at 100.00%	0.10	With warnings	
	LC18 at 0.00%	0.08	With warnings	
	LC19 at 100.00%	0.06	With warnings	
	LC2 at 100.00%	0.13	With warnings	
	LC20 at 100.00%	0.06	With warnings	
	LC21 at 0.00%	0.07	With warnings	
	LC22 at 0.00%	0.07	With warnings	
	LC23 at 0.00%	0.06	With warnings	
	LC24 at 100.00%	0.11	With warnings	
	LC25 at 100.00%	**0.20**	**With warnings**	Eq. H1-1b
	LC26 at 100.00%	0.20	With warnings	
	LC27 at 100.00%	0.20	With warnings	
	LC28 at 100.00%	0.20	With warnings	
	LC29 at 100.00%	0.20	With warnings	
	LC3 at 0.00%	0.11	With warnings	

LC30 at 100.00%	0.20	With warnings
LC31 at 100.00%	0.19	With warnings
LC32 at 100.00%	0.19	With warnings
LC33 at 100.00%	0.19	With warnings
LC34 at 100.00%	0.20	With warnings
LC35 at 100.00%	0.20	With warnings
LC36 at 100.00%	0.20	With warnings
LC37 at 100.00%	0.05	With warnings
LC38 at 100.00%	0.07	With warnings
LC39 at 100.00%	0.10	With warnings
LC4 at 100.00%	0.11	With warnings
LC40 at 0.00%	0.16	With warnings
LC41 at 0.00%	0.12	With warnings
LC42 at 0.00%	0.12	With warnings
LC43 at 0.00%	0.12	With warnings
LC44 at 0.00%	0.12	With warnings
LC45 at 0.00%	0.12	With warnings
LC46 at 0.00%	0.12	With warnings
LC47 at 0.00%	0.12	With warnings
LC48 at 0.00%	0.12	With warnings
LC49 at 0.00%	0.12	With warnings
LC5 at 100.00%	0.11	With warnings
LC50 at 0.00%	0.12	With warnings
LC51 at 0.00%	0.12	With warnings
LC52 at 0.00%	0.12	With warnings
LC53 at 100.00%	0.10	With warnings
LC54 at 100.00%	0.10	With warnings
LC55 at 100.00%	0.10	With warnings
LC56 at 100.00%	0.10	With warnings
LC57 at 100.00%	0.10	With warnings
LC58 at 100.00%	0.10	With warnings
LC59 at 100.00%	0.10	With warnings
LC6 at 100.00%	0.09	With warnings
LC60 at 100.00%	0.10	With warnings
LC61 at 100.00%	0.10	With warnings
LC62 at 100.00%	0.10	With warnings
LC63 at 100.00%	0.10	With warnings
LC64 at 100.00%	0.10	With warnings
LC65 at 100.00%	0.07	With warnings
LC66 at 100.00%	0.07	With warnings
LC67 at 100.00%	0.07	With warnings
LC68 at 100.00%	0.07	With warnings
LC69 at 100.00%	0.07	With warnings
LC7 at 100.00%	0.08	With warnings
LC70 at 100.00%	0.07	With warnings
LC71 at 100.00%	0.07	With warnings
LC72 at 100.00%	0.07	With warnings
LC73 at 100.00%	0.07	With warnings
LC74 at 100.00%	0.07	With warnings
LC75 at 100.00%	0.07	With warnings
LC76 at 100.00%	0.07	With warnings
LC8 at 100.00%	0.07	With warnings
LC9 at 0.00%	0.08	With warnings

Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
2	-6.25	3.00	0.00	0
3	6.25	3.00	0.00	0
5	2.00	5.50	0.20	0
6	-6.25	0.00	0.00	0
8	6.25	0.00	0.00	0
13	-2.00	5.50	0.20	0
14	6.00	5.50	0.20	0
16	2.00	-2.50	0.20	0
17	-2.00	-2.50	0.20	0
18	6.00	-2.50	0.20	0
53	-6.00	5.50	0.20	0
54	-6.00	-2.50	0.20	0
59	-4.40	0.00	0.00	0
60	4.40	0.00	0.00	0
61	0.00	0.00	-3.00	0
62	-3.6667	0.00	-0.50	0
63	3.6667	0.00	-0.50	0
64	0.7333	0.00	-2.50	0
65	-0.7333	0.00	-2.50	0
66	-4.40	3.00	0.00	0
67	4.40	3.00	0.00	0
68	0.00	3.00	-3.00	0

69	-3.6667	3.00	-0.50	0
70	3.6667	3.00	-0.50	0
71	0.7333	3.00	-2.50	0
72	-0.7333	3.00	-2.50	0
73	-6.00	3.00	-5.00	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
61	1	1	1	1	1	1
68	1	1	1	1	1	1
73	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	2	3		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
2	6	8		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
65	14	18		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
66	5	16		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
67	13	17		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
68	53	54		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
69	66	68		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
70	59	61		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
71	67	68		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
72	60	61		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
73	69	62		RndBar 3_4	A36	0.00	0.00	0.00
74	72	65		RndBar 3_4	A36	0.00	0.00	0.00
75	71	64		RndBar 3_4	A36	0.00	0.00	0.00
76	70	63		RndBar 3_4	A36	0.00	0.00	0.00
77	72	62		RndBar 3_4	A36	0.00	0.00	0.00
78	71	63		RndBar 3_4	A36	0.00	0.00	0.00
79	66	73		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
65	45.00	0	0.00	0.00	0.00
66	45.00	0	0.00	0.00	0.00
67	45.00	0	0.00	0.00	0.00
68	45.00	0	0.00	0.00	0.00

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING TOWER:

- NEW AT&T ANTENNAS: (800-10965) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 4478 B5 (850) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 4415 B25 (1900) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T SURGE ARRESTOR: SURGE ARRESTOR (DC6-48-60-18-8C) (TOTAL OF 1).
- INSTALL (2) DC CABLES, (1) FIBER & (1) ALARM.
- INSTALL NEW 12' HD V-BOOM SECTOR MOUNT BY SABRE INDUSTRIES TOWERS AND POLES P/N C10857001C (TYP. OF 1 PER SECTOR, TOTAL OF 3)

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:

- ADD (1) 6630.
- REPLACE EXISTING BBU WITH (1) 5216 AND (1) XMU.
- ADD HOME RUN UMTS RET.

ITEMS TO REMAIN:

- (6) ANTENNAS, (3) RRU'S, (1) SURGE ARRESTOR, (6) TMAS, 6) DIPLEXERS, (2) DC CABLES, (1) FIBER & (1) ALARM CABLE.

SQUID ALARMING (NOT TO BE DAISY CHAINED).

- THE 1ST SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED RRH/RRU ON THE ALPHA SECTOR, IN THE EVENT THE ALARM CABLE CANNOT BE CONNECTED TO ALPHA IT WILL BE ACCEPTABLE TO ALARM TO THE CLOSEST PHYSICAL SECTOR ON AN EXCEPTION BASIS.
- 2ND SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED) RRH/RRU ON THE BETA SECTOR.
- 3RD SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED) RRH/RRU ON THE GAMMA SECTOR.

SITE ADDRESS:	160 DEER RUN ROAD WILTON, CT 06897
LATITUDE:	41.241340 N, 41° 14' 28.82" N
LONGITUDE:	73.469992 W, 73° 28' 11.97" W
TYPE OF SITE:	LATTICE TOWER/ INDOOR EQUIPMENT
STRUCTURE HEIGHT:	121'-0"±
RAD CENTER:	110'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	1
GN-1	GENERAL NOTES	1
A-1	COMPOUND & EQUIPMENT PLANS	1
A-2	ANTENNA LAYOUTS & ELEVATION	1
A-3	DETAILS	1
G-1	GROUNDING DETAILS	1
RF-1	RF PLUMBING DIAGRAM	1

SITE NUMBER: CT2286

SITE NAME: WILTON DEER RUN ROAD

FA CODE:10092833

PACE ID: MRCTB030824, MRCTB031625

PROJECT: LTE 2C_3C 2018 UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:
FROM THE ROCKY HILL AREA TAKE I 91 SOUTH TOWARD NEW HAVEN MERGE ONTO I 691 WEST EXIT 18 TOWARD MERIDEN WATERBURY MERGE ONTO I 84 WEST EXIT 1 ON THE LEFT TOWARD WATERBURY DANBURY KEEP LEFT TO TAKE US 7 SOUTH EXIT 3 TOWARD NORWALK TURN RIGHT ONTO BRANCHVILLE ROAD CT 102 TURN SLIGHT LEFT ONTO OLD BRANCHVILLE ROAD TURN LEFT ONTO NOD HILL ROAD TURN RIGTH ONTO PELHAM LANE TURN LEFT ONTO WHIPSTICK ROAD TURN RIGHT ONTO ANTLER LANE TURN LEFT ONTO DEER RUN ROAD. TURN ONTO GILLY ROAD. SITE ROAD IS OFF OF CIRCLE AT END OF GILLY ROAD.

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 MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

72 HOURS

CALL
BEFORE YOU DIG
CALL TOLL FREE 1-800-922-4455
OR CALL 811

UNDERGROUND SERVICE ALERT

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT2286
SITE NAME: WILTON DEER RUN ROAD

160 DEER RUN ROAD
WILTON, CT 06897
FAIRFIELD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/19/18	ISSUED FOR CONSTRUCTION	AM	AT	DJC
A	09/14/18	ISSUED FOR REVIEW	MR	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: MR

STATE OF CONNECTICUT — DAVID J. CRAMER — 16,235 — LICENSED PROFESSIONAL ENGINEER

AT&T

TITLE SHEET
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT2286	T-1	1

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.

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 TO 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 SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – CENTERLINE
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

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.

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. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

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

8. 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.

9. 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.

10. 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.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF 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.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

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

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. 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) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

17. 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.

18. 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 SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS 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 ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. APPLICABLE BUILDING CODES:
    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.

    BUILDING CODE: IBC 2012 WITH 2016 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS

    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, ASD, FOURTEENTH EDITION;

    TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL

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.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT2286
SITE NAME: WILTON DEER RUN ROAD

160 DEER RUN ROAD
WILTON, CT 06897
FAIRFIELD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/19/18	ISSUED FOR CONSTRUCTION	AM	AT	DJC
A	09/14/18	ISSUED FOR REVIEW	MR	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: MR

STATE OF CONNECTICUT · DEREK J. CREASEY · No. 25554 · LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT2286	GN-1	1

NOTE:

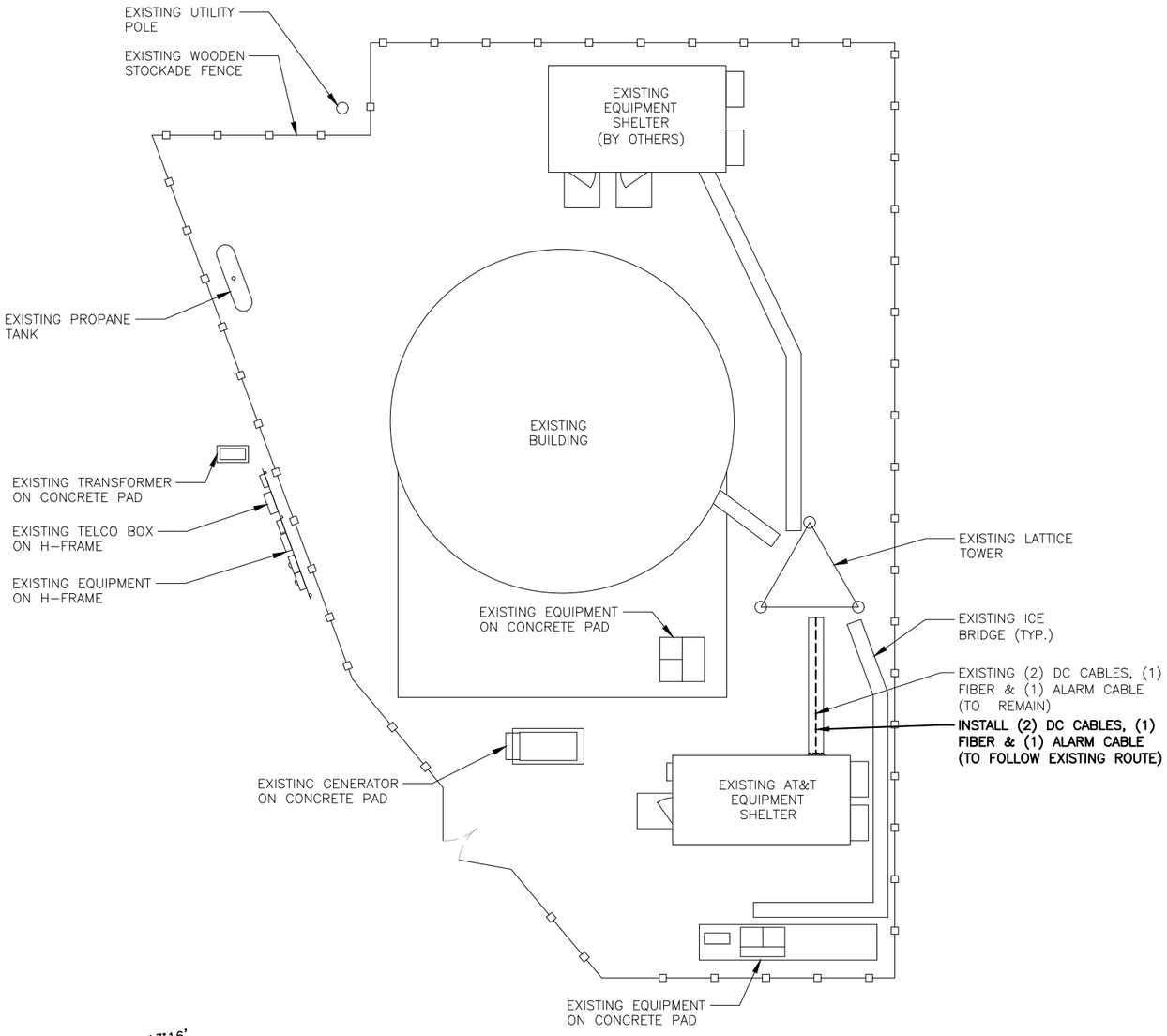
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

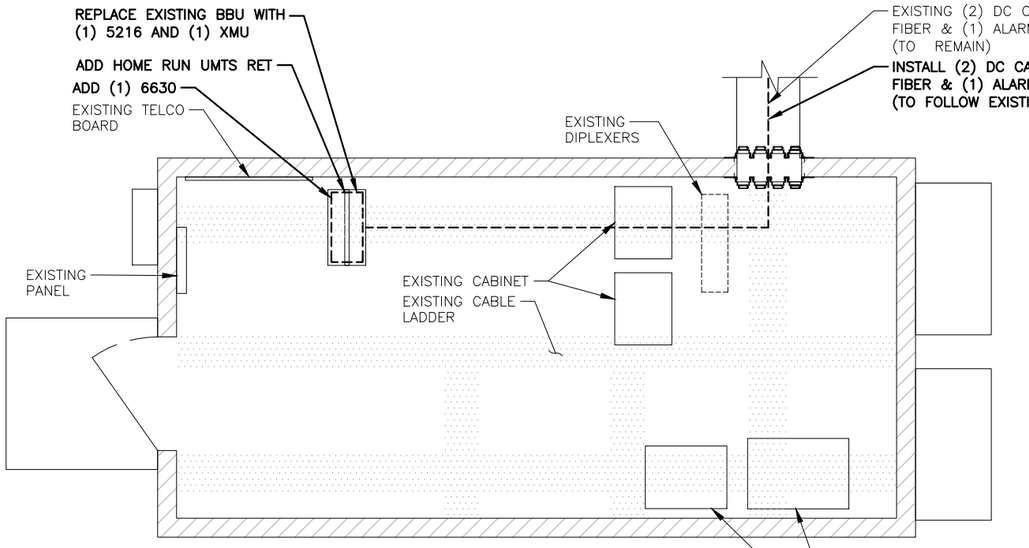
NOTE:

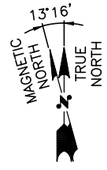
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: AUGUST 29, 2018

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

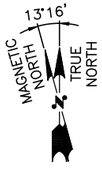






COMPOUND PLAN (1 / A-1)
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

0 4'-0" 8'-0" 16'-0" 24'-0"



EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT2286
SITE NAME: WILTON DEER RUN ROAD

160 DEER RUN ROAD
WILTON, CT 06897
FAIRFIELD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
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A	09/14/18	ISSUED FOR REVIEW	MR	AT	DJC

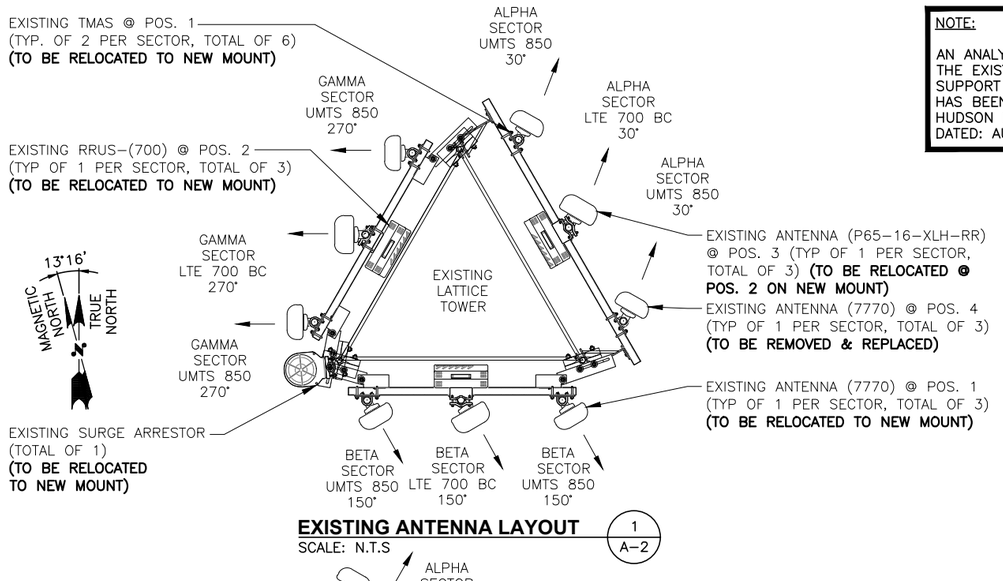
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: MR

STATE OF CONNECTICUT
DEREK J. CREASEY
No. 25351
LICENSED PROFESSIONAL ENGINEER

AT&T

COMPOUND & EQUIPMENT PLAN
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT2286	A-1	1



EXISTING ANTENNA LAYOUT (1 / A-2)
SCALE: N.T.S

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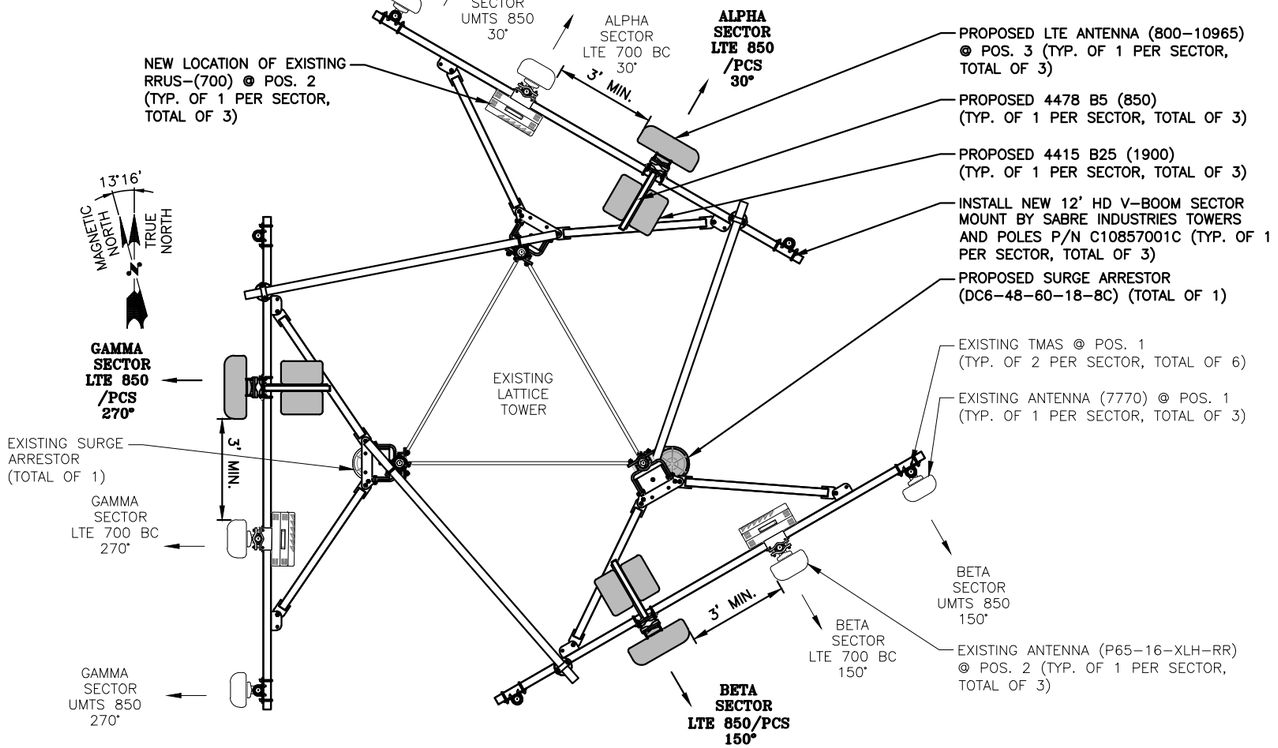

PROPOSED ANTENNA LAYOUT (2 / A-2)
SCALE: N.T.S

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

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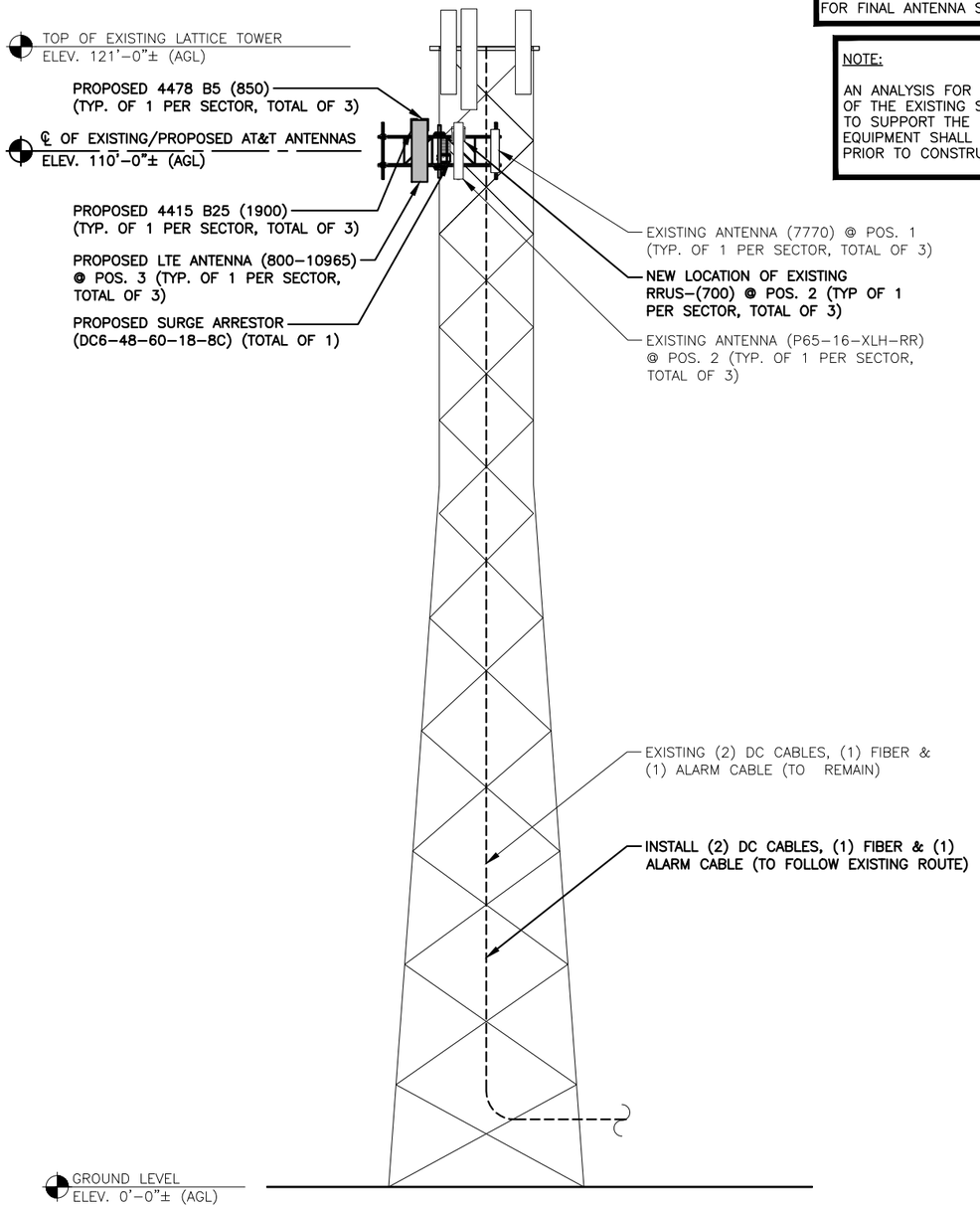

ELEVATION (3 / A-2)
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

0 4'-0" 8'-0" 16'-0" 24'-0"

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WEST BRIDGEWATER, MA 02379

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FAIRFIELD COUNTY

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A	09/14/18	ISSUED FOR REVIEW	MR	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: MR

STATE OF CONNECTICUT · JOSEPH J. CRASKE · No. 25851 · LICENSED PROFESSIONAL ENGINEER

AT&T

ANTENNA LAYOUT & ELEVATION
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT2286	A-2	1

NOTE:

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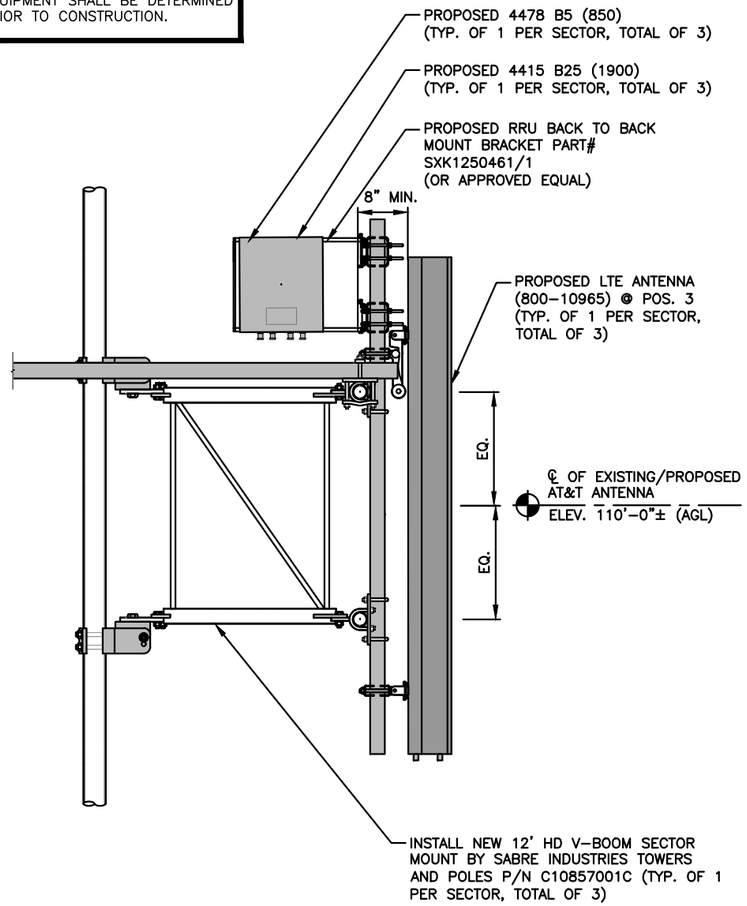


PROPOSED LTE ANTENNA & RRH MOUNTING DETAIL (1 / A-3)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	UMTS 850	7770	55.0X11.0X5.0	±110'	30°	(2)(E) LPG 21401 (2)(G)(E) LGP 21901	–	–	(2) 1-5/8" COAX (LENGTH 150' ±)	--
A2	EXISTING	LTE 700 BC	P65-16-XLH-RR	72.0X12.0X6.0	±110'	30°	–	(E) RRUS-11 (700)	–	–	(E) (1) RAYCAP DC6-48-60-18-8C
A3	**PROPOSED**	**LTE 850/PCS**	**800-10965**	**78.7X20.0X6.9**	**±110'**	**30°**	–	**(P) 4478 B5 (850) (P) 4415 B25 (1900)**	**15.1X13.2X7.4 15.1X13.2X7.4**	--	
A4	–	–	–	–	–	–	–	–	–	--	
B1	EXISTING	UMTS 850	7770	55.0X11.0X5.0	±110'	150°	(2)(E) LPG 21401 (2)(G)(E) LGP 21901	–	–	(2) 1-5/8" COAX (LENGTH 150' ±)	--
B2	EXISTING	LTE 700 BC	P65-16-XLH-RR	72.0X12.0X6.0	±110'	150°	–	(E) RRUS-11 (700)	–	–	**(P) (1) RAYCAP DC6-48-60-0-8C**
B3	**PROPOSED**	**LTE 850/PCS**	**800-10965**	**78.7X20.0X6.9**	**±110'**	**150°**	–	**(P) 4478 B5 (850) (P) 4415 B25 (1900)**	**15.1X13.2X7.4 15.1X13.2X7.4**	--	
B4	–	–	–	–	–	–	–	–	–	--	
C1	EXISTING	UMTS 850	7770	55.0X11.0X5.0	±110'	270°	(2)(E) LPG 21401 (2)(G)(E) LGP 21901	–	–	(2) 1-5/8" COAX (LENGTH 150' ±)	--
C2	EXISTING	LTE 700 BC	P65-16-XLH-RR	72.0X12.0X6.0	±110'	270°	–	(E) RRUS-11 (700)	–	–	**SHARED**
C3	**PROPOSED**	**LTE 850/PCS**	**800-10965**	**78.7X20.0X6.9**	**±110'**	**270°**	–	**(P) 4478 B5 (850) (P) 4415 B25 (1900)**	**15.1X13.2X7.4 15.1X13.2X7.4**	--	
C4	–	–	–	–	–	–	–	–	–	--	

FINAL ANTENNA SCHEDULE (3 / A-3)
SCALE: N.T.S

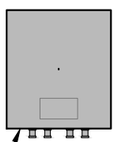
RRU CHART

QUANTITY	MODEL	L	W	D
3(E)	RRUS-11	19.7"	17.0"	7.2"
3(P)	**4478 B5**	**15.0"**	**13.2"**	**7.4"**
3(P)	**4415 B25**	**15.0"**	**13.2"**	**7.4"**

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:

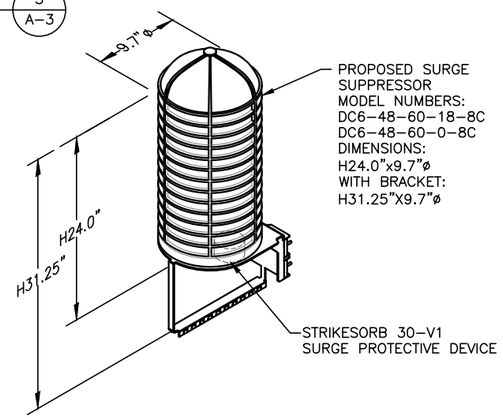
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL (2 / A-3)
SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (4 / A-3)
SCALE: N.T.S

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at&t
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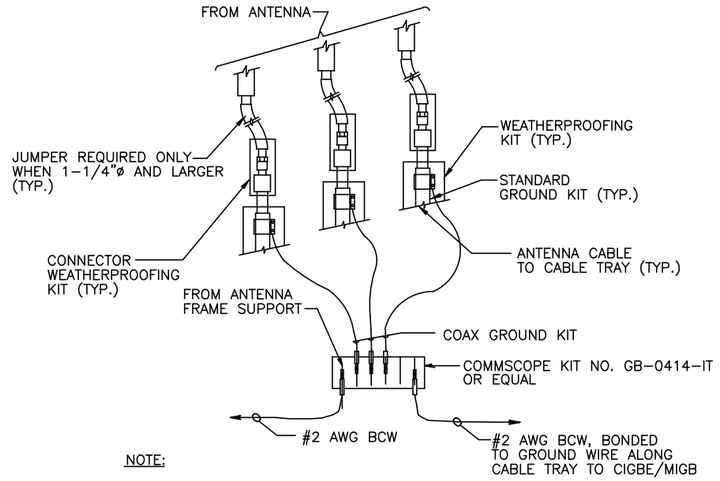
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: MR

DEREK J. CREASEY — No. 23567 — STATE OF CONNECTICUT — LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT2286	A-3	1



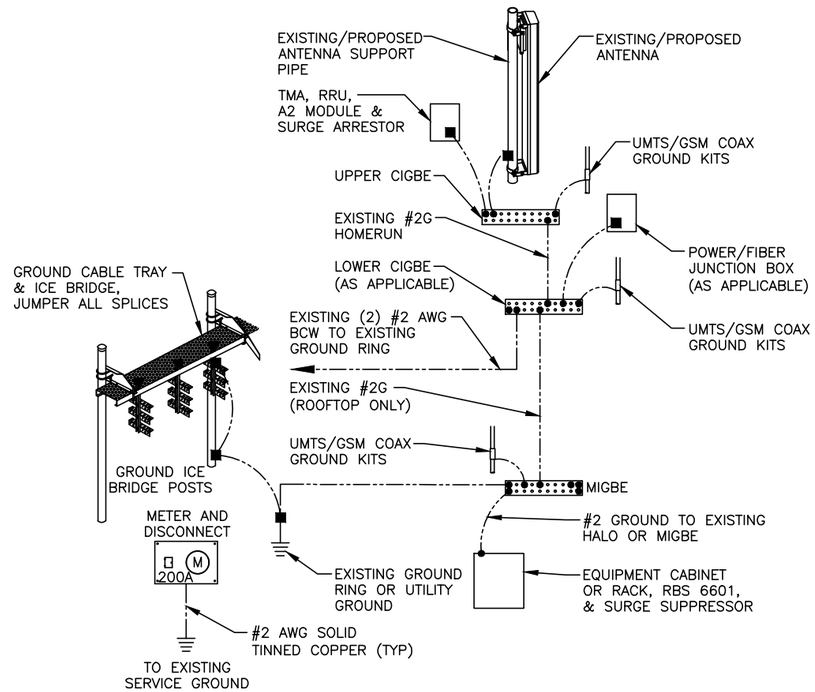
NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

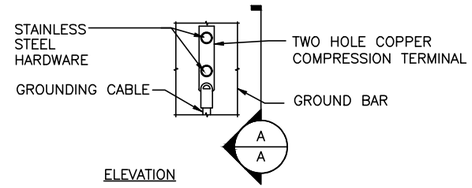
1 / G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1



NOTE:

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

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

3 / G-1

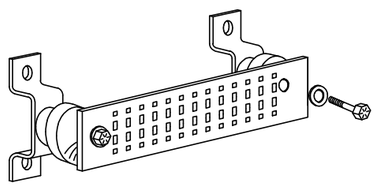
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

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

4 / G-1

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STATE OF CONNECTICUT · DEREK J. CREASEY · No. 25851 · LICENSED PROFESSIONAL ENGINEER

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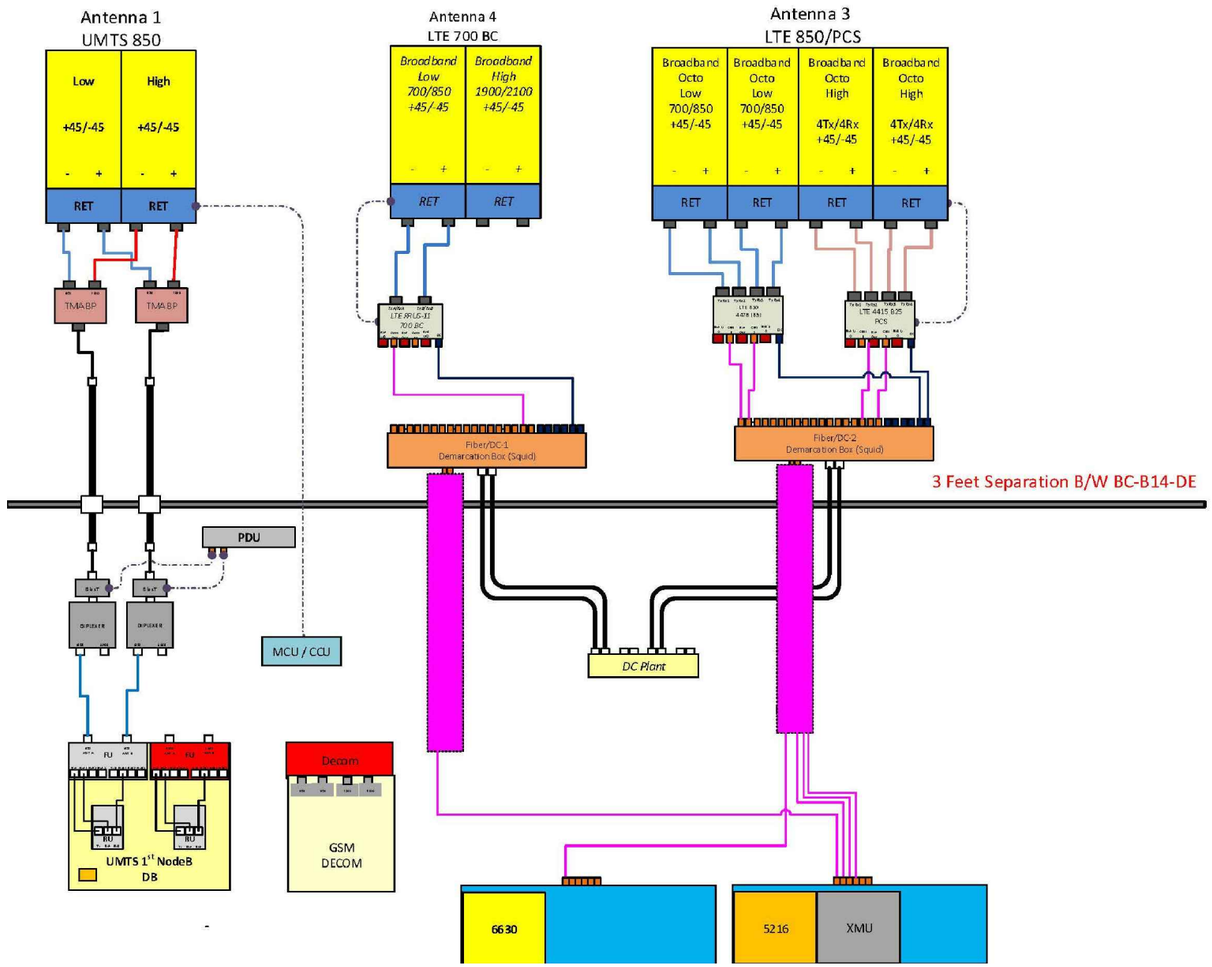
GROUNDING DETAILS
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT2286	G-1	1



RF PLUMBING DIAGRAM 1 / RF–1
SCALE: N.T.S

NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS

NOTE:

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RF PLUMBING DIAGRAM
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT2286	RF–1	1