Michael Gentile, Site Acquisition
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
750 West Center Street, Floor 3
West Bridgewater, MA 02379
Mobile: (508) 844-9813
mgentile@clinellc.com

September 24, 2018

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

RE: Notice of Exempt Modification // Site Number: CT2087
1432 Old Waterbury Road, Southbury, CT (Site Name: PRESTON HILL)
N 41.4936111 // W -73.1652777

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains nine (9) antennas at the 195-foot level of the existing 230-foot monopole tower at 1432 Old Waterbury Road, Southbury, CT. The tower and property itself are both owned by Crown Castle International. AT&T now intends to swap three (3) of its existing antennas for three (3) new models for its LTE upgrade. These antennas would be installed at the same 195-foot level of the tower. AT&T also intends to install three (3) RRUs, replace three (3) RRUS, add three (3) diplexers, add one (1) DC6 Raycap, add one (1) Fiber cable and add two (2) DC cables.

The current proposal involves an antenna swap only (three for three); zero antennas will be added. AT&T was originally approved for nine (9) antennas on December 8, 1999.

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 Emmett J. Lyman, First Selectman for the Town of East Haddam, as well as the tower owner, American Tower Corporation and the ground owner, Donald & Susan Porter. A copy of this filing is also being sent to the respective building, zoning and planning offices in the Town of East Haddam.

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 9/07/2018 by Hudson Design Group LLC, a structural analysis dated 9/14/2018 by DESTEK Engineering, a Mount

Analysis dated 8/14/2018 by Hudson Design Group LLC and an Emissions Analysis Report dated 8/31/2018 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.

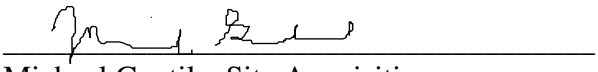
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

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 DESTEK Engineering, dated 9/14/2018, and the attached Mount Analysis by Hudson Design Group LLC, dated 8/14/2018.

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
New Cingular Wireless, PCS LLC (AT&T)
c/o Centerline Communications, LLC
750 West Center Street, Floor 3
West Bridgewater, MA 02379
Mobile: (508) 844-9813
mgentile@centerlincommunications.com

Attachments

cc: Jeff Manville, First Selectman, Town of Southbury- as elected official
Crown Castle International - as tower owner
Crown Castle International - as property owner
Town of Southbury – Building/Zoning/Planning

1432 OLD WATERBURY ROAD

Location	1432 OLD WATERBURY ROAD	**Mblu**	46/ 8/ 10A/ /
Acct#	00537703	**Owner**	CROWN ATLANTIC CO LLC
Assessment	$112,000	**Appraisal**	$160,000
PID	6367	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$0	$160,000	$160,000
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$0	$112,000	$112,000

Owner of Record

Owner	CROWN ATLANTIC CO LLC	**Sale Price**	$220,000
Co-Owner	4017 WASHINGTON RD	**Certificate**	
Address	P M BOX 353 MCMURRAY, PA 15317	**Book & Page**	484/ 720
		Sale Date	04/11/2005
		Instrument	24

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
CROWN ATLANTIC CO LLC	$220,000		484/ 720	24	04/11/2005
VOLPE BUILDERS INC	$0		297/1245	25	06/25/1995

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0
Building Percent Good:
Replacement Cost Less Depreciation: $0

Building Attributes

Field	Description
Style	Vacant Land
Model	
Grade:	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Percent	
Total Bedrooms:	
Full Bthrms:	
Half Baths:	
Extra Fixtures	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Num Kitchens	
Pln FPL:	
Det FPL:	
Gas Fireplace(s)	
% Attic Fin	
LF Dormer	
Foundation	
Bsmt Gar(s)	
Bsmt %	
SF FBM	
Fin Bsmt Qual	
Bsmt Access	

Building Photo

(http://images.vgsi.com/photos/SouthburyCTPhotos//default.jpg)

Building Layout

(http://images.vgsi.com/photos/SouthburyCTPhotos//Sketches/6

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend

No Data for Extra Features

Land

Land Use

Use Code	300
Description	Ind Land
Zone	M-2
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0
Frontage	0
Depth	0
Assessed Value	$112,000
Appraised Value	$160,000

Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$0	$160,000	$160,000
2016	$0	$160,000	$160,000
2012	$0	$160,000	$160,000

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$0	$112,000	$112,000
2016	$0	$112,000	$112,000
2012	$0	$112,000	$112,000

Date: **September 14, 2018**

Denice Nicholson
Crown Castle
3 Corporate Park Drive Suite 101
Clifton Park, NY 12065

Destek Engineering, LLC
1281 Kennestone Circle, Suite 100
Marietta, GA 30066
(770) 693-0835

Subject:	**Structural Analysis Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT2087
	Carrier Site Name:	Preston Hill
Crown Castle Designation:	**Crown Castle BU Number:**	806358
	Crown Castle Site Name:	NHV 109 943107
	Crown Castle JDE Job Number:	523898
	Crown Castle Work Order Number:	1631308
	Crown Castle Application Number:	454389 Rev. 0
Engineering Firm Designation:	**Destek Engineering, LLC Project Number:**	R1802236
Site Data:	**1432 Old Waterbury Road, SOUTHBURY, New Haven County, CT** **Latitude *41° 29' 36.92"*, Longitude *-73° 9' 54.98"*** **226 Foot - Monopole Tower**	

Dear Denice Nicholson,

Destek Engineering, LLC is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Proposed Equipment Configuration **Sufficient Capacity**

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 120 mph converted to a nominal 3-second gust wind speed of 93 mph 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. Exposure Category B and Risk Category II were used in this analysis.

Structural analysis prepared by: Wade Baxter, EIT

Respectfully submitted by:

09-14-2018

Ahmet Colakoglu, PE
President

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tnxTower Output

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1) INTRODUCTION

This tower is a 226 ft Monopole tower designed by Engineered Endeavors, Inc. in July of 1999.

2) ANALYSIS CRITERIA

Building Code:	2016 Connecticut State Building Code
TIA-222 Revision:	TIA-222-G
Risk Category:	II
Wind Speed (Nominal):	93 mph (Equivalent to 120 mph Ultimate)
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	0.75 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
193.0	195.0	2	raycap	DC6-48-60-18-8F	2 4 12	3/8 5/8 1-1/4
		3	cci antennas	DTMABP7819VG12A		
		3	cci antennas	OPA-65R-LCUU-H6 w/ Mount Pipe		
		3	ericsson	RRUS 11 B12		
		3	ericsson	RRUS 12-B2		
		3	ericsson	RRUS A2 MODULE		
		3	kathrein	800 10121 w/ Mount Pipe		
	193.0	3	cci antennas	DTMABP7819VG12A		
		6	kathrein	860 10025		
		3	ericsson	RRUS 4426 B66		
		3	ericsson	WCS RRUS-32-B30		
		3	kaelus	DBC0061F1V51-2		
		3	kathrein	80010798 w/ Mount Pipe		
		1	tower mounts	Platform Mount [LP 601-1]		
		1	Sitepro1	HRK12		

Table 2 – Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
228.0	229.0	3	alcatel lucent	B13 RRH 4X30	14	1-5/8
		3	alcatel lucent	B4 RRH2X60-4R		
		6	antel	LPA-80080/6CF w/ Mount Pipe		
		6	commscope	SBNHH-1D65B w/ Mount Pipe		
		2	raycap	RRFDC-3315-PF-48		
		12	rfs celwave	FD9R6004/2C-3L		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
	228.0	1	tower mounts	Platform Mount [LP 602-1]		
		1	tower mounts	Side Arm Mount [SO 203-3]		
205.0	207.0	3	commscope	ATSBT-TOP-MF-4G	12	1-5/8
		3	commscope	LNX-6515DS-A1M w/ Mount Pipe		
		3	ericsson	KRY 112 489/2		
		3	rfs celwave	APXV18-206516S-C-A20 w/ Mount Pipe		
	205.0	1	tower mounts	Platform Mount [LP 601-1]		
185.0	187.0	3	decibel	978QNB120E-M w/ Mount Pipe	1 6	1/2 1-5/8
		6	ems wireless	FV90-16-02DP w/ Mount Pipe		
		3	nokia	CS72993.07		
		3	rfs celwave	APXV18-206517S-C w/ Mount Pipe		
	185.0	1	tower mounts	Platform Mount [LP 601-1]		
173.0	173.0	3	alcatel lucent	1900MHz RRH (65MHz)	-	-
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER		
		3	alcatel lucent	800MHZ RRH		
		9	rfs celwave	ACU-A20-N		
		1	tower mounts	Side Arm Mount [SO 102-3]		
172.0	174.0	3	alcatel lucent	TD-RRH8x20-25	4	1-1/4
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe		
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe		
	172.0	1	tower mounts	Platform Mount [LP 1201-1]		
72.0	73.0	1	gps	GPS_A	1	1/2
	72.0	1	tower mounts	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	East Coast Drilling & Boring, Job#88268, dated 05/18/1988	217688	CCISITES
4-POST-MODIFICATION INSPECTION	Vertical Struc.,Inc. Project# 2007-209-001, dated 01/22/2007	1863184	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, Project# 128360, dated 03/12/2013	4062849	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	EEI, Project# 5262, dated 08/23/1999	821496	CCISITES

Document	Remarks	Reference	Source
4-TOWER STRUCTURAL ANALYSIS REPORTS	PJF, Project# 37517-0065.0027805, dated 08/02/2017	6994494	CCISITES
4-TOWER MANUFACTURER DRAWINGS	EEI, Project# 5262, dated 07/09/1999	821494	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.4.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Destek Engineering, LLC should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	226 - 197.96	Pole	TP28.67x21.5x0.1875	1	-6.10	1072.42	40.2	Pass
L2	197.96 - 162.91	Pole	TP37.12x27.2517x0.375	2	-22.05	3134.05	43.7	Pass
L3	162.91 - 120.29	Pole	TP47.14x35.0662x0.4375	3	-35.16	4616.12	54.9	Pass
L4	120.29 - 79.21	Pole	TP56.63x44.643x0.5	4	-52.42	6258.12	54.9	Pass
L5	79.21 - 39.13	Pole	TP65.75x53.7146x0.5625	5	-74.48	8104.46	51.9	Pass
L6	39.13 - 0	Pole	TP74.5x62.4159x0.5625	6	-105.78	9035.61	55.3	Pass
							Summary	
						Pole (L6)	55.3	Pass
						Rating =	55.3	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	61.1	Pass
1	Base Plate	0	43.0	Pass
1	Base Foundation	0	60.8	Pass
1	Base Foundation Soil Interaction	0	29.2	Pass

Structure Rating (max from all components) =	61.1%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

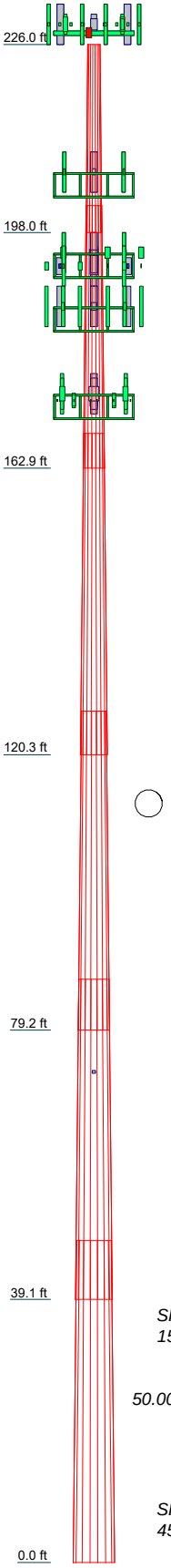
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	28.0400	18	0.1875	4.0800	21.5000	28.6700		1.4
2	39.1300	18	0.3750	5.1700	27.2517	37.1200		5.0
3	47.7900	18	0.4375	6.4200	35.0662	47.1400		9.2
4	47.5000	18	0.5000	7.5900	44.6430	56.6300	A572-65	12.9
5	47.6700	18	0.5625	8.7500	53.7146	65.7500		17.1
6	47.8800	18	0.5625		62.4159	74.5000		19.7
								65.4



ALL REACTIONS ARE FACTORED

AXIAL 169 K

SHEAR 15 K

MOMEN 2462 kip-

TORQUE 1 kip-ft

50.00 mph WIND - 0.7500 in ICE

AXIAL 106 K

SHEAR 45 K

MOMEN 7439 kip-

TORQUE 3 kip-ft

REACTIONS - 93.00 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) LPA-80080/6CF w/ Mount Pipe	228	(2) RRUS 12-B2	193
(2) LPA-80080/6CF w/ Mount Pipe	228	RRUS 12-B2	193
(2) LPA-80080/6CF w/ Mount Pipe	228	80010798 w/ Mount Pipe	193
(2) SBNHH-1D65B w/ Mount Pipe	228	80010798 w/ Mount Pipe	193
(2) SBNHH-1D65B w/ Mount Pipe	228	80010798 w/ Mount Pipe	193
(2) SBNHH-1D65B w/ Mount Pipe	228	(3) WCS RRUS-32-B30	193
B4 RRH2X60-4R	228	(2) DBC0061F1V51-2	193
B4 RRH2X60-4R	228	DBC0061F1V51-2	193
B4 RRH2X60-4R	228	DC6-48-60-18-8F	193
B13 RRH 4X30	228	RRUS 4426 B66	193
B13 RRH 4X30	228	(2) RRUS 4426 B66	193
B13 RRH 4X30	228	Miscellaneous [NA 507-1]	193
(4) FD9R6004/2C-3L	228	Platform Mount [LP 601-1]	193
(4) FD9R6004/2C-3L	228	8-ft Ladder	193
(4) FD9R6004/2C-3L	228	APXV18-206517S-C w/ Mount Pipe	185
RRFDC-3315-PF-48	228	APXV18-206517S-C w/ Mount Pipe	185
RRFDC-3315-PF-48	228	APXV18-206517S-C w/ Mount Pipe	185
8-ft Ladder	228	978QNB120E-M w/ Mount Pipe	185
Side Arm Mount [SO 203-3]	228	978QNB120E-M w/ Mount Pipe	185
Platform Mount [LP 602-1]	228	978QNB120E-M w/ Mount Pipe	185
Beacon	226	(2) FV90-16-02DP w/ Mount Pipe	185
APXV18-206516S-C-A20 w/ Mount Pipe	205	(2) FV90-16-02DP w/ Mount Pipe	185
		(2) FV90-16-02DP w/ Mount Pipe	185
APXV18-206516S-C-A20 w/ Mount Pipe	205	CS72993.07	185
		CS72993.07	185
APXV18-206516S-C-A20 w/ Mount Pipe	205	CS72993.07	185
		8-ft Ladder	185
LNX-6515DS-A1M w/ Mount Pipe	205	Platform Mount [LP 601-1]	185
LNX-6515DS-A1M w/ Mount Pipe	205	800 EXTERNAL NOTCH FILTER	173
LNX-6515DS-A1M w/ Mount Pipe	205	800 EXTERNAL NOTCH FILTER	173
ATSBT-TOP-MF-4G	205	800 EXTERNAL NOTCH FILTER	173
ATSBT-TOP-MF-4G	205	1900MHz RRH (65MHz)	173
ATSBT-TOP-MF-4G	205	1900MHz RRH (65MHz)	173
KRY 112 489/2	205	1900MHz RRH (65MHz)	173
KRY 112 489/2	205	800MHZ RRH	173
KRY 112 489/2	205	800MHZ RRH	173
8-ft Ladder	205	800MHZ RRH	173
Platform Mount [LP 601-1]	205	(3) ACU-A20-N	173
800 10121 w/ Mount Pipe	193	(3) ACU-A20-N	173
800 10121 w/ Mount Pipe	193	(3) ACU-A20-N	173
800 10121 w/ Mount Pipe	193	2.375" OD x 6' Mount Pipe	173
OPA-65R-LCUU-H6 w/ Mount Pipe	193	2.375" OD x 6' Mount Pipe	173
OPA-65R-LCUU-H6 w/ Mount Pipe	193	2.375" OD x 6' Mount Pipe	173
OPA-65R-LCUU-H6 w/ Mount Pipe	193	Side Arm Mount [SO 102-3]	173
DTMABP7819VG12A	193	APXVSPP18-C-A20 w/ Mount Pipe	172
DTMABP7819VG12A	193	APXVSPP18-C-A20 w/ Mount Pipe	172
DTMABP7819VG12A	193	APXVSPP18-C-A20 w/ Mount Pipe	172
DTMABP7819VG12A	193	APXVTM14-C-120 w/ Mount Pipe	172
DTMABP7819VG12A	193	APXVTM14-C-120 w/ Mount Pipe	172
DTMABP7819VG12A	193	APXVTM14-C-120 w/ Mount Pipe	172
(2) 860 10025	193	TD-RRH8x20-25	172
(2) 860 10025	193	TD-RRH8x20-25	172
(2) 860 10025	193	TD-RRH8x20-25	172
RRUS A2 MODULE	193	2.375" OD x 6' Mount Pipe	172
RRUS A2 MODULE	193	2.375" OD x 6' Mount Pipe	172
RRUS A2 MODULE	193	2.375" OD x 6' Mount Pipe	172
DC6-48-60-18-8F	193	Platform Mount [LP 1201-1]	172
(2) RRUS 11 B12	193	GPS_A	72
RRUS 11 B12	193	Side Arm Mount [SO 701-1]	72

MATERIAL STRENGTH

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

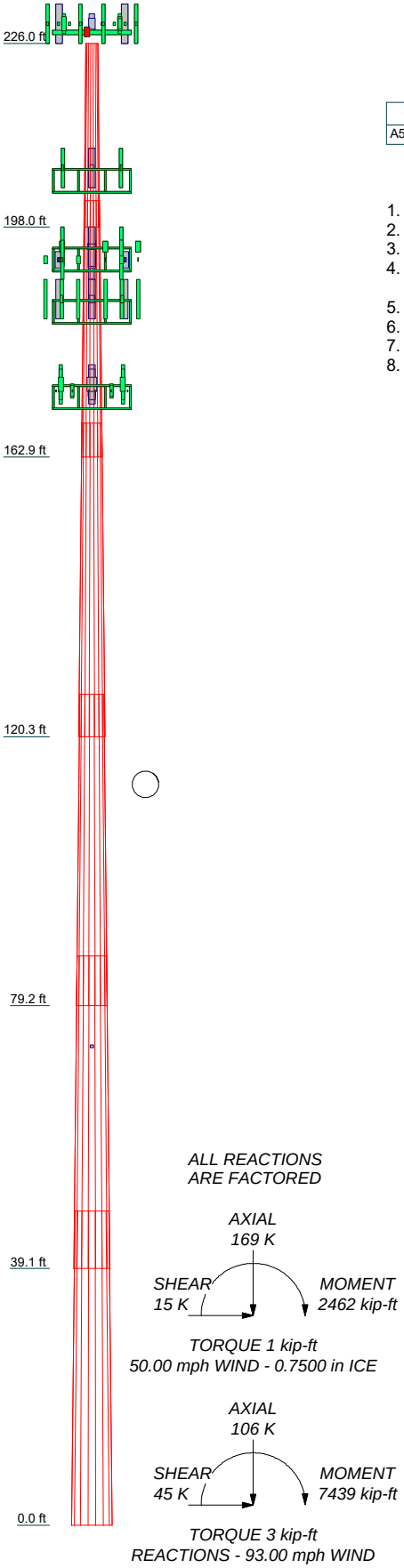
TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 93.00 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.00 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.00 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TOWER RATING: 55.3%

Destek Engineering, LLC
1281 Kennestone Circle, Suite 100
Marietta, GA 30066
Phone: (770) 693-0835
FAX:

Job: **806358 NHV 109 943107**			
Project: **R1802236**			
Client: Crown Castle	Drawn by: Ahmet Colakoglu		App'd:
Code: TIA-222-G	Date: 09/14/18		Scale: NTS
Path: C:\Users\Destek-30\Destek Dropbox\rserver\Crown\2018\R1802236 - 806358 NHV 109 943107 (2) WO\WO_163130\TNXTower\806358.eri			Dwg No. E-1

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	28.0400	18	0.1875	4.0800	21.5000	28.6700	A572-65	1.4
2	39.1300	18	0.3750	5.1700	27.2517	37.1200		5.0
3	47.7900	18	0.4375	6.4200	35.0662	47.1400		9.2
4	47.5000	18	0.5000	7.5900	44.6430	56.6300		12.9
5	47.6700	18	0.5625	8.7500	53.7146	65.7500		17.1
6	47.8800	18	0.5625		62.4159	74.5000		19.7
								65.4



MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 93.00 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.00 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.00 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TOWER RATING: 55.3%

Destek Engineering, LLC
1281 Kennestone Circle, Suite 100
Marietta, GA 30066
Phone: (770) 693-0835
FAX:

Job: **806358 NHV 109 943107**			
Project: **R1802236**			
Client: Crown Castle	Drawn by: Ahmet Colakoglu	App'd:	
Code: TIA-222-G	Date: 09/14/18	Scale: NTS	
Path: C:\Users\Destek-30\Dropbox\rserver\Crown\2018\R1802236 - 806358 NHV 109 943107 (2).WO\WO 1631308\TNXTower\806358.eri		Dwg No. E-1	

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

1) Tower is located in New Haven County, Connecticut.
2) Basic wind speed of 93.00 mph.
3) Structure Class II.
4) Exposure Category B.
5) Topographic Category 1.
6) Crest Height 0.0000 ft.
7) Nominal ice thickness of 0.7500 in.
8) Ice thickness is considered to increase with height.
9) Ice density of 56.00 pcf.
10) A wind speed of 50.00 mph is used in combination with ice.
11) Temperature drop of 50.00 °F.
12) Deflections calculated using a wind speed of 60.00 mph.
13) A non-linear (P-delta) analysis was used.
14) Pressures are calculated at each section.
15) Stress ratio used in pole design is 1.
16) 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

Tapered Pole Section Geometry

Section	*Elevation*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	226.0000-197.9600	28.0400	4.08	18	21.5000	28.6700	0.1875	0.7500	A572-65 (65 ksi)
L2	197.9600-162.9100	39.1300	5.17	18	27.2517	37.1200	0.3750	1.5000	A572-65 (65 ksi)
L3	162.9100-120.2900	47.7900	6.42	18	35.0662	47.1400	0.4375	1.7500	A572-65 (65 ksi)
L4	120.2900-79.2100	47.5000	7.59	18	44.6430	56.6300	0.5000	2.0000	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L5	79.2100-39.1300	47.6700	8.75	18	53.7146	65.7500	0.5625	2.2500	A572-65 (65 ksi)
L6	39.1300-0.0000	47.8800		18	62.4159	74.5000	0.5625	2.2500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	21.8027	12.6836	727.8616	7.5659	10.9220	66.6418	1456.6810	6.3430	3.4540	18.421
	29.0834	16.9506	1737.3206	10.1113	14.5644	119.2857	3476.9272	8.4769	4.7159	25.152
L2	28.6591	31.9900	2919.4725	9.5412	13.8439	210.8855	5842.7866	15.9980	4.1363	11.03
	37.6348	43.7357	7460.5423	13.0445	18.8570	395.6387	14930.9013	21.8720	5.8731	15.662
L3	36.8659	48.0862	7285.0027	12.2932	17.8136	408.9571	14579.5911	24.0477	5.4016	12.347
	47.7997	64.8523	17870.7516	16.5794	23.9471	746.2589	35765.0179	32.4323	7.5266	17.204
L4	46.8997	70.0550	17246.4919	15.6708	22.6787	760.4723	34515.6771	35.0341	6.9772	13.954
	57.4265	89.0783	35456.7972	19.9262	28.7680	1232.5065	70960.2494	44.5476	9.0869	18.174
L5	56.4023	94.8964	33871.0281	18.8690	27.2870	1241.2871	67786.6246	47.4572	8.4638	15.047
	66.6775	116.3841	62482.7128	23.1416	33.4010	1870.6839	125047.6419	58.2031	10.5820	18.812
L6	65.5344	110.4314	53377.3255	21.9579	31.7073	1683.4419	106824.8863	55.2262	9.9952	17.769
	75.5625	132.0062	91171.9378	26.2478	37.8460	2409.0244	182463.8419	66.0156	12.1220	21.55

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 226.0000-197.9600				1	1	1			
L2 197.9600-162.9100				1	1	1			
L3 162.9100-120.2900				1	1	1			
L4 120.2900-79.2100				1	1	1			
L5 79.2100-39.1300				1	1	1			
L6 39.1300-0.0000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
HB158-1-08U8-S8J18(1-5/8)	C	No	Surface Ar (CaAa)	226.0000 - 0.0000	2	1	0.220 0.250	1.9800		1.30
LDF6-50A(1-1/4)	A	No	Surface Ar (CaAa)	193.0000 - 0.0000	3	3	-0.140 -0.100	1.5500		0.60

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
WR-VG82ST-BRDA(5/8)	A	No	Surface Ar (CaAa)	193.0000 - 0.0000	2	1	-0.200 -0.150	0.6450		0.31
185										
LDF4-50A(1/2)	C	No	Surface Ar (CaAa)	185.0000 - 0.0000	1	1	0.400 0.400	0.6250		0.15
LDF7-50A(1-5/8)	C	No	Surface Ar (CaAa)	185.0000 - 0.0000	6	6	0.300 0.500	1.9800		0.82
***										
MS-600	A	No	Surface Af (CaAa)	134.0000 - 124.0000	1	1	0.000 0.000	6.0000	14.0000	0.00
MS-600	B	No	Surface Af (CaAa)	134.0000 - 124.0000	1	1	0.000 0.000	6.0000	14.0000	0.00
MS-600	C	No	Surface Af (CaAa)	134.0000 - 124.0000	1	1	0.000 0.000	6.0000	14.0000	0.00

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
561(1-5/8)	C	No	No	Inside Pole	226.0000 - 0.0000	12	No Ice	0.0000	1.35
							1/2" Ice	0.0000	1.35
							1" Ice	0.0000	1.35
205									
LDF7-50A(1-5/8)	B	No	No	Inside Pole	205.0000 - 0.0000	6	No Ice	0.0000	0.82
							1/2" Ice	0.0000	0.82
							1" Ice	0.0000	0.82
AVA7-50(1-5/8)	B	No	No	Inside Pole	205.0000 - 0.0000	6	No Ice	0.0000	0.70
							1/2" Ice	0.0000	0.70
							1" Ice	0.0000	0.70
193									
FB-L98B-034-XXX(3/8)	A	No	No	Inside Pole	193.0000 - 0.0000	2	No Ice	0.0000	0.06
							1/2" Ice	0.0000	0.06
							1" Ice	0.0000	0.06
WR-VG82ST-BRDA(5/8)	A	No	No	Inside Pole	193.0000 - 0.0000	2	No Ice	0.0000	0.31
							1/2" Ice	0.0000	0.31
							1" Ice	0.0000	0.31
2" (Nominal) Conduit	A	No	No	Inside Pole	193.0000 - 0.0000	1	No Ice	0.0000	0.72
							1/2" Ice	0.0000	0.72
							1" Ice	0.0000	0.72
LDF6-50A(1-1/4)	A	No	No	Inside Pole	193.0000 - 0.0000	9	No Ice	0.0000	0.60
							1/2" Ice	0.0000	0.60
							1" Ice	0.0000	0.60
172									
HB114-1-0813U4-M5J(1-1/4)	B	No	No	Inside Pole	175.0000 - 0.0000	3	No Ice	0.0000	1.20
							1/2" Ice	0.0000	1.20
							1" Ice	0.0000	1.20
HB114-21U3M12-XXXF(1-1/4)	B	No	No	Inside Pole	175.0000 - 0.0000	1	No Ice	0.0000	1.22
							1/2" Ice	0.0000	1.22
							1" Ice	0.0000	1.22
72									
LDF4-50A(1/2)	B	No	No	Inside Pole	72.0000 - 0.0000	1	No Ice	0.0000	0.15
							1/2" Ice	0.0000	0.15
							1" Ice	0.0000	0.15

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
L1	226.0000-197.9600	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.06
		C	0.000	0.000	5.552	0.000	0.53
L2	197.9600-162.9100	A	0.000	0.000	15.933	0.000	0.28
		B	0.000	0.000	0.000	0.000	0.38
		C	0.000	0.000	34.563	0.000	0.77
L3	162.9100-120.2900	A	0.000	0.000	31.689	0.000	0.39
		B	0.000	0.000	9.121	0.000	0.59
		C	0.000	0.000	70.856	0.000	1.02
L4	120.2900-79.2100	A	0.000	0.000	21.752	0.000	0.38
		B	0.000	0.000	0.000	0.000	0.57
		C	0.000	0.000	59.504	0.000	0.98
L5	79.2100-39.1300	A	0.000	0.000	21.222	0.000	0.37
		B	0.000	0.000	0.000	0.000	0.56
		C	0.000	0.000	58.056	0.000	0.96
L6	39.1300-0.0000	A	0.000	0.000	20.719	0.000	0.36
		B	0.000	0.000	0.000	0.000	0.55
		C	0.000	0.000	56.680	0.000	0.93

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
L1	226.0000-197.9600	A	1.806	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.06
		C		0.000	0.000	15.680	0.000	1.00
L2	197.9600-162.9100	A	1.777	0.000	0.000	43.886	0.000	0.97
		B		0.000	0.000	0.000	0.000	0.38
		C		0.000	0.000	71.738	0.000	2.00
L3	162.9100-120.2900	A	1.734	0.000	0.000	72.626	0.000	1.49
		B		0.000	0.000	11.021	0.000	0.74
		C		0.000	0.000	134.645	0.000	3.08
L4	120.2900-79.2100	A	1.675	0.000	0.000	58.588	0.000	1.27
		B		0.000	0.000	0.000	0.000	0.57
		C		0.000	0.000	118.016	0.000	2.77
L5	79.2100-39.1300	A	1.590	0.000	0.000	56.088	0.000	1.19
		B		0.000	0.000	0.000	0.000	0.56
		C		0.000	0.000	113.591	0.000	2.63
L6	39.1300-0.0000	A	1.420	0.000	0.000	53.266	0.000	1.11
		B		0.000	0.000	0.000	0.000	0.55
		C		0.000	0.000	108.743	0.000	2.46

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	226.0000-197.9600	-0.8621	1.6078	-1.1076	2.0657
L2	197.9600-162.9100	-6.1743	3.3169	-5.7622	2.7403
L3	162.9100-120.2900	-6.8182	3.9351	-6.7232	3.4346
L4	120.2900-79.2100	-8.5215	4.9086	-8.0349	4.1001
L5	79.2100-39.1300	-9.0419	5.2016	-8.6431	4.4119
L6	39.1300-0.0000	-9.4547	5.4341	-9.0853	4.6459

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	2	HB158-1-08U8-S8J18(1-5/8)	197.96 - 226.00	1.0000	1.0000
L1	11	LDF6-50A(1-1/4)	197.96 - 193.00	1.0000	1.0000
L1	12	WR-VG82ST-BRDA(5/8)	197.96 - 193.00	1.0000	1.0000
L1	14	LDF4-50A(1/2)	197.96 - 185.00	1.0000	1.0000
L1	15	LDF7-50A(1-5/8)	197.96 - 185.00	1.0000	1.0000
L2	2	HB158-1-08U8-S8J18(1-5/8)	162.91 - 197.96	1.0000	1.0000
L2	11	LDF6-50A(1-1/4)	162.91 - 193.00	1.0000	1.0000
L2	12	WR-VG82ST-BRDA(5/8)	162.91 - 193.00	1.0000	1.0000
L2	14	LDF4-50A(1/2)	162.91 - 185.00	1.0000	1.0000
L2	15	LDF7-50A(1-5/8)	162.91 - 185.00	1.0000	1.0000
L2	22	MS-600	162.91 - 134.00	1.0000	1.0000
L2	23	MS-600	162.91 - 134.00	1.0000	1.0000
L2	24	MS-600	162.91 - 134.00	1.0000	1.0000
L3	2	HB158-1-08U8-S8J18(1-5/8)	120.29 - 162.91	1.0000	1.0000
L3	11	LDF6-50A(1-1/4)	120.29 - 162.91	1.0000	1.0000
L3	12	WR-VG82ST-BRDA(5/8)	120.29 - 162.91	1.0000	1.0000
L3	14	LDF4-50A(1/2)	120.29 - 162.91	1.0000	1.0000
L3	15	LDF7-50A(1-5/8)	120.29 - 162.91	1.0000	1.0000
L4	2	HB158-1-08U8-S8J18(1-5/8)	79.21 - 120.29	1.0000	1.0000
L4	11	LDF6-50A(1-1/4)	79.21 - 120.29	1.0000	1.0000
L4	12	WR-VG82ST-BRDA(5/8)	79.21 - 120.29	1.0000	1.0000
L4	14	LDF4-50A(1/2)	79.21 - 120.29	1.0000	1.0000
L4	15	LDF7-50A(1-5/8)	79.21 - 120.29	1.0000	1.0000
L5	2	HB158-1-08U8-S8J18(1-5/8)	39.13 - 79.21	1.0000	1.0000
L5	11	LDF6-50A(1-1/4)	39.13 - 79.21	1.0000	1.0000
L5	12	WR-VG82ST-BRDA(5/8)	39.13 - 79.21	1.0000	1.0000
L5	14	LDF4-50A(1/2)	39.13 - 79.21	1.0000	1.0000
L5	15	LDF7-50A(1-5/8)	39.13 - 79.21	1.0000	1.0000

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
Beacon	C	From Leg	0.0000 0.00 1.00	0.0000	226.0000	No Ice 1/2" Ice 1" Ice	1.2000 1.3900 1.5900	1.2000 1.3900 1.5900	0.03 0.04 0.06
228									
(2) LPA-80080/6CF w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.0000	228.0000	No Ice 1/2" Ice 1" Ice	4.5639 5.1051 5.6116	10.2588 11.4274 12.3118	0.05 0.11 0.19
(2) LPA-80080/6CF w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.0000	228.0000	No Ice 1/2" Ice 1" Ice	4.5639 5.1051 5.6116	10.2588 11.4274 12.3118	0.05 0.11 0.19
(2) LPA-80080/6CF w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.0000	228.0000	No Ice 1/2" Ice 1" Ice	4.5639 5.1051 5.6116	10.2588 11.4274 12.3118	0.05 0.11 0.19
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.0000	228.0000	No Ice 1/2" Ice 1" Ice	8.3164 8.8765 9.4016	7.0042 8.1855 9.0806	0.07 0.13 0.21
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.0000	228.0000	No Ice 1/2" Ice 1" Ice	8.3164 8.8765 9.4016	7.0042 8.1855 9.0806	0.07 0.13 0.21
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.0000	228.0000	No Ice 1/2" Ice 1" Ice	8.3164 8.8765 9.4016	7.0042 8.1855 9.0806	0.07 0.13 0.21
B4 RRH2X60-4R	A	From Leg	4.0000 0.00 1.00	0.0000	228.0000	No Ice 1/2" Ice 1" Ice	3.3554 3.6120 3.8757	2.0048 2.2369 2.4759	0.06 0.08 0.10
B4 RRH2X60-4R	B	From Leg	4.0000 0.00 1.00	0.0000	228.0000	No Ice 1/2" Ice 1" Ice	3.3554 3.6120 3.8757	2.0048 2.2369 2.4759	0.06 0.08 0.10
B4 RRH2X60-4R	C	From Leg	4.0000 0.00 1.00	0.0000	228.0000	No Ice 1/2" Ice 1" Ice	3.3554 3.6120 3.8757	2.0048 2.2369 2.4759	0.06 0.08 0.10
B13 RRH 4X30	A	From Leg	4.0000 0.00 1.00	0.0000	228.0000	No Ice 1/2" Ice 1" Ice	2.0552 2.2405 2.4333	1.3201 1.4754 1.6376	0.06 0.07 0.09
B13 RRH 4X30	B	From Leg	4.0000 0.00 1.00	0.0000	228.0000	No Ice 1/2" Ice 1" Ice	2.0552 2.2405 2.4333	1.3201 1.4754 1.6376	0.06 0.07 0.09
B13 RRH 4X30	C	From Leg	4.0000 0.00 1.00	0.0000	228.0000	No Ice 1/2" Ice 1" Ice	2.0552 2.2405 2.4333	1.3201 1.4754 1.6376	0.06 0.07 0.09
(4) FD9R6004/2C-3L	A	From Leg	4.0000 0.00 1.00	0.0000	228.0000	No Ice 1/2" Ice 1" Ice	0.3142 0.3862 0.4656	0.0762 0.1189 0.1685	0.00 0.01 0.01
(4) FD9R6004/2C-3L	B	From Leg	4.0000 0.00 1.00	0.0000	228.0000	No Ice 1/2" Ice 1" Ice	0.3142 0.3862 0.4656	0.0762 0.1189 0.1685	0.00 0.01 0.01
(4) FD9R6004/2C-3L	C	From Leg	4.0000	0.0000	228.0000	No Ice	0.3142	0.0762	0.00

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
			0.00			1/2"	0.3862	0.1189	0.01
			1.00			Ice	0.4656	0.1685	0.01
						1" Ice			
RRFDC-3315-PF-48	B	From Leg	4.0000	0.0000	228.0000	No Ice	3.7079	2.1921	0.02
			0.00			1/2"	3.9505	2.3950	0.05
			1.00			Ice	4.2005	2.6056	0.09
						1" Ice			
RRFDC-3315-PF-48	C	From Leg	4.0000	0.0000	228.0000	No Ice	3.7079	2.1921	0.02
			0.00			1/2"	3.9505	2.3950	0.05
			1.00			Ice	4.2005	2.6056	0.09
						1" Ice			
8-ft Ladder	C	From Leg	2.0000	0.0000	228.0000	No Ice	7.0700	7.0700	0.04
			0.00			1/2"	9.7300	9.7300	0.07
			-2.00			Ice	11.1900	11.1900	0.08
						1" Ice			
Side Arm Mount [SO 203-3]	C	None		0.0000	228.0000	No Ice	7.1200	7.1200	0.38
						1/2"	9.8800	9.8800	0.46
						Ice	12.6400	12.6400	0.55
						1" Ice			
Platform Mount [LP 602-1]	C	None		0.0000	228.0000	No Ice	32.0300	32.0300	1.34
						1/2"	38.7100	38.7100	1.80
						Ice	45.3900	45.3900	2.26
						1" Ice			
205									
APXV18-206516S-C-A20 w/ Mount Pipe	A	From Leg	4.0000	0.0000	205.0000	No Ice	3.8586	3.2963	0.04
			0.00			1/2"	4.2736	4.0044	0.07
			2.00			Ice	4.6737	4.6717	0.11
						1" Ice			
APXV18-206516S-C-A20 w/ Mount Pipe	B	From Leg	4.0000	0.0000	205.0000	No Ice	3.8586	3.2963	0.04
			0.00			1/2"	4.2736	4.0044	0.07
			2.00			Ice	4.6737	4.6717	0.11
						1" Ice			
APXV18-206516S-C-A20 w/ Mount Pipe	C	From Leg	4.0000	0.0000	205.0000	No Ice	3.8586	3.2963	0.04
			0.00			1/2"	4.2736	4.0044	0.07
			2.00			Ice	4.6737	4.6717	0.11
						1" Ice			
LNX-6515DS-A1M w/ Mount Pipe	A	From Leg	4.0000	0.0000	205.0000	No Ice	11.6828	9.8418	0.08
			0.00			1/2"	12.4043	11.3657	0.17
			2.00			Ice	13.1351	12.9138	0.27
						1" Ice			
LNX-6515DS-A1M w/ Mount Pipe	B	From Leg	4.0000	0.0000	205.0000	No Ice	11.6828	9.8418	0.08
			0.00			1/2"	12.4043	11.3657	0.17
			2.00			Ice	13.1351	12.9138	0.27
						1" Ice			
LNX-6515DS-A1M w/ Mount Pipe	C	From Leg	4.0000	0.0000	205.0000	No Ice	11.6828	9.8418	0.08
			0.00			1/2"	12.4043	11.3657	0.17
			2.00			Ice	13.1351	12.9138	0.27
						1" Ice			
ATSBT-TOP-MF-4G	A	From Leg	4.0000	0.0000	205.0000	No Ice	0.1736	0.0949	0.00
			0.00			1/2"	0.2291	0.1399	0.00
			2.00			Ice	0.2921	0.1934	0.01
						1" Ice			
ATSBT-TOP-MF-4G	B	From Leg	4.0000	0.0000	205.0000	No Ice	0.1736	0.0949	0.00
			0.00			1/2"	0.2291	0.1399	0.00
			2.00			Ice	0.2921	0.1934	0.01
						1" Ice			
ATSBT-TOP-MF-4G	C	From Leg	4.0000	0.0000	205.0000	No Ice	0.1736	0.0949	0.00
			0.00			1/2"	0.2291	0.1399	0.00
			2.00			Ice	0.2921	0.1934	0.01
						1" Ice			
KRY 112 489/2	A	From Leg	4.0000	0.0000	205.0000	No Ice	0.5592	0.3651	0.02
			0.00			1/2"	0.6579	0.4484	0.02
			2.00			Ice	0.7640	0.5420	0.03
						1" Ice			
KRY 112 489/2	B	From Leg	4.0000	0.0000	205.0000	No Ice	0.5592	0.3651	0.02

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
			0.00			1/2"	0.6579	0.4484	0.02
			2.00			Ice	0.7640	0.5420	0.03
						1" Ice			
KRY 112 489/2	C	From Leg	4.0000	0.0000	205.0000	No Ice	0.5592	0.3651	0.02
			0.00			1/2"	0.6579	0.4484	0.02
			2.00			Ice	0.7640	0.5420	0.03
						1" Ice			
8-ft Ladder	C	From Leg	2.0000	0.0000	205.0000	No Ice	7.0700	7.0700	0.04
			0.00			1/2"	9.7300	9.7300	0.07
			-2.00			Ice	11.1900	11.1900	0.08
						1" Ice			
Platform Mount [LP 601-1]	C	None		0.0000	205.0000	No Ice	28.4700	28.4700	1.12
						1/2"	33.5900	33.5900	1.51
						Ice	38.7100	38.7100	1.91
						1" Ice			
193									
800 10121 w/ Mount Pipe	A	From Leg	4.0000	0.0000	193.0000	No Ice	5.3879	4.5996	0.07
			0.00			1/2"	5.8131	5.3507	0.11
			2.00			Ice	6.2340	6.0464	0.17
						1" Ice			
800 10121 w/ Mount Pipe	B	From Leg	4.0000	0.0000	193.0000	No Ice	5.3879	4.5996	0.07
			0.00			1/2"	5.8131	5.3507	0.11
			2.00			Ice	6.2340	6.0464	0.17
						1" Ice			
800 10121 w/ Mount Pipe	C	From Leg	4.0000	0.0000	193.0000	No Ice	5.3879	4.5996	0.07
			0.00			1/2"	5.8131	5.3507	0.11
			2.00			Ice	6.2340	6.0464	0.17
						1" Ice			
OPA-65R-LCUU-H6 w/ Mount Pipe	A	From Leg	4.0000	0.0000	193.0000	No Ice	9.8953	7.1792	0.10
			0.00			1/2"	10.4700	8.3621	0.18
			2.00			Ice	11.0098	9.2588	0.26
						1" Ice			
OPA-65R-LCUU-H6 w/ Mount Pipe	B	From Leg	4.0000	0.0000	193.0000	No Ice	9.8953	7.1792	0.10
			0.00			1/2"	10.4700	8.3621	0.18
			2.00			Ice	11.0098	9.2588	0.26
						1" Ice			
OPA-65R-LCUU-H6 w/ Mount Pipe	C	From Leg	4.0000	0.0000	193.0000	No Ice	9.8953	7.1792	0.10
			0.00			1/2"	10.4700	8.3621	0.18
			2.00			Ice	11.0098	9.2588	0.26
						1" Ice			
DTMABP7819VG12A	A	From Leg	4.0000	0.0000	193.0000	No Ice	0.9762	0.3387	0.02
			0.00			1/2"	1.1002	0.4192	0.03
			2.00			Ice	1.2316	0.5098	0.04
						1" Ice			
DTMABP7819VG12A	B	From Leg	4.0000	0.0000	193.0000	No Ice	0.9762	0.3387	0.02
			0.00			1/2"	1.1002	0.4192	0.03
			2.00			Ice	1.2316	0.5098	0.04
						1" Ice			
DTMABP7819VG12A	C	From Leg	4.0000	0.0000	193.0000	No Ice	0.9762	0.3387	0.02
			0.00			1/2"	1.1002	0.4192	0.03
			2.00			Ice	1.2316	0.5098	0.04
						1" Ice			
DTMABP7819VG12A	A	From Leg	4.0000	0.0000	193.0000	No Ice	0.9762	0.3387	0.02
			0.00			1/2"	1.1002	0.4192	0.03
			0.00			Ice	1.2316	0.5098	0.04
						1" Ice			
DTMABP7819VG12A	B	From Leg	4.0000	0.0000	193.0000	No Ice	0.9762	0.3387	0.02
			0.00			1/2"	1.1002	0.4192	0.03
			0.00			Ice	1.2316	0.5098	0.04
						1" Ice			
DTMABP7819VG12A	C	From Leg	4.0000	0.0000	193.0000	No Ice	0.9762	0.3387	0.02
			0.00			1/2"	1.1002	0.4192	0.03
			0.00			Ice	1.2316	0.5098	0.04
						1" Ice			
(2) 860 10025	A	From Leg	4.0000	0.0000	193.0000	No Ice	0.1369	0.1157	0.00

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
			0.00			1/2"	0.1901	0.1669	0.00
			0.00			Ice	0.2523	0.2252	0.01
						1" Ice			
(2) 860 10025	B	From Leg	4.0000	0.0000	193.0000	No Ice	0.1369	0.1157	0.00
			0.00			1/2"	0.1901	0.1669	0.00
			0.00			Ice	0.2523	0.2252	0.01
						1" Ice			
(2) 860 10025	C	From Leg	4.0000	0.0000	193.0000	No Ice	0.1369	0.1157	0.00
			0.00			1/2"	0.1901	0.1669	0.00
			0.00			Ice	0.2523	0.2252	0.01
						1" Ice			
RRUS A2 MODULE	A	From Leg	4.0000	0.0000	193.0000	No Ice	1.6000	0.3797	0.02
			0.00			1/2"	1.7581	0.4701	0.03
			2.00			Ice	1.9237	0.5675	0.04
						1" Ice			
RRUS A2 MODULE	B	From Leg	4.0000	0.0000	193.0000	No Ice	1.6000	0.3797	0.02
			0.00			1/2"	1.7581	0.4701	0.03
			2.00			Ice	1.9237	0.5675	0.04
						1" Ice			
RRUS A2 MODULE	C	From Leg	4.0000	0.0000	193.0000	No Ice	1.6000	0.3797	0.02
			0.00			1/2"	1.7581	0.4701	0.03
			2.00			Ice	1.9237	0.5675	0.04
						1" Ice			
DC6-48-60-18-8F	B	From Leg	4.0000	0.0000	193.0000	No Ice	0.7915	0.7915	0.02
			0.00			1/2"	1.2743	1.2743	0.03
			2.00			Ice	1.4503	1.4503	0.05
						1" Ice			
(2) RRUS 11 B12	B	From Leg	4.0000	0.0000	193.0000	No Ice	2.8333	1.1821	0.05
			0.00			1/2"	3.0426	1.3299	0.07
			2.00			Ice	3.2593	1.4848	0.10
						1" Ice			
RRUS 11 B12	C	From Leg	4.0000	0.0000	193.0000	No Ice	2.8333	1.1821	0.05
			0.00			1/2"	3.0426	1.3299	0.07
			2.00			Ice	3.2593	1.4848	0.10
						1" Ice			
(2) RRUS 12-B2	B	From Leg	4.0000	0.0000	193.0000	No Ice	3.1435	1.2816	0.06
			0.00			1/2"	3.3632	1.4340	0.08
			2.00			Ice	3.5904	1.5955	0.11
						1" Ice			
RRUS 12-B2	C	From Leg	4.0000	0.0000	193.0000	No Ice	3.1435	1.2816	0.06
			0.00			1/2"	3.3632	1.4340	0.08
			2.00			Ice	3.5904	1.5955	0.11
						1" Ice			
80010798 w/ Mount Pipe	A	From Leg	4.0000	0.0000	193.0000	No Ice	10.9246	7.4788	0.11
			0.00			1/2"	11.5345	8.7492	0.19
			0.00			Ice	12.1217	9.8028	0.28
						1" Ice			
80010798 w/ Mount Pipe	B	From Leg	4.0000	0.0000	193.0000	No Ice	10.9246	7.4788	0.11
			0.00			1/2"	11.5345	8.7492	0.19
			0.00			Ice	12.1217	9.8028	0.28
						1" Ice			
80010798 w/ Mount Pipe	C	From Leg	4.0000	0.0000	193.0000	No Ice	10.9246	7.4788	0.11
			0.00			1/2"	11.5345	8.7492	0.19
			0.00			Ice	12.1217	9.8028	0.28
						1" Ice			
(3) WCS RRUS-32-B30	A	From Leg	4.0000	0.0000	193.0000	No Ice	3.3139	2.4238	0.08
			0.00			1/2"	3.5576	2.6383	0.10
			0.00			Ice	3.8087	2.8597	0.14
						1" Ice			
(2) DBC0061F1V51-2	A	From Leg	4.0000	0.0000	193.0000	No Ice	0.4300	0.4133	0.03
			0.00			1/2"	0.5140	0.4959	0.03
			0.00			Ice	0.6054	0.5859	0.04
						1" Ice			
DBC0061F1V51-2	C	From Leg	4.0000	0.0000	193.0000	No Ice	0.4300	0.4133	0.03
			0.00				0.5140	0.4959	0.03

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*
			0.00			1/2" Ice	0.6054	0.5859	0.04
						1" Ice			
DC6-48-60-18-8F	A	From Leg	4.0000	0.0000	193.0000	No Ice	0.7915	0.7915	0.02
			0.00			1/2" Ice	1.2743	1.2743	0.03
			2.00			1" Ice	1.4503	1.4503	0.05
RRUS 4426 B66	B	From Leg	4.0000	0.0000	193.0000	No Ice	1.6444	0.7252	0.05
			0.00			1/2" Ice	1.8044	0.8421	0.06
			0.00			1" Ice	1.9719	0.9685	0.08
(2) RRUS 4426 B66	C	From Leg	4.0000	0.0000	193.0000	No Ice	1.6444	0.7252	0.05
			0.00			1/2" Ice	1.8044	0.8421	0.06
			0.00			1" Ice	1.9719	0.9685	0.08
Miscellaneous [NA 507-1]	C	None		0.0000	193.0000	No Ice	4.8000	4.8000	0.25
						1/2" Ice	6.7000	6.7000	0.29
						1" Ice	8.6000	8.6000	0.34
Platform Mount [LP 601-1]	C	None		0.0000	193.0000	No Ice	28.4700	28.4700	1.12
						1/2" Ice	33.5900	33.5900	1.51
						1" Ice	38.7100	38.7100	1.91
8-ft Ladder	C	From Leg	2.0000	0.0000	193.0000	No Ice	7.0700	7.0700	0.04
			0.00			1/2" Ice	9.7300	9.7300	0.07
			-2.00			1" Ice	11.1900	11.1900	0.08
185									
APXV18-206517S-C w/ Mount Pipe	A	From Leg	4.0000	0.0000	185.0000	No Ice	5.4042	4.7000	0.05
			0.00			1/2" Ice	5.9597	5.8600	0.10
			2.00			1" Ice	6.4808	6.7338	0.15
APXV18-206517S-C w/ Mount Pipe	B	From Leg	4.0000	0.0000	185.0000	No Ice	5.4042	4.7000	0.05
			0.00			1/2" Ice	5.9597	5.8600	0.10
			2.00			1" Ice	6.4808	6.7338	0.15
APXV18-206517S-C w/ Mount Pipe	C	From Leg	4.0000	0.0000	185.0000	No Ice	5.4042	4.7000	0.05
			0.00			1/2" Ice	5.9597	5.8600	0.10
			2.00			1" Ice	6.4808	6.7338	0.15
978QNB120E-M w/ Mount Pipe	A	From Leg	4.0000	0.0000	185.0000	No Ice	7.8255	5.1455	0.06
			0.00			1/2" Ice	8.2838	5.9157	0.12
			2.00			1" Ice	8.7366	6.6150	0.19
978QNB120E-M w/ Mount Pipe	B	From Leg	4.0000	0.0000	185.0000	No Ice	7.8255	5.1455	0.06
			0.00			1/2" Ice	8.2838	5.9157	0.12
			2.00			1" Ice	8.7366	6.6150	0.19
978QNB120E-M w/ Mount Pipe	C	From Leg	4.0000	0.0000	185.0000	No Ice	7.8255	5.1455	0.06
			0.00			1/2" Ice	8.2838	5.9157	0.12
			2.00			1" Ice	8.7366	6.6150	0.19
(2) FV90-16-02DP w/ Mount Pipe	A	From Leg	4.0000	0.0000	185.0000	No Ice	4.5931	3.3194	0.04
			0.00			1/2" Ice	5.0183	4.0888	0.08
			2.00			1" Ice	5.4362	4.7844	0.12
(2) FV90-16-02DP w/ Mount Pipe	B	From Leg	4.0000	0.0000	185.0000	No Ice	4.5931	3.3194	0.04
			0.00			1/2" Ice	5.0183	4.0888	0.08
			2.00			1" Ice	5.4362	4.7844	0.12
(2) FV90-16-02DP w/ Mount Pipe	C	From Leg	4.0000	0.0000	185.0000	No Ice	4.5931	3.3194	0.04
			0.00			1/2" Ice	5.0183	4.0888	0.08
			2.00			1" Ice	5.4362	4.7844	0.12
CS72993.07	A	From Leg	4.0000	0.0000	185.0000	No Ice	1.2250	0.3887	0.02

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
			0.00			1/2"	1.3648	0.4841	0.03
			2.00			Ice	1.5120	0.5866	0.04
						1" Ice			
CS72993.07	B	From Leg	4.0000	0.0000	185.0000	No Ice	1.2250	0.3887	0.02
			0.00			1/2"	1.3648	0.4841	0.03
			2.00			Ice	1.5120	0.5866	0.04
						1" Ice			
CS72993.07	C	From Leg	4.0000	0.0000	185.0000	No Ice	1.2250	0.3887	0.02
			0.00			1/2"	1.3648	0.4841	0.03
			2.00			Ice	1.5120	0.5866	0.04
						1" Ice			
8-ft Ladder	C	From Leg	2.0000	0.0000	185.0000	No Ice	7.0700	7.0700	0.04
			0.00			1/2"	9.7300	9.7300	0.07
			-2.00			Ice	11.1900	11.1900	0.08
						1" Ice			
Platform Mount [LP 601-1]	C	None		0.0000	185.0000	No Ice	28.4700	28.4700	1.12
						1/2"	33.5900	33.5900	1.51
						Ice	38.7100	38.7100	1.91
						1" Ice			
173									
800 EXTERNAL NOTCH FILTER	A	From Leg	2.0000	0.0000	173.0000	No Ice	0.6601	0.3211	0.01
			0.00			1/2"	0.7627	0.3983	0.02
			0.00			Ice	0.8727	0.4830	0.02
						1" Ice			
800 EXTERNAL NOTCH FILTER	B	From Leg	2.0000	0.0000	173.0000	No Ice	0.6601	0.3211	0.01
			0.00			1/2"	0.7627	0.3983	0.02
			0.00			Ice	0.8727	0.4830	0.02
						1" Ice			
800 EXTERNAL NOTCH FILTER	C	From Leg	2.0000	0.0000	173.0000	No Ice	0.6601	0.3211	0.01
			0.00			1/2"	0.7627	0.3983	0.02
			0.00			Ice	0.8727	0.4830	0.02
						1" Ice			
1900MHz RRH (65MHz)	A	From Leg	2.0000	0.0000	173.0000	No Ice	2.3218	2.2360	0.06
			0.00			1/2"	2.5266	2.4385	0.08
			0.00			Ice	2.7388	2.6485	0.11
						1" Ice			
1900MHz RRH (65MHz)	B	From Leg	2.0000	0.0000	173.0000	No Ice	2.3218	2.2360	0.06
			0.00			1/2"	2.5266	2.4385	0.08
			0.00			Ice	2.7388	2.6485	0.11
						1" Ice			
1900MHz RRH (65MHz)	C	From Leg	2.0000	0.0000	173.0000	No Ice	2.3218	2.2360	0.06
			0.00			1/2"	2.5266	2.4385	0.08
			0.00			Ice	2.7388	2.6485	0.11
						1" Ice			
800MHZ RRH	A	From Leg	2.0000	0.0000	173.0000	No Ice	2.1342	1.7730	0.05
			0.00			1/2"	2.3195	1.9461	0.07
			0.00			Ice	2.5123	2.1267	0.10
						1" Ice			
800MHZ RRH	B	From Leg	2.0000	0.0000	173.0000	No Ice	2.1342	1.7730	0.05
			0.00			1/2"	2.3195	1.9461	0.07
			0.00			Ice	2.5123	2.1267	0.10
						1" Ice			
800MHZ RRH	C	From Leg	2.0000	0.0000	173.0000	No Ice	2.1342	1.7730	0.05
			0.00			1/2"	2.3195	1.9461	0.07
			0.00			Ice	2.5123	2.1267	0.10
						1" Ice			
(3) ACU-A20-N	A	From Leg	2.0000	0.0000	173.0000	No Ice	0.0667	0.1167	0.00
			0.00			1/2"	0.1037	0.1620	0.00
			0.00			Ice	0.1481	0.2148	0.00
						1" Ice			
(3) ACU-A20-N	B	From Leg	2.0000	0.0000	173.0000	No Ice	0.0667	0.1167	0.00
			0.00			1/2"	0.1037	0.1620	0.00
			0.00			Ice	0.1481	0.2148	0.00
						1" Ice			
(3) ACU-A20-N	C	From Leg	2.0000	0.0000	173.0000	No Ice	0.0667	0.1167	0.00

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*
			0.00 0.00			1/2" Ice 1" Ice	0.1037 0.1481	0.1620 0.2148	0.00 0.00
2.375" OD x 6' Mount Pipe	A	From Leg	2.0000 0.00 0.00	0.0000	173.0000	No Ice 1/2" Ice 1" Ice	1.4250 1.9250 2.2939	1.4250 1.9250 2.2939	0.03 0.04 0.05
2.375" OD x 6' Mount Pipe	B	From Leg	2.0000 0.00 0.00	0.0000	173.0000	No Ice 1/2" Ice 1" Ice	1.4250 1.9250 2.2939	1.4250 1.9250 2.2939	0.03 0.04 0.05
2.375" OD x 6' Mount Pipe	C	From Leg	2.0000 0.00 0.00	0.0000	173.0000	No Ice 1/2" Ice 1" Ice	1.4250 1.9250 2.2939	1.4250 1.9250 2.2939	0.03 0.04 0.05
Side Arm Mount [SO 102-3]	C	None		0.0000	173.0000	No Ice 1/2" Ice 1" Ice	3.0000 3.4800 3.9600	3.0000 3.4800 3.9600	0.08 0.11 0.14
172									
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.0000	172.0000	No Ice 1/2" Ice 1" Ice	8.2619 8.8215 9.3462	6.9458 8.1266 9.0212	0.08 0.15 0.23
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.0000	172.0000	No Ice 1/2" Ice 1" Ice	8.2619 8.8215 9.3462	6.9458 8.1266 9.0212	0.08 0.15 0.23
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.0000	172.0000	No Ice 1/2" Ice 1" Ice	8.2619 8.8215 9.3462	6.9458 8.1266 9.0212	0.08 0.15 0.23
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.0000	172.0000	No Ice 1/2" Ice 1" Ice	6.5799 7.0306 7.4733	4.9591 5.7544 6.4723	0.08 0.13 0.19
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.0000	172.0000	No Ice 1/2" Ice 1" Ice	6.5799 7.0306 7.4733	4.9591 5.7544 6.4723	0.08 0.13 0.19
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.0000	172.0000	No Ice 1/2" Ice 1" Ice	6.5799 7.0306 7.4733	4.9591 5.7544 6.4723	0.08 0.13 0.19
TD-RRH8x20-25	A	From Leg	4.0000 0.00 2.00	0.0000	172.0000	No Ice 1/2" Ice 1" Ice	4.0455 4.2975 4.5570	1.5345 1.7142 1.9008	0.07 0.10 0.13
TD-RRH8x20-25	B	From Leg	4.0000 0.00 2.00	0.0000	172.0000	No Ice 1/2" Ice 1" Ice	4.0455 4.2975 4.5570	1.5345 1.7142 1.9008	0.07 0.10 0.13
TD-RRH8x20-25	C	From Leg	4.0000 0.00 2.00	0.0000	172.0000	No Ice 1/2" Ice 1" Ice	4.0455 4.2975 4.5570	1.5345 1.7142 1.9008	0.07 0.10 0.13
2.375" OD x 6' Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.0000	172.0000	No Ice 1/2" Ice 1" Ice	1.4250 1.9250 2.2939	1.4250 1.9250 2.2939	0.03 0.04 0.05
2.375" OD x 6' Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.0000	172.0000	No Ice 1/2" Ice 1" Ice	1.4250 1.9250 2.2939	1.4250 1.9250 2.2939	0.03 0.04 0.05
2.375" OD x 6' Mount Pipe	C	From Leg	4.0000	0.0000	172.0000	No Ice	1.4250	1.4250	0.03

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
			0.00 2.00			1/2" Ice 1" Ice	1.9250 2.2939	1.9250 2.2939	0.04 0.05
Platform Mount [LP 1201-1]	C	None		0.0000	172.0000	No Ice 1/2" Ice 1" Ice	23.1000 26.8000 30.5000	23.1000 26.8000 30.5000	2.10 2.50 2.90
72 GPS_A	A	From Leg	1.0000 0.00 1.00	0.0000	72.0000	No Ice 1/2" Ice 1" Ice	0.2550 0.3205 0.3934	0.2550 0.3205 0.3934	0.00 0.00 0.01
Side Arm Mount [SO 701-1]	A	From Leg	0.0000 0.00 0.00	0.0000	72.0000	No Ice 1/2" Ice 1" Ice	0.8500 1.1400 1.4300	1.6700 2.3400 3.0100	0.07 0.08 0.09

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
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

Comb. No.	Description
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
L1	226 - 197.96	Pole	Max Tension	26	0.00	-0.00	0.00
			Max. Compression	26	-18.94	0.69	-1.83
			Max. Mx	20	-6.15	237.33	-0.23
			Max. My	14	-6.17	0.13	-235.47
			Max. Vy	20	-12.80	237.33	-0.23
			Max. Vx	2	-12.72	0.15	234.77
			Max. Torque	24			2.24
L2	197.96 - 162.91	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.94	1.24	-3.49
			Max. Mx	20	-22.18	959.95	0.78
			Max. My	14	-22.22	-0.95	-951.55
			Max. Vy	20	-29.38	959.95	0.78
			Max. Vx	2	-29.16	1.37	950.74
			Max. Torque	25			3.43
L3	162.91 - 120.29	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.82	3.07	-7.09
			Max. Mx	20	-35.28	2256.28	1.88
			Max. My	14	-35.30	-2.43	-2238.97
			Max. Vy	20	-33.24	2256.28	1.88
			Max. Vx	2	-33.02	3.39	2237.09
			Max. Torque	25			3.43
L4	120.29 - 79.21	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-99.13	5.10	-11.11
			Max. Mx	20	-52.50	3662.26	2.83
			Max. My	14	-52.52	-3.85	-3636.46
			Max. Vy	20	-37.10	3662.26	2.83
			Max. Vx	2	-36.88	5.33	3633.31
			Max. Torque	25			3.42
L5	79.21 - 39.13	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-128.70	7.15	-14.78
			Max. Mx	20	-74.53	5181.05	3.82
			Max. My	14	-74.54	-5.20	-5146.29
			Max. Vy	20	-40.73	5181.05	3.82
			Max. Vx	2	-40.48	7.22	5142.07
			Max. Torque	25			3.41
L6	39.13 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-169.04	9.79	-20.05
			Max. Mx	20	-105.78	7217.89	4.65
			Max. My	14	-105.78	-6.80	-7172.24
			Max. Vy	20	-44.13	7217.89	4.65
			Max. Vx	2	-43.90	9.51	7165.98
			Max. Torque	25			3.33

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	169.04	-0.00	0.00
	Max. H_x	21	79.35	44.09	0.04
	Max. H_z	2	105.80	0.04	43.85
	Max. M_x	2	7165.98	0.04	43.85
	Max. M_z	8	7215.11	-44.09	-0.04
	Max. Torsion	25	3.33	22.08	38.00
	Min. Vert	21	79.35	44.09	0.04
	Min. H_x	9	79.35	-44.09	-0.04
	Min. H_z	15	79.35	-0.04	-43.85
	Min. M_x	14	-7172.24	-0.04	-43.85
	Min. M_z	20	-7217.89	44.09	0.04
	Min. Torsion	13	-3.28	-22.08	-38.00

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	88.17	-0.00	0.00	2.80	1.10	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	105.80	-0.04	-43.85	-7165.98	9.51	-2.92
0.9 Dead+1.6 Wind 0 deg - No Ice	79.35	-0.04	-43.85	-7075.46	9.05	-2.92
1.2 Dead+1.6 Wind 30 deg - No Ice	105.80	22.01	-37.96	-6201.99	-3600.65	-1.73
0.9 Dead+1.6 Wind 30 deg - No Ice	79.35	22.01	-37.96	-6124.00	-3555.19	-1.73
1.2 Dead+1.6 Wind 60 deg - No Ice	105.80	38.17	-21.89	-3574.49	-6245.59	-0.08
0.9 Dead+1.6 Wind 60 deg - No Ice	79.35	38.17	-21.89	-3529.91	-6166.47	-0.08
1.2 Dead+1.6 Wind 90 deg - No Ice	105.80	44.09	0.04	11.66	-7215.11	1.57
0.9 Dead+1.6 Wind 90 deg - No Ice	79.35	44.09	0.04	10.64	-7124.17	1.57
1.2 Dead+1.6 Wind 120 deg - No Ice	105.80	39.34	22.62	3708.33	-6448.96	2.79
0.9 Dead+1.6 Wind 120 deg - No Ice	79.35	39.34	22.62	3660.40	-6367.40	2.79
1.2 Dead+1.6 Wind 150 deg - No Ice	105.80	22.08	38.00	6217.14	-3614.77	3.28
0.9 Dead+1.6 Wind 150 deg - No Ice	79.35	22.08	38.00	6137.21	-3569.11	3.28
1.2 Dead+1.6 Wind 180 deg - No Ice	105.80	0.04	43.85	7172.24	-6.80	2.91
0.9 Dead+1.6 Wind 180 deg - No Ice	79.35	0.04	43.85	7080.67	-7.04	2.91
1.2 Dead+1.6 Wind 210 deg - No Ice	105.80	-22.01	37.96	6209.05	3603.39	1.76
0.9 Dead+1.6 Wind 210 deg - No Ice	79.35	-22.01	37.96	6129.22	3557.21	1.76
1.2 Dead+1.6 Wind 240 deg - No Ice	105.80	-38.17	21.89	3581.53	6248.36	0.13
0.9 Dead+1.6 Wind 240 deg - No Ice	79.35	-38.17	21.89	3535.13	6168.52	0.12
1.2 Dead+1.6 Wind 270 deg - No Ice	105.80	-44.09	-0.04	-4.65	7217.89	-1.55
0.9 Dead+1.6 Wind 270 deg - No Ice	79.35	-44.09	-0.04	-5.45	7126.22	-1.56
1.2 Dead+1.6 Wind 300 deg - No Ice	105.80	-39.34	-22.62	-3701.35	6451.71	-2.82

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
0.9 Dead+1.6 Wind 300 deg - No Ice	79.35	-39.34	-22.62	-3655.22	6369.43	-2.82
1.2 Dead+1.6 Wind 330 deg - No Ice	105.80	-22.08	-38.00	-6210.14	3617.49	-3.32
0.9 Dead+1.6 Wind 330 deg - No Ice	79.35	-22.08	-38.00	-6132.03	3571.12	-3.33
1.2 Dead+1.0 Ice+1.0 Temp	169.04	0.00	-0.00	20.05	9.79	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	169.04	-0.01	-13.98	-2309.11	11.80	-1.01
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	169.04	7.01	-12.10	-1996.11	-1158.74	-0.59
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	169.04	12.15	-6.98	-1142.72	-2016.09	-0.01
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	169.04	14.04	0.01	22.39	-2330.54	0.58
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	169.04	12.76	7.35	1247.24	-2122.12	1.00
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	169.04	7.02	12.11	2039.14	-1161.75	1.16
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	169.04	0.01	13.98	2350.40	8.32	1.01
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	169.04	-7.01	12.10	2037.63	1178.99	0.59
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	169.04	-12.15	6.98	1184.15	2036.45	0.01
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	169.04	-14.04	-0.01	18.91	2350.68	-0.58
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	169.04	-12.76	-7.35	-1205.94	2142.26	-1.01
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	169.04	-7.02	-12.11	-1997.85	1181.88	-1.17
Dead+Wind 0 deg - Service	88.17	-0.01	-10.21	-1653.76	3.03	-0.69
Dead+Wind 30 deg - Service	88.17	5.12	-8.83	-1430.86	-831.09	-0.41
Dead+Wind 60 deg - Service	88.17	8.88	-5.10	-823.79	-1442.22	-0.02
Dead+Wind 90 deg - Service	88.17	10.26	0.01	4.80	-1666.59	0.37
Dead+Wind 120 deg - Service	88.17	9.15	5.26	859.01	-1489.34	0.66
Dead+Wind 150 deg - Service	88.17	5.14	8.84	1438.58	-834.35	0.78
Dead+Wind 180 deg - Service	88.17	0.01	10.21	1659.59	-0.73	0.69
Dead+Wind 210 deg - Service	88.17	-5.12	8.83	1436.70	833.39	0.41
Dead+Wind 240 deg - Service	88.17	-8.88	5.10	829.62	1444.52	0.03
Dead+Wind 270 deg - Service	88.17	-10.26	-0.01	1.03	1668.90	-0.37
Dead+Wind 300 deg - Service	88.17	-9.15	-5.26	-853.17	1491.65	-0.66
Dead+Wind 330 deg - Service	88.17	-5.14	-8.84	-1432.75	836.66	-0.78

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	-88.17	0.00	0.00	88.17	-0.00	0.000%
2	-0.04	-105.80	-43.86	0.04	105.80	43.85	0.003%
3	-0.04	-79.35	-43.86	0.04	79.35	43.85	0.006%
4	22.01	-105.80	-37.96	-22.01	105.80	37.96	0.000%
5	22.01	-79.35	-37.96	-22.01	79.35	37.96	0.000%
6	38.17	-105.80	-21.89	-38.17	105.80	21.89	0.000%
7	38.17	-79.35	-21.89	-38.17	79.35	21.89	0.000%
8	44.10	-105.80	0.04	-44.09	105.80	-0.04	0.007%
9	44.10	-79.35	0.04	-44.09	79.35	-0.04	0.006%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
10	39.34	-105.80	22.62	-39.34	105.80	-22.62	0.000%
11	39.34	-79.35	22.62	-39.34	79.35	-22.62	0.000%
12	22.08	-105.80	38.00	-22.08	105.80	-38.00	0.000%
13	22.08	-79.35	38.00	-22.08	79.35	-38.00	0.000%
14	0.04	-105.80	43.86	-0.04	105.80	-43.85	0.007%
15	0.04	-79.35	43.86	-0.04	79.35	-43.85	0.006%
16	-22.01	-105.80	37.96	22.01	105.80	-37.96	0.000%
17	-22.01	-79.35	37.96	22.01	79.35	-37.96	0.000%
18	-38.17	-105.80	21.89	38.17	105.80	-21.89	0.000%
19	-38.17	-79.35	21.89	38.17	79.35	-21.89	0.000%
20	-44.10	-105.80	-0.04	44.09	105.80	0.04	0.007%
21	-44.10	-79.35	-0.04	44.09	79.35	0.04	0.006%
22	-39.34	-105.80	-22.62	39.34	105.80	22.62	0.000%
23	-39.34	-79.35	-22.62	39.34	79.35	22.62	0.000%
24	-22.08	-105.80	-38.00	22.08	105.80	38.00	0.000%
25	-22.08	-79.35	-38.00	22.08	79.35	38.00	0.000%
26	0.00	-169.04	0.00	-0.00	169.04	0.00	0.000%
27	-0.01	-169.04	-13.98	0.01	169.04	13.98	0.001%
28	7.01	-169.04	-12.11	-7.01	169.04	12.10	0.001%
29	12.15	-169.04	-6.98	-12.15	169.04	6.98	0.001%
30	14.04	-169.04	0.01	-14.04	169.04	-0.01	0.001%
31	12.76	-169.04	7.35	-12.76	169.04	-7.35	0.001%
32	7.03	-169.04	12.11	-7.02	169.04	-12.11	0.001%
33	0.01	-169.04	13.98	-0.01	169.04	-13.98	0.001%
34	-7.01	-169.04	12.11	7.01	169.04	-12.10	0.001%
35	-12.15	-169.04	6.98	12.15	169.04	-6.98	0.001%
36	-14.04	-169.04	-0.01	14.04	169.04	0.01	0.001%
37	-12.76	-169.04	-7.35	12.76	169.04	7.35	0.001%
38	-7.03	-169.04	-12.11	7.02	169.04	12.11	0.001%
39	-0.01	-88.17	-10.21	0.01	88.17	10.21	0.002%
40	5.12	-88.17	-8.84	-5.12	88.17	8.83	0.002%
41	8.88	-88.17	-5.10	-8.88	88.17	5.10	0.002%
42	10.26	-88.17	0.01	-10.26	88.17	-0.01	0.002%
43	9.16	-88.17	5.26	-9.15	88.17	-5.26	0.002%
44	5.14	-88.17	8.85	-5.14	88.17	-8.84	0.002%
45	0.01	-88.17	10.21	-0.01	88.17	-10.21	0.002%
46	-5.12	-88.17	8.84	5.12	88.17	-8.83	0.002%
47	-8.88	-88.17	5.10	8.88	88.17	-5.10	0.002%
48	-10.26	-88.17	-0.01	10.26	88.17	0.01	0.002%
49	-9.16	-88.17	-5.26	9.15	88.17	5.26	0.002%
50	-5.14	-88.17	-8.85	5.14	88.17	8.84	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	17	0.00005732	0.00008226
3	Yes	16	0.00007544	0.00013254
4	Yes	21	0.00000001	0.00010087
5	Yes	21	0.00000001	0.00007591
6	Yes	21	0.00000001	0.00010240
7	Yes	21	0.00000001	0.00007708
8	Yes	16	0.00011213	0.00011689
9	Yes	16	0.00007536	0.00010134
10	Yes	21	0.00000001	0.00011359
11	Yes	21	0.00000001	0.00008517
12	Yes	21	0.00000001	0.00010039
13	Yes	21	0.00000001	0.00007545
14	Yes	16	0.00011221	0.00014050
15	Yes	16	0.00007543	0.00012145
16	Yes	21	0.00000001	0.00010390
17	Yes	21	0.00000001	0.00007822
18	Yes	21	0.00000001	0.00010287
19	Yes	21	0.00000001	0.00007737
20	Yes	16	0.00011212	0.00010519
21	Yes	16	0.00007536	0.00009211
22	Yes	21	0.00000001	0.00010828
23	Yes	21	0.00000001	0.00008103
24	Yes	21	0.00000001	0.00010597
25	Yes	21	0.00000001	0.00007985
26	Yes	12	0.00000001	0.00001752
27	Yes	18	0.00011645	0.00010564
28	Yes	18	0.00011623	0.00014437
29	Yes	18	0.00011624	0.00014523
30	Yes	18	0.00011646	0.00010659
31	Yes	19	0.00006255	0.00009062
32	Yes	18	0.00011623	0.00014711
33	Yes	18	0.00011645	0.00010767
34	Yes	19	0.00006265	0.00008438
35	Yes	19	0.00006265	0.00008408
36	Yes	18	0.00011644	0.00010748
37	Yes	19	0.00006255	0.00008708
38	Yes	18	0.00011622	0.00014946
39	Yes	16	0.00009202	0.00002203
40	Yes	16	0.00009191	0.00002939
41	Yes	16	0.00009191	0.00003193
42	Yes	16	0.00009202	0.00002134
43	Yes	16	0.00009186	0.00004098
44	Yes	16	0.00009190	0.00002777
45	Yes	16	0.00009202	0.00002203
46	Yes	16	0.00009190	0.00003503
47	Yes	16	0.00009190	0.00003257
48	Yes	16	0.00009202	0.00002132
49	Yes	16	0.00009187	0.00003092
50	Yes	16	0.00009190	0.00003835

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	226 - 197.96	35.361	43	1.5752	0.0062
L2	202.04 - 162.91	27.782	43	1.4147	0.0036
L3	168.08 - 120.29	18.497	43	1.1647	0.0019
L4	126.71 - 79.21	9.904	43	0.7960	0.0009
L5	86.8 - 39.13	4.457	43	0.4917	0.0004
L6	47.88 - 0	1.352	43	0.2555	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
228.0000	(2) LPA-80080/6CF w/ Mount Pipe	43	35.361	1.5752	0.0062	33473
226.0000	Beacon	43	35.361	1.5752	0.0062	33473
205.0000	APXV18-206516S-C-A20 w/ Mount Pipe	43	28.685	1.4347	0.0039	7991
193.0000	800 10121 w/ Mount Pipe	43	25.117	1.3525	0.0030	6987
185.0000	APXV18-206517S-C w/ Mount Pipe	43	22.875	1.2955	0.0025	6989
173.0000	800 EXTERNAL NOTCH FILTER	43	19.719	1.2045	0.0021	6992
172.0000	APXVSPP18-C-A20 w/ Mount Pipe	43	19.467	1.1966	0.0020	6992
72.0000	GPS_A	43	3.027	0.3966	0.0003	8684

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	226 - 197.96	152.849	10	6.8180	0.0266
L2	202.04 - 162.91	120.157	10	6.1260	0.0155
L3	168.08 - 120.29	80.049	10	5.0457	0.0081
L4	126.71 - 79.21	42.878	10	3.4487	0.0036
L5	86.8 - 39.13	19.296	10	2.1300	0.0017
L6	47.88 - 0	5.854	10	1.1063	0.0007

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
228.0000	(2) LPA-80080/6CF w/ Mount Pipe	10	152.849	6.8180	0.0266	7994
226.0000	Beacon	10	152.849	6.8180	0.0266	7994
205.0000	APXV18-206516S-C-A20 w/ Mount Pipe	10	124.053	6.2126	0.0166	1905
193.0000	800 10121 w/ Mount Pipe	10	108.652	5.8576	0.0126	1659
185.0000	APXV18-206517S-C w/ Mount Pipe	10	98.971	5.6115	0.0108	1654
173.0000	800 EXTERNAL NOTCH FILTER	10	85.334	5.2181	0.0088	1647
172.0000	APXVSPP18-C-A20 w/ Mount Pipe	10	84.245	5.1836	0.0086	1647
72.0000	GPS_A	10	13.106	1.7178	0.0013	2008

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	226 - 197.96 (1)	TP28.67x21.5x0.1875	28.0400	0.0000	0.0	16.3298	-6.10	1072.42	0.006
L2	197.96 - 162.91 (2)	TP37.12x27.2517x0.375	39.1300	0.0000	0.0	42.1838	-22.05	3134.05	0.007
L3	162.91 - 120.29 (3)	TP47.14x35.0662x0.4375	47.7900	0.0000	0.0	62.5999	-35.16	4616.12	0.008
L4	120.29 - 79.21 (4)	TP56.63x44.643x0.5	47.5000	0.0000	0.0	86.0386	-52.42	6258.12	0.008
L5	79.21 - 39.13 (5)	TP65.75x53.7146x0.5625	47.6700	0.0000	0.0	112.4400	-74.48	8104.46	0.009
L6	39.13 - 0 (6)	TP74.5x62.4159x0.5625	47.8800	0.0000	0.0	132.0060	-105.78	9035.61	0.012

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	226 - 197.96 (1)	TP28.67x21.5x0.1875	239.73	605.72	0.396	0.00	605.72	0.000
L2	197.96 - 162.91 (2)	TP37.12x27.2517x0.375	978.07	2277.90	0.429	0.00	2277.90	0.000
L3	162.91 - 120.29 (3)	TP47.14x35.0662x0.4375	2312.58	4271.34	0.541	0.00	4271.34	0.000
L4	120.29 - 79.21 (4)	TP56.63x44.643x0.5	3768.68	6967.32	0.541	0.00	6967.32	0.000
L5	79.21 - 39.13 (5)	TP65.75x53.7146x0.5625	5339.49	10484.50	0.509	0.00	10484.50	0.000
L6	39.13 - 0 (6)	TP74.5x62.4159x0.5625	7439.14	13741.17	0.541	0.00	13741.17	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	226 - 197.96 (1)	TP28.67x21.5x0.1875	13.05	536.21	0.024	2.16	1214.18	0.002
L2	197.96 - 162.91 (2)	TP37.12x27.2517x0.375	30.09	1567.02	0.019	2.98	4568.64	0.001
L3	162.91 - 120.29 (3)	TP47.14x35.0662x0.4375	34.39	2308.06	0.015	2.94	8565.67	0.000
L4	120.29 - 79.21 (4)	TP56.63x44.643x0.5	38.42	3129.06	0.012	2.94	13971.08	0.000
L5	79.21 - 39.13 (5)	TP65.75x53.7146x0.5625	42.06	4052.23	0.010	2.79	21022.83	0.000
L6	39.13 - 0 (6)	TP74.5x62.4159x0.5625	45.42	4517.80	0.010	2.79	27547.50	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	226 - 197.96 (1)	0.006	0.396	0.000	0.024	0.002	0.402	1.000	4.8.2

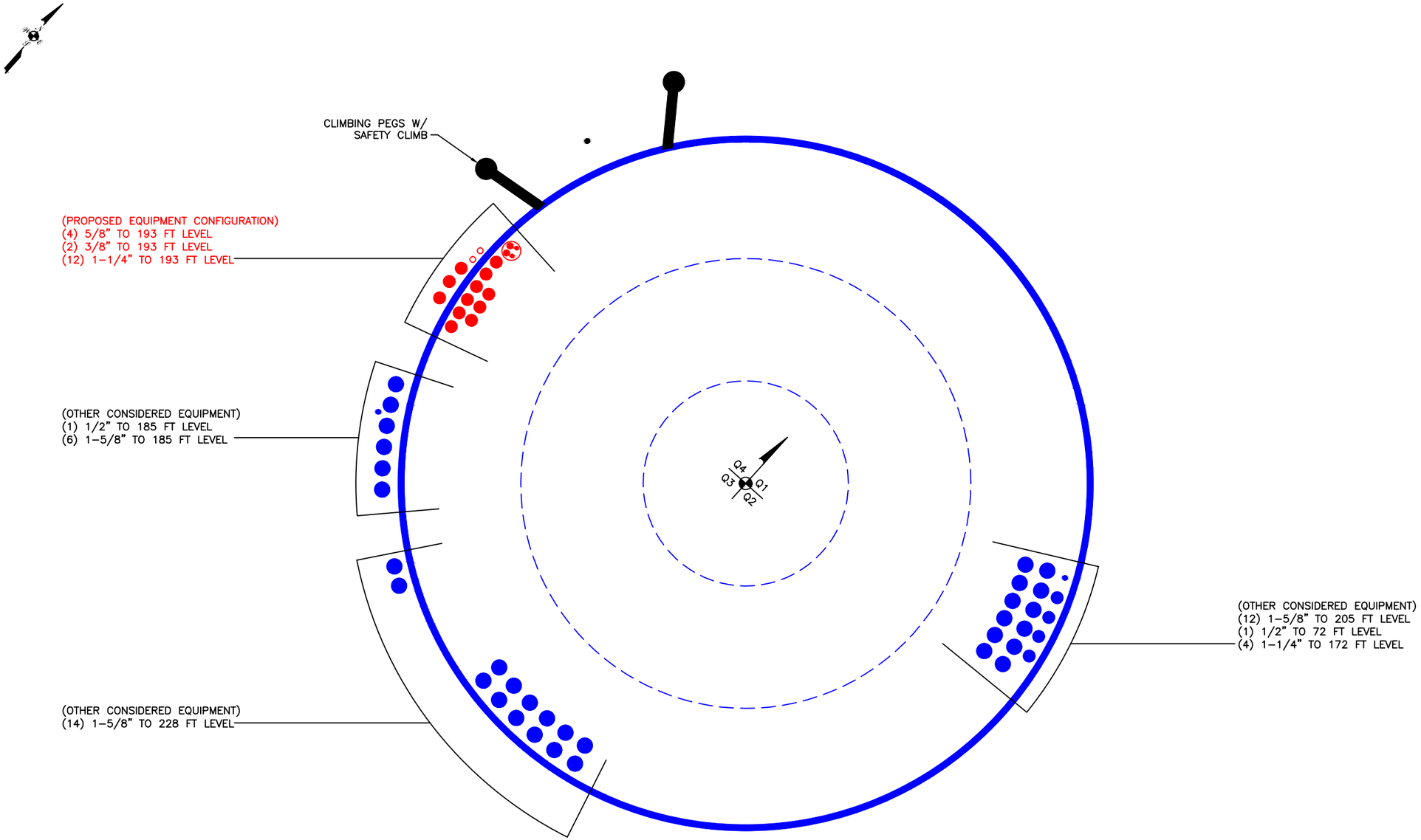
Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L2	197.96 - 162.91 (2)	0.007	0.429	0.000	0.019	0.001	0.437	1.000	4.8.2
L3	162.91 - 120.29 (3)	0.008	0.541	0.000	0.015	0.000	0.549	1.000	4.8.2
L4	120.29 - 79.21 (4)	0.008	0.541	0.000	0.012	0.000	0.549	1.000	4.8.2
L5	79.21 - 39.13 (5)	0.009	0.509	0.000	0.010	0.000	0.519	1.000	4.8.2
L6	39.13 - 0 (6)	0.012	0.541	0.000	0.010	0.000	0.553	1.000	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	226 - 197.96	Pole	TP28.67x21.5x0.1875	1	-6.10	1072.42	40.2	Pass
L2	197.96 - 162.91	Pole	TP37.12x27.2517x0.375	2	-22.05	3134.05	43.7	Pass
L3	162.91 - 120.29	Pole	TP47.14x35.0662x0.4375	3	-35.16	4616.12	54.9	Pass
L4	120.29 - 79.21	Pole	TP56.63x44.643x0.5	4	-52.42	6258.12	54.9	Pass
L5	79.21 - 39.13	Pole	TP65.75x53.7146x0.5625	5	-74.48	8104.46	51.9	Pass
L6	39.13 - 0	Pole	TP74.5x62.4159x0.5625	6	-105.78	9035.61	55.3	Pass
							Summary	
						Pole (L6)	55.3	Pass
						RATING =	**55.3**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806358 TOWER ID: C_BASELEVEL

APPENDIX C

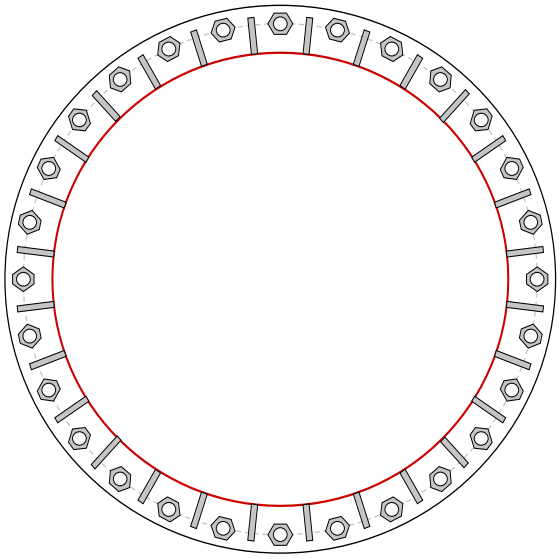
ADDITIONAL CALCULATIONS

Monopole Base Plate Connection

Site Info	
BU #	806358
Site Name	NHV 109 943107
Order #	454389 Rev.0

Analysis Considerations	
TIA-222 Revision	G
Grout Considered:	No
l_{ar} (in)	1.5
Eta Factor, η	0.5

Applied Loads	
Moment (kip-ft)	7439.14
Axial Force (kips)	105.78
Shear Force (kips)	45.42



Connection Properties

Anchor Rod Data

(28) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 84" BC

Base Plate Data

90" OD x 2.5" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

(28) 18"H x 6"W x 1"T, Notch: 0.75"
plate: Fy= 50 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.5" groove, 45° dbl bevelFALSE
vert. weld: 0.5" fillet

Pole Data

74.5" x 0.5625" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary		*(units of kips, kip-in)*
Pu = 155.55	ϕPn = 260	**Stress Rating**
Vu = 1.62	ϕVn = n/a	**61.1%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary		
Max Stress (ksi):	20.44	(Roark's Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**37.9%**	**Pass**

Stiffener Summary		
Horizontal Weld:	**41.2%**	**Pass**
Vertical Weld:	**27.1%**	**Pass**
Plate Flexure+Shear:	**10.2%**	**Pass**
Plate Tension+Shear:	**42.0%**	**Pass**
Plate Compression:	**43.0%**	**Pass**
Pole Summary		
Punching Shear:	**7.2%**	**Pass**

Drilled Pier Foundation

BU # :	806358
Site Name:	NHV 109 943107
Order Number:	454389 Rev.0

TIA-222 Revison:	G
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	7439	
Axial Force (kips)	106	
Shear Force (kips)	45	

Material Properties		
Concrete Strength, f'c:	3	ksi
Rebar Strength, Fy:	60	ksi

Pier Design Data		
Depth	36	ft
Ext. Above Grade	1	ft
Pier Section 1		
From 1' above grade to 36' below grade		
Pier Diameter	9	ft
Rebar Quantity	40	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	

Analysis Results		
Soil Lateral Capacity	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	10.03	-
Soil Safety Factor	6.89	-
Max Moment (kip-ft)	7810.31	-
Rating	*19.3%*	-
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	1339.65	-
End Bearing (kips)	477.13	-
Weight of Concrete (kips)	423.69	-
Total Capacity (kips)	1816.78	-
Axial (kips)	529.69	-
Rating	*29.2%*	-
Reinforced Concrete Capacity	*Compression*	*Uplift*
Critical Depth (ft from TOC)	9.58	-
Critical Moment (kip-ft)	7808.91	-
Critical Moment Capacity	12848.02	-
Rating	*60.8%*	-

Soil Interaction Rating	**29.2%**
Structural Foundation Rating	**60.8%**

Check Limitation	
N/A	☐

Soil Profile

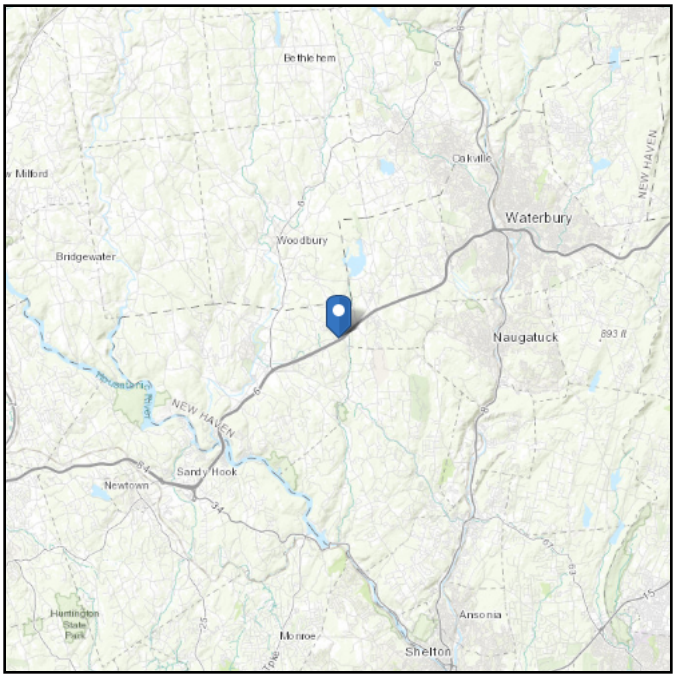
Groundwater Depth	n/a	ft	# of Layers: 6

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	4	4	100	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	4	4.5	0.5	110	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
3	4.5	9	4.5	110	150	0	35	0.807	0.807				50	Cohesionless
4	9	14	5	120	150	0	40	1.303	1.303				129	Cohesionless
5	14	19	5	125	150	0	40	1.772	1.772				167	Cohesionless
6	19	36	17	130	150	0	40	2.598	2.598			10	100	Cohesionless

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-10	**Elevation:**	666.03 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.493589
Soil Class:	D - Stiff Soil	**Longitude:**	-73.165272



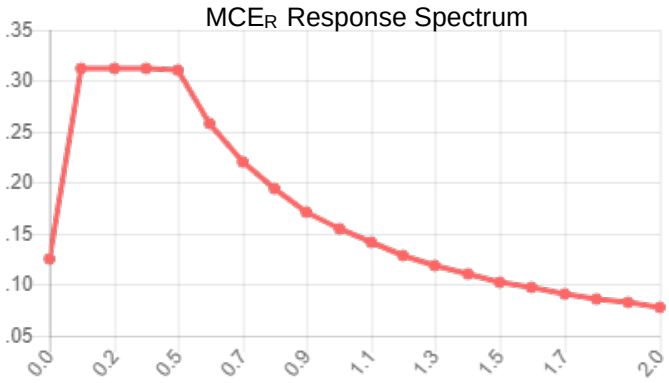
Seismic

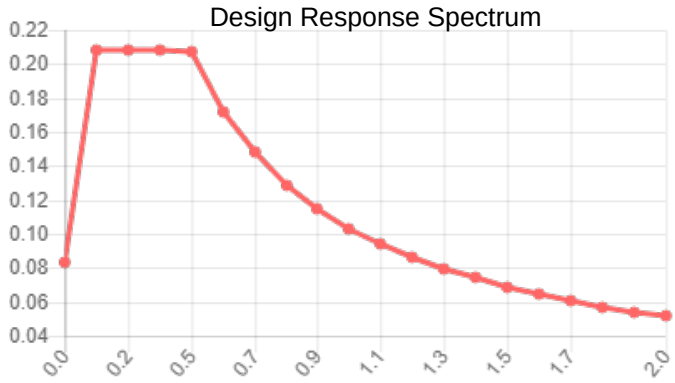
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.195	S_{DS} :	0.208
S_1 :	0.065	S_{D1} :	0.103
F_a :	1.600	T_L :	6.000
F_v :	2.400	PGA :	0.102
S_{MS} :	0.312	PGA_M :	0.163
S_{M1} :	0.155	F_{PGA} :	1.595
		I_e :	1

Seismic Design Category B





Data Accessed: Fri Sep 14 2018

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Fri Sep 14 2018

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

August 14, 2018

CENTERLINE COMMUNICATIONS at&t

Centerline Communications
95 Ryan Drive
Raynham, MA 02767

RE:		
	Site Number:	CT2087 (LTE 3C/4C/5C)
	FA Number:	10035332
	PACE Number:	MRCTB030968
	PT Number:	2051A0GGN3
	Site Name:	Preston Hill (CT2087)
	Site Address:	1432 Old Waterbury Road Southbury, CT 06488

To Whom It May Concern:

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

- (3) 800-10121 Antennas (54.5"x10.3"x5.9"– Wt. = 45 lbs. /each)
- (3) OPA-65R-LCUU-H6 Antennas (72.0"x14.8"x7.4" – Wt. = 73 lbs. /each)
- (3) RRUS-11 RRH's (19.7"x17.0"x7.2" – Wt. = 51 lbs. /each)
- (3) RRUS-12 RRH's (20.4"x18.5"x7.5" – Wt. = 58 lbs. /each)
- (3) A2 Modules (16.4"x15.1"x3.4" – Wt. = 22 lbs. /each)
- (3) DTMABP7819VG12A TMA's (10.7"x11.1"x3.8" – Wt. = 20 lbs. /each)
- (1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each) (Tower Mount)
- **(3) 800-10798 Antennas (78.5"x14.8"x6.7"– Wt. = 82 lbs. /each)**
- **(3) 4426 B66 RRH's (15.0"x13.2"x7.4" – Wt. = 49 lbs. /each)**
- **(3) RRUS-32 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)**
- **(6) DBC0061F1V51-2 Combiners (8.0"x6.2"x6.5" – Wt. = 19 lbs. /each)**
- **(1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each) (Tower Mount)**

**Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mounts. HDG's subconsultant, ProVertic LLC, conducted a survey climb and mapping of the existing AT&T antenna mounts on June 5, 2015. Mount photographs provided by Centerline Communications.

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 115 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 was converted to a nominal wind speed. The minimum wind speed value of 95 mph was used to perform this analysis per the TIA-222-G.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban or 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 500 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 1.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.

Based on our evaluation, we have determined that the existing mount **IS NOT CAPABLE** of supporting the proposed installation. HDG recommends the following modifications:

- **Install new handrail kit, SitePro1 P/N HRK12 (or approved equal). Handrail kit is required per AT&T Technical Directive to stabilize existing cantilevered antennas.**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing 3C/4C/5C Mount Rating	27	LC10	101%	**FAIL**
Modified 3C/4C/5C Mount Rating	33	LC1	94%	**PASS**

Reference Documents:

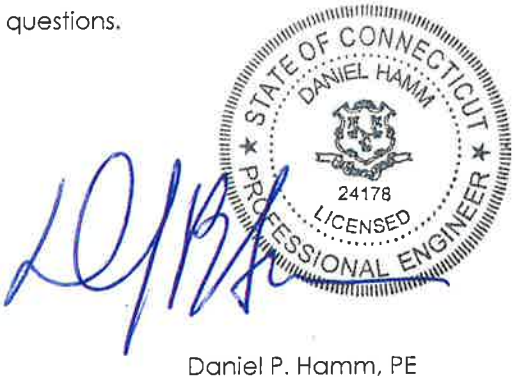
- Mount mapping report prepared by ProVertic LLC.

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. Contractor to perform pre-inspection prior to construction.
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:



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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: 8/13/2018
Project Name: Preston Hill
Project Number: CT2087
Designed By: JP **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

	z=	196 (ft)
	z_g=	1200 (ft)
K_z= **1.198**	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}= **1.012282367**

(If Category 1 then K_{zt} =1.0)

Category=	3

K_h=	77.91	
K_e=	0.9	(from Table 2-4)
K_t=	0.53	(from Table 2-5)
f=	2	(from Table 2-5)
z=	196	
H=	90	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.01	
K_{iz} =	1.20	(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} = **1.80** in

Date: 8/13/2018
Project Name: Preston Hill
Project Number: CT2087
Designed By: JP Checked By: MSC

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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= 225 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 State Building Code, Latest Edition.
Per TIA-222-G, V_{min} = 95 mph V_{max} = 115 mph

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

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

		K_z=	1.198
		K_{zt}=	1.0
q_z=	**26.61**	K_d=	0.95
$q_{z\,(ice)}$=	**7.37**	V_{asd}=	95 mph
$q_{z\,(30)}$=	**2.65**	$V_{max\,(ice)}$=	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

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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 = **1.80** 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)
800-10121 Antenna	54.5	10.3	5.9	3.90	5.29	1.32	137	55	14
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	4.86	1.31	257	93	26
800-10798 Antenna	78.5	14.8	6.7	8.07	5.30	1.32	284	102	28
RRUS-11 RRH	19.7	17.0	7.2	2.33	1.16	1.20	74	29	7
RRUS-11 RRH (Shielded)	19.7	2.2	7.2	0.30	8.95	1.47	12	10	1
RRUS-32 RRH	27.2	12.1	7.0	2.29	2.25	1.20	73	30	7
4426 B66 RRH	15.0	13.2	5.8	1.38	1.14	1.20	44	19	4
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.10	1.20	84	33	8
RRUS-12 RRH (Shielded)	20.4	3.7	7.5	0.52	5.51	1.33	19	12	2
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.96	1.20	26	13	3
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	30	13	3
2" Pipe	2.4	12.0		0.20	0.20	1.20	6	6	1
C 5x9	5.0	12.0		0.42	0.42	2.00	22	14	2

Date: 8/13/2018
Project Name: Preston Hill
Project Number: CT2087
Designed By: JP Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.80	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)
800-10121 Antenna	54.5	10.3	5.9	3.90	2.23	5.29	9.24	1.32	1.47	137	88	125
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	257	147	229
800-10798 Antenna	78.5	14.8	6.7	8.07	3.65	5.30	11.72	1.32	1.56	284	151	251
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	74	32	64
RRUS-11 RRH (Shielded)	19.7	8.5	7.2	1.16	0.99	2.32	2.74	1.20	1.21	37	32	36
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	73	44	66
4426 B66 RRH	15.0	13.2	5.8	1.38	0.60	1.14	2.59	1.20	1.20	44	19	38
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	84	34	71
RRUS-12 RRH (Shielded)	20.4	9.3	7.5	1.31	1.06	2.21	2.72	1.20	1.21	42	34	40
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	26	9	22

WIND LOADS WITH ICE:

800-10121 Antenna	58.1	13.9	9.5	5.61	3.83	4.18	6.12	1.27	1.36	53	38	49
OPA-65R-LCUU-H6 Antenna	75.6	18.4	11.0	9.66	5.78	4.11	6.87	1.27	1.39	91	59	83
800-10798 Antenna	82.1	18.4	10.3	10.49	5.87	4.46	7.97	1.29	1.43	100	62	90
RRUS-11 RRH	23.3	20.6	10.8	3.33	1.75	1.13	2.16	1.20	1.20	29	15	26
RRUS-11 RRH (Shielded)	23.3	10.3	10.8	1.67	1.75	2.26	2.16	1.20	1.20	15	15	15
RRUS-32 RRH	30.8	15.7	10.6	3.36	2.27	1.96	2.91	1.20	1.22	30	20	27
4426 B66 RRH	18.6	16.8	9.4	2.17	1.21	1.11	1.98	1.20	1.20	19	11	17
RRUS-12 RRH	24.0	22.1	11.1	3.68	1.85	1.09	2.16	1.20	1.20	33	16	29
RRUS-12 RRH (Shielded)	24.0	11.1	11.1	1.84	1.85	2.17	2.16	1.20	1.20	16	16	16
DTMABP7819VG12A TMA	14.3	14.7	7.4	1.46	0.73	0.97	1.93	1.20	1.20	13	7	11
Surge Arrestor	27.6	13.3	13.3	2.55	2.55	2.08	2.08	1.20	1.20	23	23	23

WIND LOADS AT 30 MPH:

800-10121 Antenna	54.5	10.3	5.9	3.90	2.23	5.29	9.24	1.32	1.47	14	9	12
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	26	15	23
800-10798 Antenna	78.5	14.8	6.7	8.07	3.65	5.30	11.72	1.32	1.56	28	15	25
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 (Shielded)	19.7	8.5	7.2	1.16	0.99	2.32	2.74	1.20	1.21	4	3	4
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	7	4	7
4426 B66 RRH	15.0	13.2	5.8	1.38	0.60	1.14	2.59	1.20	1.20	4	2	4
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	8	3	7
RRUS-12 RRH (Shielded)	20.4	9.3	7.5	1.31	1.06	2.21	2.72	1.20	1.21	4	3	4
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	3	1	2

Date: 8/13/2018
Project Name: Preston Hill
Project Number: CT2087
Designed By: JP Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.80	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)
800-10121 Antenna	54.5	10.3	5.9	3.90	2.23	5.29	9.24	1.32	1.47	137	88	100
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	257	147	174
800-10798 Antenna	78.5	14.8	6.7	8.07	3.65	5.30	11.72	1.32	1.56	284	151	185
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	74	32	42
RRUS-11 RRH (Shielded)	19.7	12.8	7.2	1.74	0.99	1.55	2.74	1.20	1.21	56	32	38
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	73	44	52
4426 B66 RRH	15.0	13.2	5.8	1.38	0.60	1.14	2.59	1.20	1.20	44	19	25
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	84	34	47
RRUS-12 RRH (Shielded)	20.4	13.9	7.5	1.97	1.06	1.47	2.72	1.20	1.21	63	34	41
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	26	9	13

WIND LOADS WITH ICE:

800-10121 Antenna	58.1	13.9	9.5	5.61	3.83	4.18	6.12	1.27	1.36	53	38	42
OPA-65R-LCUU-H6 Antenna	75.6	18.4	11.0	9.66	5.78	4.11	6.87	1.27	1.39	91	59	67
800-10798 Antenna	82.1	18.4	10.3	10.49	5.87	4.46	7.97	1.29	1.43	100	62	71
RRUS-11 RRH	23.3	20.6	10.8	3.33	1.75	1.13	2.16	1.20	1.20	29	15	19
RRUS-11 RRH (Shielded)	23.3	15.5	10.8	2.50	1.75	1.51	2.16	1.20	1.20	22	15	17
RRUS-32 RRH	30.8	15.7	10.6	3.36	2.27	1.96	2.91	1.20	1.22	30	20	23
4426 B66 RRH	18.6	16.8	9.4	2.17	1.21	1.11	1.98	1.20	1.20	19	11	13
RRUS-12 RRH	24.0	22.1	11.1	3.68	1.85	1.09	2.16	1.20	1.20	33	16	20
RRUS-12 RRH (Shielded)	24.0	16.6	11.1	2.76	1.85	1.45	2.16	1.20	1.20	24	16	18
DTMABP7819VG12A TMA	14.3	14.7	7.4	1.46	0.73	0.97	1.93	1.20	1.20	13	7	8
Surge Arrestor	27.6	13.3	13.3	2.55	2.55	2.08	2.08	1.20	1.20	23	23	23

WIND LOADS AT 30 MPH:

800-10121 Antenna	54.5	10.3	5.9	3.90	2.23	5.29	9.24	1.32	1.47	11	9	10
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	26	15	17
800-10798 Antenna	78.5	14.8	6.7	8.07	3.65	5.30	11.72	1.32	1.56	28	15	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 (Shielded)	19.7	12.8	7.2	1.74	0.99	1.55	2.74	1.20	1.21	6	3	4
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	7	4	5
4426 B66 RRH	15.0	13.2	5.8	1.38	0.60	1.14	2.59	1.20	1.20	4	2	3
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	8	3	5
RRUS-12 RRH (Shielded)	20.4	13.9	7.5	1.97	1.06	1.47	2.72	1.20	1.21	6	3	4
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	3	1	1

Date: 8/13/2018
Project Name: Preston Hill
Project Number: CT2087
Designed By: JP Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.80	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)
800-10121 Antenna	54.5	10.3	5.9	3.90	2.23	5.29	9.24	1.32	1.47	137	88	88
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	257	147	147
800-10798 Antenna	78.5	14.8	6.7	8.07	3.65	5.30	11.72	1.32	1.56	284	151	151
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	74	32	32
RRUS-11 RRH (Shielded)	19.7	2.2	7.2	0.30	0.99	8.95	2.74	1.47	1.21	12	32	32
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	73	44	44
4426 B66 RRH	15.0	13.2	5.8	1.38	0.60	1.14	2.59	1.20	1.20	44	19	19
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	84	34	34
RRUS-12 RRH (Shielded)	20.4	3.7	7.5	0.52	1.06	5.51	2.72	1.33	1.21	19	34	34
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	26	9	9

WIND LOADS WITH ICE:

800-10121 Antenna	58.1	13.9	9.5	5.61	3.83	4.18	6.12	1.27	1.36	53	38	38
OPA-65R-LCUU-H6 Antenna	75.6	18.4	11.0	9.66	5.78	4.11	6.87	1.27	1.39	91	59	59
800-10798 Antenna	82.1	18.4	10.3	10.49	5.87	4.46	7.97	1.29	1.43	100	62	62
RRUS-11 RRH	23.3	20.6	10.8	3.33	1.75	1.13	2.16	1.20	1.20	29	15	15
RRUS-11 RRH (Shielded)	23.3	5.8	10.8	0.94	1.75	4.02	2.16	1.27	1.20	9	15	15
RRUS-32 RRH	30.8	15.7	10.6	3.36	2.27	1.96	2.91	1.20	1.22	30	20	20
4426 B66 RRH	18.6	16.8	9.4	2.17	1.21	1.11	1.98	1.20	1.20	19	11	11
RRUS-12 RRH	24.0	22.1	11.1	3.68	1.85	1.09	2.16	1.20	1.20	33	16	16
RRUS-12 RRH (Shielded)	24.0	7.3	11.1	1.22	1.85	3.29	2.16	1.24	1.20	11	16	16
DTMABP7819VG12A TMA	14.3	14.7	7.4	1.46	0.73	0.97	1.93	1.20	1.20	13	7	7
Surge Arrestor	27.6	13.3	13.3	2.55	2.55	2.08	2.08	1.20	1.20	23	23	23

WIND LOADS AT 30 MPH:

800-10121 Antenna	54.5	10.3	5.9	3.90	2.23	5.29	9.24	1.32	1.47	14	9	9
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	26	15	15
800-10798 Antenna	78.5	14.8	6.7	8.07	3.65	5.30	11.72	1.32	1.56	28	15	15
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 (Shielded)	19.7	2.2	7.2	0.30	0.99	8.95	2.74	1.47	1.21	1	3	3
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	7	4	4
4426 B66 RRH	15.0	13.2	5.8	1.38	0.60	1.14	2.59	1.20	1.20	4	2	2
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	8	3	3
RRUS-12 RRH (Shielded)	20.4	3.7	7.5	0.52	1.06	5.51	2.72	1.33	1.21	2	3	3
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	3	1	1

Date: 8/13/2018
Project Name: Preston Hill
Project Number: CT2087
Designed By: JP Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 120 (deg) | Ice Thickness = 1.80 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)
800-10121 Antenna	54.5	10.3	5.9	3.90	2.23	5.29	9.24	1.32	1.47	137	88	100
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	257	147	174
800-10798 Antenna	78.5	14.8	6.7	8.07	3.65	5.30	11.72	1.32	1.56	284	151	185
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	74	32	42
RRUS-11 RRH (Shielded)	19.7	12.8	7.2	1.74	0.99	1.55	2.74	1.20	1.21	56	32	38
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	73	44	52
4426 B66 RRH	15.0	13.2	5.8	1.38	0.60	1.14	2.59	1.20	1.20	44	19	25
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	84	34	47
RRUS-12 RRH (Shielded)	20.4	13.9	7.5	1.97	1.06	1.47	2.72	1.20	1.21	63	34	41
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	26	9	13

WIND LOADS WITH ICE:

800-10121 Antenna	58.1	13.9	9.5	5.61	3.83	4.18	6.12	1.27	1.36	53	38	42
OPA-65R-LCUU-H6 Antenna	75.6	18.4	11.0	9.66	5.78	4.11	6.87	1.27	1.39	91	59	67
800-10798 Antenna	82.1	18.4	10.3	10.49	5.87	4.46	7.97	1.29	1.43	100	62	71
RRUS-11 RRH	23.3	20.6	10.8	3.33	1.75	1.13	2.16	1.20	1.20	29	15	19
RRUS-11 RRH (Shielded)	23.3	15.5	10.8	2.50	1.75	1.51	2.16	1.20	1.20	22	15	17
RRUS-32 RRH	30.8	15.7	10.6	3.36	2.27	1.96	2.91	1.20	1.22	30	20	23
4426 B66 RRH	18.6	16.8	9.4	2.17	1.21	1.11	1.98	1.20	1.20	19	11	13
RRUS-12 RRH	24.0	22.1	11.1	3.68	1.85	1.09	2.16	1.20	1.20	33	16	20
RRUS-12 RRH (Shielded)	24.0	16.6	11.1	2.76	1.85	1.45	2.16	1.20	1.20	24	16	18
DTMABP7819VG12A TMA	14.3	14.7	7.4	1.46	0.73	0.97	1.93	1.20	1.20	13	7	8
Surge Arrestor	27.6	13.3	13.3	2.55	2.55	2.08	2.08	1.20	1.20	23	23	23

WIND LOADS AT 30 MPH:

800-10121 Antenna	54.5	10.3	5.9	3.90	2.23	5.29	9.24	1.32	1.47	14	9	10
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	26	15	17
800-10798 Antenna	78.5	14.8	6.7	8.07	3.65	5.30	11.72	1.32	1.56	28	15	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 (Shielded)	19.7	12.8	7.2	1.74	0.99	1.55	2.74	1.20	1.21	6	3	4
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	7	4	5
4426 B66 RRH	15.0	13.2	5.8	1.38	0.60	1.14	2.59	1.20	1.20	4	2	3
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	8	3	5
RRUS-12 RRH (Shielded)	20.4	13.9	7.5	1.97	1.06	1.47	2.72	1.20	1.21	6	3	4
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	3	1	1

Date: 8/13/2018
Project Name: Preston Hill
Project Number: CT2087
Designed By: JP Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 150 (deg) | Ice Thickness = 1.80 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)
800-10121 Antenna	54.5	10.3	5.9	3.90	2.23	5.29	9.24	1.32	1.47	137	88	125
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	257	147	229
800-10798 Antenna	78.5	14.8	6.7	8.07	3.65	5.30	11.72	1.32	1.56	284	151	251
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	74	32	64
RRUS-11 RRH (Shielded)	19.7	8.5	7.2	1.16	0.99	2.32	2.74	1.20	1.21	37	32	36
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	73	44	66
4426 B66 RRH	15.0	13.2	5.8	1.38	0.60	1.14	2.59	1.20	1.20	44	19	38
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	84	34	71
RRUS-12 RRH (Shielded)	20.4	9.3	7.5	1.31	1.06	2.21	2.72	1.20	1.21	42	34	40
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	26	9	22

WIND LOADS WITH ICE:

800-10121 Antenna	58.1	13.9	9.5	5.61	3.83	4.18	6.12	1.27	1.36	53	38	49
OPA-65R-LCUU-H6 Antenna	75.6	18.4	11.0	9.66	5.78	4.11	6.87	1.27	1.39	91	59	83
800-10798 Antenna	82.1	18.4	10.3	10.49	5.87	4.46	7.97	1.29	1.43	100	62	90
RRUS-11 RRH	23.3	20.6	10.8	3.33	1.75	1.13	2.16	1.20	1.20	29	15	26
RRUS-11 RRH (Shielded)	23.3	10.3	10.8	1.67	1.75	2.26	2.16	1.20	1.20	15	15	15
RRUS-32 RRH	30.8	15.7	10.6	3.36	2.27	1.96	2.91	1.20	1.22	30	20	27
4426 B66 RRH	18.6	16.8	9.4	2.17	1.21	1.11	1.98	1.20	1.20	19	11	17
RRUS-12 RRH	24.0	22.1	11.1	3.68	1.85	1.09	2.16	1.20	1.20	33	16	29
RRUS-12 RRH (Shielded)	24.0	11.1	11.1	1.84	1.85	2.17	2.16	1.20	1.20	16	16	16
DTMABP7819VG12A TMA	14.3	14.7	7.4	1.46	0.73	0.97	1.93	1.20	1.20	13	7	11
Surge Arrestor	27.6	13.3	13.3	2.55	2.55	2.08	2.08	1.20	1.20	23	23	23

WIND LOADS AT 30 MPH:

800-10121 Antenna	54.5	10.3	5.9	3.90	2.23	5.29	9.24	1.32	1.47	14	9	12
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	26	15	23
800-10798 Antenna	78.5	14.8	6.7	8.07	3.65	5.30	11.72	1.32	1.56	28	15	25
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 (Shielded)	19.7	8.5	7.2	1.16	0.99	2.32	2.74	1.20	1.21	4	3	4
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	7	4	7
4426 B66 RRH	15.0	13.2	5.8	1.38	0.60	1.14	2.59	1.20	1.20	4	2	4
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	8	3	7
RRUS-12 RRH (Shielded)	20.4	9.3	7.5	1.31	1.06	2.21	2.72	1.20	1.21	4	3	4
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	3	1	2

Date: 8/13/2018
Project Name: Preston Hill
Project Number: CT2087
Designed By: JP **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.80 in.
Density of ice: 56 pcf

800-10121 Antenna

Weight of ice based on total radial SF area:

Height (in):	54.5	
Width (in):	10.3	
Depth (in):	5.9	
Total weight of ice on object:		137 lbs
Weight of object:	45 lbs	
Combined weight of ice and object:		182 lbs

OPA-65R-LCUU-H6 Antenna

Weight of ice based on total radial SF area:

Height (in):	72.0	
Width (in):	14.8	
Depth (in):	7.4	
Total weight of ice on object:		242 lbs
Weight of object:	73 lbs	
Combined weight of ice and object:		315 lbs

800-10798 Antenna

Weight of ice based on total radial SF area:

Height (in):	78.5	
Width (in):	14.8	
Depth (in):	6.7	
Total weight of ice on object:		260 lbs
Weight of object:	82 lbs	
Combined weight of ice and object:		342 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:		73 lbs
Weight of object:	51 lbs	
Combined weight of ice and object:		124 lbs

RRUS-32 RRH

Weight of ice based on total radial SF area:

Height (in):	27.2	
Width (in):	12.1	
Depth (in):	7.0	
Total weight of ice on object:		79 lbs
Weight of object:	60 lbs	
Combined weight of ice and object:		139 lbs

4426 B66 RRH

Weight of ice based on total radial SF area:

Height (in):	15.0	
Width (in):	13.2	
Depth (in):	5.8	
Total weight of ice on object:		45 lbs
Weight of object:	49 lbs	
Combined weight of ice and object:		94 lbs

RRUS-12 RRH

Weight of ice based on total radial SF area:

Height (in):	20.4	
Width (in):	18.5	
Depth (in):	7.5	
Total weight of ice on object:		81 lbs
Weight of object:	58 lbs	
Combined weight of ice and object:		139 lbs

A2 Module

Weight of ice based on total radial SF area:

Height (in):	16.4	
Width (in):	15.1	
Depth (in):	3.4	
Total weight of ice on object:		52 lbs
Weight of object:	22 lbs	
Combined weight of ice and object:		74 lbs

Date: 8/13/2018
Project Name: Preston Hill
Project Number: CT2087
Designed By: JP **Checked By**: MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice:	1.80	in.
Density of ice:	56	pcf

DTMABP7819VG12A TMA

Weight of ice based on total radial SF area:

Height (in):	10.7	
Width (in):	11.1	
Depth (in):	3.8	
Total weight of ice on object:		27 lbs
Weight of object:	20	lbs
Combined weight of ice and object:		47 lbs

DBC0061F1V51-2 Diplexer

Weight of ice based on total radial SF area:

Height (in):	8.0	
Width (in):	6.2	
Depth (in):	6.5	
Total weight of ice on object:		16 lbs
Weight of object:	19	lbs
Combined weight of ice and object:		35 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:		51 lbs
Weight of object:	33	lbs
Combined weight of ice and object:		84 lbs

C 9x5

Weight of ice based on total radial SF area:

Height (in):	9	
Width (in):	5	
Per foot weight of ice on object:		27 plf

PL 6x1/2

Weight of ice based on total radial SF area:

Height (in):	6	
Width (in):	1	
Per foot weight of ice on object:		17 plf

HSS 3x3

Weight of ice based on total radial SF area:

Height (in):	3	
Width (in):	3	
Per foot weight of ice on object:		13 plf

2" pipe

Per foot weight of ice:

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

L 3-1/2x3-1/2 Angle

Weight of ice based on total radial SF area:

Height (in):	3.5	
Width (in):	3.5	
Per foot weight of ice on object:		15 plf

HUDSON
Design Group LLC

3C/4C/5C Mount Calculations
(Existing Conditions)

Bentley

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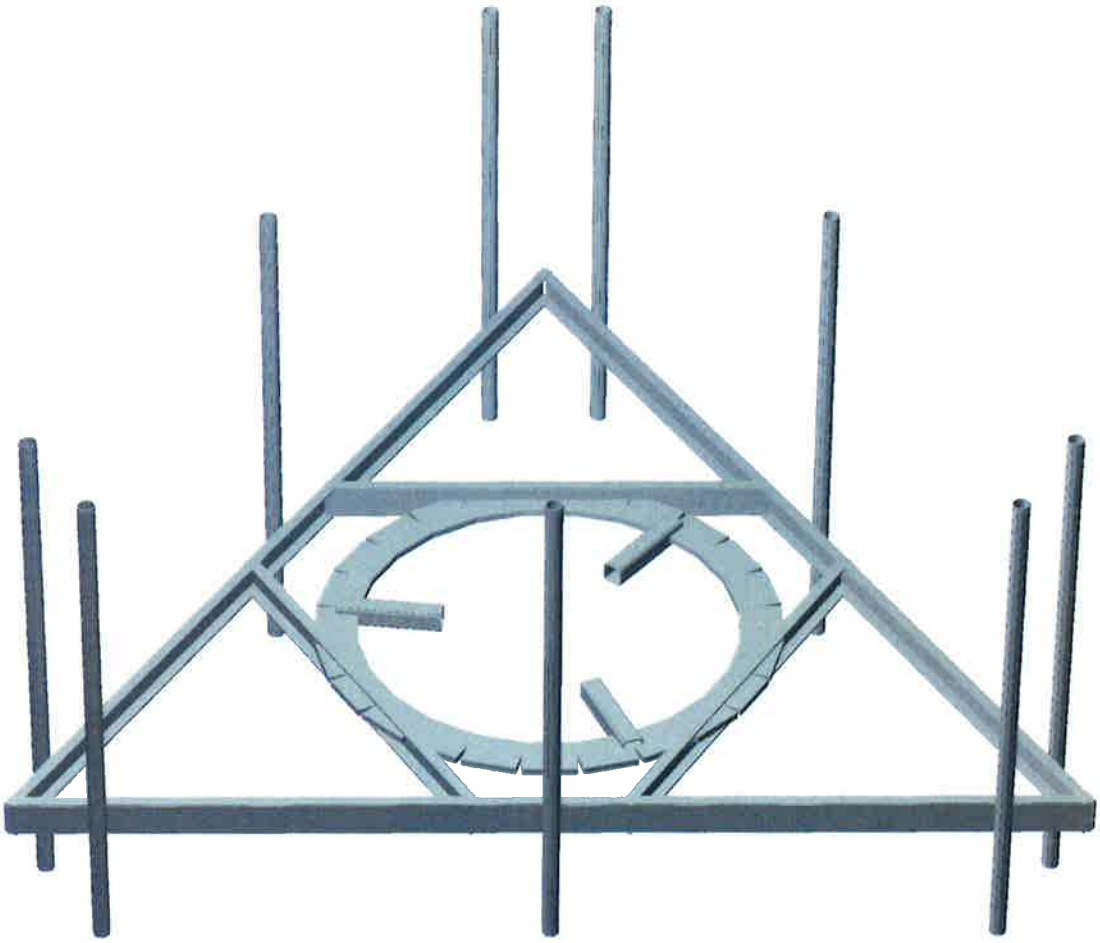

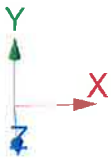

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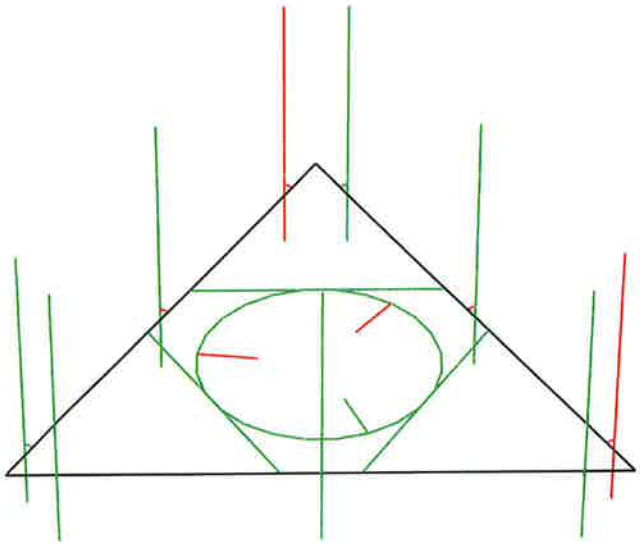
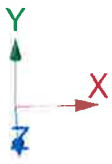
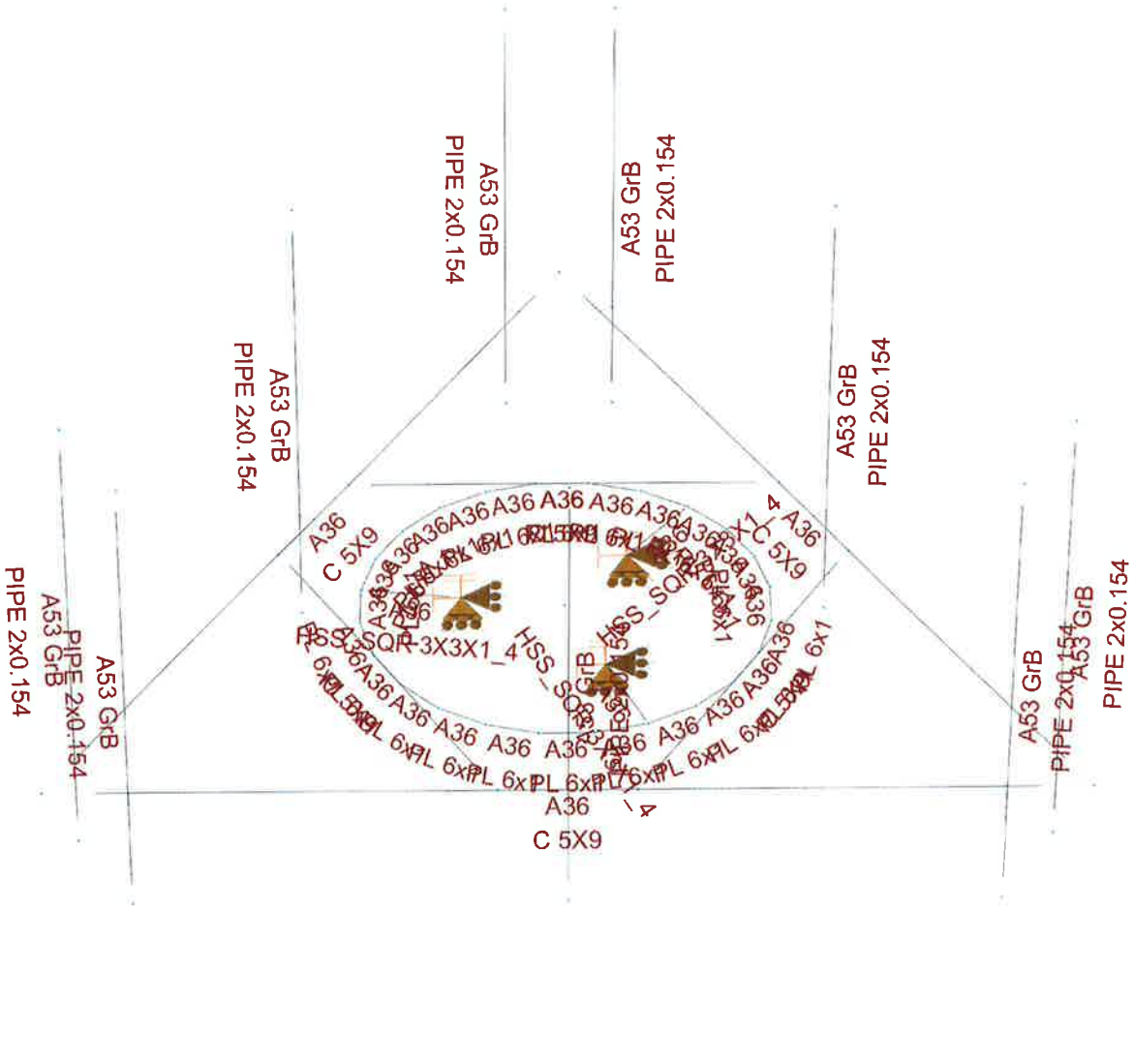
- Error on design
- Design O.K.
- With warnings



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Bentley

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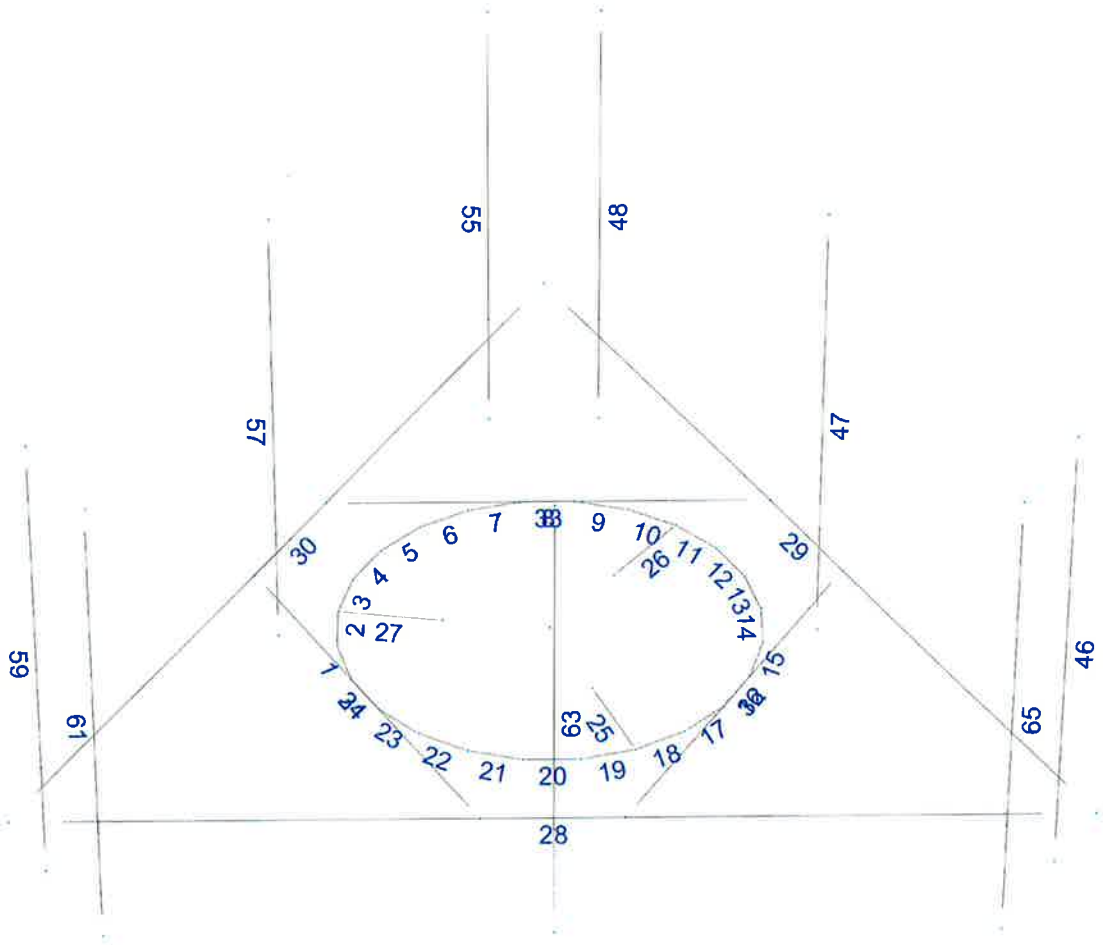

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Load data

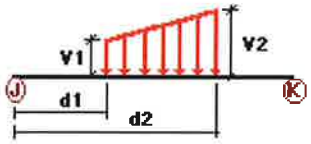
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
W0	Wind Load 0/60/120 deg	No	WIND
W30	Wind Load 30/90/150 deg	No	WIND
Di	Ice Load	No	LL
Wi0	Ice Wind Load 0/60/120 deg	No	WIND
Wi30	Ice Wind Load 30/90/150 deg	No	WIND
WL0	WL 30 mph 0/60/120 deg	No	WIND
WL30	WL 30 mph 30/90/150 deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load End of Mount	No	LL
LLa1	500 lb Live Load on Antenna 1	No	LL
LLa2	500 lb Live Load on Antenna 2	No	LL
LLa3	500 lb Live Load on Antenna 3	No	LL
LLa4	500 lb Live Load on Antenna 4	No	LL
W180	-W0	Yes	
W210	-W30	Yes	
Wi180	-Wi0	Yes	
Wi210	-Wi30	Yes	
WL180	-WL0	Yes	
WL210	-WL30	Yes	

Distributed force on members

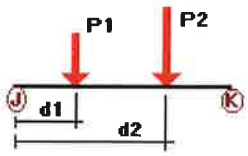


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
W0	28	Z	-0.022	-0.022	0.00	Yes	100.00	Yes
	29	Z	-0.022	-0.022	0.00	Yes	100.00	Yes
	30	Z	-0.022	-0.022	0.00	Yes	100.00	Yes
	31	Z	-0.022	-0.022	0.00	Yes	100.00	Yes
	32	Z	-0.022	-0.022	0.00	Yes	100.00	Yes
	33	Z	-0.022	-0.022	0.00	Yes	100.00	Yes
	46	Z	-0.006	-0.006	0.00	Yes	100.00	Yes
	47	Z	-0.006	-0.006	0.00	Yes	100.00	Yes

	48	Z	-0.006	-0.006	0.00	Yes	100.00	Yes
	55	Z	-0.006	-0.006	0.00	Yes	100.00	Yes
	57	Z	-0.006	-0.006	0.00	Yes	100.00	Yes
	59	Z	-0.006	-0.006	0.00	Yes	100.00	Yes
	61	Z	-0.006	-0.006	0.00	Yes	100.00	Yes
	63	Z	-0.006	-0.006	0.00	Yes	100.00	Yes
	65	Z	-0.006	-0.006	0.00	Yes	100.00	Yes
W30	28	X	-0.022	-0.022	0.00	Yes	100.00	Yes
	29	X	-0.022	-0.022	0.00	Yes	100.00	Yes
	30	X	-0.022	-0.022	0.00	Yes	100.00	Yes
	31	X	-0.022	-0.022	0.00	Yes	100.00	Yes
	32	X	-0.022	-0.022	0.00	Yes	100.00	Yes
	46	X	-0.006	-0.006	0.00	Yes	100.00	Yes
	47	X	-0.006	-0.006	0.00	Yes	100.00	Yes
	48	X	-0.006	-0.006	0.00	Yes	100.00	Yes
	55	X	-0.006	-0.006	0.00	Yes	100.00	Yes
	57	X	-0.006	-0.006	0.00	Yes	100.00	Yes
	59	X	-0.006	-0.006	0.00	Yes	100.00	Yes
	61	X	-0.006	-0.006	0.00	Yes	100.00	Yes
	63	X	-0.006	-0.006	0.00	Yes	100.00	Yes
	65	X	-0.006	-0.006	0.00	Yes	100.00	Yes
Di	1	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	2	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	3	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	4	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	5	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	6	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	7	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	8	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	9	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	10	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	11	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	12	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	13	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	14	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	15	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	16	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	17	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	18	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	19	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	20	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	21	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	22	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	23	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	24	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	25	Y	-0.013	-0.013	0.00	Yes	100.00	Yes
	26	Y	-0.013	-0.013	0.00	Yes	100.00	Yes
	27	Y	-0.013	-0.013	0.00	Yes	100.00	Yes
	28	Y	-0.027	-0.027	0.00	Yes	100.00	Yes
	29	Y	-0.027	-0.027	0.00	Yes	100.00	Yes
	30	Y	-0.027	-0.027	0.00	Yes	100.00	Yes
	31	Y	-0.027	-0.027	0.00	Yes	100.00	Yes
	32	Y	-0.027	-0.027	0.00	Yes	100.00	Yes
	33	Y	-0.027	-0.027	0.00	Yes	100.00	Yes
	46	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
	47	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
	48	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
	55	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
	57	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
	59	Y	-0.009	-0.009	0.00	Yes	100.00	Yes

61	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
63	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
65	Y	-0.009	-0.009	0.00	Yes	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	46	y	-0.041	1.00	No
		y	-0.041	5.00	No
		y	-0.049	2.00	No
		y	-0.08	4.00	No
	47	y	-0.037	1.00	No
		y	-0.037	5.00	No
		y	-0.051	2.00	No
		y	-0.06	4.00	No
	48	y	-0.023	1.00	No
		y	-0.023	5.00	No
		y	-0.02	3.00	No
	55	y	-0.041	1.00	No
		y	-0.041	5.00	No
		y	-0.049	2.00	No
		y	-0.08	4.00	No
	57	y	-0.037	1.00	No
		y	-0.037	5.00	No
		y	-0.051	2.00	No
		y	-0.06	4.00	No
	59	y	-0.023	1.00	No
		y	-0.023	5.00	No
		y	-0.02	3.00	No
	61	y	-0.041	1.00	No
		y	-0.041	5.00	No
		y	-0.049	2.00	No
		y	-0.08	4.00	No
	63	y	-0.037	1.00	No
		y	-0.037	5.00	No
		y	-0.051	2.00	No
		y	-0.06	4.00	No
	65	y	-0.023	1.00	No
		y	-0.023	5.00	No
		y	-0.02	3.00	No
W0	46	z	-0.093	1.00	No
		z	-0.093	5.00	No
		z	-0.025	2.00	No
		z	-0.041	4.00	No
	47	z	-0.088	1.00	No
		z	-0.088	5.00	No
		z	-0.038	2.00	No
		z	-0.052	4.00	No
	48	z	-0.051	1.00	No

		z	-0.051	5.00	No
		z	-0.013	3.00	No
	55	z	-0.093	1.00	No
		z	-0.093	5.00	No
		z	-0.025	2.00	No
		z	-0.041	4.00	No
	57	z	-0.088	1.00	No
		z	-0.088	5.00	No
		z	-0.038	2.00	No
		z	-0.052	4.00	No
	59	z	-0.051	1.00	No
		z	-0.051	5.00	No
		z	-0.013	3.00	No
	61	z	-0.143	1.00	No
		z	-0.143	5.00	No
		z	-0.019	4.00	No
	63	z	-0.129	1.00	No
		z	-0.129	5.00	No
		z	-0.012	2.00	No
	65	z	-0.069	1.00	No
		z	-0.069	5.00	No
W30	46	x	-0.126	1.00	No
		x	-0.126	5.00	No
		x	-0.038	2.00	No
		x	-0.04	4.00	No
	47	x	-0.115	1.00	No
		x	-0.115	5.00	No
		x	-0.036	2.00	No
		x	-0.066	4.00	No
	48	x	-0.063	1.00	No
		x	-0.063	5.00	No
		x	-0.022	3.00	No
	55	x	-0.126	1.00	No
		x	-0.126	5.00	No
		x	-0.038	2.00	No
		x	-0.04	4.00	No
	57	x	-0.115	1.00	No
		x	-0.115	5.00	No
		x	-0.036	2.00	No
		x	-0.066	4.00	No
	59	x	-0.063	1.00	No
		x	-0.063	5.00	No
		x	-0.022	3.00	No
	61	x	-0.076	1.00	No
		x	-0.076	5.00	No
		x	-0.019	2.00	No
		x	-0.034	4.00	No
	63	x	-0.074	1.00	No
		x	-0.074	5.00	No
		x	-0.032	2.00	No
		x	-0.044	4.00	No
	65	x	-0.044	1.00	No
		x	-0.044	5.00	No
		x	-0.009	3.00	No
Di	46	y	-0.13	1.00	No
		y	-0.13	5.00	No
		y	-0.045	2.00	No
		y	-0.133	4.00	No
	47	y	-0.121	1.00	No
		y	-0.121	5.00	No

		y	-0.073	2.00	No
		y	-0.079	4.00	No
	48	y	-0.069	1.00	No
		y	-0.069	5.00	No
		y	-0.027	3.00	No
	55	y	-0.13	1.00	No
		y	-0.13	5.00	No
		y	-0.045	2.00	No
		y	-0.133	4.00	No
	57	y	-0.121	1.00	No
		y	-0.121	5.00	No
		y	-0.073	2.00	No
		y	-0.079	4.00	No
	59	y	-0.069	1.00	No
		y	-0.069	5.00	No
		y	-0.027	3.00	No
	61	y	-0.13	1.00	No
		y	-0.13	5.00	No
		y	-0.045	2.00	No
		y	-0.133	4.00	No
	63	y	-0.121	1.00	No
		y	-0.121	5.00	No
		y	-0.073	2.00	No
		y	-0.079	4.00	No
	65	y	-0.069	1.00	No
		y	-0.069	5.00	No
		y	-0.027	3.00	No
Wi0	46	z	-0.036	1.00	No
		z	-0.036	5.00	No
		z	-0.013	2.00	No
		z	-0.018	4.00	No
	47	z	-0.034	1.00	No
		z	-0.034	5.00	No
		z	-0.017	2.00	No
		z	-0.023	4.00	No
	48	z	-0.022	1.00	No
		z	-0.022	5.00	No
		z	-0.008	3.00	No
	55	z	-0.036	1.00	No
		z	-0.036	5.00	No
		z	-0.013	2.00	No
		z	-0.018	4.00	No
	57	z	-0.034	1.00	No
		z	-0.034	5.00	No
		z	-0.017	2.00	No
		z	-0.023	4.00	No
	59	z	-0.022	1.00	No
		z	-0.022	5.00	No
		z	-0.008	3.00	No
	61	z	-0.052	1.00	No
		z	-0.052	5.00	No
		z	-0.012	4.00	No
	63	z	-0.047	1.00	No
		z	-0.047	5.00	No
		z	-0.01	2.00	No
	65	z	-0.028	1.00	No
		z	-0.028	5.00	No
Wi30	46	x	-0.046	1.00	No
		x	-0.046	5.00	No
		x	-0.017	2.00	No

		x	-0.016	4.00	No
	47	x	-0.042	1.00	No
		x	-0.042	5.00	No
		x	-0.015	2.00	No
		x	-0.027	4.00	No
	48	x	-0.025	1.00	No
		x	-0.025	5.00	No
		x	-0.011	3.00	No
	55	x	-0.046	1.00	No
		x	-0.046	5.00	No
		x	-0.017	2.00	No
		x	-0.016	4.00	No
	57	x	-0.042	1.00	No
		x	-0.042	5.00	No
		x	-0.015	2.00	No
		x	-0.027	4.00	No
	59	x	-0.025	1.00	No
		x	-0.025	5.00	No
		x	-0.011	3.00	No
	61	x	-0.032	1.00	No
		x	-0.032	5.00	No
		x	-0.011	2.00	No
		x	-0.016	4.00	No
	63	x	-0.03	1.00	No
		x	-0.03	5.00	No
		x	-0.015	2.00	No
		x	-0.02	4.00	No
	65	x	-0.02	1.00	No
		x	-0.02	5.00	No
		x	-0.007	3.00	No
WL0	46	z	-0.01	1.00	No
		z	-0.01	5.00	No
		z	-0.003	2.00	No
		z	-0.005	4.00	No
	47	z	-0.009	1.00	No
		z	-0.009	5.00	No
		z	-0.004	2.00	No
		z	-0.006	4.00	No
	48	z	-0.005	1.00	No
		z	-0.005	5.00	No
		z	-0.002	3.00	No
	55	z	-0.01	1.00	No
		z	-0.01	5.00	No
		z	-0.003	2.00	No
		z	-0.005	4.00	No
	57	z	-0.009	1.00	No
		z	-0.009	5.00	No
		z	-0.004	2.00	No
		z	-0.006	4.00	No
	59	z	-0.005	1.00	No
		z	-0.005	5.00	No
		z	-0.002	3.00	No
	61	z	-0.015	1.00	No
		z	-0.015	5.00	No
		z	-0.002	4.00	No
	63	z	-0.013	1.00	No
		z	-0.013	5.00	No
		z	-0.002	2.00	No
	65	z	-0.007	1.00	No
		z	-0.007	5.00	No

WL30	46	x	-0.013	1.00	No
		x	-0.013	5.00	No
		x	-0.004	2.00	No
		x	-0.004	4.00	No
	47	x	-0.012	1.00	No
		x	-0.012	5.00	No
		x	-0.004	2.00	No
		x	-0.007	4.00	No
	48	x	-0.007	1.00	No
		x	-0.007	5.00	No
		x	-0.003	3.00	No
	55	x	-0.013	1.00	No
		x	-0.013	5.00	No
		x	-0.004	2.00	No
		x	-0.004	4.00	No
	57	x	-0.012	1.00	No
		x	-0.012	5.00	No
		x	-0.004	2.00	No
		x	-0.007	4.00	No
	59	x	-0.007	1.00	No
		x	-0.007	5.00	No
		x	-0.003	3.00	No
	61	x	-0.008	1.00	No
		x	-0.008	5.00	No
		x	-0.002	2.00	No
		x	-0.004	4.00	No
	63	x	-0.008	1.00	No
		x	-0.008	5.00	No
		x	-0.004	2.00	No
		x	-0.005	4.00	No
	65	x	-0.005	1.00	No
		x	-0.005	5.00	No
		x	-0.001	3.00	No
LL1	28	y	-0.25	6.00	No
LL2	28	y	-0.25	12.00	No
LLa1	65	y	-0.50	3.00	No
LLa2	63	y	-0.50	3.00	No
LLa3	61	y	-0.50	3.00	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
W0	Wind Load 0/60/120 deg	No	0.00	0.00	0.00
W30	Wind Load 30/90/150 deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
Wi0	Ice Wind Load 0/60/120 deg	No	0.00	0.00	0.00
Wi30	Ice Wind Load 30/90/150 deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0/60/120 deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30/90/150 deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load End of Mount	No	0.00	0.00	0.00
LLa1	500 lb Live Load on Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load on Antenna 2	No	0.00	0.00	0.00

LLa3	500 lb Live Load on Antenna 3	No	0.00	0.00	0.00
LLa4	500 lb Live Load on Antenna 4	No	0.00	0.00	0.00
W180	-W0	Yes	0.00	0.00	0.00
W210	-W30	Yes	0.00	0.00	0.00
Wi180	-Wi0	Yes	0.00	0.00	0.00
Wi210	-Wi30	Yes	0.00	0.00	0.00
WL180	-WL0	Yes	0.00	0.00	0.00
WL210	-WL30	Yes	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	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
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	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
LLa4	0.00	0.00	0.00
W180	0.00	0.00	0.00
W210	0.00	0.00	0.00
Wi180	0.00	0.00	0.00
Wi210	0.00	0.00	0.00
WL180	0.00	0.00	0.00
WL210	0.00	0.00	0.00

Bentley

Current Date: 8/13/2018 6:20 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2087\3C-4C-5C 2018\CT2087 (3C-4C-5C).etz\

Steel Code Check

Report: Summary - For all selected load conditions

Load conditions to be included in design :

LC1=1.2DL+1.6W0
LC2=1.2DL+1.6W30
LC3=1.2DL-1.6W0
LC4=1.2DL-1.6W30
LC5=0.9DL+1.6W0
LC6=0.9DL+1.6W30
LC7=0.9DL-1.6W0
LC8=0.9DL-1.6W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.2DL
LC14=0.9DL
LC15=1.2DL+1.6LL1
LC16=1.2DL+1.6LL2
LC17=1.2DL+WL0+LLa1
LC18=1.2DL+WL30+LLa1
LC19=1.2DL-WL0+LLa1
LC20=1.2DL-WL30+LLa1
LC21=1.2DL+WL0+LLa2
LC22=1.2DL+WL30+LLa2
LC23=1.2DL-WL0+LLa2
LC24=1.2DL-WL30+LLa2
LC25=1.2DL+WL0+LLa3
LC26=1.2DL+WL30+LLa3
LC27=1.2DL-WL0+LLa3
LC28=1.2DL-WL30+LLa3
LC29=1.2DL+WL0+LLa4
LC30=1.2DL+WL30+LLa4
LC31=1.2DL-WL0+LLa4
LC32=1.2DL-WL30+LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	C 5X9	**28**	LC1 at 8.33%	0.28	With warnings	
			LC10 at 56.25%	0.48	With warnings	
			LC11 at 56.25%	0.46	With warnings	
			LC12 at 56.25%	0.52	With warnings	
			LC13 at 56.25%	0.14	With warnings	
			LC14 at 56.25%	0.10	With warnings	
			LC15 at 56.25%	0.13	With warnings	
			LC16 at 56.25%	0.29	With warnings	
			LC17 at 56.25%	0.30	With warnings	
			LC18 at 56.25%	0.31	With warnings	
			LC19 at 56.25%	0.31	With warnings	
			LC2 at 43.75%	0.66	With warnings	
			LC20 at 56.25%	0.32	With warnings	
			LC21 at 56.25%	0.13	With warnings	
			LC22 at 56.25%	0.15	With warnings	
			LC23 at 56.25%	0.15	With warnings	

	LC24 at 56.25%	0.16	With warnings	
	LC25 at 56.25%	0.23	With warnings	
	LC26 at 56.25%	0.25	With warnings	
	LC27 at 56.25%	0.25	With warnings	
	LC28 at 56.25%	0.26	With warnings	
	LC29 at 56.25%	0.14	With warnings	
	LC3 at 57.29%	0.49	With warnings	Eq. H1-1b
	LC30 at 56.25%	0.16	With warnings	
	LC31 at 56.25%	0.15	With warnings	
	LC32 at 56.25%	0.17	With warnings	
	LC4 at 56.25%	**0.79**	**With warnings**	Eq. H1-1b
	LC5 at 8.33%	0.29	With warnings	
	LC6 at 43.75%	0.63	With warnings	
	LC7 at 57.29%	0.45	With warnings	
	LC8 at 56.25%	0.75	With warnings	
	LC9 at 57.29%	0.42	With warnings	
29	LC1 at 56.25%	**0.74**	**With warnings**	Eq. H1-1b
	LC10 at 56.25%	0.48	With warnings	
	LC11 at 56.25%	0.48	With warnings	
	LC12 at 56.25%	0.51	With warnings	
	LC13 at 56.25%	0.14	With warnings	
	LC14 at 56.25%	0.10	With warnings	
	LC15 at 56.25%	0.13	With warnings	
	LC16 at 56.25%	0.22	With warnings	
	LC17 at 43.75%	0.31	With warnings	
	LC18 at 56.25%	0.29	With warnings	
	LC19 at 43.75%	0.30	With warnings	
	LC2 at 56.25%	0.46	With warnings	
	LC20 at 56.25%	0.26	With warnings	
	LC21 at 56.25%	0.16	With warnings	
	LC22 at 56.25%	0.15	With warnings	
	LC23 at 43.75%	0.16	With warnings	
	LC24 at 56.25%	0.15	With warnings	
	LC25 at 56.25%	0.05	With warnings	
	LC26 at 8.33%	0.04	With warnings	
	LC27 at 43.75%	0.04	With warnings	
	LC28 at 56.25%	0.05	With warnings	
	LC29 at 56.25%	0.17	With warnings	
	LC3 at 43.75%	0.60	With warnings	
	LC30 at 56.25%	0.16	With warnings	
	LC31 at 56.25%	0.16	With warnings	
	LC32 at 56.25%	0.17	With warnings	
	LC4 at 56.25%	0.70	With warnings	Eq. H1-1b
	LC5 at 43.75%	0.71	With warnings	
	LC6 at 56.25%	0.46	With warnings	
	LC7 at 43.75%	0.57	With warnings	
	LC8 at 56.25%	0.67	With warnings	
	LC9 at 56.25%	0.51	With warnings	
30	LC1 at 56.25%	**0.74**	**With warnings**	Eq. H1-1b
	LC10 at 56.25%	0.49	With warnings	
	LC11 at 56.25%	0.49	With warnings	
	LC12 at 56.25%	0.44	With warnings	
	LC13 at 56.25%	0.14	With warnings	
	LC14 at 56.25%	0.10	With warnings	
	LC15 at 56.25%	0.16	With warnings	
	LC16 at 56.25%	0.04	With warnings	
	LC17 at 56.25%	0.06	With warnings	
	LC18 at 56.25%	0.06	With warnings	
	LC19 at 56.25%	0.06	With warnings	
	LC2 at 43.75%	0.69	With warnings	Eq. H1-1b
	LC20 at 8.33%	0.04	With warnings	
	LC21 at 56.25%	0.19	With warnings	

	LC22 at 56.25%	0.19	With warnings	
	LC23 at 56.25%	0.19	With warnings	
	LC24 at 56.25%	0.18	With warnings	
	LC25 at 56.25%	0.33	With warnings	
	LC26 at 56.25%	0.33	With warnings	
	LC27 at 56.25%	0.33	With warnings	
	LC28 at 56.25%	0.34	With warnings	
	LC29 at 56.25%	0.16	With warnings	
	LC3 at 56.25%	0.68	With warnings	
	LC30 at 56.25%	0.16	With warnings	
	LC31 at 56.25%	0.16	With warnings	
	LC32 at 56.25%	0.15	With warnings	
	LC4 at 43.75%	0.46	With warnings	
	LC5 at 56.25%	0.71	With warnings	
	LC6 at 43.75%	0.66	With warnings	
	LC7 at 56.25%	0.64	With warnings	
	LC8 at 43.75%	0.49	With warnings	
	LC9 at 56.25%	0.51	With warnings	
31	LC1 at 56.25%	0.53	OK	
	LC10 at 56.25%	0.56	OK	
	LC11 at 56.25%	0.53	OK	
	LC12 at 56.25%	0.44	OK	
	LC13 at 56.25%	0.16	OK	
	LC14 at 56.25%	0.12	OK	
	LC15 at 56.25%	0.18	OK	
	LC16 at 56.25%	0.09	OK	
	LC17 at 56.25%	0.10	OK	
	LC18 at 56.25%	0.12	OK	
	LC19 at 56.25%	0.10	OK	
	LC2 at 56.25%	**0.76**	**OK**	Eq. H1-1b
	LC20 at 56.25%	0.08	OK	
	LC21 at 56.25%	0.20	OK	
	LC22 at 56.25%	0.22	OK	
	LC23 at 56.25%	0.21	OK	
	LC24 at 56.25%	0.19	OK	
	LC25 at 56.25%	0.32	OK	
	LC26 at 56.25%	0.33	OK	
	LC27 at 56.25%	0.32	OK	
	LC28 at 56.25%	0.30	OK	
	LC29 at 56.25%	0.17	OK	
	LC3 at 56.25%	0.58	OK	
	LC30 at 56.25%	0.19	OK	
	LC31 at 56.25%	0.17	OK	
	LC32 at 56.25%	0.15	OK	
	LC4 at 0.00%	0.51	OK	Eq. H1-1b
	LC5 at 56.25%	0.49	OK	
	LC6 at 56.25%	0.73	OK	
	LC7 at 56.25%	0.54	OK	
	LC8 at 43.75%	0.51	OK	
	LC9 at 56.25%	0.52	OK	
32	LC1 at 100.00%	0.46	OK	Eq. H1-1b
	LC10 at 43.75%	0.49	OK	
	LC11 at 43.75%	0.51	OK	
	LC12 at 43.75%	0.56	OK	
	LC13 at 43.75%	0.16	OK	
	LC14 at 43.75%	0.12	OK	
	LC15 at 43.75%	0.23	OK	
	LC16 at 43.75%	0.29	OK	
	LC17 at 43.75%	0.31	OK	
	LC18 at 43.75%	0.33	OK	
	LC19 at 43.75%	0.33	OK	
	LC2 at 0.00%	0.49	OK	Eq. H1-1b

		LC20 at 43.75%	0.35	OK	
		LC21 at 43.75%	0.25	OK	
		LC22 at 43.75%	0.27	OK	
		LC23 at 43.75%	0.27	OK	
		LC24 at 43.75%	0.29	OK	
		LC25 at 43.75%	0.17	OK	
		LC26 at 43.75%	0.19	OK	
		LC27 at 43.75%	0.20	OK	
		LC28 at 43.75%	0.21	OK	
		LC29 at 43.75%	0.14	OK	
		LC3 at 56.25%	0.56	OK	Eq. H1-1b
		LC30 at 43.75%	0.16	OK	
		LC31 at 43.75%	0.17	OK	
		LC32 at 43.75%	0.18	OK	
		LC4 at 43.75%	**0.79**	**OK**	Eq. H1-1b
		LC5 at 100.00%	0.46	OK	
		LC6 at 43.75%	0.49	OK	
		LC7 at 56.25%	0.54	OK	
		LC8 at 43.75%	0.75	OK	
		LC9 at 43.75%	0.42	OK	
	33	LC1 at 56.25%	**0.84**	**OK**	Eq. H1-1b
		LC10 at 56.25%	0.47	OK	
		LC11 at 56.25%	0.47	OK	
		LC12 at 56.25%	0.52	OK	
		LC13 at 56.25%	0.16	OK	
		LC14 at 56.25%	0.12	OK	
		LC15 at 56.25%	0.13	OK	
		LC16 at 56.25%	0.17	OK	
		LC17 at 56.25%	0.19	OK	
		LC18 at 56.25%	0.16	OK	
		LC19 at 56.25%	0.16	OK	
		LC2 at 43.75%	0.34	OK	
		LC20 at 56.25%	0.18	OK	
		LC21 at 56.25%	0.15	OK	
		LC22 at 56.25%	0.12	OK	
		LC23 at 56.25%	0.12	OK	
		LC24 at 56.25%	0.14	OK	
		LC25 at 56.25%	0.10	OK	
		LC26 at 56.25%	0.08	OK	
		LC27 at 56.25%	0.08	OK	
		LC28 at 56.25%	0.09	OK	
		LC29 at 56.25%	0.19	OK	
		LC3 at 0.00%	0.52	OK	
		LC30 at 56.25%	0.16	OK	
		LC31 at 56.25%	0.16	OK	
		LC32 at 56.25%	0.17	OK	
		LC4 at 56.25%	0.50	OK	
		LC5 at 56.25%	0.80	OK	
		LC6 at 0.00%	0.32	OK	
		LC7 at 56.25%	0.56	OK	
		LC8 at 56.25%	0.47	OK	
		LC9 at 56.25%	0.57	OK	
HSS_SQR 3X3X1_4	**25**	LC1 at 100.00%	0.15	OK	
		LC10 at 100.00%	0.67	OK	
		LC11 at 100.00%	**0.98**	**OK**	Eq. H3-6
		LC12 at 100.00%	0.97	OK	
		LC13 at 100.00%	0.24	OK	
		LC14 at 100.00%	0.18	OK	
		LC15 at 100.00%	0.36	OK	
		LC16 at 100.00%	0.43	OK	
		LC17 at 100.00%	0.46	OK	
		LC18 at 100.00%	0.47	OK	

	LC19 at 100.00%	0.50	OK	
	LC2 at 100.00%	0.23	OK	
	LC20 at 100.00%	0.61	OK	
	LC21 at 100.00%	0.38	OK	
	LC22 at 100.00%	0.39	OK	
	LC23 at 100.00%	0.42	OK	
	LC24 at 100.00%	0.41	OK	
	LC25 at 100.00%	0.29	OK	
	LC26 at 100.00%	0.30	OK	
	LC27 at 100.00%	0.32	OK	
	LC28 at 100.00%	0.32	OK	
	LC29 at 100.00%	0.23	OK	
	LC3 at 100.00%	0.64	OK	
	LC30 at 100.00%	0.24	OK	
	LC31 at 100.00%	0.27	OK	
	LC32 at 100.00%	0.26	OK	
	LC4 at 100.00%	0.74	OK	
	LC5 at 100.00%	0.21	OK	
	LC6 at 0.00%	0.18	OK	
	LC7 at 100.00%	0.58	OK	
	LC8 at 100.00%	0.50	OK	
	LC9 at 100.00%	0.79	OK	
26	LC1 at 100.00%	0.87	OK	
	LC10 at 100.00%	0.86	OK	
	LC11 at 100.00%	0.64	OK	
	LC12 at 100.00%	0.97	OK	
	LC13 at 100.00%	0.24	OK	
	LC14 at 100.00%	0.18	OK	
	LC15 at 100.00%	0.20	OK	
	LC16 at 100.00%	0.27	OK	
	LC17 at 100.00%	0.28	OK	
	LC18 at 100.00%	0.26	OK	
	LC19 at 100.00%	0.25	OK	
	LC2 at 100.00%	0.24	OK	
	LC20 at 100.00%	0.28	OK	
	LC21 at 100.00%	0.21	OK	
	LC22 at 100.00%	0.18	OK	
	LC23 at 100.00%	0.17	OK	
	LC24 at 100.00%	0.21	OK	
	LC25 at 100.00%	0.13	OK	
	LC26 at 100.00%	0.11	OK	
	LC27 at 100.00%	0.10	OK	
	LC28 at 100.00%	0.13	OK	
	LC29 at 100.00%	0.27	OK	
	LC3 at 100.00%	0.18	OK	
	LC30 at 100.00%	0.24	OK	
	LC31 at 100.00%	0.23	OK	
	LC32 at 100.00%	0.27	OK	
	LC4 at 100.00%	0.65	OK	
	LC5 at 100.00%	0.77	OK	
	LC6 at 100.00%	0.22	OK	
	LC7 at 100.00%	0.24	OK	
	LC8 at 100.00%	0.59	OK	
	LC9 at 100.00%	**1.00**	**N.G.**	Eq. H3-6
27	LC1 at 100.00%	0.46	OK	
	LC10 at 100.00%	**1.01**	**N.G.**	Eq. H3-6
	LC11 at 100.00%	0.92	OK	
	LC12 at 100.00%	0.77	OK	
	LC13 at 100.00%	0.24	OK	
	LC14 at 100.00%	0.18	OK	
	LC15 at 100.00%	0.28	OK	
	LC16 at 100.00%	0.13	OK	

		LC17 at 100.00%	0.14	OK	
		LC18 at 100.00%	0.16	OK	
		LC19 at 100.00%	0.14	OK	
		LC2 at 100.00%	0.70	OK	
		LC20 at 100.00%	0.11	OK	
		LC21 at 100.00%	0.29	OK	
		LC22 at 100.00%	0.31	OK	
		LC23 at 100.00%	0.29	OK	
		LC24 at 100.00%	0.26	OK	
		LC25 at 100.00%	0.46	OK	
		LC26 at 100.00%	0.59	OK	
		LC27 at 100.00%	0.57	OK	
		LC28 at 100.00%	0.43	OK	
		LC29 at 100.00%	0.25	OK	
		LC3 at 100.00%	0.42	OK	
		LC30 at 100.00%	0.27	OK	
		LC31 at 100.00%	0.25	OK	
		LC32 at 100.00%	0.23	OK	
		LC4 at 100.00%	0.21	OK	
		LC5 at 100.00%	0.40	OK	
		LC6 at 100.00%	0.64	OK	
		LC7 at 100.00%	0.36	OK	
		LC8 at 100.00%	0.27	OK	
		LC9 at 100.00%	0.90	OK	
PIPE 2x0.154	**46**	LC1 at 71.88%	0.77	OK	
		LC10 at 71.88%	0.24	OK	
		LC11 at 71.88%	0.19	OK	
		LC12 at 71.88%	0.24	OK	
		LC13 at 71.88%	0.02	OK	
		LC14 at 71.88%	0.01	OK	
		LC15 at 71.88%	0.02	OK	
		LC16 at 71.88%	0.02	OK	
		LC17 at 71.88%	0.05	OK	
		LC18 at 71.88%	0.07	OK	
		LC19 at 71.88%	0.05	OK	
		LC2 at 71.88%	**1.01**	**N.G.**	Eq. H1-1b
		LC20 at 71.88%	0.07	OK	
		LC21 at 71.88%	0.05	OK	
		LC22 at 71.88%	0.07	OK	
		LC23 at 71.88%	0.05	OK	
		LC24 at 71.88%	0.07	OK	
		LC25 at 71.88%	0.05	OK	
		LC26 at 71.88%	0.07	OK	
		LC27 at 71.88%	0.05	OK	
		LC28 at 71.88%	0.07	OK	
		LC29 at 71.88%	0.05	OK	
		LC3 at 71.88%	0.77	OK	
		LC30 at 71.88%	0.07	OK	
		LC31 at 71.88%	0.05	OK	
		LC32 at 71.88%	0.07	OK	
		LC4 at 71.88%	1.01	N.G.	
		LC5 at 71.88%	0.77	OK	
		LC6 at 71.88%	1.01	N.G.	
		LC7 at 71.88%	0.77	OK	
		LC8 at 71.88%	1.01	N.G.	
		LC9 at 71.88%	0.19	OK	
	47	LC1 at 71.88%	0.80	OK	
		LC10 at 71.88%	0.22	OK	
		LC11 at 71.88%	0.19	OK	
		LC12 at 71.88%	0.22	OK	
		LC13 at 71.88%	0.01	OK	
		LC14 at 71.88%	0.01	OK	

	LC15 at 71.88%	0.01	OK	
	LC16 at 71.88%	0.01	OK	
	LC17 at 71.88%	0.04	OK	
	LC18 at 71.88%	0.06	OK	
	LC19 at 71.88%	0.04	OK	
	LC2 at 71.88%	**0.96**	**OK**	Eq. H1-1b
	LC20 at 71.88%	0.06	OK	
	LC21 at 71.88%	0.04	OK	
	LC22 at 71.88%	0.06	OK	
	LC23 at 71.88%	0.04	OK	
	LC24 at 71.88%	0.06	OK	
	LC25 at 71.88%	0.04	OK	
	LC26 at 71.88%	0.06	OK	
	LC27 at 71.88%	0.04	OK	
	LC28 at 71.88%	0.06	OK	
	LC29 at 71.88%	0.04	OK	
	LC3 at 71.88%	0.80	OK	
	LC30 at 71.88%	0.06	OK	
	LC31 at 71.88%	0.04	OK	
	LC32 at 71.88%	0.06	OK	
	LC4 at 71.88%	0.96	OK	
	LC5 at 71.88%	0.80	OK	
	LC6 at 71.88%	0.95	OK	
	LC7 at 71.88%	0.80	OK	
	LC8 at 71.88%	0.95	OK	
	LC9 at 71.88%	0.19	OK	
48	LC1 at 71.88%	0.43	OK	
	LC10 at 71.88%	0.11	OK	
	LC11 at 71.88%	0.09	OK	
	LC12 at 71.88%	0.11	OK	
	LC13 at 71.88%	0.01	OK	
	LC14 at 71.88%	0.00	OK	
	LC15 at 71.88%	0.01	OK	
	LC16 at 71.88%	0.01	OK	
	LC17 at 71.88%	0.02	OK	
	LC18 at 71.88%	0.03	OK	
	LC19 at 71.88%	0.02	OK	
	LC2 at 71.88%	**0.52**	**OK**	Eq. H1-1b
	LC20 at 71.88%	0.03	OK	
	LC21 at 71.88%	0.02	OK	
	LC22 at 71.88%	0.03	OK	
	LC23 at 71.88%	0.02	OK	
	LC24 at 71.88%	0.03	OK	
	LC25 at 71.88%	0.02	OK	
	LC26 at 71.88%	0.03	OK	
	LC27 at 71.88%	0.02	OK	
	LC28 at 71.88%	0.03	OK	
	LC29 at 71.88%	0.02	OK	
	LC3 at 71.88%	0.43	OK	
	LC30 at 71.88%	0.03	OK	
	LC31 at 71.88%	0.02	OK	
	LC32 at 71.88%	0.03	OK	
	LC4 at 71.88%	0.52	OK	
	LC5 at 71.88%	0.43	OK	
	LC6 at 71.88%	0.52	OK	
	LC7 at 71.88%	0.43	OK	
	LC8 at 71.88%	0.52	OK	
	LC9 at 71.88%	0.09	OK	
55	LC1 at 71.88%	0.77	OK	
	LC10 at 71.88%	0.24	OK	
	LC11 at 71.88%	0.19	OK	
	LC12 at 71.88%	0.24	OK	

	LC13 at 71.88%	0.02	OK	
	LC14 at 71.88%	0.01	OK	
	LC15 at 71.88%	0.02	OK	
	LC16 at 71.88%	0.02	OK	
	LC17 at 71.88%	0.05	OK	
	LC18 at 71.88%	0.07	OK	
	LC19 at 71.88%	0.05	OK	
	LC2 at 71.88%	**1.01**	**N.G.**	Eq. H1-1b
	LC20 at 71.88%	0.07	OK	
	LC21 at 71.88%	0.05	OK	
	LC22 at 71.88%	0.07	OK	
	LC23 at 71.88%	0.05	OK	
	LC24 at 71.88%	0.07	OK	
	LC25 at 71.88%	0.05	OK	
	LC26 at 71.88%	0.07	OK	
	LC27 at 71.88%	0.05	OK	
	LC28 at 71.88%	0.07	OK	
	LC29 at 71.88%	0.05	OK	
	LC3 at 71.88%	0.77	OK	
	LC30 at 71.88%	0.07	OK	
	LC31 at 71.88%	0.05	OK	
	LC32 at 71.88%	0.07	OK	
	LC4 at 71.88%	1.01	N.G.	
	LC5 at 71.88%	0.77	OK	
	LC6 at 71.88%	1.01	N.G.	
	LC7 at 71.88%	0.77	OK	
	LC8 at 71.88%	1.01	N.G.	
	LC9 at 71.88%	0.19	OK	
57	LC1 at 71.88%	0.80	OK	
	LC10 at 71.88%	0.22	OK	
	LC11 at 71.88%	0.19	OK	
	LC12 at 71.88%	0.22	OK	
	LC13 at 71.88%	0.01	OK	
	LC14 at 71.88%	0.01	OK	
	LC15 at 71.88%	0.01	OK	
	LC16 at 71.88%	0.01	OK	
	LC17 at 71.88%	0.04	OK	
	LC18 at 71.88%	0.06	OK	
	LC19 at 71.88%	0.04	OK	
	LC2 at 71.88%	**0.96**	**OK**	Eq. H1-1b
	LC20 at 71.88%	0.06	OK	
	LC21 at 71.88%	0.04	OK	
	LC22 at 71.88%	0.06	OK	
	LC23 at 71.88%	0.04	OK	
	LC24 at 71.88%	0.06	OK	
	LC25 at 71.88%	0.04	OK	
	LC26 at 71.88%	0.06	OK	
	LC27 at 71.88%	0.04	OK	
	LC28 at 71.88%	0.06	OK	
	LC29 at 71.88%	0.04	OK	
	LC3 at 71.88%	0.80	OK	
	LC30 at 71.88%	0.06	OK	
	LC31 at 71.88%	0.04	OK	
	LC32 at 71.88%	0.06	OK	
	LC4 at 71.88%	0.96	OK	
	LC5 at 71.88%	0.80	OK	
	LC6 at 71.88%	0.95	OK	
	LC7 at 71.88%	0.80	OK	
	LC8 at 71.88%	0.95	OK	
	LC9 at 71.88%	0.19	OK	
59	LC1 at 71.88%	0.43	OK	
	LC10 at 71.88%	0.11	OK	

	LC11 at 71.88%	0.09	OK	
	LC12 at 71.88%	0.11	OK	
	LC13 at 71.88%	0.01	OK	
	LC14 at 71.88%	0.00	OK	
	LC15 at 71.88%	0.01	OK	
	LC16 at 71.88%	0.01	OK	
	LC17 at 71.88%	0.02	OK	
	LC18 at 71.88%	0.03	OK	
	LC19 at 71.88%	0.02	OK	
	LC2 at 71.88%	**0.52**	**OK**	Eq. H1-1b
	LC20 at 71.88%	0.03	OK	
	LC21 at 71.88%	0.02	OK	
	LC22 at 71.88%	0.03	OK	
	LC23 at 71.88%	0.02	OK	
	LC24 at 71.88%	0.03	OK	
	LC25 at 71.88%	0.02	OK	
	LC26 at 71.88%	0.03	OK	
	LC27 at 71.88%	0.02	OK	
	LC28 at 71.88%	0.03	OK	
	LC29 at 71.88%	0.02	OK	
	LC3 at 71.88%	0.43	OK	
	LC30 at 71.88%	0.03	OK	
	LC31 at 71.88%	0.02	OK	
	LC32 at 71.88%	0.03	OK	
	LC4 at 71.88%	0.52	OK	
	LC5 at 71.88%	0.43	OK	
	LC6 at 71.88%	0.52	OK	
	LC7 at 71.88%	0.43	OK	
	LC8 at 71.88%	0.52	OK	
	LC9 at 71.88%	0.09	OK	
61	LC1 at 71.88%	0.70	OK	
	LC10 at 71.88%	0.13	OK	
	LC11 at 71.88%	0.16	OK	
	LC12 at 71.88%	0.13	OK	
	LC13 at 71.88%	0.02	OK	
	LC14 at 71.88%	0.01	OK	
	LC15 at 71.88%	0.02	OK	
	LC16 at 71.88%	0.02	OK	
	LC17 at 71.88%	0.05	OK	
	LC18 at 71.88%	0.03	OK	
	LC19 at 71.88%	0.05	OK	
	LC2 at 71.88%	0.47	OK	
	LC20 at 71.88%	0.03	OK	
	LC21 at 71.88%	0.05	OK	
	LC22 at 71.88%	0.03	OK	
	LC23 at 71.88%	0.05	OK	
	LC24 at 71.88%	0.03	OK	
	LC25 at 71.88%	0.07	OK	
	LC26 at 71.88%	0.05	OK	
	LC27 at 71.88%	0.07	OK	
	LC28 at 71.88%	0.05	OK	
	LC29 at 71.88%	0.05	OK	
	LC3 at 71.88%	**0.70**	**OK**	Eq. H1-1b
	LC30 at 71.88%	0.03	OK	
	LC31 at 71.88%	0.05	OK	
	LC32 at 71.88%	0.03	OK	
	LC4 at 71.88%	0.47	OK	
	LC5 at 71.88%	0.69	OK	
	LC6 at 71.88%	0.47	OK	
	LC7 at 71.88%	0.69	OK	
	LC8 at 71.88%	0.47	OK	
	LC9 at 71.88%	0.16	OK	

63	LC1 at 71.88%	0.66	OK	
	LC10 at 71.88%	0.13	OK	
	LC11 at 71.88%	0.16	OK	
	LC12 at 71.88%	0.13	OK	
	LC13 at 71.88%	0.01	OK	
	LC14 at 71.88%	0.01	OK	
	LC15 at 71.88%	0.01	OK	
	LC16 at 71.88%	0.01	OK	
	LC17 at 71.88%	0.05	OK	
	LC18 at 71.88%	0.04	OK	
	LC19 at 71.88%	0.05	OK	
	LC2 at 71.88%	0.51	OK	
	LC20 at 71.88%	0.04	OK	
	LC21 at 71.88%	0.06	OK	
	LC22 at 71.88%	0.06	OK	
	LC23 at 71.88%	0.06	OK	
	LC24 at 71.88%	0.06	OK	
	LC25 at 71.88%	0.05	OK	
	LC26 at 71.88%	0.04	OK	
	LC27 at 71.88%	0.05	OK	
	LC28 at 71.88%	0.04	OK	
	LC29 at 71.88%	0.05	OK	
	LC3 at 71.88%	**0.66**	**OK**	Eq. H1-1b
	LC30 at 71.88%	0.04	OK	
	LC31 at 71.88%	0.05	OK	
	LC32 at 71.88%	0.04	OK	
	LC4 at 71.88%	0.51	OK	
	LC5 at 71.88%	0.66	OK	
	LC6 at 71.88%	0.50	OK	
	LC7 at 71.88%	0.66	OK	
	LC8 at 71.88%	0.50	OK	
	LC9 at 71.88%	0.16	OK	
65	LC1 at 71.88%	0.37	OK	
	LC10 at 71.88%	0.07	OK	
	LC11 at 71.88%	0.08	OK	
	LC12 at 71.88%	0.07	OK	
	LC13 at 71.88%	0.01	OK	
	LC14 at 71.88%	0.00	OK	
	LC15 at 71.88%	0.01	OK	
	LC16 at 71.88%	0.01	OK	
	LC17 at 71.88%	0.04	OK	Sec. E1
	LC18 at 71.88%	0.04	OK	
	LC19 at 71.88%	0.04	OK	
	LC2 at 71.88%	0.28	OK	
	LC20 at 71.88%	0.04	OK	
	LC21 at 71.88%	0.02	OK	
	LC22 at 71.88%	0.02	OK	
	LC23 at 71.88%	0.02	OK	
	LC24 at 71.88%	0.02	OK	
	LC25 at 71.88%	0.02	OK	
	LC26 at 71.88%	0.02	OK	
	LC27 at 71.88%	0.02	OK	
	LC28 at 71.88%	0.02	OK	
	LC29 at 71.88%	0.02	OK	
	LC3 at 71.88%	**0.37**	**OK**	Eq. H1-1b
	LC30 at 71.88%	0.02	OK	
	LC31 at 71.88%	0.02	OK	
	LC32 at 71.88%	0.02	OK	
	LC4 at 71.88%	0.28	OK	
	LC5 at 71.88%	0.37	OK	
	LC6 at 71.88%	0.28	OK	
	LC7 at 71.88%	0.37	OK	
	LC8 at 71.88%	0.28	OK	

		LC9 at 71.88%	0.08	OK	
PL 6x1	**1**	LC1 at 0.00%	0.26	OK	
		LC10 at 0.00%	**0.59**	**OK**	Eq. H1-1b
		LC11 at 0.00%	0.52	OK	
		LC12 at 0.00%	0.46	OK	
		LC13 at 0.00%	0.18	OK	
		LC14 at 0.00%	0.13	OK	
		LC15 at 0.00%	0.19	OK	
		LC16 at 0.00%	0.08	OK	
		LC17 at 0.00%	0.08	OK	
		LC18 at 0.00%	0.10	OK	
		LC19 at 0.00%	0.08	OK	
		LC2 at 0.00%	0.51	OK	
		LC20 at 0.00%	0.06	OK	
		LC21 at 0.00%	0.20	OK	
		LC22 at 0.00%	0.21	OK	
		LC23 at 0.00%	0.19	OK	
		LC24 at 0.00%	0.17	OK	
		LC25 at 0.00%	0.34	OK	
		LC26 at 0.00%	0.36	OK	
		LC27 at 0.00%	0.34	OK	
		LC28 at 0.00%	0.32	OK	
		LC29 at 0.00%	0.18	OK	
		LC3 at 0.00%	0.16	OK	
		LC30 at 0.00%	0.20	OK	
		LC31 at 0.00%	0.18	OK	
		LC32 at 0.00%	0.16	OK	
		LC4 at 0.00%	0.15	OK	
		LC5 at 0.00%	0.21	OK	
		LC6 at 0.00%	0.46	OK	
		LC7 at 0.00%	0.12	OK	
		LC8 at 0.00%	0.19	OK	
		LC9 at 0.00%	0.54	OK	
	2	LC1 at 0.00%	0.19	OK	
		LC10 at 0.00%	**0.67**	**OK**	Eq. H1-1b
		LC11 at 0.00%	0.61	OK	
		LC12 at 0.00%	0.55	OK	
		LC13 at 0.00%	0.21	OK	
		LC14 at 0.00%	0.16	OK	
		LC15 at 0.00%	0.26	OK	
		LC16 at 0.00%	0.12	OK	
		LC17 at 0.00%	0.12	OK	
		LC18 at 0.00%	0.14	OK	
		LC19 at 0.00%	0.13	OK	
		LC2 at 0.00%	0.58	OK	
		LC20 at 0.00%	0.11	OK	
		LC21 at 0.00%	0.27	OK	
		LC22 at 0.00%	0.29	OK	
		LC23 at 0.00%	0.27	OK	
		LC24 at 0.00%	0.25	OK	
		LC25 at 0.00%	0.41	OK	
		LC26 at 0.00%	0.43	OK	
		LC27 at 0.00%	0.41	OK	
		LC28 at 0.00%	0.39	OK	
		LC29 at 0.00%	0.21	OK	
		LC3 at 0.00%	0.28	OK	
		LC30 at 0.00%	0.23	OK	
		LC31 at 0.00%	0.21	OK	
		LC32 at 0.00%	0.19	OK	
		LC4 at 0.00%	0.16	OK	
		LC5 at 0.00%	0.14	OK	
		LC6 at 0.00%	0.52	OK	

	LC7 at 0.00%	0.23	OK	
	LC8 at 0.00%	0.21	OK	
	LC9 at 0.00%	0.59	OK	
3	LC1 at 0.00%	0.21	OK	
	LC10 at 0.00%	**0.33**	**OK**	Eq. H1-1b
	LC11 at 0.00%	0.28	OK	
	LC12 at 0.00%	0.27	OK	
	LC13 at 0.00%	0.10	OK	
	LC14 at 0.00%	0.08	OK	
	LC15 at 0.00%	0.11	OK	
	LC16 at 0.00%	0.06	OK	
	LC17 at 0.00%	0.06	OK	
	LC18 at 0.00%	0.07	OK	
	LC19 at 0.00%	0.05	OK	
	LC2 at 0.00%	0.30	OK	
	LC20 at 0.00%	0.05	OK	
	LC21 at 0.00%	0.11	OK	
	LC22 at 0.00%	0.12	OK	
	LC23 at 0.00%	0.10	OK	
	LC24 at 0.00%	0.10	OK	
	LC25 at 0.00%	0.15	OK	
	LC26 at 0.00%	0.15	OK	
	LC27 at 0.00%	0.14	OK	
	LC28 at 0.00%	0.14	OK	
	LC29 at 0.00%	0.11	OK	
	LC3 at 0.00%	0.08	OK	
	LC30 at 0.00%	0.11	OK	
	LC31 at 0.00%	0.10	OK	
	LC32 at 0.00%	0.10	OK	
	LC4 at 0.00%	0.09	OK	
	LC5 at 0.00%	0.18	OK	
	LC6 at 0.00%	0.27	OK	
	LC7 at 0.00%	0.05	OK	
	LC8 at 0.00%	0.11	OK	
	LC9 at 0.00%	0.31	OK	
4	LC1 at 100.00%	0.13	OK	
	LC10 at 100.00%	**0.24**	**OK**	Eq. H1-1b
	LC11 at 100.00%	0.21	OK	
	LC12 at 100.00%	0.20	OK	
	LC13 at 100.00%	0.07	OK	
	LC14 at 100.00%	0.06	OK	
	LC15 at 100.00%	0.08	OK	
	LC16 at 100.00%	0.04	OK	
	LC17 at 100.00%	0.04	OK	
	LC18 at 100.00%	0.05	OK	
	LC19 at 100.00%	0.04	OK	
	LC2 at 100.00%	0.18	OK	
	LC20 at 100.00%	0.04	OK	
	LC21 at 100.00%	0.08	OK	
	LC22 at 100.00%	0.08	OK	
	LC23 at 100.00%	0.07	OK	
	LC24 at 100.00%	0.07	OK	
	LC25 at 100.00%	0.10	OK	
	LC26 at 100.00%	0.11	OK	
	LC27 at 100.00%	0.10	OK	
	LC28 at 100.00%	0.10	OK	
	LC29 at 100.00%	0.08	OK	
	LC3 at 100.00%	0.04	OK	
	LC30 at 100.00%	0.08	OK	
	LC31 at 100.00%	0.07	OK	
	LC32 at 100.00%	0.07	OK	
	LC4 at 100.00%	0.04	OK	

	LC5 at 100.00%	0.12	OK	
	LC6 at 100.00%	0.17	OK	
	LC7 at 0.00%	0.03	OK	
	LC8 at 100.00%	0.05	OK	
	LC9 at 100.00%	0.23	OK	
5	LC1 at 0.00%	0.08	OK	
	LC10 at 0.00%	**0.14**	**OK**	Eq. H1-1b
	LC11 at 0.00%	0.13	OK	
	LC12 at 0.00%	0.13	OK	
	LC13 at 0.00%	0.04	OK	
	LC14 at 0.00%	0.03	OK	
	LC15 at 0.00%	0.05	OK	
	LC16 at 0.00%	0.03	OK	
	LC17 at 0.00%	0.03	OK	
	LC18 at 0.00%	0.03	OK	
	LC19 at 0.00%	0.03	OK	
	LC2 at 0.00%	0.08	OK	
	LC20 at 0.00%	0.03	OK	
	LC21 at 0.00%	0.05	OK	
	LC22 at 0.00%	0.05	OK	
	LC23 at 0.00%	0.04	OK	
	LC24 at 0.00%	0.04	OK	
	LC25 at 0.00%	0.06	OK	
	LC26 at 0.00%	0.06	OK	
	LC27 at 0.00%	0.06	OK	
	LC28 at 0.00%	0.06	OK	
	LC29 at 0.00%	0.05	OK	
	LC3 at 100.00%	0.04	OK	
	LC30 at 0.00%	0.05	OK	
	LC31 at 0.00%	0.04	OK	
	LC32 at 0.00%	0.04	OK	
	LC4 at 100.00%	0.06	OK	
	LC5 at 0.00%	0.07	OK	
	LC6 at 0.00%	0.07	OK	
	LC7 at 100.00%	0.03	OK	
	LC8 at 100.00%	0.05	OK	
	LC9 at 0.00%	0.14	OK	
6	LC1 at 0.00%	0.07	OK	
	LC10 at 0.00%	0.08	OK	
	LC11 at 0.00%	0.07	OK	
	LC12 at 0.00%	0.09	OK	
	LC13 at 0.00%	0.03	OK	
	LC14 at 0.00%	0.02	OK	
	LC15 at 0.00%	0.02	OK	
	LC16 at 0.00%	0.02	OK	
	LC17 at 0.00%	0.02	OK	
	LC18 at 0.00%	0.02	OK	
	LC19 at 100.00%	0.02	OK	
	LC2 at 0.00%	0.09	OK	Eq. H1-1b
	LC20 at 0.00%	0.02	OK	
	LC21 at 0.00%	0.02	OK	
	LC22 at 0.00%	0.02	OK	
	LC23 at 0.00%	0.02	OK	
	LC24 at 0.00%	0.02	OK	
	LC25 at 100.00%	0.02	OK	
	LC26 at 100.00%	0.02	OK	
	LC27 at 100.00%	0.02	OK	
	LC28 at 100.00%	0.02	OK	
	LC29 at 0.00%	0.03	OK	
	LC3 at 0.00%	0.05	OK	
	LC30 at 0.00%	0.03	OK	
	LC31 at 0.00%	0.03	OK	

	LC32 at 0.00%	0.03	OK	
	LC4 at 0.00%	0.08	OK	
	LC5 at 0.00%	0.07	OK	
	LC6 at 0.00%	0.09	OK	
	LC7 at 0.00%	0.05	OK	
	LC8 at 0.00%	0.08	OK	
	LC9 at 0.00%	**0.09**	**OK**	Eq. H3-1
7	LC1 at 100.00%	0.11	OK	
	LC10 at 100.00%	0.12	OK	
	LC11 at 100.00%	0.09	OK	
	LC12 at 0.00%	0.08	OK	
	LC13 at 100.00%	0.03	OK	
	LC14 at 100.00%	0.02	OK	
	LC15 at 100.00%	0.03	OK	
	LC16 at 0.00%	0.03	OK	
	LC17 at 0.00%	0.03	OK	
	LC18 at 0.00%	0.02	OK	
	LC19 at 0.00%	0.02	OK	
	LC2 at 100.00%	**0.15**	**OK**	Eq. H1-1b
	LC20 at 0.00%	0.03	OK	
	LC21 at 100.00%	0.03	OK	
	LC22 at 100.00%	0.03	OK	
	LC23 at 100.00%	0.03	OK	
	LC24 at 0.00%	0.02	OK	
	LC25 at 100.00%	0.05	OK	
	LC26 at 100.00%	0.05	OK	
	LC27 at 100.00%	0.05	OK	
	LC28 at 100.00%	0.04	OK	
	LC29 at 100.00%	0.03	OK	
	LC3 at 100.00%	0.06	OK	
	LC30 at 100.00%	0.03	OK	
	LC31 at 100.00%	0.03	OK	
	LC32 at 0.00%	0.03	OK	
	LC4 at 100.00%	0.10	OK	
	LC5 at 100.00%	0.11	OK	
	LC6 at 100.00%	0.14	OK	
	LC7 at 100.00%	0.07	OK	
	LC8 at 100.00%	0.10	OK	
	LC9 at 100.00%	0.10	OK	
8	LC1 at 0.00%	0.05	OK	
	LC10 at 0.00%	0.05	OK	
	LC11 at 0.00%	0.05	OK	
	LC12 at 50.00%	0.06	OK	
	LC13 at 0.00%	0.02	OK	
	LC14 at 0.00%	0.01	OK	
	LC15 at 0.00%	0.02	OK	
	LC16 at 50.00%	0.03	OK	
	LC17 at 50.00%	0.03	OK	
	LC18 at 50.00%	0.03	OK	
	LC19 at 50.00%	0.03	OK	
	LC2 at 0.00%	0.05	OK	
	LC20 at 50.00%	0.03	OK	
	LC21 at 0.00%	0.02	OK	
	LC22 at 0.00%	0.01	OK	
	LC23 at 0.00%	0.01	OK	
	LC24 at 0.00%	0.02	OK	
	LC25 at 0.00%	0.01	OK	
	LC26 at 0.00%	0.01	OK	
	LC27 at 0.00%	0.01	OK	
	LC28 at 0.00%	0.01	OK	
	LC29 at 0.00%	0.02	OK	
	LC3 at 100.00%	0.02	OK	

	LC30 at 0.00%	0.02	OK	
	LC31 at 0.00%	0.02	OK	
	LC32 at 50.00%	0.02	OK	
	LC4 at 50.00%	**0.09**	**OK**	Eq. H3-1
	LC5 at 0.00%	0.05	OK	
	LC6 at 0.00%	0.06	OK	
	LC7 at 0.00%	0.03	OK	
	LC8 at 50.00%	0.08	OK	
	LC9 at 0.00%	0.06	OK	Eq. H1-1b
9	LC1 at 0.00%	0.44	OK	
	LC10 at 0.00%	0.48	OK	
	LC11 at 0.00%	0.47	OK	
	LC12 at 0.00%	0.57	OK	
	LC13 at 0.00%	0.18	OK	
	LC14 at 0.00%	0.13	OK	
	LC15 at 0.00%	0.15	OK	
	LC16 at 0.00%	0.20	OK	
	LC17 at 0.00%	0.21	OK	
	LC18 at 0.00%	0.18	OK	
	LC19 at 0.00%	0.18	OK	
	LC2 at 100.00%	0.07	OK	Eq. H1-1b
	LC20 at 0.00%	0.21	OK	
	LC21 at 0.00%	0.15	OK	
	LC22 at 0.00%	0.12	OK	
	LC23 at 0.00%	0.12	OK	
	LC24 at 0.00%	0.15	OK	
	LC25 at 0.00%	0.08	OK	
	LC26 at 0.00%	0.06	OK	
	LC27 at 0.00%	0.06	OK	
	LC28 at 0.00%	0.08	OK	
	LC29 at 0.00%	0.19	OK	
	LC3 at 0.00%	0.08	OK	
	LC30 at 0.00%	0.17	OK	
	LC31 at 0.00%	0.17	OK	
	LC32 at 0.00%	0.19	OK	
	LC4 at 0.00%	0.40	OK	
	LC5 at 0.00%	0.39	OK	
	LC6 at 0.00%	0.09	OK	
	LC7 at 0.00%	0.12	OK	
	LC8 at 0.00%	0.36	OK	
	LC9 at 0.00%	**0.58**	**OK**	Eq. H1-1b
10	LC1 at 0.00%	0.54	OK	
	LC10 at 0.00%	0.58	OK	
	LC11 at 0.00%	0.55	OK	
	LC12 at 0.00%	0.62	OK	
	LC13 at 0.00%	0.21	OK	
	LC14 at 0.00%	0.16	OK	
	LC15 at 0.00%	0.17	OK	
	LC16 at 0.00%	0.21	OK	
	LC17 at 0.00%	0.22	OK	
	LC18 at 0.00%	0.20	OK	
	LC19 at 0.00%	0.19	OK	
	LC2 at 0.00%	0.13	OK	
	LC20 at 0.00%	0.21	OK	
	LC21 at 0.00%	0.18	OK	
	LC22 at 0.00%	0.16	OK	
	LC23 at 0.00%	0.15	OK	
	LC24 at 0.00%	0.17	OK	
	LC25 at 0.00%	0.12	OK	
	LC26 at 0.00%	0.10	OK	
	LC27 at 0.00%	0.09	OK	
	LC28 at 0.00%	0.11	OK	

	LC29 at 0.00%	0.23	OK	
	LC3 at 0.00%	0.12	OK	
	LC30 at 0.00%	0.20	OK	
	LC31 at 0.00%	0.20	OK	
	LC32 at 0.00%	0.22	OK	
	LC4 at 0.00%	0.33	OK	
	LC5 at 0.00%	0.49	OK	
	LC6 at 0.00%	0.07	OK	
	LC7 at 0.00%	0.17	OK	
	LC8 at 0.00%	0.28	OK	
	LC9 at 0.00%	**0.66**	**OK**	Eq. H1-1b
11	LC1 at 0.00%	0.21	OK	
	LC10 at 0.00%	0.28	OK	
	LC11 at 0.00%	0.28	OK	
	LC12 at 0.00%	**0.33**	**OK**	Eq. H1-1b
	LC13 at 0.00%	0.10	OK	
	LC14 at 0.00%	0.08	OK	
	LC15 at 0.00%	0.09	OK	
	LC16 at 0.00%	0.16	OK	
	LC17 at 0.00%	0.16	OK	
	LC18 at 0.00%	0.15	OK	
	LC19 at 0.00%	0.16	OK	
	LC2 at 0.00%	0.09	OK	
	LC20 at 0.00%	0.17	OK	
	LC21 at 0.00%	0.09	OK	
	LC22 at 0.00%	0.09	OK	
	LC23 at 0.00%	0.09	OK	
	LC24 at 0.00%	0.10	OK	
	LC25 at 0.00%	0.05	OK	
	LC26 at 0.00%	0.04	OK	
	LC27 at 0.00%	0.05	OK	
	LC28 at 0.00%	0.06	OK	
	LC29 at 0.00%	0.11	OK	
	LC3 at 0.00%	0.07	OK	
	LC30 at 0.00%	0.10	OK	
	LC31 at 0.00%	0.10	OK	
	LC32 at 0.00%	0.11	OK	
	LC4 at 0.00%	0.30	OK	
	LC5 at 0.00%	0.19	OK	
	LC6 at 0.00%	0.11	OK	
	LC7 at 0.00%	0.05	OK	
	LC8 at 0.00%	0.27	OK	
	LC9 at 0.00%	0.31	OK	
12	LC1 at 100.00%	0.14	OK	
	LC10 at 100.00%	0.20	OK	
	LC11 at 100.00%	0.21	OK	
	LC12 at 100.00%	**0.24**	**OK**	Eq. H1-1b
	LC13 at 100.00%	0.07	OK	
	LC14 at 100.00%	0.06	OK	
	LC15 at 100.00%	0.07	OK	
	LC16 at 100.00%	0.11	OK	
	LC17 at 100.00%	0.12	OK	
	LC18 at 100.00%	0.11	OK	
	LC19 at 100.00%	0.11	OK	
	LC2 at 100.00%	0.04	OK	
	LC20 at 100.00%	0.12	OK	
	LC21 at 100.00%	0.07	OK	
	LC22 at 100.00%	0.06	OK	
	LC23 at 100.00%	0.07	OK	
	LC24 at 100.00%	0.07	OK	
	LC25 at 100.00%	0.04	OK	
	LC26 at 100.00%	0.03	OK	

	LC27 at 100.00%	0.04	OK	
	LC28 at 100.00%	0.04	OK	
	LC29 at 100.00%	0.08	OK	
	LC3 at 100.00%	0.05	OK	
	LC30 at 100.00%	0.07	OK	
	LC31 at 100.00%	0.07	OK	
	LC32 at 100.00%	0.08	OK	
	LC4 at 100.00%	0.19	OK	
	LC5 at 100.00%	0.12	OK	
	LC6 at 100.00%	0.06	OK	
	LC7 at 0.00%	0.03	OK	
	LC8 at 100.00%	0.17	OK	
	LC9 at 100.00%	0.23	OK	
13	LC1 at 0.00%	0.07	OK	
	LC10 at 0.00%	0.12	OK	
	LC11 at 0.00%	0.13	OK	
	LC12 at 0.00%	**0.14**	**OK**	Eq. H1-1b
	LC13 at 0.00%	0.04	OK	
	LC14 at 0.00%	0.03	OK	
	LC15 at 0.00%	0.05	OK	
	LC16 at 0.00%	0.06	OK	
	LC17 at 0.00%	0.07	OK	
	LC18 at 0.00%	0.06	OK	
	LC19 at 0.00%	0.07	OK	
	LC2 at 100.00%	0.05	OK	
	LC20 at 0.00%	0.07	OK	
	LC21 at 0.00%	0.05	OK	
	LC22 at 0.00%	0.04	OK	
	LC23 at 0.00%	0.05	OK	
	LC24 at 0.00%	0.05	OK	
	LC25 at 0.00%	0.03	OK	
	LC26 at 0.00%	0.03	OK	
	LC27 at 0.00%	0.03	OK	
	LC28 at 0.00%	0.03	OK	
	LC29 at 0.00%	0.05	OK	
	LC3 at 0.00%	0.05	OK	
	LC30 at 0.00%	0.04	OK	
	LC31 at 0.00%	0.04	OK	
	LC32 at 0.00%	0.05	OK	
	LC4 at 0.00%	0.09	OK	
	LC5 at 0.00%	0.06	OK	
	LC6 at 100.00%	0.05	OK	
	LC7 at 0.00%	0.04	OK	
	LC8 at 0.00%	0.08	OK	
	LC9 at 0.00%	0.14	OK	
14	LC1 at 0.00%	0.06	OK	
	LC10 at 0.00%	0.08	OK	
	LC11 at 0.00%	0.09	OK	
	LC12 at 0.00%	0.09	OK	Eq. H3-1
	LC13 at 0.00%	0.03	OK	
	LC14 at 0.00%	0.02	OK	
	LC15 at 0.00%	0.04	OK	
	LC16 at 0.00%	0.06	OK	
	LC17 at 0.00%	0.06	OK	
	LC18 at 0.00%	0.06	OK	
	LC19 at 0.00%	0.07	OK	
	LC2 at 0.00%	0.09	OK	
	LC20 at 0.00%	0.07	OK	
	LC21 at 0.00%	0.04	OK	
	LC22 at 0.00%	0.04	OK	
	LC23 at 0.00%	0.04	OK	
	LC24 at 0.00%	0.04	OK	

	LC25 at 0.00%	0.02	OK	
	LC26 at 0.00%	0.03	OK	
	LC27 at 0.00%	0.03	OK	
	LC28 at 0.00%	0.03	OK	
	LC29 at 0.00%	0.03	OK	
	LC3 at 0.00%	0.06	OK	
	LC30 at 0.00%	0.03	OK	
	LC31 at 0.00%	0.03	OK	
	LC32 at 0.00%	0.03	OK	
	LC4 at 0.00%	**0.10**	**OK**	Eq. H1-1b
	LC5 at 0.00%	0.06	OK	
	LC6 at 0.00%	0.09	OK	
	LC7 at 0.00%	0.05	OK	
	LC8 at 0.00%	0.10	OK	
	LC9 at 0.00%	0.08	OK	
15	LC1 at 100.00%	0.12	OK	
	LC10 at 100.00%	0.08	OK	
	LC11 at 0.00%	0.08	OK	Eq. H3-1
	LC12 at 100.00%	0.12	OK	
	LC13 at 100.00%	0.03	OK	
	LC14 at 100.00%	0.02	OK	
	LC15 at 0.00%	0.04	OK	
	LC16 at 100.00%	0.06	OK	
	LC17 at 100.00%	0.06	OK	
	LC18 at 0.00%	0.06	OK	
	LC19 at 0.00%	0.06	OK	
	LC2 at 100.00%	0.11	OK	
	LC20 at 0.00%	0.06	OK	
	LC21 at 0.00%	0.04	OK	
	LC22 at 0.00%	0.04	OK	
	LC23 at 0.00%	0.05	OK	
	LC24 at 0.00%	0.05	OK	
	LC25 at 0.00%	0.03	OK	
	LC26 at 0.00%	0.03	OK	
	LC27 at 0.00%	0.03	OK	
	LC28 at 0.00%	0.03	OK	
	LC29 at 100.00%	0.03	OK	
	LC3 at 0.00%	0.07	OK	
	LC30 at 0.00%	0.02	OK	
	LC31 at 0.00%	0.03	OK	
	LC32 at 100.00%	0.03	OK	
	LC4 at 100.00%	**0.17**	**OK**	Eq. H1-1b
	LC5 at 100.00%	0.12	OK	
	LC6 at 100.00%	0.12	OK	
	LC7 at 100.00%	0.07	OK	
	LC8 at 100.00%	0.16	OK	
	LC9 at 100.00%	0.11	OK	
16	LC1 at 0.00%	0.05	OK	
	LC10 at 0.00%	0.05	OK	
	LC11 at 0.00%	0.06	OK	Eq. H1-1b
	LC12 at 0.00%	0.06	OK	
	LC13 at 0.00%	0.02	OK	
	LC14 at 0.00%	0.01	OK	
	LC15 at 0.00%	0.04	OK	
	LC16 at 0.00%	0.03	OK	
	LC17 at 0.00%	0.04	OK	
	LC18 at 0.00%	0.04	OK	
	LC19 at 0.00%	0.04	OK	
	LC2 at 53.13%	0.03	OK	
	LC20 at 0.00%	0.04	OK	
	LC21 at 0.00%	0.04	OK	
	LC22 at 0.00%	0.05	OK	

	LC23 at 0.00%	0.05	OK	
	LC24 at 0.00%	0.05	OK	
	LC25 at 0.00%	0.04	OK	
	LC26 at 0.00%	0.04	OK	
	LC27 at 0.00%	0.04	OK	
	LC28 at 0.00%	0.04	OK	
	LC29 at 0.00%	0.02	OK	
	LC3 at 0.00%	**0.08**	**OK**	Eq. H3-1
	LC30 at 0.00%	0.02	OK	
	LC31 at 0.00%	0.02	OK	
	LC32 at 0.00%	0.02	OK	
	LC4 at 100.00%	0.04	OK	Eq. H1-1b
	LC5 at 0.00%	0.05	OK	
	LC6 at 100.00%	0.03	OK	
	LC7 at 0.00%	0.08	OK	
	LC8 at 100.00%	0.04	OK	
	LC9 at 0.00%	0.05	OK	
17	LC1 at 0.00%	0.10	OK	
	LC10 at 0.00%	0.50	OK	
	LC11 at 0.00%	**0.58**	**OK**	Eq. H1-1b
	LC12 at 0.00%	0.55	OK	
	LC13 at 0.00%	0.18	OK	
	LC14 at 0.00%	0.13	OK	
	LC15 at 0.00%	0.28	OK	
	LC16 at 0.00%	0.34	OK	
	LC17 at 0.00%	0.36	OK	
	LC18 at 0.00%	0.37	OK	
	LC19 at 0.00%	0.39	OK	
	LC2 at 0.00%	0.10	OK	
	LC20 at 0.00%	0.38	OK	
	LC21 at 0.00%	0.30	OK	
	LC22 at 0.00%	0.31	OK	
	LC23 at 0.00%	0.33	OK	
	LC24 at 0.00%	0.32	OK	
	LC25 at 0.00%	0.21	OK	
	LC26 at 0.00%	0.22	OK	
	LC27 at 0.00%	0.25	OK	
	LC28 at 0.00%	0.24	OK	
	LC29 at 0.00%	0.16	OK	
	LC3 at 0.00%	0.46	OK	
	LC30 at 0.00%	0.17	OK	
	LC31 at 0.00%	0.20	OK	
	LC32 at 0.00%	0.19	OK	
	LC4 at 0.00%	0.32	OK	
	LC5 at 0.00%	0.15	OK	
	LC6 at 0.00%	0.06	OK	
	LC7 at 0.00%	0.42	OK	
	LC8 at 0.00%	0.28	OK	
	LC9 at 0.00%	0.46	OK	
18	LC1 at 100.00%	0.07	OK	
	LC10 at 0.00%	0.56	OK	
	LC11 at 0.00%	**0.65**	**OK**	Eq. H1-1b
	LC12 at 0.00%	0.65	OK	
	LC13 at 0.00%	0.21	OK	
	LC14 at 0.00%	0.16	OK	
	LC15 at 0.00%	0.29	OK	
	LC16 at 0.00%	0.39	OK	
	LC17 at 0.00%	0.41	OK	
	LC18 at 0.00%	0.41	OK	
	LC19 at 0.00%	0.43	OK	
	LC2 at 0.00%	0.07	OK	
	LC20 at 0.00%	0.43	OK	

	LC21 at 0.00%	0.30	OK	
	LC22 at 0.00%	0.30	OK	
	LC23 at 0.00%	0.33	OK	
	LC24 at 0.00%	0.33	OK	
	LC25 at 0.00%	0.22	OK	
	LC26 at 0.00%	0.22	OK	
	LC27 at 0.00%	0.24	OK	
	LC28 at 0.00%	0.24	OK	
	LC29 at 0.00%	0.20	OK	
	LC3 at 0.00%	0.48	OK	
	LC30 at 0.00%	0.20	OK	
	LC31 at 0.00%	0.22	OK	
	LC32 at 0.00%	0.22	OK	
	LC4 at 0.00%	0.45	OK	
	LC5 at 0.00%	0.12	OK	
	LC6 at 0.00%	0.08	OK	
	LC7 at 0.00%	0.43	OK	
	LC8 at 0.00%	0.40	OK	
	LC9 at 0.00%	0.56	OK	
19	LC1 at 0.00%	0.10	OK	
	LC10 at 0.00%	0.29	OK	
	LC11 at 0.00%	**0.33**	**OK**	Eq. H1-1b
	LC12 at 0.00%	0.29	OK	
	LC13 at 0.00%	0.10	OK	
	LC14 at 0.00%	0.08	OK	
	LC15 at 0.00%	0.16	OK	
	LC16 at 0.00%	0.14	OK	
	LC17 at 0.00%	0.15	OK	
	LC18 at 0.00%	0.15	OK	
	LC19 at 0.00%	0.16	OK	
	LC2 at 0.00%	0.10	OK	
	LC20 at 0.00%	0.15	OK	
	LC21 at 0.00%	0.17	OK	
	LC22 at 0.00%	0.17	OK	
	LC23 at 0.00%	0.18	OK	
	LC24 at 0.00%	0.17	OK	
	LC25 at 0.00%	0.18	OK	
	LC26 at 0.00%	0.18	OK	
	LC27 at 0.00%	0.19	OK	
	LC28 at 0.00%	0.18	OK	
	LC29 at 0.00%	0.10	OK	
	LC3 at 0.00%	0.31	OK	
	LC30 at 0.00%	0.10	OK	
	LC31 at 0.00%	0.12	OK	
	LC32 at 0.00%	0.11	OK	
	LC4 at 0.00%	0.11	OK	
	LC5 at 0.00%	0.13	OK	
	LC6 at 0.00%	0.08	OK	
	LC7 at 0.00%	0.29	OK	
	LC8 at 0.00%	0.09	OK	
	LC9 at 0.00%	0.27	OK	
20	LC1 at 100.00%	0.05	OK	
	LC10 at 100.00%	0.22	OK	
	LC11 at 100.00%	**0.24**	**OK**	Eq. H1-1b
	LC12 at 100.00%	0.22	OK	
	LC13 at 100.00%	0.07	OK	
	LC14 at 100.00%	0.06	OK	
	LC15 at 100.00%	0.11	OK	
	LC16 at 100.00%	0.10	OK	
	LC17 at 100.00%	0.11	OK	
	LC18 at 100.00%	0.11	OK	
	LC19 at 100.00%	0.12	OK	

	LC2 at 100.00%	0.08	OK	
	LC20 at 100.00%	0.11	OK	
	LC21 at 100.00%	0.12	OK	
	LC22 at 100.00%	0.12	OK	
	LC23 at 100.00%	0.13	OK	
	LC24 at 100.00%	0.12	OK	
	LC25 at 100.00%	0.12	OK	
	LC26 at 100.00%	0.13	OK	
	LC27 at 100.00%	0.13	OK	
	LC28 at 100.00%	0.13	OK	
	LC29 at 100.00%	0.07	OK	
	LC3 at 100.00%	0.20	OK	
	LC30 at 100.00%	0.07	OK	
	LC31 at 100.00%	0.08	OK	
	LC32 at 100.00%	0.07	OK	
	LC4 at 100.00%	0.08	OK	
	LC5 at 100.00%	0.06	OK	
	LC6 at 100.00%	0.06	OK	
	LC7 at 100.00%	0.18	OK	
	LC8 at 100.00%	0.06	OK	
	LC9 at 100.00%	0.20	OK	
21	LC1 at 100.00%	0.06	OK	
	LC10 at 0.00%	0.13	OK	
	LC11 at 0.00%	**0.14**	**OK**	Eq. H1-1b
	LC12 at 0.00%	0.13	OK	
	LC13 at 0.00%	0.04	OK	
	LC14 at 0.00%	0.03	OK	
	LC15 at 0.00%	0.06	OK	
	LC16 at 0.00%	0.06	OK	
	LC17 at 0.00%	0.06	OK	
	LC18 at 0.00%	0.06	OK	
	LC19 at 0.00%	0.07	OK	
	LC2 at 0.00%	0.06	OK	
	LC20 at 0.00%	0.06	OK	
	LC21 at 0.00%	0.06	OK	
	LC22 at 0.00%	0.07	OK	
	LC23 at 0.00%	0.07	OK	
	LC24 at 0.00%	0.07	OK	
	LC25 at 0.00%	0.07	OK	
	LC26 at 0.00%	0.07	OK	
	LC27 at 0.00%	0.07	OK	
	LC28 at 0.00%	0.07	OK	
	LC29 at 0.00%	0.04	OK	
	LC3 at 0.00%	0.09	OK	
	LC30 at 0.00%	0.04	OK	
	LC31 at 0.00%	0.05	OK	
	LC32 at 0.00%	0.04	OK	
	LC4 at 0.00%	0.05	OK	
	LC5 at 100.00%	0.05	OK	
	LC6 at 0.00%	0.06	OK	
	LC7 at 0.00%	0.08	OK	
	LC8 at 0.00%	0.04	OK	
	LC9 at 0.00%	0.12	OK	
22	LC1 at 0.00%	0.09	OK	
	LC10 at 0.00%	0.09	OK	Eq. H3-1
	LC11 at 0.00%	0.09	OK	
	LC12 at 0.00%	0.07	OK	
	LC13 at 0.00%	0.03	OK	
	LC14 at 0.00%	0.02	OK	
	LC15 at 0.00%	0.04	OK	
	LC16 at 100.00%	0.02	OK	
	LC17 at 100.00%	0.02	OK	

	LC18 at 100.00%	0.02	OK	
	LC19 at 0.00%	0.03	OK	
	LC2 at 0.00%	0.07	OK	
	LC20 at 0.00%	0.02	OK	
	LC21 at 0.00%	0.04	OK	
	LC22 at 0.00%	0.04	OK	
	LC23 at 0.00%	0.04	OK	
	LC24 at 0.00%	0.04	OK	
	LC25 at 0.00%	0.06	OK	
	LC26 at 0.00%	0.07	OK	
	LC27 at 0.00%	0.07	OK	
	LC28 at 0.00%	0.06	OK	
	LC29 at 0.00%	0.03	OK	
	LC3 at 0.00%	**0.10**	**OK**	Eq. H1-1b
	LC30 at 0.00%	0.03	OK	
	LC31 at 0.00%	0.03	OK	
	LC32 at 0.00%	0.03	OK	
	LC4 at 0.00%	0.05	OK	
	LC5 at 0.00%	0.09	OK	
	LC6 at 0.00%	0.07	OK	
	LC7 at 0.00%	0.10	OK	
	LC8 at 0.00%	0.05	OK	
	LC9 at 0.00%	0.08	OK	
23	LC1 at 100.00%	0.11	OK	
	LC10 at 100.00%	0.09	OK	
	LC11 at 100.00%	0.12	OK	
	LC12 at 100.00%	0.10	OK	
	LC13 at 100.00%	0.03	OK	
	LC14 at 100.00%	0.02	OK	
	LC15 at 100.00%	0.07	OK	
	LC16 at 100.00%	0.05	OK	
	LC17 at 100.00%	0.05	OK	
	LC18 at 100.00%	0.06	OK	
	LC19 at 100.00%	0.06	OK	
	LC2 at 0.00%	0.08	OK	
	LC20 at 100.00%	0.06	OK	
	LC21 at 100.00%	0.07	OK	
	LC22 at 100.00%	0.08	OK	
	LC23 at 100.00%	0.08	OK	
	LC24 at 100.00%	0.08	OK	
	LC25 at 100.00%	0.07	OK	
	LC26 at 100.00%	0.08	OK	
	LC27 at 100.00%	0.08	OK	
	LC28 at 100.00%	0.08	OK	
	LC29 at 0.00%	0.03	OK	
	LC3 at 100.00%	**0.17**	**OK**	Eq. H1-1b
	LC30 at 0.00%	0.03	OK	
	LC31 at 100.00%	0.03	OK	
	LC32 at 100.00%	0.03	OK	
	LC4 at 100.00%	0.08	OK	
	LC5 at 100.00%	0.12	OK	
	LC6 at 0.00%	0.07	OK	
	LC7 at 100.00%	0.16	OK	
	LC8 at 100.00%	0.08	OK	
	LC9 at 0.00%	0.08	OK	
24	LC1 at 0.00%	0.06	OK	
	LC10 at 0.00%	0.06	OK	Eq. H1-1b
	LC11 at 0.00%	0.05	OK	
	LC12 at 0.00%	0.05	OK	
	LC13 at 0.00%	0.02	OK	
	LC14 at 0.00%	0.01	OK	
	LC15 at 0.00%	0.02	OK	

LC16 at 0.00%	0.01	OK	
LC17 at 0.00%	0.01	OK	
LC18 at 0.00%	0.01	OK	
LC19 at 0.00%	0.01	OK	
LC2 at 0.00%	**0.07**	**OK**	Eq. H3-1
LC20 at 0.00%	0.01	OK	
LC21 at 0.00%	0.02	OK	
LC22 at 0.00%	0.02	OK	
LC23 at 0.00%	0.02	OK	
LC24 at 0.00%	0.02	OK	
LC25 at 0.00%	0.03	OK	
LC26 at 0.00%	0.04	OK	
LC27 at 0.00%	0.03	OK	
LC28 at 0.00%	0.03	OK	
LC29 at 0.00%	0.02	OK	
LC3 at 100.00%	0.04	OK	Eq. H1-1b
LC30 at 0.00%	0.02	OK	
LC31 at 0.00%	0.02	OK	
LC32 at 0.00%	0.02	OK	
LC4 at 0.00%	0.04	OK	
LC5 at 0.00%	0.06	OK	
LC6 at 0.00%	0.06	OK	
LC7 at 100.00%	0.04	OK	
LC8 at 0.00%	0.04	OK	
LC9 at 0.00%	0.06	OK	

Bentley

Current Date: 8/13/2018 6:20 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2087\3C-4C-5C 2018\CT2087 (3C-4C-5C).etz\

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
1	0.8479	0.00	2.3297	0
2	-0.4305	0.00	2.4415	0
3	-1.5936	0.00	1.8992	0
4	-2.3297	0.00	0.8479	0
5	-2.4415	0.00	-0.4305	0
6	-1.8992	0.00	-1.5936	0
7	-0.8479	0.00	-2.3297	0
8	1.8992	0.00	1.5936	0
9	2.4415	0.00	0.4305	0
10	2.3297	0.00	-0.8479	0
11	1.5936	0.00	-1.8992	0
12	0.4305	0.00	-2.4415	0
13	-2.4697	0.00	0.2161	0
14	-2.2469	0.00	-1.0477	0
15	-1.422	0.00	-2.0308	0
16	2.0308	0.00	-1.422	0
17	1.0477	0.00	-2.2469	0
18	-0.2161	0.00	-2.4697	0
19	-2.0308	0.00	1.422	0
20	2.4697	0.00	-0.2161	0
21	-1.0477	0.00	2.2469	0

22	2.2469	0.00	1.0477	0
23	0.2161	0.00	2.4697	0
24	1.422	0.00	2.0308	0
25	0.4275	0.00	1.1746	0
26	0.8035	0.00	-0.9575	0
27	-1.231	0.00	-0.2171	0
28	5.9243	0.00	3.7742	0
29	0.6565	0.00	3.5442	0
30	-0.9629	0.00	3.4735	0
31	-6.2307	0.00	3.2435	0
32	-3.3976	0.00	-1.2036	0
33	-2.5267	0.00	-2.5706	0
34	0.3064	0.00	-7.0177	0
35	2.7412	0.00	-2.3406	0
36	3.4896	0.00	-0.9029	0
79	0.00	0.00	0.00	0
89	5.6294	4.50	2.7749	0
90	3.2886	4.50	-1.7218	0
91	0.9478	4.50	-6.2184	0
92	5.6294	-1.50	2.7749	0
93	3.2886	-1.50	-1.7218	0
94	0.9478	-1.50	-6.2184	0
113	-0.4116	4.50	-6.2626	0
114	-0.4116	-1.50	-6.2626	0
115	-3.1354	4.50	-1.9871	0
116	-3.1354	-1.50	-1.9871	0
117	-5.8592	4.50	2.2884	0
118	-5.8592	-1.50	2.2884	0
125	-5.2178	4.50	3.4877	0
126	-5.2178	-1.50	3.4877	0
127	-0.1532	4.50	3.7089	0
128	-0.1532	-1.50	3.7089	0
129	4.9114	4.50	3.93	0
130	4.9114	-1.50	3.93	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
25	1	1	1	1	1	1
26	1	1	1	1	1	1
27	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	4	13		PL 6x1	A36	0.00	0.00	0.00
2	5	13		PL 6x1	A36	0.00	0.00	0.00
3	5	14		PL 6x1	A36	0.00	0.00	0.00
4	6	14		PL 6x1	A36	0.00	0.00	0.00
5	6	15		PL 6x1	A36	0.00	0.00	0.00

6	7	15	PL 6x1	A36	0.00	0.00	0.00
7	7	18	PL 6x1	A36	0.00	0.00	0.00
8	12	18	PL 6x1	A36	0.00	0.00	0.00
9	12	17	PL 6x1	A36	0.00	0.00	0.00
10	11	17	PL 6x1	A36	0.00	0.00	0.00
11	11	16	PL 6x1	A36	0.00	0.00	0.00
12	10	16	PL 6x1	A36	0.00	0.00	0.00
13	10	20	PL 6x1	A36	0.00	0.00	0.00
14	9	20	PL 6x1	A36	0.00	0.00	0.00
15	9	22	PL 6x1	A36	0.00	0.00	0.00
16	8	22	PL 6x1	A36	0.00	0.00	0.00
17	8	24	PL 6x1	A36	0.00	0.00	0.00
18	1	24	PL 6x1	A36	0.00	0.00	0.00
19	1	23	PL 6x1	A36	0.00	0.00	0.00
20	2	23	PL 6x1	A36	0.00	0.00	0.00
21	2	21	PL 6x1	A36	0.00	0.00	0.00
22	3	21	PL 6x1	A36	0.00	0.00	0.00
23	3	19	PL 6x1	A36	0.00	0.00	0.00
24	4	19	PL 6x1	A36	0.00	0.00	0.00
25	1	25	HSS_SQR 3X3X1_4	A36	0.00	0.00	0.00
26	11	26	HSS_SQR 3X3X1_4	A36	0.00	0.00	0.00
27	5	27	HSS_SQR 3X3X1_4	A36	0.00	0.00	0.00
28	31	28	C 5X9	A36	0.00	0.00	0.00
29	28	34	C 5X9	A36	0.00	0.00	0.00
30	34	31	C 5X9	A36	0.00	0.00	0.00
31	30	32	C 5X9	A36	0.00	0.00	0.00
32	29	36	C 5X9	A36	0.00	0.00	0.00
33	33	35	C 5X9	A36	0.00	0.00	0.00
46	89	92	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
47	90	93	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
48	91	94	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
55	113	114	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
57	115	116	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
59	117	118	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
61	125	126	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
63	127	128	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
65	129	130	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
1	90.00	0	0.00	0.00	0.00
2	90.00	0	0.00	0.00	0.00
3	90.00	0	0.00	0.00	0.00
4	90.00	0	0.00	0.00	0.00
5	90.00	0	0.00	0.00	0.00
6	90.00	0	0.00	0.00	0.00
7	90.00	0	0.00	0.00	0.00
8	90.00	0	0.00	0.00	0.00
9	90.00	0	0.00	0.00	0.00
10	90.00	0	0.00	0.00	0.00
11	90.00	0	0.00	0.00	0.00
12	90.00	0	0.00	0.00	0.00
13	90.00	0	0.00	0.00	0.00
14	90.00	0	0.00	0.00	0.00

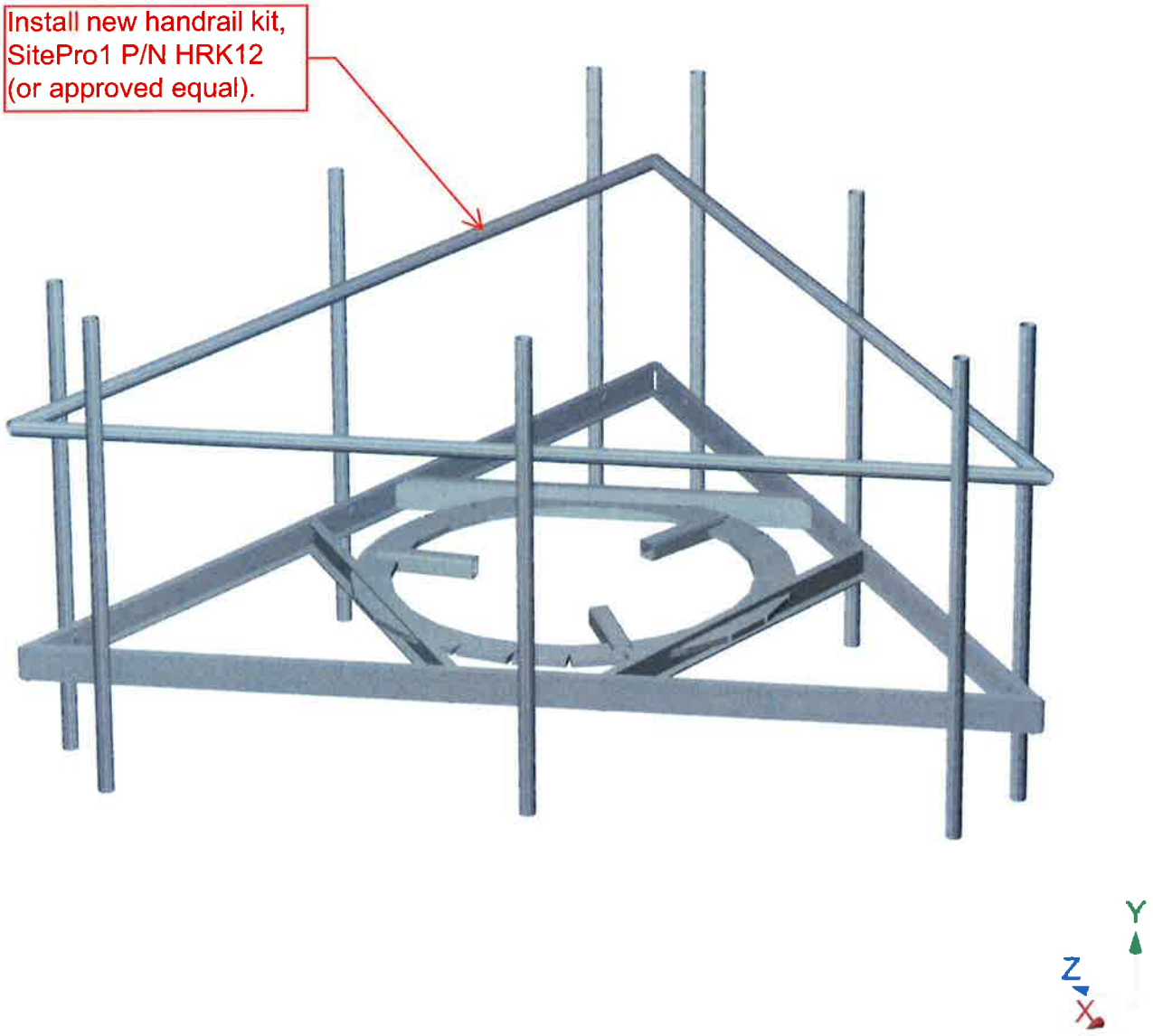
15	90.00	0	0.00	0.00	0.00
16	90.00	0	0.00	0.00	0.00
17	90.00	0	0.00	0.00	0.00
18	90.00	0	0.00	0.00	0.00
19	90.00	0	0.00	0.00	0.00
20	90.00	0	0.00	0.00	0.00
21	90.00	0	0.00	0.00	0.00
22	90.00	0	0.00	0.00	0.00
23	90.00	0	0.00	0.00	0.00
24	90.00	0	0.00	0.00	0.00
28	180.00	0	0.00	0.00	0.00
29	180.00	0	0.00	0.00	0.00
30	180.00	0	0.00	0.00	0.00
31	180.00	0	0.00	0.00	0.00
33	180.00	0	0.00	0.00	0.00
46	0.00	2	-0.50	0.00	-0.866
47	0.00	2	-0.50	0.00	-0.866
48	0.00	2	-0.50	0.00	-0.866
55	0.00	2	-0.50	0.00	0.866
57	0.00	2	-0.50	0.00	0.866
59	0.00	2	-0.50	0.00	0.866

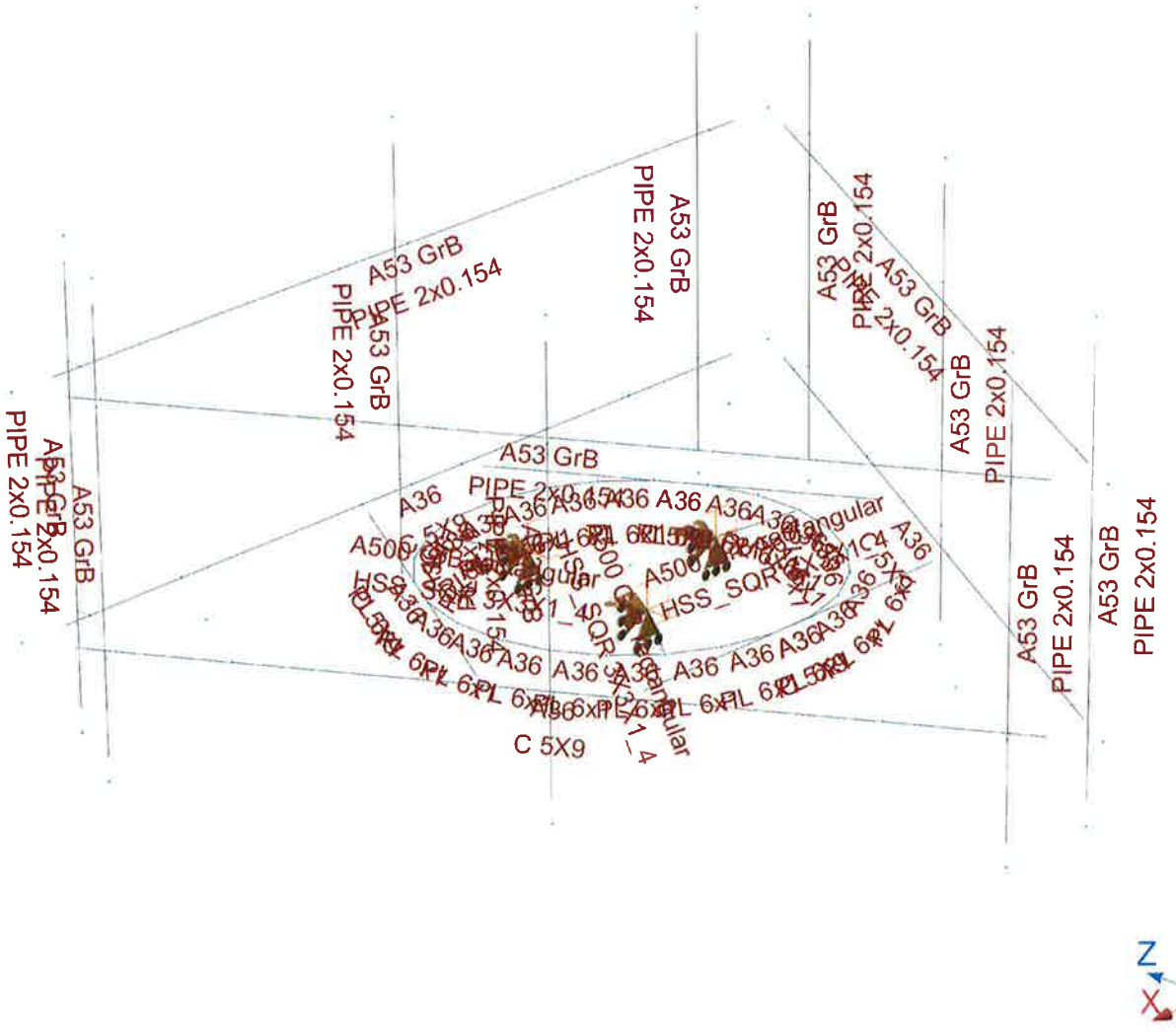
HUDSON
Design Group LLC

3C/4C/5C Mount Calculations
(Proposed Conditions)

Bentley

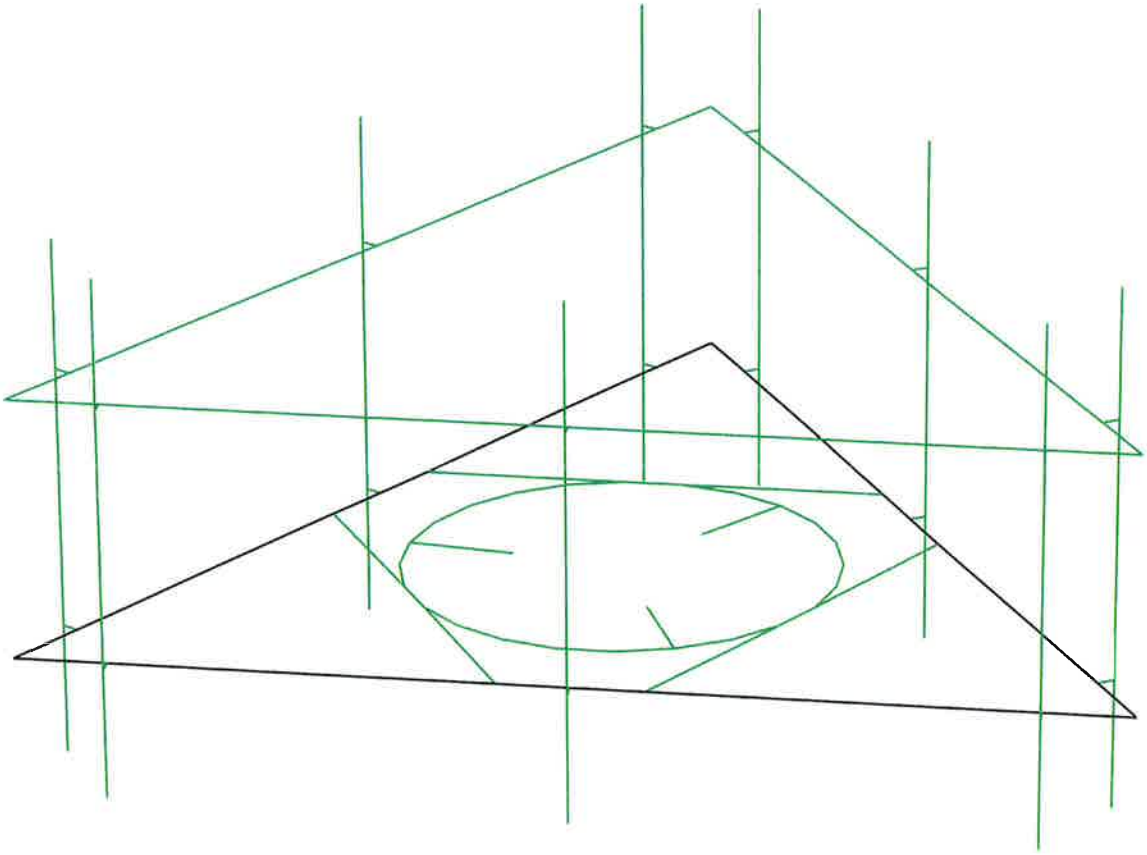
Current Date: 8/14/2018 10:17 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2087\3C-4C-5C 2018\CT2087 (3C-4C-5C) (MOD).etz\

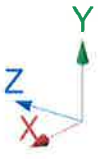



A53 GrB
PIPE 2x0.154
A36
C 5X9
HSS_SQR
Y
Z
X

Design status

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





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Current Date: 8/14/2018 10:22 AM
Units system: English
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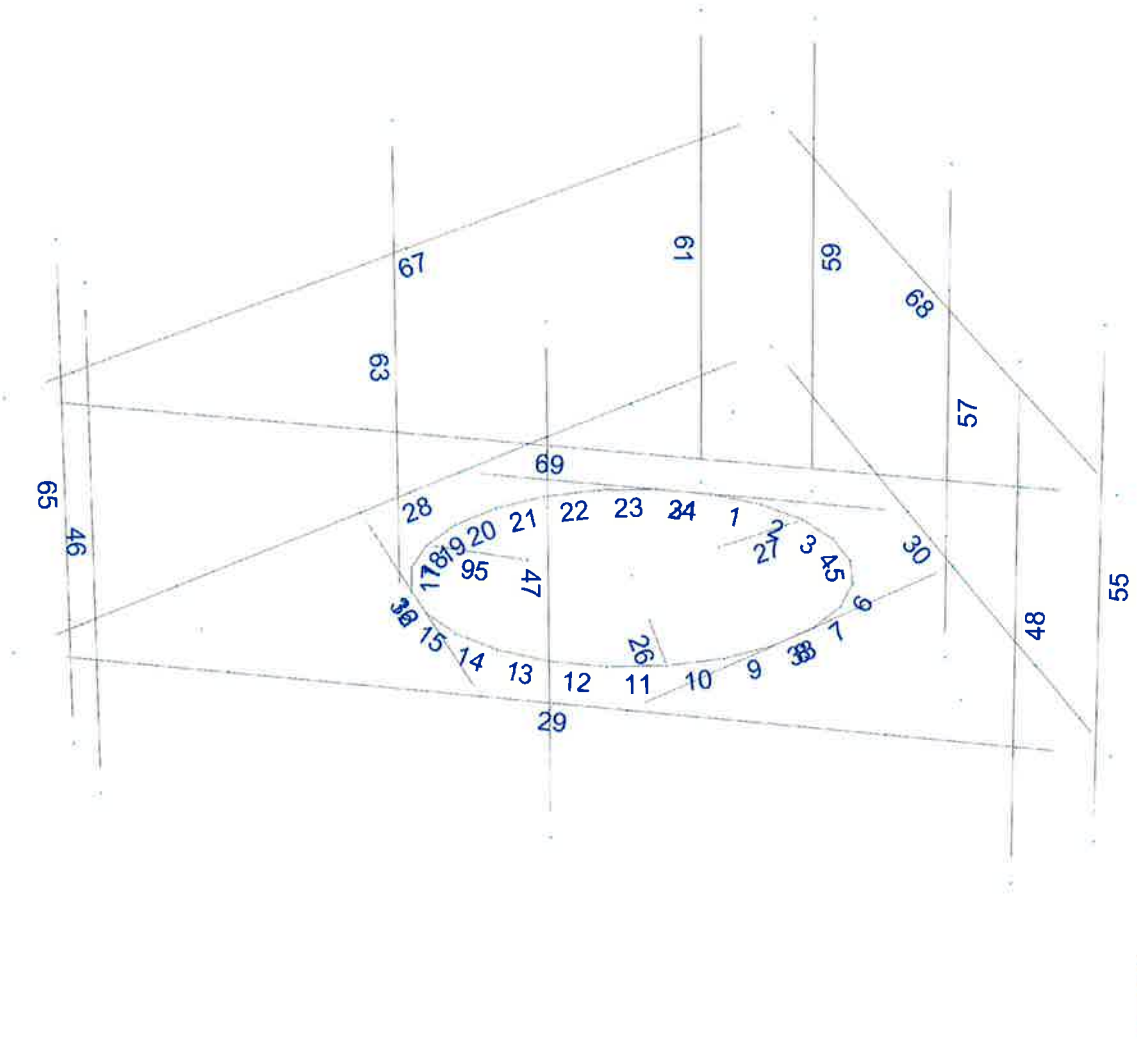

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Load data

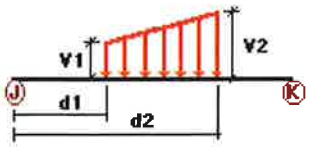
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
W0	Wind Load 0/60/120 deg	No	WIND
W30	Wind Load 30/90/150 deg	No	WIND
Di	Ice Load	No	LL
Wi0	Ice Wind Load 0/60/120 deg	No	WIND
Wi30	Ice Wind Load 30/90/150 deg	No	WIND
WL0	WL 30 mph 0/60/120 deg	No	WIND
WL30	WL 30 mph 30/90/150 deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load End of Mount	No	LL
LLa1	500 lb Live Load on Antenna 1	No	LL
LLa2	500 lb Live Load on Antenna 2	No	LL
LLa3	500 lb Live Load on Antenna 3	No	LL
LLa4	500 lb Live Load on Antenna 4	No	LL
W180	-W0	Yes	
W210	-W30	Yes	
Wi180	-Wi0	Yes	
Wi210	-Wi30	Yes	
WL180	-WL0	Yes	
WL210	-WL30	Yes	

Distributed force on members

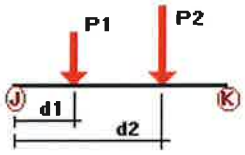


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
W0	28	Z	-0.022	-0.022	0.00	Yes	100.00	Yes
	29	Z	-0.022	-0.022	0.00	Yes	100.00	Yes
	30	Z	-0.022	-0.022	0.00	Yes	100.00	Yes
	31	Z	-0.022	-0.022	0.00	Yes	100.00	Yes
	32	Z	-0.022	-0.022	0.00	Yes	100.00	Yes
	33	Z	-0.022	-0.022	0.00	Yes	100.00	Yes
	46	Z	-0.006	-0.006	0.00	Yes	100.00	Yes
	47	Z	-0.006	-0.006	0.00	Yes	100.00	Yes

	48	Z	-0.006	-0.006	0.00	Yes	100.00	Yes
	55	Z	-0.006	-0.006	0.00	Yes	100.00	Yes
	57	Z	-0.006	-0.006	0.00	Yes	100.00	Yes
	59	Z	-0.006	-0.006	0.00	Yes	100.00	Yes
	61	Z	-0.006	-0.006	0.00	Yes	100.00	Yes
	63	Z	-0.006	-0.006	0.00	Yes	100.00	Yes
	65	Z	-0.006	-0.006	0.00	Yes	100.00	Yes
	67	Z	-0.009	-0.009	0.00	Yes	100.00	Yes
	68	Z	-0.009	-0.009	0.00	Yes	100.00	Yes
	69	Z	-0.009	-0.009	0.00	Yes	100.00	Yes
W30	28	X	-0.022	-0.022	0.00	Yes	100.00	Yes
	29	X	-0.022	-0.022	0.00	Yes	100.00	Yes
	30	X	-0.022	-0.022	0.00	Yes	100.00	Yes
	31	X	-0.022	-0.022	0.00	Yes	100.00	Yes
	32	X	-0.022	-0.022	0.00	Yes	100.00	Yes
	46	X	-0.006	-0.006	0.00	Yes	100.00	Yes
	47	X	-0.006	-0.006	0.00	Yes	100.00	Yes
	48	X	-0.006	-0.006	0.00	Yes	100.00	Yes
	55	X	-0.006	-0.006	0.00	Yes	100.00	Yes
	57	X	-0.006	-0.006	0.00	Yes	100.00	Yes
	59	X	-0.006	-0.006	0.00	Yes	100.00	Yes
	61	X	-0.006	-0.006	0.00	Yes	100.00	Yes
	63	X	-0.006	-0.006	0.00	Yes	100.00	Yes
	65	X	-0.006	-0.006	0.00	Yes	100.00	Yes
	68	X	-0.009	-0.009	0.00	Yes	100.00	Yes
	69	X	-0.009	-0.009	0.00	Yes	100.00	Yes
Di	1	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	2	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	3	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	4	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	5	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	6	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	7	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	8	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	9	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	10	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	11	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	12	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	13	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	14	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	15	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	16	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	17	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	18	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	19	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	20	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	21	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	22	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	23	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	24	Y	-0.017	-0.017	0.00	Yes	100.00	Yes
	26	Y	-0.013	-0.013	0.00	Yes	100.00	Yes
	27	Y	-0.013	-0.013	0.00	Yes	100.00	Yes
	28	Y	-0.027	-0.027	0.00	Yes	100.00	Yes
	29	Y	-0.027	-0.027	0.00	Yes	100.00	Yes
	30	Y	-0.027	-0.027	0.00	Yes	100.00	Yes
	31	Y	-0.027	-0.027	0.00	Yes	100.00	Yes
	32	Y	-0.027	-0.027	0.00	Yes	100.00	Yes
	33	Y	-0.027	-0.027	0.00	Yes	100.00	Yes
	46	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
	47	Y	-0.009	-0.009	0.00	Yes	100.00	Yes

48	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
55	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
57	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
59	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
61	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
63	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
65	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
67	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
68	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
69	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
95	Y	-0.013	-0.013	0.00	Yes	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	46	y	-0.041	1.00	No
		y	-0.041	5.00	No
		y	-0.049	2.00	No
		y	-0.08	4.00	No
	47	y	-0.037	1.00	No
		y	-0.037	5.00	No
		y	-0.051	2.00	No
		y	-0.06	4.00	No
	48	y	-0.023	1.00	No
		y	-0.023	5.00	No
		y	-0.02	3.00	No
	55	y	-0.041	1.00	No
		y	-0.041	5.00	No
		y	-0.049	2.00	No
		y	-0.08	4.00	No
	57	y	-0.037	1.00	No
		y	-0.037	5.00	No
		y	-0.051	2.00	No
		y	-0.06	4.00	No
	59	y	-0.023	1.00	No
		y	-0.023	5.00	No
		y	-0.02	3.00	No
	61	y	-0.041	1.00	No
		y	-0.041	5.00	No
		y	-0.049	2.00	No
		y	-0.08	4.00	No
	63	y	-0.037	1.00	No
		y	-0.037	5.00	No
		y	-0.051	2.00	No
		y	-0.06	4.00	No
	65	y	-0.023	1.00	No
		y	-0.023	5.00	No
		y	-0.02	3.00	No
W0	46	z	-0.093	1.00	No

		z	-0.093	5.00	No
		z	-0.025	2.00	No
		z	-0.041	4.00	No
	47	z	-0.088	1.00	No
		z	-0.088	5.00	No
		z	-0.038	2.00	No
		z	-0.052	4.00	No
	48	z	-0.051	1.00	No
		z	-0.051	5.00	No
		z	-0.013	3.00	No
	55	z	-0.093	1.00	No
		z	-0.093	5.00	No
		z	-0.025	2.00	No
		z	-0.041	4.00	No
	57	z	-0.088	1.00	No
		z	-0.088	5.00	No
		z	-0.038	2.00	No
		z	-0.052	4.00	No
	59	z	-0.051	1.00	No
		z	-0.051	5.00	No
		z	-0.013	3.00	No
	61	z	-0.143	1.00	No
		z	-0.143	5.00	No
		z	-0.019	4.00	No
	63	z	-0.129	1.00	No
		z	-0.129	5.00	No
		z	-0.012	2.00	No
	65	z	-0.069	1.00	No
		z	-0.069	5.00	No
W30	46	x	-0.126	1.00	No
		x	-0.126	5.00	No
		x	-0.038	2.00	No
		x	-0.04	4.00	No
	47	x	-0.115	1.00	No
		x	-0.115	5.00	No
		x	-0.036	2.00	No
		x	-0.066	4.00	No
	48	x	-0.063	1.00	No
		x	-0.063	5.00	No
		x	-0.022	3.00	No
	55	x	-0.126	1.00	No
		x	-0.126	5.00	No
		x	-0.038	2.00	No
		x	-0.04	4.00	No
	57	x	-0.115	1.00	No
		x	-0.115	5.00	No
		x	-0.036	2.00	No
		x	-0.066	4.00	No
	59	x	-0.063	1.00	No
		x	-0.063	5.00	No
		x	-0.022	3.00	No
	61	x	-0.076	1.00	No
		x	-0.076	5.00	No
		x	-0.019	2.00	No
		x	-0.034	4.00	No
	63	x	-0.074	1.00	No
		x	-0.074	5.00	No
		x	-0.032	2.00	No
		x	-0.044	4.00	No
	65	x	-0.044	1.00	No

		x	-0.044	5.00	No
		x	-0.009	3.00	No
Di	46	y	-0.13	1.00	No
		y	-0.13	5.00	No
		y	-0.045	2.00	No
		y	-0.133	4.00	No
	47	y	-0.121	1.00	No
		y	-0.121	5.00	No
		y	-0.073	2.00	No
		y	-0.079	4.00	No
	48	y	-0.069	1.00	No
		y	-0.069	5.00	No
		y	-0.027	3.00	No
	55	y	-0.13	1.00	No
		y	-0.13	5.00	No
		y	-0.045	2.00	No
		y	-0.133	4.00	No
	57	y	-0.121	1.00	No
		y	-0.121	5.00	No
		y	-0.073	2.00	No
		y	-0.079	4.00	No
	59	y	-0.069	1.00	No
		y	-0.069	5.00	No
		y	-0.027	3.00	No
	61	y	-0.13	1.00	No
		y	-0.13	5.00	No
		y	-0.045	2.00	No
		y	-0.133	4.00	No
	63	y	-0.121	1.00	No
		y	-0.121	5.00	No
		y	-0.073	2.00	No
		y	-0.079	4.00	No
	65	y	-0.069	1.00	No
		y	-0.069	5.00	No
		y	-0.027	3.00	No
Wi0	46	z	-0.036	1.00	No
		z	-0.036	5.00	No
		z	-0.013	2.00	No
		z	-0.018	4.00	No
	47	z	-0.034	1.00	No
		z	-0.034	5.00	No
		z	-0.017	2.00	No
		z	-0.023	4.00	No
	48	z	-0.022	1.00	No
		z	-0.022	5.00	No
		z	-0.008	3.00	No
	55	z	-0.036	1.00	No
		z	-0.036	5.00	No
		z	-0.013	2.00	No
		z	-0.018	4.00	No
	57	z	-0.034	1.00	No
		z	-0.034	5.00	No
		z	-0.017	2.00	No
		z	-0.023	4.00	No
	59	z	-0.022	1.00	No
		z	-0.022	5.00	No
		z	-0.008	3.00	No
	61	z	-0.052	1.00	No
		z	-0.052	5.00	No
		z	-0.012	4.00	No

	63	z	-0.047	1.00	No
		z	-0.047	5.00	No
		z	-0.01	2.00	No
	65	z	-0.028	1.00	No
		z	-0.028	5.00	No
Wi30	46	x	-0.046	1.00	No
		x	-0.046	5.00	No
		x	-0.017	2.00	No
		x	-0.016	4.00	No
	47	x	-0.042	1.00	No
		x	-0.042	5.00	No
		x	-0.015	2.00	No
		x	-0.027	4.00	No
	48	x	-0.025	1.00	No
		x	-0.025	5.00	No
		x	-0.011	3.00	No
	55	x	-0.046	1.00	No
		x	-0.046	5.00	No
		x	-0.017	2.00	No
		x	-0.016	4.00	No
	57	x	-0.042	1.00	No
		x	-0.042	5.00	No
		x	-0.015	2.00	No
		x	-0.027	4.00	No
	59	x	-0.025	1.00	No
		x	-0.025	5.00	No
		x	-0.011	3.00	No
	61	x	-0.032	1.00	No
		x	-0.032	5.00	No
		x	-0.011	2.00	No
		x	-0.016	4.00	No
	63	x	-0.03	1.00	No
		x	-0.03	5.00	No
		x	-0.015	2.00	No
		x	-0.02	4.00	No
	65	x	-0.02	1.00	No
		x	-0.02	5.00	No
		x	-0.007	3.00	No
WL0	46	z	-0.01	1.00	No
		z	-0.01	5.00	No
		z	-0.003	2.00	No
		z	-0.005	4.00	No
	47	z	-0.009	1.00	No
		z	-0.009	5.00	No
		z	-0.004	2.00	No
		z	-0.006	4.00	No
	48	z	-0.005	1.00	No
		z	-0.005	5.00	No
		z	-0.002	3.00	No
	55	z	-0.01	1.00	No
		z	-0.01	5.00	No
		z	-0.003	2.00	No
		z	-0.005	4.00	No
	57	z	-0.009	1.00	No
		z	-0.009	5.00	No
		z	-0.004	2.00	No
		z	-0.006	4.00	No
	59	z	-0.005	1.00	No
		z	-0.005	5.00	No
		z	-0.002	3.00	No

	61	z	-0.015	1.00	No
		z	-0.015	5.00	No
		z	-0.002	4.00	No
	63	z	-0.013	1.00	No
		z	-0.013	5.00	No
		z	-0.002	2.00	No
	65	z	-0.007	1.00	No
		z	-0.007	5.00	No
WL30	46	x	-0.013	1.00	No
		x	-0.013	5.00	No
		x	-0.004	2.00	No
		x	-0.004	4.00	No
	47	x	-0.012	1.00	No
		x	-0.012	5.00	No
		x	-0.004	2.00	No
		x	-0.007	4.00	No
	48	x	-0.007	1.00	No
		x	-0.007	5.00	No
		x	-0.003	3.00	No
	55	x	-0.013	1.00	No
		x	-0.013	5.00	No
		x	-0.004	2.00	No
		x	-0.004	4.00	No
	57	x	-0.012	1.00	No
		x	-0.012	5.00	No
		x	-0.004	2.00	No
		x	-0.007	4.00	No
	59	x	-0.007	1.00	No
		x	-0.007	5.00	No
		x	-0.003	3.00	No
	61	x	-0.008	1.00	No
		x	-0.008	5.00	No
		x	-0.002	2.00	No
		x	-0.004	4.00	No
	63	x	-0.008	1.00	No
		x	-0.008	5.00	No
		x	-0.004	2.00	No
		x	-0.005	4.00	No
	65	x	-0.005	1.00	No
		x	-0.005	5.00	No
		x	-0.001	3.00	No
LL1	28	y	-0.25	6.00	No
	67	y	-0.25	6.00	No
LL2	28	y	-0.25	12.00	No
	67	y	-0.25	12.00	No
LLa1	65	y	-0.50	3.00	No
LLa2	63	y	-0.50	3.00	No
LLa3	61	y	-0.50	3.00	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
W0	Wind Load 0/60/120 deg	No	0.00	0.00	0.00
W30	Wind Load 30/90/150 deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
Wi0	Ice Wind Load 0/60/120 deg	No	0.00	0.00	0.00
Wi30	Ice Wind Load 30/90/150 deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0/60/120 deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30/90/150 deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load End of Mount	No	0.00	0.00	0.00
LLa1	500 lb Live Load on Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load on Antenna 2	No	0.00	0.00	0.00
LLa3	500 lb Live Load on Antenna 3	No	0.00	0.00	0.00
LLa4	500 lb Live Load on Antenna 4	No	0.00	0.00	0.00
W180	-W0	Yes	0.00	0.00	0.00
W210	-W30	Yes	0.00	0.00	0.00
Wi180	-Wi0	Yes	0.00	0.00	0.00
Wi210	-Wi30	Yes	0.00	0.00	0.00
WL180	-WL0	Yes	0.00	0.00	0.00
WL210	-WL30	Yes	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	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
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	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
LLa4	0.00	0.00	0.00
W180	0.00	0.00	0.00
W210	0.00	0.00	0.00
Wi180	0.00	0.00	0.00
Wi210	0.00	0.00	0.00
WL180	0.00	0.00	0.00
WL210	0.00	0.00	0.00

Bentley

Current Date: 8/14/2018 10:23 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2087\3C-4C-5C 2018\CT2087 (3C-4C-5C) (MOD).etz\

Steel Code Check

Report: Summary - For all selected load conditions

Load conditions to be included in design :

LC1=1.2DL+1.6W0
LC2=1.2DL+1.6W30
LC3=1.2DL-1.6W0
LC4=1.2DL-1.6W30
LC5=0.9DL+1.6W0
LC6=0.9DL+1.6W30
LC7=0.9DL-1.6W0
LC8=0.9DL-1.6W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.2DL
LC14=0.9DL
LC15=1.2DL+1.6LL1
LC16=1.2DL+1.6LL2
LC17=1.2DL+WL0+LLa1
LC18=1.2DL+WL30+LLa1
LC19=1.2DL-WL0+LLa1
LC20=1.2DL-WL30+LLa1
LC21=1.2DL+WL0+LLa2
LC22=1.2DL+WL30+LLa2
LC23=1.2DL-WL0+LLa2
LC24=1.2DL-WL30+LLa2
LC25=1.2DL+WL0+LLa3
LC26=1.2DL+WL30+LLa3
LC27=1.2DL-WL0+LLa3
LC28=1.2DL-WL30+LLa3
LC29=1.2DL+WL0+LLa4
LC30=1.2DL+WL30+LLa4
LC31=1.2DL-WL0+LLa4
LC32=1.2DL-WL30+LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	C 5X9	**28**	LC1 at 56.94%	0.30	With warnings	
			LC10 at 56.25%	0.41	With warnings	
			LC11 at 56.94%	0.40	With warnings	
			LC12 at 56.25%	0.45	With warnings	
			LC13 at 56.25%	0.12	With warnings	
			LC14 at 56.25%	0.09	With warnings	
			LC15 at 56.94%	0.11	With warnings	
			LC16 at 56.94%	0.36	With warnings	
			LC17 at 56.94%	0.25	With warnings	
			LC18 at 56.25%	0.26	With warnings	
			LC19 at 56.94%	0.26	With warnings	
			LC2 at 43.75%	0.70	With warnings	Eq. H1-1b
			LC20 at 56.25%	0.27	With warnings	
			LC21 at 56.25%	0.11	With warnings	
			LC22 at 56.25%	0.13	With warnings	
			LC23 at 56.94%	0.13	With warnings	

	LC24 at 56.25%	0.15	With warnings	
	LC25 at 43.06%	0.19	With warnings	
	LC26 at 43.75%	0.21	With warnings	
	LC27 at 56.25%	0.21	With warnings	
	LC28 at 56.25%	0.22	With warnings	
	LC29 at 56.25%	0.11	With warnings	
	LC3 at 56.94%	0.57	With warnings	Eq. H1-1b
	LC30 at 56.25%	0.14	With warnings	
	LC31 at 56.94%	0.13	With warnings	
	LC32 at 56.25%	0.15	With warnings	
	LC4 at 56.25%	**0.79**	**With warnings**	Eq. H1-1b
	LC5 at 56.94%	0.33	With warnings	
	LC6 at 43.75%	0.67	With warnings	
	LC7 at 56.94%	0.54	With warnings	
	LC8 at 56.25%	0.76	With warnings	
	LC9 at 56.94%	0.33	With warnings	
29	LC1 at 56.25%	**0.80**	**With warnings**	Eq. H1-1b
	LC10 at 56.25%	0.39	With warnings	
	LC11 at 56.25%	0.38	With warnings	
	LC12 at 56.25%	0.44	With warnings	
	LC13 at 56.25%	0.12	With warnings	
	LC14 at 56.25%	0.09	With warnings	
	LC15 at 43.75%	0.11	With warnings	
	LC16 at 42.97%	0.27	With warnings	
	LC17 at 56.25%	0.21	With warnings	
	LC18 at 56.25%	0.20	With warnings	
	LC19 at 43.75%	0.20	With warnings	
	LC2 at 56.25%	0.56	With warnings	
	LC20 at 56.25%	0.21	With warnings	
	LC21 at 56.25%	0.13	With warnings	
	LC22 at 56.25%	0.12	With warnings	
	LC23 at 43.75%	0.13	With warnings	
	LC24 at 56.25%	0.13	With warnings	
	LC25 at 56.25%	0.06	With warnings	
	LC26 at 56.25%	0.05	With warnings	
	LC27 at 43.75%	0.05	With warnings	
	LC28 at 56.25%	0.06	With warnings	
	LC29 at 56.25%	0.15	With warnings	
	LC3 at 43.75%	0.64	With warnings	
	LC30 at 56.25%	0.13	With warnings	
	LC31 at 56.25%	0.13	With warnings	
	LC32 at 56.25%	0.14	With warnings	
	LC4 at 56.25%	0.76	With warnings	
	LC5 at 56.25%	0.77	With warnings	
	LC6 at 56.25%	0.58	With warnings	
	LC7 at 43.75%	0.66	With warnings	
	LC8 at 56.25%	0.73	With warnings	
	LC9 at 56.25%	0.45	With warnings	
30	LC1 at 56.25%	**0.80**	**With warnings**	Eq. H1-1b
	LC10 at 56.25%	0.43	With warnings	
	LC11 at 56.25%	0.43	With warnings	
	LC12 at 43.75%	0.33	With warnings	
	LC13 at 56.25%	0.12	With warnings	
	LC14 at 56.25%	0.09	With warnings	
	LC15 at 56.25%	0.15	With warnings	
	LC16 at 50.00%	0.04	With warnings	
	LC17 at 56.25%	0.06	With warnings	
	LC18 at 56.25%	0.06	With warnings	
	LC19 at 56.25%	0.06	With warnings	
	LC2 at 43.75%	0.70	With warnings	
	LC20 at 43.75%	0.05	With warnings	
	LC21 at 56.25%	0.16	With warnings	

	LC22 at 56.25%	0.16	With warnings	
	LC23 at 56.25%	0.16	With warnings	
	LC24 at 56.94%	0.13	With warnings	
	LC25 at 56.25%	0.27	With warnings	
	LC26 at 56.25%	0.27	With warnings	
	LC27 at 56.25%	0.27	With warnings	
	LC28 at 56.25%	0.24	With warnings	
	LC29 at 56.25%	0.14	With warnings	
	LC3 at 56.25%	0.70	With warnings	
	LC30 at 56.25%	0.14	With warnings	
	LC31 at 56.25%	0.14	With warnings	
	LC32 at 56.25%	0.11	With warnings	
	LC4 at 43.75%	0.54	With warnings	
	LC5 at 56.25%	0.78	With warnings	
	LC6 at 43.75%	0.68	With warnings	
	LC7 at 56.25%	0.67	With warnings	
	LC8 at 43.75%	0.56	With warnings	
	LC9 at 56.25%	0.44	With warnings	
31	LC1 at 56.25%	0.59	OK	
	LC10 at 56.25%	0.58	OK	
	LC11 at 56.25%	0.55	OK	
	LC12 at 56.25%	0.47	OK	
	LC13 at 56.25%	0.16	OK	
	LC14 at 56.25%	0.12	OK	
	LC15 at 56.25%	0.22	OK	
	LC16 at 43.75%	0.06	OK	
	LC17 at 56.25%	0.10	OK	
	LC18 at 56.25%	0.12	OK	
	LC19 at 56.25%	0.11	OK	
	LC2 at 56.25%	**0.81**	**OK**	Eq. H1-1b
	LC20 at 43.75%	0.09	OK	
	LC21 at 56.25%	0.21	OK	
	LC22 at 56.25%	0.22	OK	
	LC23 at 56.25%	0.21	OK	
	LC24 at 56.25%	0.19	OK	
	LC25 at 56.25%	0.32	OK	
	LC26 at 56.25%	0.33	OK	
	LC27 at 56.25%	0.32	OK	
	LC28 at 56.25%	0.30	OK	
	LC29 at 56.25%	0.18	OK	
	LC3 at 56.25%	0.65	OK	
	LC30 at 56.25%	0.19	OK	
	LC31 at 56.25%	0.18	OK	
	LC32 at 56.25%	0.16	OK	
	LC4 at 0.00%	0.53	OK	Eq. H1-1b
	LC5 at 56.25%	0.55	OK	
	LC6 at 56.25%	0.77	OK	
	LC7 at 56.25%	0.61	OK	
	LC8 at 0.00%	0.53	OK	
	LC9 at 56.25%	0.54	OK	
32	LC1 at 100.00%	0.48	OK	Eq. H1-1b
	LC10 at 43.75%	0.52	OK	
	LC11 at 43.75%	0.52	OK	
	LC12 at 43.75%	0.58	OK	
	LC13 at 43.75%	0.16	OK	
	LC14 at 43.75%	0.12	OK	
	LC15 at 43.75%	0.31	OK	
	LC16 at 43.75%	0.43	OK	
	LC17 at 43.75%	0.31	OK	
	LC18 at 43.75%	0.33	OK	
	LC19 at 43.75%	0.33	OK	
	LC2 at 0.00%	0.52	OK	

		LC20 at 43.75%	0.34	OK	
		LC21 at 43.75%	0.25	OK	
		LC22 at 43.75%	0.27	OK	
		LC23 at 43.75%	0.27	OK	
		LC24 at 43.75%	0.29	OK	
		LC25 at 43.75%	0.19	OK	
		LC26 at 43.75%	0.21	OK	
		LC27 at 43.75%	0.21	OK	
		LC28 at 43.75%	0.23	OK	
		LC29 at 43.75%	0.15	OK	
		LC3 at 56.25%	0.61	OK	Eq. H1-1b
		LC30 at 43.75%	0.17	OK	
		LC31 at 43.75%	0.17	OK	
		LC32 at 43.75%	0.19	OK	
		LC4 at 43.75%	**0.84**	**OK**	Eq. H1-1b
		LC5 at 100.00%	0.48	OK	
		LC6 at 43.75%	0.54	OK	
		LC7 at 56.25%	0.59	OK	
		LC8 at 43.75%	0.80	OK	
		LC9 at 43.75%	0.44	OK	
	33	LC1 at 56.25%	**0.94**	**OK**	Eq. H1-1b
		LC10 at 56.25%	0.50	OK	
		LC11 at 56.25%	0.49	OK	
		LC12 at 56.25%	0.54	OK	
		LC13 at 56.25%	0.16	OK	
		LC14 at 56.25%	0.12	OK	
		LC15 at 56.25%	0.11	OK	
		LC16 at 56.25%	0.19	OK	
		LC17 at 56.25%	0.20	OK	
		LC18 at 56.25%	0.17	OK	
		LC19 at 56.25%	0.17	OK	
		LC2 at 43.75%	0.34	OK	
		LC20 at 56.25%	0.19	OK	
		LC21 at 56.25%	0.15	OK	
		LC22 at 56.25%	0.13	OK	
		LC23 at 56.25%	0.13	OK	
		LC24 at 56.25%	0.14	OK	
		LC25 at 56.25%	0.11	OK	
		LC26 at 56.25%	0.08	OK	
		LC27 at 56.25%	0.08	OK	
		LC28 at 56.25%	0.09	OK	
		LC29 at 56.25%	0.19	OK	
		LC3 at 56.25%	0.60	OK	
		LC30 at 56.25%	0.17	OK	
		LC31 at 56.25%	0.17	OK	
		LC32 at 56.25%	0.18	OK	
		LC4 at 56.25%	0.56	OK	
		LC5 at 56.25%	0.90	OK	
		LC6 at 43.75%	0.32	OK	
		LC7 at 56.25%	0.64	OK	
		LC8 at 56.25%	0.52	OK	
		LC9 at 56.25%	0.59	OK	
HSS_SQR 3X3X1_4	**26**	LC1 at 100.00%	0.79	OK	
		LC10 at 100.00%	0.57	OK	
		LC11 at 100.00%	0.53	OK	
		LC12 at 100.00%	0.63	OK	
		LC13 at 100.00%	0.20	OK	
		LC14 at 100.00%	0.15	OK	
		LC15 at 100.00%	0.13	OK	
		LC16 at 100.00%	0.25	OK	
		LC17 at 100.00%	0.23	OK	
		LC18 at 100.00%	0.22	OK	

	LC19 at 100.00%	0.21	OK	
	LC2 at 100.00%	0.21	OK	
	LC20 at 100.00%	0.23	OK	
	LC21 at 100.00%	0.17	OK	
	LC22 at 100.00%	0.15	OK	
	LC23 at 100.00%	0.15	OK	
	LC24 at 100.00%	0.17	OK	
	LC25 at 100.00%	0.11	OK	
	LC26 at 100.00%	0.09	OK	
	LC27 at 100.00%	0.08	OK	
	LC28 at 100.00%	0.11	OK	
	LC29 at 100.00%	0.22	OK	
	LC3 at 100.00%	0.21	OK	
	LC30 at 100.00%	0.20	OK	
	LC31 at 100.00%	0.19	OK	
	LC32 at 100.00%	0.22	OK	
	LC4 at 100.00%	0.56	OK	
	LC5 at 100.00%	0.56	OK	
	LC6 at 100.00%	0.20	OK	
	LC7 at 100.00%	0.26	OK	
	LC8 at 100.00%	0.50	OK	
	LC9 at 100.00%	**0.79**	**OK**	Eq. H3-6
27	LC1 at 100.00%	0.37	OK	
	LC10 at 100.00%	**0.80**	**OK**	Eq. H3-6
	LC11 at 100.00%	0.74	OK	
	LC12 at 100.00%	0.52	OK	
	LC13 at 100.00%	0.20	OK	
	LC14 at 100.00%	0.15	OK	
	LC15 at 100.00%	0.25	OK	
	LC16 at 0.00%	0.03	OK	
	LC17 at 100.00%	0.11	OK	
	LC18 at 100.00%	0.13	OK	
	LC19 at 100.00%	0.11	OK	
	LC2 at 100.00%	0.62	OK	
	LC20 at 100.00%	0.09	OK	
	LC21 at 100.00%	0.24	OK	
	LC22 at 100.00%	0.25	OK	
	LC23 at 100.00%	0.24	OK	
	LC24 at 100.00%	0.22	OK	
	LC25 at 100.00%	0.37	OK	
	LC26 at 100.00%	0.38	OK	
	LC27 at 100.00%	0.37	OK	
	LC28 at 100.00%	0.35	OK	
	LC29 at 100.00%	0.21	OK	
	LC3 at 100.00%	0.37	OK	
	LC30 at 100.00%	0.22	OK	
	LC31 at 100.00%	0.21	OK	
	LC32 at 100.00%	0.19	OK	
	LC4 at 100.00%	0.22	OK	
	LC5 at 100.00%	0.32	OK	
	LC6 at 100.00%	0.57	OK	
	LC7 at 100.00%	0.32	OK	
	LC8 at 100.00%	0.27	OK	
	LC9 at 100.00%	0.59	OK	
95	LC1 at 0.00%	0.18	OK	
	LC10 at 0.00%	0.55	OK	
	LC11 at 0.00%	0.63	OK	Eq. H1-1b
	LC12 at 0.00%	**0.77**	**OK**	Eq. H3-6
	LC13 at 0.00%	0.20	OK	
	LC14 at 0.00%	0.15	OK	
	LC15 at 0.00%	0.38	OK	
	LC16 at 0.00%	0.62	OK	

		LC17 at 0.00%	0.37	OK	
		LC18 at 0.00%	0.38	OK	
		LC19 at 0.00%	0.40	OK	
		LC2 at 0.00%	0.14	OK	
		LC20 at 0.00%	0.39	OK	
		LC21 at 0.00%	0.31	OK	
		LC22 at 0.00%	0.31	OK	
		LC23 at 0.00%	0.34	OK	
		LC24 at 0.00%	0.33	OK	
		LC25 at 0.00%	0.24	OK	
		LC26 at 0.00%	0.25	OK	
		LC27 at 0.00%	0.27	OK	
		LC28 at 0.00%	0.26	OK	
		LC29 at 0.00%	0.19	OK	
		LC3 at 0.00%	0.58	OK	
		LC30 at 0.00%	0.20	OK	
		LC31 at 0.00%	0.22	OK	
		LC32 at 0.00%	0.21	OK	
		LC4 at 0.00%	0.49	OK	
		LC5 at 0.00%	0.23	OK	
		LC6 at 100.00%	0.14	OK	
		LC7 at 0.00%	0.53	OK	
		LC8 at 0.00%	0.44	OK	
		LC9 at 0.00%	0.53	OK	
PIPE 2x0.154	**46**	LC1 at 72.92%	**0.65**	**OK**	Eq. H1-1b
		LC10 at 72.92%	0.42	OK	
		LC11 at 72.92%	0.30	OK	
		LC12 at 72.92%	0.35	OK	
		LC13 at 72.92%	0.13	OK	
		LC14 at 72.92%	0.10	OK	
		LC15 at 72.92%	0.13	OK	
		LC16 at 72.92%	0.33	OK	
		LC17 at 72.92%	0.24	OK	
		LC18 at 72.92%	0.23	OK	
		LC19 at 72.92%	0.19	OK	
		LC2 at 72.92%	0.33	OK	
		LC20 at 72.92%	0.21	OK	
		LC21 at 72.92%	0.15	OK	
		LC22 at 72.92%	0.13	OK	
		LC23 at 72.92%	0.10	OK	
		LC24 at 72.92%	0.11	OK	
		LC25 at 72.92%	0.07	OK	
		LC26 at 72.92%	0.06	OK	
		LC27 at 25.00%	0.09	OK	
		LC28 at 25.00%	0.06	OK	
		LC29 at 72.92%	0.15	OK	
		LC3 at 25.00%	0.55	OK	
		LC30 at 72.92%	0.14	OK	
		LC31 at 72.92%	0.11	OK	
		LC32 at 72.92%	0.12	OK	
		LC4 at 75.00%	0.13	OK	
		LC5 at 25.00%	0.64	OK	
		LC6 at 72.92%	0.30	OK	
		LC7 at 25.00%	0.56	OK	
		LC8 at 75.00%	0.12	OK	
		LC9 at 72.92%	0.47	OK	
	47	LC1 at 72.92%	0.69	OK	
		LC10 at 72.92%	0.33	OK	
		LC11 at 72.92%	0.23	OK	
		LC12 at 66.67%	0.14	OK	
		LC13 at 72.92%	0.08	OK	
		LC14 at 72.92%	0.06	OK	

	LC15 at 72.92%	0.07	OK	
	LC16 at 72.92%	0.10	OK	
	LC17 at 72.92%	0.10	OK	
	LC18 at 72.92%	0.11	OK	
	LC19 at 72.92%	0.09	OK	
	LC2 at 72.92%	0.67	OK	
	LC20 at 72.92%	0.06	OK	
	LC21 at 72.92%	0.09	OK	
	LC22 at 72.92%	0.10	OK	
	LC23 at 72.92%	0.09	OK	
	LC24 at 72.92%	0.06	OK	
	LC25 at 72.92%	0.09	OK	
	LC26 at 72.92%	0.10	OK	
	LC27 at 72.92%	0.09	OK	
	LC28 at 72.92%	0.06	OK	
	LC29 at 72.92%	0.09	OK	
	LC3 at 72.92%	**0.74**	**OK**	Eq. H1-1b
	LC30 at 72.92%	0.11	OK	
	LC31 at 72.92%	0.07	OK	
	LC32 at 72.92%	0.05	OK	
	LC4 at 72.92%	0.53	OK	
	LC5 at 72.92%	0.69	OK	
	LC6 at 72.92%	0.65	OK	
	LC7 at 72.92%	0.73	OK	
	LC8 at 72.92%	0.55	OK	
	LC9 at 72.92%	0.30	OK	
48	LC1 at 72.92%	0.20	OK	
	LC10 at 72.92%	0.27	OK	
	LC11 at 72.92%	0.40	OK	
	LC12 at 72.92%	0.42	OK	
	LC13 at 72.92%	0.11	OK	
	LC14 at 72.92%	0.09	OK	
	LC15 at 72.92%	0.11	OK	
	LC16 at 72.92%	0.25	OK	
	LC17 at 72.92%	0.18	OK	
	LC18 at 72.92%	0.17	OK	
	LC19 at 72.92%	0.21	OK	
	LC2 at 25.00%	0.50	OK	
	LC20 at 72.92%	0.21	OK	
	LC21 at 72.92%	0.10	OK	
	LC22 at 72.92%	0.10	OK	
	LC23 at 72.92%	0.13	OK	
	LC24 at 72.92%	0.13	OK	
	LC25 at 25.00%	0.07	OK	
	LC26 at 25.00%	0.09	OK	
	LC27 at 25.00%	0.06	OK	
	LC28 at 72.92%	0.05	OK	
	LC29 at 72.92%	0.10	OK	
	LC3 at 72.92%	0.42	OK	
	LC30 at 72.92%	0.10	OK	
	LC31 at 72.92%	0.13	OK	
	LC32 at 72.92%	0.13	OK	
	LC4 at 25.00%	**0.60**	**OK**	Eq. H1-1b
	LC5 at 72.92%	0.22	OK	
	LC6 at 25.00%	0.51	OK	
	LC7 at 72.92%	0.40	OK	
	LC8 at 25.00%	0.59	OK	
	LC9 at 72.92%	0.29	OK	
55	LC1 at 72.92%	0.30	OK	
	LC10 at 72.92%	0.45	OK	
	LC11 at 72.92%	0.45	OK	
	LC12 at 72.92%	0.31	OK	

	LC13 at 72.92%	0.13	OK	
	LC14 at 72.92%	0.10	OK	
	LC15 at 72.92%	0.15	OK	
	LC16 at 25.00%	0.15	OK	
	LC17 at 25.00%	0.07	OK	
	LC18 at 72.92%	0.07	OK	
	LC19 at 72.92%	0.08	OK	
	LC2 at 25.00%	**0.62**	**OK**	Eq. H1-1b
	LC20 at 25.00%	0.09	OK	
	LC21 at 72.92%	0.13	OK	
	LC22 at 72.92%	0.16	OK	
	LC23 at 72.92%	0.16	OK	
	LC24 at 72.92%	0.13	OK	
	LC25 at 72.92%	0.21	OK	
	LC26 at 72.92%	0.24	OK	
	LC27 at 72.92%	0.24	OK	
	LC28 at 72.92%	0.21	OK	
	LC29 at 72.92%	0.11	OK	
	LC3 at 72.92%	0.51	OK	
	LC30 at 72.92%	0.14	OK	
	LC31 at 72.92%	0.14	OK	
	LC32 at 72.92%	0.11	OK	
	LC4 at 25.00%	0.52	OK	
	LC5 at 72.92%	0.31	OK	
	LC6 at 25.00%	0.61	OK	
	LC7 at 72.92%	0.47	OK	
	LC8 at 25.00%	0.53	OK	
	LC9 at 72.92%	0.32	OK	
57	LC1 at 72.92%	0.60	OK	
	LC10 at 72.92%	0.25	OK	
	LC11 at 72.92%	0.34	OK	
	LC12 at 72.92%	0.23	OK	
	LC13 at 72.92%	0.08	OK	
	LC14 at 72.92%	0.06	OK	
	LC15 at 72.92%	0.09	OK	
	LC16 at 72.92%	0.08	OK	
	LC17 at 72.92%	0.07	OK	
	LC18 at 72.92%	0.09	OK	
	LC19 at 72.92%	0.11	OK	
	LC2 at 72.92%	0.62	OK	
	LC20 at 72.92%	0.08	OK	
	LC21 at 72.92%	0.07	OK	
	LC22 at 72.92%	0.09	OK	
	LC23 at 72.92%	0.12	OK	
	LC24 at 72.92%	0.09	OK	
	LC25 at 72.92%	0.08	OK	
	LC26 at 72.92%	0.10	OK	
	LC27 at 72.92%	0.13	OK	
	LC28 at 72.92%	0.10	OK	
	LC29 at 72.92%	0.06	OK	
	LC3 at 72.92%	**0.74**	**OK**	Eq. H1-1b
	LC30 at 72.92%	0.08	OK	
	LC31 at 72.92%	0.11	OK	
	LC32 at 72.92%	0.08	OK	
	LC4 at 72.92%	0.67	OK	
	LC5 at 72.92%	0.61	OK	
	LC6 at 72.92%	0.62	OK	
	LC7 at 72.92%	0.72	OK	
	LC8 at 72.92%	0.66	OK	
	LC9 at 72.92%	0.19	OK	
59	LC1 at 72.92%	**0.63**	**OK**	Eq. H1-1b
	LC10 at 72.92%	0.33	OK	

	LC11 at 72.92%	0.26	OK	
	LC12 at 72.92%	0.36	OK	
	LC13 at 72.92%	0.11	OK	
	LC14 at 72.92%	0.09	OK	
	LC15 at 72.92%	0.14	OK	
	LC16 at 25.00%	0.16	OK	
	LC17 at 72.92%	0.05	OK	
	LC18 at 25.00%	0.05	OK	
	LC19 at 25.00%	0.08	OK	
	LC2 at 25.00%	0.12	OK	
	LC20 at 25.00%	0.06	OK	
	LC21 at 72.92%	0.15	OK	
	LC22 at 72.92%	0.12	OK	
	LC23 at 72.92%	0.11	OK	
	LC24 at 72.92%	0.13	OK	
	LC25 at 72.92%	0.26	OK	
	LC26 at 72.92%	0.24	OK	
	LC27 at 72.92%	0.22	OK	
	LC28 at 72.92%	0.25	OK	
	LC29 at 72.92%	0.14	OK	
	LC3 at 25.00%	0.49	OK	
	LC30 at 72.92%	0.11	OK	
	LC31 at 72.92%	0.09	OK	
	LC32 at 72.92%	0.12	OK	
	LC4 at 72.92%	0.25	OK	
	LC5 at 72.92%	0.60	OK	
	LC6 at 25.00%	0.11	OK	
	LC7 at 25.00%	0.50	OK	
	LC8 at 72.92%	0.22	OK	
	LC9 at 72.92%	0.43	OK	
61	LC1 at 25.00%	0.30	OK	
	LC10 at 72.92%	0.29	OK	
	LC11 at 72.92%	0.40	OK	
	LC12 at 72.92%	0.47	OK	
	LC13 at 72.92%	0.13	OK	
	LC14 at 72.92%	0.10	OK	
	LC15 at 72.92%	0.10	OK	
	LC16 at 72.92%	0.30	OK	
	LC17 at 72.92%	0.20	OK	
	LC18 at 72.92%	0.18	OK	
	LC19 at 72.92%	0.20	OK	
	LC2 at 72.92%	0.40	OK	
	LC20 at 72.92%	0.22	OK	
	LC21 at 72.92%	0.11	OK	
	LC22 at 72.92%	0.09	OK	
	LC23 at 72.92%	0.12	OK	
	LC24 at 72.92%	0.13	OK	
	LC25 at 72.92%	0.29	OK	
	LC26 at 72.92%	0.27	OK	
	LC27 at 72.92%	0.30	OK	
	LC28 at 72.92%	0.32	OK	
	LC29 at 72.92%	0.12	OK	
	LC3 at 25.00%	0.40	OK	
	LC30 at 72.92%	0.10	OK	
	LC31 at 72.92%	0.13	OK	
	LC32 at 72.92%	0.15	OK	
	LC4 at 72.92%	**0.59**	**OK**	Eq. H1-1b
	LC5 at 25.00%	0.31	OK	
	LC6 at 72.92%	0.42	OK	
	LC7 at 25.00%	0.39	OK	
	LC8 at 72.92%	0.56	OK	
	LC9 at 72.92%	0.37	OK	

63	LC1 at 72.92%	0.37	OK	
	LC10 at 72.92%	0.23	OK	
	LC11 at 72.92%	0.18	OK	
	LC12 at 72.92%	0.34	OK	
	LC13 at 72.92%	0.08	OK	
	LC14 at 72.92%	0.06	OK	
	LC15 at 72.92%	0.17	OK	
	LC16 at 72.92%	0.10	OK	
	LC17 at 72.92%	0.08	OK	
	LC18 at 72.92%	0.09	OK	
	LC19 at 33.33%	0.06	OK	
	LC2 at 72.92%	**0.63**	**OK**	Eq. H1-1b
	LC20 at 72.92%	0.10	OK	
	LC21 at 72.92%	0.18	OK	
	LC22 at 72.92%	0.14	OK	
	LC23 at 72.92%	0.15	OK	
	LC24 at 72.92%	0.20	OK	
	LC25 at 72.92%	0.14	OK	
	LC26 at 72.92%	0.09	OK	
	LC27 at 72.92%	0.10	OK	
	LC28 at 72.92%	0.15	OK	
	LC29 at 72.92%	0.10	OK	
	LC3 at 72.92%	0.29	OK	
	LC30 at 72.92%	0.07	OK	
	LC31 at 72.92%	0.07	OK	
	LC32 at 72.92%	0.10	OK	
	LC4 at 72.92%	0.61	OK	
	LC5 at 72.92%	0.34	OK	
	LC6 at 72.92%	0.62	OK	
	LC7 at 72.92%	0.30	OK	
	LC8 at 72.92%	0.60	OK	
	LC9 at 72.92%	0.28	OK	
65	LC1 at 25.00%	0.33	OK	
	LC10 at 72.92%	0.43	OK	
	LC11 at 72.92%	0.38	OK	
	LC12 at 72.92%	0.27	OK	
	LC13 at 72.92%	0.11	OK	
	LC14 at 72.92%	0.09	OK	
	LC15 at 72.92%	0.09	OK	
	LC16 at 72.92%	0.39	OK	
	LC17 at 72.92%	0.30	OK	
	LC18 at 72.92%	0.33	OK	
	LC19 at 72.92%	0.32	OK	
	LC2 at 72.92%	**0.52**	**OK**	Eq. H1-1b
	LC20 at 72.92%	0.29	OK	
	LC21 at 72.92%	0.09	OK	
	LC22 at 72.92%	0.12	OK	
	LC23 at 72.92%	0.11	OK	
	LC24 at 72.92%	0.08	OK	
	LC25 at 72.92%	0.16	OK	
	LC26 at 72.92%	0.19	OK	
	LC27 at 72.92%	0.18	OK	
	LC28 at 72.92%	0.15	OK	
	LC29 at 72.92%	0.11	OK	
	LC3 at 25.00%	0.43	OK	Eq. H1-1b
	LC30 at 72.92%	0.14	OK	
	LC31 at 72.92%	0.12	OK	
	LC32 at 72.92%	0.09	OK	
	LC4 at 72.92%	0.29	OK	
	LC5 at 25.00%	0.34	OK	
	LC6 at 72.92%	0.49	OK	
	LC7 at 25.00%	0.42	OK	
	LC8 at 72.92%	0.32	OK	

	LC9 at 72.92%	0.32	OK	
67	LC1 at 0.00%	0.51	OK	
	LC10 at 50.00%	0.33	OK	
	LC11 at 50.00%	0.35	OK	
	LC12 at 48.44%	0.34	OK	
	LC13 at 48.44%	0.10	OK	
	LC14 at 48.44%	0.08	OK	
	LC15 at 50.00%	0.09	OK	
	LC16 at 50.00%	0.22	OK	
	LC17 at 50.00%	0.17	OK	
	LC18 at 50.00%	0.19	OK	
	LC19 at 50.00%	0.20	OK	
	LC2 at 0.00%	0.49	OK	
	LC20 at 50.00%	0.17	OK	
	LC21 at 48.44%	0.10	OK	
	LC22 at 50.00%	0.12	OK	
	LC23 at 48.44%	0.13	OK	
	LC24 at 48.44%	0.13	OK	
	LC25 at 48.44%	0.15	OK	
	LC26 at 48.44%	0.16	OK	
	LC27 at 48.44%	0.18	OK	
	LC28 at 48.44%	0.18	OK	
	LC29 at 48.44%	0.09	OK	
	LC3 at 0.00%	**0.55**	**OK**	Eq. H3-6
	LC30 at 50.00%	0.11	OK	
	LC31 at 48.44%	0.12	OK	
	LC32 at 48.44%	0.11	OK	
	LC4 at 100.00%	0.50	OK	Eq. H1-1b
	LC5 at 0.00%	0.51	OK	
	LC6 at 100.00%	0.49	OK	
	LC7 at 0.00%	0.55	OK	
	LC8 at 100.00%	0.49	OK	
	LC9 at 48.44%	0.24	OK	
68	LC1 at 100.00%	0.54	OK	
	LC10 at 48.44%	0.37	OK	
	LC11 at 48.44%	0.30	OK	
	LC12 at 50.00%	0.27	OK	
	LC13 at 48.44%	0.10	OK	
	LC14 at 48.44%	0.08	OK	
	LC15 at 48.44%	0.12	OK	
	LC16 at 0.00%	0.13	OK	
	LC17 at 0.00%	0.09	OK	
	LC18 at 48.44%	0.09	OK	
	LC19 at 100.00%	0.10	OK	
	LC2 at 0.00%	0.64	OK	
	LC20 at 0.00%	0.10	OK	
	LC21 at 50.00%	0.12	OK	
	LC22 at 48.44%	0.13	OK	
	LC23 at 48.44%	0.11	OK	
	LC24 at 50.00%	0.10	OK	
	LC25 at 50.00%	0.18	OK	
	LC26 at 48.44%	0.19	OK	
	LC27 at 48.44%	0.17	OK	
	LC28 at 50.00%	0.16	OK	
	LC29 at 50.00%	0.12	OK	
	LC3 at 100.00%	0.56	OK	Eq. H1-1b
	LC30 at 48.44%	0.12	OK	
	LC31 at 48.44%	0.10	OK	
	LC32 at 50.00%	0.09	OK	
	LC4 at 0.00%	0.61	OK	Eq. H3-6
	LC5 at 100.00%	0.55	OK	
	LC6 at 0.00%	**0.64**	**OK**	Eq. H3-6

		LC7 at 100.00%	0.56	OK	
		LC8 at 0.00%	0.60	OK	
		LC9 at 50.00%	0.35	OK	
	69	LC1 at 0.00%	0.48	OK	
		LC10 at 48.44%	0.27	OK	
		LC11 at 50.00%	0.30	OK	
		LC12 at 50.00%	0.37	OK	
		LC13 at 48.44%	0.10	OK	
		LC14 at 48.44%	0.08	OK	
		LC15 at 50.00%	0.10	OK	
		LC16 at 48.44%	0.19	OK	
		LC17 at 48.44%	0.17	OK	
		LC18 at 48.44%	0.14	OK	
		LC19 at 50.00%	0.15	OK	
		LC2 at 100.00%	0.59	OK	
		LC20 at 50.00%	0.17	OK	
		LC21 at 48.44%	0.11	OK	
		LC22 at 48.44%	0.09	OK	
		LC23 at 50.00%	0.10	OK	
		LC24 at 50.00%	0.12	OK	
		LC25 at 100.00%	0.09	OK	
		LC26 at 100.00%	0.10	OK	
		LC27 at 0.00%	0.11	OK	
		LC28 at 0.00%	0.09	OK	
		LC29 at 48.44%	0.12	OK	
		LC3 at 0.00%	0.53	OK	Eq. H1-1b
		LC30 at 48.44%	0.09	OK	
		LC31 at 50.00%	0.10	OK	
		LC32 at 50.00%	0.12	OK	
		LC4 at 100.00%	**0.66**	**OK**	Eq. H3-6
		LC5 at 0.00%	0.49	OK	
		LC6 at 100.00%	0.59	OK	Eq. H3-6
		LC7 at 0.00%	0.53	OK	
		LC8 at 100.00%	0.66	OK	
		LC9 at 48.44%	0.36	OK	
PL 6x1	**1**	LC1 at 0.00%	0.26	OK	
		LC10 at 0.00%	**0.63**	**OK**	Eq. H1-1b
		LC11 at 0.00%	0.56	OK	
		LC12 at 0.00%	0.49	OK	
		LC13 at 0.00%	0.19	OK	
		LC14 at 0.00%	0.14	OK	
		LC15 at 0.00%	0.22	OK	
		LC16 at 100.00%	0.04	OK	
		LC17 at 0.00%	0.08	OK	
		LC18 at 0.00%	0.10	OK	
		LC19 at 0.00%	0.08	OK	
		LC2 at 0.00%	0.58	OK	
		LC20 at 0.00%	0.06	OK	
		LC21 at 0.00%	0.21	OK	
		LC22 at 0.00%	0.23	OK	
		LC23 at 0.00%	0.21	OK	
		LC24 at 0.00%	0.19	OK	
		LC25 at 0.00%	0.36	OK	
		LC26 at 0.00%	0.37	OK	
		LC27 at 0.00%	0.35	OK	
		LC28 at 0.00%	0.34	OK	
		LC29 at 0.00%	0.19	OK	
		LC3 at 0.00%	0.19	OK	
		LC30 at 0.00%	0.21	OK	
		LC31 at 0.00%	0.19	OK	
		LC32 at 0.00%	0.17	OK	
		LC4 at 0.00%	0.20	OK	

	LC5 at 0.00%	0.21	OK	
	LC6 at 0.00%	0.53	OK	
	LC7 at 0.00%	0.14	OK	
	LC8 at 0.00%	0.25	OK	
	LC9 at 0.00%	0.57	OK	
2	LC1 at 0.00%	0.18	OK	
	LC10 at 0.00%	**0.71**	**OK**	Eq. H1-1b
	LC11 at 0.00%	0.65	OK	
	LC12 at 0.00%	0.58	OK	
	LC13 at 0.00%	0.22	OK	
	LC14 at 0.00%	0.17	OK	
	LC15 at 0.00%	0.31	OK	
	LC16 at 0.00%	0.06	OK	
	LC17 at 0.00%	0.14	OK	
	LC18 at 0.00%	0.16	OK	
	LC19 at 0.00%	0.15	OK	
	LC2 at 0.00%	0.65	OK	
	LC20 at 0.00%	0.13	OK	
	LC21 at 0.00%	0.28	OK	
	LC22 at 0.00%	0.30	OK	
	LC23 at 0.00%	0.28	OK	
	LC24 at 0.00%	0.26	OK	
	LC25 at 0.00%	0.41	OK	
	LC26 at 0.00%	0.43	OK	
	LC27 at 0.00%	0.41	OK	
	LC28 at 0.00%	0.40	OK	
	LC29 at 0.00%	0.22	OK	
	LC3 at 0.00%	0.32	OK	
	LC30 at 0.00%	0.24	OK	
	LC31 at 0.00%	0.22	OK	
	LC32 at 0.00%	0.21	OK	
	LC4 at 0.00%	0.21	OK	
	LC5 at 0.00%	0.13	OK	
	LC6 at 0.00%	0.60	OK	
	LC7 at 0.00%	0.27	OK	
	LC8 at 0.00%	0.26	OK	
	LC9 at 0.00%	0.63	OK	
3	LC1 at 0.00%	0.23	OK	
	LC10 at 0.00%	**0.35**	**OK**	Eq. H1-1b
	LC11 at 0.00%	0.30	OK	
	LC12 at 0.00%	0.30	OK	
	LC13 at 0.00%	0.11	OK	
	LC14 at 0.00%	0.08	OK	
	LC15 at 0.00%	0.12	OK	
	LC16 at 100.00%	0.01	OK	
	LC17 at 0.00%	0.06	OK	
	LC18 at 0.00%	0.07	OK	
	LC19 at 0.00%	0.06	OK	
	LC2 at 0.00%	0.33	OK	
	LC20 at 0.00%	0.05	OK	
	LC21 at 0.00%	0.12	OK	
	LC22 at 0.00%	0.12	OK	
	LC23 at 0.00%	0.11	OK	
	LC24 at 0.00%	0.11	OK	
	LC25 at 0.00%	0.16	OK	
	LC26 at 0.00%	0.17	OK	
	LC27 at 0.00%	0.16	OK	
	LC28 at 0.00%	0.15	OK	
	LC29 at 0.00%	0.12	OK	
	LC3 at 0.00%	0.07	OK	
	LC30 at 0.00%	0.12	OK	
	LC31 at 0.00%	0.11	OK	

	LC32 at 0.00%	0.11	OK	
	LC4 at 0.00%	0.10	OK	
	LC5 at 0.00%	0.20	OK	
	LC6 at 0.00%	0.30	OK	
	LC7 at 0.00%	0.04	OK	
	LC8 at 0.00%	0.13	OK	
	LC9 at 0.00%	0.33	OK	
4	LC1 at 100.00%	0.15	OK	
	LC10 at 100.00%	**0.25**	**OK**	Eq. H1-1b
	LC11 at 100.00%	0.22	OK	
	LC12 at 100.00%	0.22	OK	
	LC13 at 100.00%	0.08	OK	
	LC14 at 100.00%	0.06	OK	
	LC15 at 100.00%	0.08	OK	
	LC16 at 0.00%	0.02	OK	
	LC17 at 100.00%	0.05	OK	
	LC18 at 100.00%	0.05	OK	
	LC19 at 100.00%	0.04	OK	
	LC2 at 100.00%	0.20	OK	
	LC20 at 100.00%	0.04	OK	
	LC21 at 100.00%	0.08	OK	
	LC22 at 100.00%	0.09	OK	
	LC23 at 100.00%	0.08	OK	
	LC24 at 100.00%	0.08	OK	
	LC25 at 100.00%	0.12	OK	
	LC26 at 100.00%	0.12	OK	
	LC27 at 100.00%	0.11	OK	
	LC28 at 100.00%	0.11	OK	
	LC29 at 100.00%	0.08	OK	
	LC3 at 0.00%	0.04	OK	
	LC30 at 100.00%	0.09	OK	
	LC31 at 100.00%	0.08	OK	
	LC32 at 100.00%	0.08	OK	
	LC4 at 100.00%	0.04	OK	
	LC5 at 100.00%	0.13	OK	
	LC6 at 100.00%	0.18	OK	
	LC7 at 0.00%	0.04	OK	
	LC8 at 100.00%	0.06	OK	
	LC9 at 100.00%	0.24	OK	
5	LC1 at 0.00%	0.09	OK	
	LC10 at 0.00%	**0.15**	**OK**	Eq. H1-1b
	LC11 at 0.00%	0.14	OK	
	LC12 at 0.00%	0.13	OK	
	LC13 at 0.00%	0.05	OK	
	LC14 at 0.00%	0.04	OK	
	LC15 at 0.00%	0.05	OK	
	LC16 at 100.00%	0.03	OK	
	LC17 at 0.00%	0.03	OK	
	LC18 at 0.00%	0.04	OK	
	LC19 at 0.00%	0.03	OK	
	LC2 at 0.00%	0.10	OK	
	LC20 at 0.00%	0.03	OK	
	LC21 at 0.00%	0.05	OK	
	LC22 at 0.00%	0.05	OK	
	LC23 at 0.00%	0.05	OK	
	LC24 at 0.00%	0.05	OK	
	LC25 at 0.00%	0.07	OK	
	LC26 at 0.00%	0.07	OK	
	LC27 at 0.00%	0.06	OK	
	LC28 at 0.00%	0.06	OK	
	LC29 at 0.00%	0.05	OK	
	LC3 at 100.00%	0.04	OK	

	LC30 at 0.00%	0.05	OK	
	LC31 at 0.00%	0.05	OK	
	LC32 at 0.00%	0.05	OK	
	LC4 at 100.00%	0.06	OK	
	LC5 at 0.00%	0.08	OK	
	LC6 at 0.00%	0.09	OK	
	LC7 at 0.00%	0.04	OK	
	LC8 at 100.00%	0.06	OK	
	LC9 at 0.00%	0.15	OK	
6	LC1 at 0.00%	0.09	OK	
	LC10 at 0.00%	0.09	OK	
	LC11 at 0.00%	0.08	OK	
	LC12 at 0.00%	0.09	OK	
	LC13 at 0.00%	0.03	OK	
	LC14 at 0.00%	0.02	OK	
	LC15 at 100.00%	0.02	OK	
	LC16 at 0.00%	0.04	OK	
	LC17 at 0.00%	0.03	OK	
	LC18 at 0.00%	0.02	OK	
	LC19 at 100.00%	0.02	OK	
	LC2 at 0.00%	**0.10**	**OK**	Eq. H1-1b
	LC20 at 0.00%	0.02	OK	
	LC21 at 0.00%	0.02	OK	
	LC22 at 0.00%	0.02	OK	
	LC23 at 0.00%	0.02	OK	
	LC24 at 0.00%	0.02	OK	
	LC25 at 0.00%	0.03	OK	
	LC26 at 0.00%	0.03	OK	
	LC27 at 0.00%	0.03	OK	
	LC28 at 0.00%	0.02	OK	
	LC29 at 0.00%	0.03	OK	
	LC3 at 0.00%	0.05	OK	
	LC30 at 0.00%	0.03	OK	
	LC31 at 0.00%	0.03	OK	
	LC32 at 0.00%	0.03	OK	
	LC4 at 0.00%	0.09	OK	
	LC5 at 0.00%	0.08	OK	
	LC6 at 0.00%	0.10	OK	
	LC7 at 0.00%	0.06	OK	
	LC8 at 0.00%	0.09	OK	
	LC9 at 0.00%	0.10	OK	Eq. H3-1
7	LC1 at 100.00%	0.13	OK	
	LC10 at 100.00%	0.12	OK	
	LC11 at 100.00%	0.10	OK	
	LC12 at 0.00%	0.09	OK	
	LC13 at 100.00%	0.03	OK	
	LC14 at 100.00%	0.02	OK	
	LC15 at 100.00%	0.03	OK	
	LC16 at 100.00%	0.06	OK	
	LC17 at 0.00%	0.03	OK	
	LC18 at 0.00%	0.03	OK	
	LC19 at 0.00%	0.03	OK	
	LC2 at 100.00%	**0.16**	**OK**	Eq. H1-1b
	LC20 at 0.00%	0.03	OK	
	LC21 at 100.00%	0.03	OK	
	LC22 at 100.00%	0.04	OK	
	LC23 at 100.00%	0.03	OK	
	LC24 at 100.00%	0.02	OK	
	LC25 at 100.00%	0.07	OK	
	LC26 at 100.00%	0.07	OK	
	LC27 at 100.00%	0.06	OK	
	LC28 at 100.00%	0.06	OK	

	LC29 at 100.00%	0.03	OK	
	LC3 at 100.00%	0.07	OK	
	LC30 at 100.00%	0.04	OK	
	LC31 at 100.00%	0.03	OK	
	LC32 at 0.00%	0.03	OK	
	LC4 at 100.00%	0.10	OK	
	LC5 at 100.00%	0.12	OK	
	LC6 at 100.00%	0.15	OK	
	LC7 at 100.00%	0.07	OK	
	LC8 at 100.00%	0.11	OK	
	LC9 at 100.00%	0.11	OK	
8	LC1 at 0.00%	0.07	OK	Eq. H1-1b
	LC10 at 0.00%	0.05	OK	
	LC11 at 0.00%	0.05	OK	
	LC12 at 50.00%	0.06	OK	
	LC13 at 0.00%	0.02	OK	
	LC14 at 0.00%	0.01	OK	
	LC15 at 0.00%	0.01	OK	
	LC16 at 50.00%	0.06	OK	
	LC17 at 50.00%	0.04	OK	
	LC18 at 50.00%	0.03	OK	
	LC19 at 50.00%	0.04	OK	
	LC2 at 0.00%	0.06	OK	
	LC20 at 50.00%	0.04	OK	
	LC21 at 0.00%	0.02	OK	
	LC22 at 0.00%	0.01	OK	
	LC23 at 0.00%	0.01	OK	
	LC24 at 0.00%	0.02	OK	
	LC25 at 0.00%	0.01	OK	
	LC26 at 0.00%	0.01	OK	
	LC27 at 0.00%	0.01	OK	
	LC28 at 0.00%	0.01	OK	
	LC29 at 0.00%	0.02	OK	
	LC3 at 0.00%	0.03	OK	
	LC30 at 0.00%	0.02	OK	
	LC31 at 0.00%	0.02	OK	
	LC32 at 50.00%	0.02	OK	
	LC4 at 50.00%	**0.09**	**OK**	Eq. H3-1
	LC5 at 0.00%	0.05	OK	
	LC6 at 0.00%	0.06	OK	
	LC7 at 0.00%	0.03	OK	
	LC8 at 50.00%	0.09	OK	
	LC9 at 0.00%	0.06	OK	
9	LC1 at 0.00%	0.53	OK	
	LC10 at 0.00%	0.52	OK	
	LC11 at 0.00%	0.51	OK	
	LC12 at 0.00%	0.60	OK	
	LC13 at 0.00%	0.19	OK	
	LC14 at 0.00%	0.14	OK	
	LC15 at 0.00%	0.12	OK	
	LC16 at 0.00%	0.26	OK	
	LC17 at 0.00%	0.23	OK	
	LC18 at 0.00%	0.21	OK	
	LC19 at 0.00%	0.20	OK	
	LC2 at 100.00%	0.07	OK	Eq. H1-1b
	LC20 at 0.00%	0.23	OK	
	LC21 at 0.00%	0.16	OK	
	LC22 at 0.00%	0.14	OK	
	LC23 at 0.00%	0.13	OK	
	LC24 at 0.00%	0.16	OK	
	LC25 at 0.00%	0.08	OK	
	LC26 at 0.00%	0.06	OK	

	LC27 at 0.00%	0.06	OK	
	LC28 at 0.00%	0.08	OK	
	LC29 at 0.00%	0.21	OK	
	LC3 at 0.00%	0.15	OK	
	LC30 at 0.00%	0.18	OK	
	LC31 at 0.00%	0.18	OK	
	LC32 at 0.00%	0.20	OK	
	LC4 at 0.00%	0.43	OK	
	LC5 at 0.00%	0.49	OK	
	LC6 at 0.00%	0.10	OK	
	LC7 at 0.00%	0.20	OK	
	LC8 at 0.00%	0.38	OK	
	LC9 at 0.00%	**0.61**	**OK**	Eq. H1-1b
10	LC1 at 0.00%	0.64	OK	
	LC10 at 0.00%	0.61	OK	
	LC11 at 0.00%	0.59	OK	
	LC12 at 0.00%	0.66	OK	
	LC13 at 0.00%	0.22	OK	
	LC14 at 0.00%	0.17	OK	
	LC15 at 0.00%	0.15	OK	
	LC16 at 0.00%	0.22	OK	
	LC17 at 0.00%	0.23	OK	
	LC18 at 0.00%	0.21	OK	
	LC19 at 0.00%	0.20	OK	
	LC2 at 0.00%	0.12	OK	
	LC20 at 0.00%	0.22	OK	
	LC21 at 0.00%	0.19	OK	
	LC22 at 0.00%	0.17	OK	
	LC23 at 0.00%	0.16	OK	
	LC24 at 0.00%	0.18	OK	
	LC25 at 0.00%	0.14	OK	
	LC26 at 0.00%	0.12	OK	
	LC27 at 0.00%	0.11	OK	
	LC28 at 0.00%	0.13	OK	
	LC29 at 0.00%	0.24	OK	
	LC3 at 0.00%	0.20	OK	
	LC30 at 0.00%	0.22	OK	
	LC31 at 0.00%	0.21	OK	
	LC32 at 0.00%	0.23	OK	
	LC4 at 0.00%	0.36	OK	
	LC5 at 0.00%	0.59	OK	
	LC6 at 100.00%	0.07	OK	
	LC7 at 0.00%	0.26	OK	
	LC8 at 0.00%	0.30	OK	
	LC9 at 0.00%	**0.70**	**OK**	Eq. H1-1b
11	LC1 at 0.00%	0.25	OK	
	LC10 at 0.00%	0.30	OK	
	LC11 at 0.00%	0.30	OK	
	LC12 at 0.00%	**0.35**	**OK**	Eq. H1-1b
	LC13 at 0.00%	0.11	OK	
	LC14 at 0.00%	0.08	OK	
	LC15 at 0.00%	0.09	OK	
	LC16 at 0.00%	0.21	OK	
	LC17 at 0.00%	0.16	OK	
	LC18 at 0.00%	0.15	OK	
	LC19 at 0.00%	0.16	OK	
	LC2 at 0.00%	0.10	OK	
	LC20 at 0.00%	0.17	OK	
	LC21 at 0.00%	0.10	OK	
	LC22 at 0.00%	0.09	OK	
	LC23 at 0.00%	0.10	OK	
	LC24 at 0.00%	0.11	OK	

	LC25 at 0.00%	0.06	OK	
	LC26 at 0.00%	0.05	OK	
	LC27 at 0.00%	0.05	OK	
	LC28 at 0.00%	0.06	OK	
	LC29 at 0.00%	0.12	OK	
	LC3 at 0.00%	0.07	OK	
	LC30 at 0.00%	0.11	OK	
	LC31 at 0.00%	0.11	OK	
	LC32 at 0.00%	0.12	OK	
	LC4 at 0.00%	0.32	OK	
	LC5 at 0.00%	0.22	OK	
	LC6 at 0.00%	0.13	OK	
	LC7 at 0.00%	0.05	OK	
	LC8 at 0.00%	0.29	OK	
	LC9 at 0.00%	0.33	OK	
12	LC1 at 100.00%	0.16	OK	
	LC10 at 100.00%	0.22	OK	
	LC11 at 100.00%	0.22	OK	
	LC12 at 100.00%	**0.25**	**OK**	Eq. H1-1b
	LC13 at 100.00%	0.08	OK	
	LC14 at 100.00%	0.06	OK	
	LC15 at 100.00%	0.07	OK	
	LC16 at 100.00%	0.15	OK	
	LC17 at 100.00%	0.12	OK	
	LC18 at 100.00%	0.11	OK	
	LC19 at 100.00%	0.11	OK	
	LC2 at 100.00%	0.05	OK	
	LC20 at 100.00%	0.12	OK	
	LC21 at 100.00%	0.08	OK	
	LC22 at 100.00%	0.07	OK	
	LC23 at 100.00%	0.07	OK	
	LC24 at 100.00%	0.08	OK	
	LC25 at 100.00%	0.05	OK	
	LC26 at 100.00%	0.04	OK	
	LC27 at 100.00%	0.04	OK	
	LC28 at 100.00%	0.05	OK	
	LC29 at 100.00%	0.08	OK	
	LC3 at 100.00%	0.05	OK	
	LC30 at 100.00%	0.08	OK	
	LC31 at 100.00%	0.08	OK	
	LC32 at 100.00%	0.09	OK	
	LC4 at 100.00%	0.21	OK	
	LC5 at 100.00%	0.14	OK	
	LC6 at 100.00%	0.07	OK	
	LC7 at 0.00%	0.04	OK	
	LC8 at 100.00%	0.19	OK	
	LC9 at 100.00%	0.24	OK	
13	LC1 at 0.00%	0.08	OK	
	LC10 at 0.00%	0.13	OK	
	LC11 at 0.00%	0.14	OK	
	LC12 at 0.00%	**0.15**	**OK**	Eq. H1-1b
	LC13 at 0.00%	0.05	OK	
	LC14 at 0.00%	0.04	OK	
	LC15 at 0.00%	0.05	OK	
	LC16 at 0.00%	0.09	OK	
	LC17 at 0.00%	0.07	OK	
	LC18 at 0.00%	0.07	OK	
	LC19 at 0.00%	0.07	OK	
	LC2 at 100.00%	0.05	OK	
	LC20 at 0.00%	0.07	OK	
	LC21 at 0.00%	0.05	OK	
	LC22 at 0.00%	0.05	OK	

	LC23 at 0.00%	0.05	OK	
	LC24 at 0.00%	0.05	OK	
	LC25 at 0.00%	0.03	OK	
	LC26 at 0.00%	0.03	OK	
	LC27 at 0.00%	0.03	OK	
	LC28 at 0.00%	0.04	OK	
	LC29 at 0.00%	0.05	OK	
	LC3 at 0.00%	0.05	OK	
	LC30 at 0.00%	0.05	OK	
	LC31 at 0.00%	0.05	OK	
	LC32 at 0.00%	0.05	OK	
	LC4 at 0.00%	0.10	OK	
	LC5 at 0.00%	0.07	OK	
	LC6 at 100.00%	0.05	OK	
	LC7 at 0.00%	0.05	OK	
	LC8 at 0.00%	0.09	OK	
	LC9 at 0.00%	0.15	OK	
14	LC1 at 0.00%	0.07	OK	
	LC10 at 0.00%	0.08	OK	
	LC11 at 0.00%	0.10	OK	
	LC12 at 0.00%	0.10	OK	Eq. H3-1
	LC13 at 0.00%	0.03	OK	
	LC14 at 0.00%	0.02	OK	
	LC15 at 0.00%	0.05	OK	
	LC16 at 0.00%	0.09	OK	
	LC17 at 0.00%	0.06	OK	
	LC18 at 0.00%	0.06	OK	
	LC19 at 0.00%	0.07	OK	
	LC2 at 0.00%	0.09	OK	
	LC20 at 0.00%	0.07	OK	
	LC21 at 0.00%	0.04	OK	
	LC22 at 0.00%	0.04	OK	
	LC23 at 0.00%	0.05	OK	
	LC24 at 0.00%	0.05	OK	
	LC25 at 0.00%	0.03	OK	
	LC26 at 0.00%	0.03	OK	
	LC27 at 0.00%	0.03	OK	
	LC28 at 0.00%	0.03	OK	
	LC29 at 0.00%	0.03	OK	
	LC3 at 0.00%	0.07	OK	
	LC30 at 0.00%	0.03	OK	
	LC31 at 0.00%	0.03	OK	
	LC32 at 0.00%	0.03	OK	
	LC4 at 0.00%	**0.10**	**OK**	Eq. H1-1b
	LC5 at 0.00%	0.07	OK	
	LC6 at 0.00%	0.09	OK	
	LC7 at 0.00%	0.06	OK	
	LC8 at 0.00%	0.10	OK	
	LC9 at 0.00%	0.08	OK	
15	LC1 at 100.00%	0.14	OK	
	LC10 at 100.00%	0.09	OK	
	LC11 at 0.00%	0.09	OK	Eq. H3-1
	LC12 at 100.00%	0.12	OK	
	LC13 at 100.00%	0.03	OK	
	LC14 at 100.00%	0.02	OK	
	LC15 at 0.00%	0.06	OK	
	LC16 at 0.00%	0.08	OK	
	LC17 at 0.00%	0.06	OK	
	LC18 at 0.00%	0.06	OK	
	LC19 at 0.00%	0.06	OK	
	LC2 at 100.00%	0.12	OK	
	LC20 at 0.00%	0.06	OK	

	LC21 at 0.00%	0.04	OK	
	LC22 at 0.00%	0.05	OK	
	LC23 at 0.00%	0.05	OK	
	LC24 at 0.00%	0.05	OK	
	LC25 at 0.00%	0.03	OK	
	LC26 at 0.00%	0.03	OK	
	LC27 at 0.00%	0.04	OK	
	LC28 at 0.00%	0.04	OK	
	LC29 at 100.00%	0.03	OK	
	LC3 at 100.00%	0.08	OK	
	LC30 at 100.00%	0.03	OK	
	LC31 at 0.00%	0.03	OK	
	LC32 at 100.00%	0.04	OK	
	LC4 at 100.00%	**0.18**	**OK**	Eq. H1-1b
	LC5 at 100.00%	0.14	OK	
	LC6 at 100.00%	0.13	OK	
	LC7 at 100.00%	0.09	OK	
	LC8 at 100.00%	0.17	OK	
	LC9 at 100.00%	0.11	OK	
16	LC1 at 53.13%	0.06	OK	
	LC10 at 0.00%	0.05	OK	
	LC11 at 53.13%	0.06	OK	
	LC12 at 0.00%	0.06	OK	
	LC13 at 0.00%	0.02	OK	
	LC14 at 0.00%	0.01	OK	
	LC15 at 0.00%	0.06	OK	
	LC16 at 0.00%	0.05	OK	
	LC17 at 0.00%	0.04	OK	
	LC18 at 0.00%	0.04	OK	
	LC19 at 0.00%	0.04	OK	
	LC2 at 0.00%	0.03	OK	
	LC20 at 0.00%	0.04	OK	
	LC21 at 0.00%	0.04	OK	
	LC22 at 0.00%	0.05	OK	
	LC23 at 0.00%	0.05	OK	
	LC24 at 0.00%	0.05	OK	
	LC25 at 0.00%	0.04	OK	
	LC26 at 0.00%	0.04	OK	
	LC27 at 0.00%	0.05	OK	
	LC28 at 0.00%	0.04	OK	
	LC29 at 0.00%	0.02	OK	
	LC3 at 0.00%	**0.10**	**OK**	Eq. H3-1
	LC30 at 0.00%	0.02	OK	
	LC31 at 0.00%	0.02	OK	
	LC32 at 0.00%	0.02	OK	
	LC4 at 53.13%	0.05	OK	
	LC5 at 53.13%	0.07	OK	
	LC6 at 100.00%	0.03	OK	
	LC7 at 0.00%	0.09	OK	
	LC8 at 53.13%	0.04	OK	
	LC9 at 0.00%	0.05	OK	
17	LC1 at 0.00%	0.16	OK	
	LC10 at 0.00%	0.53	OK	
	LC11 at 0.00%	**0.62**	**OK**	Eq. H1-1b
	LC12 at 0.00%	0.59	OK	
	LC13 at 0.00%	0.19	OK	
	LC14 at 0.00%	0.14	OK	
	LC15 at 0.00%	0.39	OK	
	LC16 at 0.00%	0.50	OK	
	LC17 at 0.00%	0.37	OK	
	LC18 at 0.00%	0.37	OK	
	LC19 at 0.00%	0.40	OK	

	LC2 at 0.00%	0.07	OK	
	LC20 at 0.00%	0.39	OK	
	LC21 at 0.00%	0.31	OK	
	LC22 at 0.00%	0.32	OK	
	LC23 at 0.00%	0.34	OK	
	LC24 at 0.00%	0.33	OK	
	LC25 at 0.00%	0.24	OK	
	LC26 at 0.00%	0.25	OK	
	LC27 at 0.00%	0.27	OK	
	LC28 at 0.00%	0.26	OK	
	LC29 at 0.00%	0.18	OK	
	LC3 at 0.00%	0.55	OK	
	LC30 at 0.00%	0.19	OK	
	LC31 at 0.00%	0.21	OK	
	LC32 at 0.00%	0.20	OK	
	LC4 at 0.00%	0.38	OK	
	LC5 at 0.00%	0.21	OK	
	LC6 at 0.00%	0.05	OK	
	LC7 at 0.00%	0.50	OK	
	LC8 at 0.00%	0.34	OK	
	LC9 at 0.00%	0.50	OK	
18	LC1 at 0.00%	0.11	OK	
	LC10 at 0.00%	0.60	OK	
	LC11 at 0.00%	**0.69**	**OK**	Eq. H1-1b
	LC12 at 0.00%	0.68	OK	
	LC13 at 0.00%	0.22	OK	
	LC14 at 0.00%	0.17	OK	
	LC15 at 0.00%	0.38	OK	
	LC16 at 0.00%	0.56	OK	
	LC17 at 0.00%	0.41	OK	
	LC18 at 0.00%	0.41	OK	
	LC19 at 0.00%	0.43	OK	
	LC2 at 0.00%	0.07	OK	
	LC20 at 0.00%	0.43	OK	
	LC21 at 0.00%	0.32	OK	
	LC22 at 0.00%	0.32	OK	
	LC23 at 0.00%	0.34	OK	
	LC24 at 0.00%	0.34	OK	
	LC25 at 0.00%	0.23	OK	
	LC26 at 0.00%	0.24	OK	
	LC27 at 0.00%	0.26	OK	
	LC28 at 0.00%	0.26	OK	
	LC29 at 0.00%	0.21	OK	
	LC3 at 0.00%	0.56	OK	
	LC30 at 0.00%	0.21	OK	
	LC31 at 0.00%	0.23	OK	
	LC32 at 0.00%	0.23	OK	
	LC4 at 0.00%	0.51	OK	
	LC5 at 0.00%	0.17	OK	
	LC6 at 0.00%	0.12	OK	
	LC7 at 0.00%	0.50	OK	
	LC8 at 0.00%	0.45	OK	
	LC9 at 0.00%	0.59	OK	
19	LC1 at 0.00%	0.14	OK	
	LC10 at 0.00%	0.31	OK	
	LC11 at 0.00%	0.35	OK	
	LC12 at 0.00%	0.31	OK	
	LC13 at 0.00%	0.11	OK	
	LC14 at 0.00%	0.08	OK	
	LC15 at 0.00%	0.21	OK	
	LC16 at 0.00%	0.20	OK	
	LC17 at 0.00%	0.17	OK	

	LC18 at 0.00%	0.17	OK	
	LC19 at 0.00%	0.18	OK	
	LC2 at 0.00%	0.11	OK	
	LC20 at 0.00%	0.17	OK	
	LC21 at 0.00%	0.17	OK	
	LC22 at 0.00%	0.18	OK	
	LC23 at 0.00%	0.19	OK	
	LC24 at 0.00%	0.18	OK	
	LC25 at 0.00%	0.17	OK	
	LC26 at 0.00%	0.18	OK	
	LC27 at 0.00%	0.19	OK	
	LC28 at 0.00%	0.18	OK	
	LC29 at 0.00%	0.11	OK	
	LC3 at 0.00%	**0.36**	**OK**	Eq. H1-1b
	LC30 at 0.00%	0.11	OK	
	LC31 at 0.00%	0.12	OK	
	LC32 at 0.00%	0.11	OK	
	LC4 at 0.00%	0.12	OK	
	LC5 at 0.00%	0.17	OK	
	LC6 at 0.00%	0.09	OK	
	LC7 at 0.00%	0.33	OK	
	LC8 at 0.00%	0.10	OK	
	LC9 at 0.00%	0.29	OK	
20	LC1 at 100.00%	0.07	OK	
	LC10 at 100.00%	0.23	OK	
	LC11 at 100.00%	**0.25**	**OK**	Eq. H1-1b
	LC12 at 100.00%	0.23	OK	
	LC13 at 100.00%	0.08	OK	
	LC14 at 100.00%	0.06	OK	
	LC15 at 100.00%	0.15	OK	
	LC16 at 100.00%	0.14	OK	
	LC17 at 100.00%	0.12	OK	
	LC18 at 100.00%	0.12	OK	
	LC19 at 100.00%	0.13	OK	
	LC2 at 100.00%	0.09	OK	
	LC20 at 100.00%	0.12	OK	
	LC21 at 100.00%	0.12	OK	
	LC22 at 100.00%	0.13	OK	
	LC23 at 100.00%	0.13	OK	
	LC24 at 100.00%	0.13	OK	
	LC25 at 100.00%	0.12	OK	
	LC26 at 100.00%	0.13	OK	
	LC27 at 100.00%	0.13	OK	
	LC28 at 100.00%	0.13	OK	
	LC29 at 100.00%	0.08	OK	
	LC3 at 100.00%	0.23	OK	
	LC30 at 100.00%	0.08	OK	
	LC31 at 100.00%	0.09	OK	
	LC32 at 100.00%	0.08	OK	
	LC4 at 100.00%	0.09	OK	
	LC5 at 100.00%	0.09	OK	
	LC6 at 100.00%	0.07	OK	
	LC7 at 100.00%	0.21	OK	
	LC8 at 100.00%	0.07	OK	
	LC9 at 100.00%	0.21	OK	
21	LC1 at 100.00%	0.06	OK	
	LC10 at 0.00%	0.14	OK	
	LC11 at 0.00%	**0.15**	**OK**	Eq. H1-1b
	LC12 at 0.00%	0.14	OK	
	LC13 at 0.00%	0.05	OK	
	LC14 at 0.00%	0.04	OK	
	LC15 at 0.00%	0.08	OK	

	LC16 at 0.00%	0.08	OK	
	LC17 at 0.00%	0.07	OK	
	LC18 at 0.00%	0.07	OK	
	LC19 at 0.00%	0.07	OK	
	LC2 at 0.00%	0.07	OK	
	LC20 at 0.00%	0.07	OK	
	LC21 at 0.00%	0.07	OK	
	LC22 at 0.00%	0.07	OK	
	LC23 at 0.00%	0.07	OK	
	LC24 at 0.00%	0.07	OK	
	LC25 at 0.00%	0.07	OK	
	LC26 at 0.00%	0.07	OK	
	LC27 at 0.00%	0.07	OK	
	LC28 at 0.00%	0.07	OK	
	LC29 at 0.00%	0.05	OK	
	LC3 at 0.00%	0.11	OK	
	LC30 at 0.00%	0.05	OK	
	LC31 at 0.00%	0.05	OK	
	LC32 at 0.00%	0.05	OK	
	LC4 at 0.00%	0.06	OK	
	LC5 at 100.00%	0.06	OK	
	LC6 at 0.00%	0.07	OK	
	LC7 at 0.00%	0.10	OK	
	LC8 at 0.00%	0.04	OK	
	LC9 at 0.00%	0.13	OK	
22	LC1 at 0.00%	0.11	OK	
	LC10 at 0.00%	0.10	OK	Eq. H3-1
	LC11 at 0.00%	0.09	OK	
	LC12 at 0.00%	0.08	OK	
	LC13 at 0.00%	0.03	OK	
	LC14 at 0.00%	0.02	OK	
	LC15 at 0.00%	0.05	OK	
	LC16 at 0.00%	0.04	OK	
	LC17 at 0.00%	0.03	OK	
	LC18 at 0.00%	0.03	OK	
	LC19 at 0.00%	0.03	OK	
	LC2 at 0.00%	0.08	OK	
	LC20 at 0.00%	0.03	OK	
	LC21 at 0.00%	0.04	OK	
	LC22 at 0.00%	0.04	OK	
	LC23 at 0.00%	0.04	OK	
	LC24 at 0.00%	0.04	OK	
	LC25 at 0.00%	0.06	OK	
	LC26 at 0.00%	0.07	OK	
	LC27 at 0.00%	0.06	OK	
	LC28 at 0.00%	0.06	OK	
	LC29 at 0.00%	0.03	OK	
	LC3 at 0.00%	**0.12**	**OK**	Eq. H1-1b
	LC30 at 0.00%	0.03	OK	
	LC31 at 0.00%	0.03	OK	
	LC32 at 0.00%	0.03	OK	
	LC4 at 0.00%	0.05	OK	
	LC5 at 0.00%	0.11	OK	
	LC6 at 0.00%	0.08	OK	
	LC7 at 0.00%	0.12	OK	
	LC8 at 0.00%	0.05	OK	
	LC9 at 0.00%	0.09	OK	
23	LC1 at 100.00%	0.14	OK	
	LC10 at 100.00%	0.10	OK	
	LC11 at 100.00%	0.12	OK	
	LC12 at 100.00%	0.11	OK	
	LC13 at 100.00%	0.03	OK	

	LC14 at 100.00%	0.02	OK	
	LC15 at 100.00%	0.10	OK	
	LC16 at 100.00%	0.10	OK	
	LC17 at 100.00%	0.07	OK	
	LC18 at 100.00%	0.07	OK	
	LC19 at 100.00%	0.08	OK	
	LC2 at 0.00%	0.09	OK	
	LC20 at 100.00%	0.08	OK	
	LC21 at 100.00%	0.07	OK	
	LC22 at 100.00%	0.08	OK	
	LC23 at 100.00%	0.08	OK	
	LC24 at 100.00%	0.08	OK	
	LC25 at 100.00%	0.06	OK	
	LC26 at 100.00%	0.07	OK	
	LC27 at 100.00%	0.07	OK	
	LC28 at 100.00%	0.07	OK	
	LC29 at 0.00%	0.03	OK	
	LC3 at 100.00%	**0.19**	**OK**	Eq. H1-1b
	LC30 at 0.00%	0.03	OK	
	LC31 at 100.00%	0.04	OK	
	LC32 at 100.00%	0.03	OK	
	LC4 at 100.00%	0.09	OK	
	LC5 at 100.00%	0.14	OK	
	LC6 at 0.00%	0.08	OK	
	LC7 at 100.00%	0.19	OK	
	LC8 at 100.00%	0.08	OK	
	LC9 at 0.00%	0.08	OK	
24	LC1 at 0.00%	0.07	OK	
	LC10 at 0.00%	0.06	OK	
	LC11 at 0.00%	0.05	OK	
	LC12 at 0.00%	0.05	OK	
	LC13 at 0.00%	0.02	OK	
	LC14 at 0.00%	0.01	OK	
	LC15 at 0.00%	0.03	OK	
	LC16 at 0.00%	0.03	OK	
	LC17 at 0.00%	0.01	OK	
	LC18 at 0.00%	0.01	OK	
	LC19 at 0.00%	0.01	OK	
	LC2 at 0.00%	**0.08**	**OK**	Eq. H3-1
	LC20 at 0.00%	0.02	OK	
	LC21 at 0.00%	0.02	OK	
	LC22 at 0.00%	0.02	OK	
	LC23 at 0.00%	0.02	OK	
	LC24 at 0.00%	0.02	OK	
	LC25 at 0.00%	0.03	OK	
	LC26 at 0.00%	0.04	OK	
	LC27 at 0.00%	0.03	OK	
	LC28 at 0.00%	0.03	OK	
	LC29 at 0.00%	0.02	OK	
	LC3 at 100.00%	0.04	OK	Eq. H1-1b
	LC30 at 0.00%	0.02	OK	
	LC31 at 0.00%	0.02	OK	
	LC32 at 0.00%	0.02	OK	
	LC4 at 0.00%	0.04	OK	
	LC5 at 0.00%	0.06	OK	
	LC6 at 0.00%	0.07	OK	
	LC7 at 0.00%	0.04	OK	
	LC8 at 0.00%	0.05	OK	
	LC9 at 0.00%	0.06	OK	

Bentley

Current Date: 8/14/2018 10:23 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2087\3C-4C-5C 2018\CT2087 (3C-4C-5C) (MOD).etz\

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
1	0.9487	0.00	2.2905	0
2	-0.3236	0.00	2.458	0
3	-1.5092	0.00	1.9669	0
4	-2.2905	0.00	0.9487	0
5	-2.458	0.00	-0.3236	0
6	-1.9669	0.00	-1.5092	0
7	-0.9487	0.00	-2.2905	0
8	1.9669	0.00	1.5092	0
9	2.458	0.00	0.3236	0
10	2.2905	0.00	-0.9487	0
11	1.5092	0.00	-1.9669	0
12	0.3236	0.00	-2.458	0
13	-2.458	0.00	0.3236	0
14	-2.2905	0.00	-0.9487	0
15	-1.5092	0.00	-1.9669	0
16	1.9669	0.00	-1.5092	0
17	0.9487	0.00	-2.2905	0
18	-0.3236	0.00	-2.458	0
19	-1.9669	0.00	1.5092	0
20	2.458	0.00	-0.3236	0
21	-0.9487	0.00	2.2905	0

22	2.2905	0.00	0.9487	0
23	0.3236	0.00	2.458	0
24	1.5092	0.00	1.9669	0
25	0.4784	0.00	1.1548	0
26	0.7609	0.00	-0.9917	0
27	-1.2393	0.00	-0.1632	0
28	6.0833	0.00	3.5122	0
29	0.8104	0.00	3.5122	0
30	-0.8104	0.00	3.5122	0
31	-6.0833	0.00	3.5122	0
32	-3.4469	0.00	-1.0543	0
33	-2.6365	0.00	-2.458	0
34	9.47E-08	0.00	-7.0244	0
35	2.6365	0.00	-2.458	0
36	3.4469	0.00	-1.0543	0
79	0.00	0.00	0.00	0
89	5.7451	4.50	2.5267	0
90	3.2103	4.50	-1.8636	0
91	0.6756	4.50	-6.2538	0
92	5.7451	-1.50	2.5267	0
93	3.2103	-1.50	-1.8636	0
94	0.6756	-1.50	-6.2538	0
113	-0.6843	4.50	-6.2387	0
114	-0.6843	-1.50	-6.2387	0
115	-3.2191	4.50	-1.8485	0
116	-3.2191	-1.50	-1.8485	0
117	-5.7538	4.50	2.5418	0
118	-5.7538	-1.50	2.5418	0
125	-5.0607	4.50	3.712	0
126	-5.0607	-1.50	3.712	0
127	0.0087	4.50	3.712	0
128	0.0087	-1.50	3.712	0
129	5.0782	4.50	3.712	0
130	5.0782	-1.50	3.712	0
149	-6.0833	3.00	3.5122	0
150	6.0833	3.00	3.5122	0
151	9.47E-08	3.00	-7.0244	0
152	-1.2168	0.00	-4.9169	0
154	1.2168	0.00	-4.9169	0
155	-4.1567	0.00	0.1752	0
158	-1.53E-07	0.00	-4.9169	0
163	4.2582	0.00	2.4584	0
165	3.6498	0.00	3.5122	0
166	4.8666	0.00	1.4047	0
169	-4.8665	0.00	1.4047	0
187	-3.6498	0.00	3.5122	0
188	-2.2301	0.00	3.5122	0
189	-4.2582	0.00	2.4585	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
25	1	1	1	1	1	1
26	1	1	1	1	1	1
27	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	4	13		PL 6x1	A36	0.00	0.00	0.00
2	5	13		PL 6x1	A36	0.00	0.00	0.00
3	5	14		PL 6x1	A36	0.00	0.00	0.00
4	6	14		PL 6x1	A36	0.00	0.00	0.00
5	6	15		PL 6x1	A36	0.00	0.00	0.00
6	7	15		PL 6x1	A36	0.00	0.00	0.00
7	7	18		PL 6x1	A36	0.00	0.00	0.00
8	12	18		PL 6x1	A36	0.00	0.00	0.00
9	12	17		PL 6x1	A36	0.00	0.00	0.00
10	11	17		PL 6x1	A36	0.00	0.00	0.00
11	11	16		PL 6x1	A36	0.00	0.00	0.00
12	10	16		PL 6x1	A36	0.00	0.00	0.00
13	10	20		PL 6x1	A36	0.00	0.00	0.00
14	9	20		PL 6x1	A36	0.00	0.00	0.00
15	9	22		PL 6x1	A36	0.00	0.00	0.00
16	8	22		PL 6x1	A36	0.00	0.00	0.00
17	8	24		PL 6x1	A36	0.00	0.00	0.00
18	1	24		PL 6x1	A36	0.00	0.00	0.00
19	1	23		PL 6x1	A36	0.00	0.00	0.00
20	2	23		PL 6x1	A36	0.00	0.00	0.00
21	2	21		PL 6x1	A36	0.00	0.00	0.00
22	3	21		PL 6x1	A36	0.00	0.00	0.00
23	3	19		PL 6x1	A36	0.00	0.00	0.00
24	4	19		PL 6x1	A36	0.00	0.00	0.00
26	11	26		HSS_SQR 3X3X1_4	A500 GrB rectangular	0.00	0.00	0.00
27	5	27		HSS_SQR 3X3X1_4	A500 GrB rectangular	0.00	0.00	0.00
28	31	28		C 5X9	A36	0.00	0.00	0.00
29	28	34		C 5X9	A36	0.00	0.00	0.00
30	34	31		C 5X9	A36	0.00	0.00	0.00
31	30	32		C 5X9	A36	0.00	0.00	0.00
32	29	36		C 5X9	A36	0.00	0.00	0.00
33	33	35		C 5X9	A36	0.00	0.00	0.00
46	89	92		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
47	90	93		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
48	91	94		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
55	113	114		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
57	115	116		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
59	117	118		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
61	125	126		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
63	127	128		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
65	129	130		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
67	149	150		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
68	151	149		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
69	150	151		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
95	25	1		HSS_SQR 3X3X1_4	A500 GrB rectangular	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
1	90.00	0	0.00	0.00	0.00
2	90.00	0	0.00	0.00	0.00
3	90.00	0	0.00	0.00	0.00
4	90.00	0	0.00	0.00	0.00
5	90.00	0	0.00	0.00	0.00
6	90.00	0	0.00	0.00	0.00
7	90.00	0	0.00	0.00	0.00
8	90.00	0	0.00	0.00	0.00
9	90.00	0	0.00	0.00	0.00
10	90.00	0	0.00	0.00	0.00
11	90.00	0	0.00	0.00	0.00
12	90.00	0	0.00	0.00	0.00
13	90.00	0	0.00	0.00	0.00
14	90.00	0	0.00	0.00	0.00
15	90.00	0	0.00	0.00	0.00
16	90.00	0	0.00	0.00	0.00
17	90.00	0	0.00	0.00	0.00
18	90.00	0	0.00	0.00	0.00
19	90.00	0	0.00	0.00	0.00
20	90.00	0	0.00	0.00	0.00
21	90.00	0	0.00	0.00	0.00
22	90.00	0	0.00	0.00	0.00
23	90.00	0	0.00	0.00	0.00
24	90.00	0	0.00	0.00	0.00
28	180.00	0	0.00	0.00	0.00
29	180.00	0	0.00	0.00	0.00
30	180.00	0	0.00	0.00	0.00
31	180.00	0	0.00	0.00	0.00
33	180.00	0	0.00	0.00	0.00
46	0.00	2	-0.5373	0.00	-0.8434
47	0.00	2	-0.5373	0.00	-0.8434
48	0.00	2	-0.5373	0.00	-0.8434
55	0.00	2	-0.4617	0.00	0.887
57	0.00	2	-0.4617	0.00	0.887
59	0.00	2	-0.4617	0.00	0.887
61	0.00	2	0.999	0.00	-0.0436
63	0.00	2	0.999	0.00	-0.0436
65	0.00	2	0.999	0.00	-0.0436
67	180.00	0	0.00	0.00	0.00
68	180.00	0	0.00	0.00	0.00
69	180.00	0	0.00	0.00	0.00

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT2087

FA#: 10035332

Preston Hill
1432 Old Waterburt Road
Southbury, CT 06488

August 31, 2018

Centerline Communications Project Number: 950012-158

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**5.53 %**

August 31, 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: **CT2087 – Preston Hill**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **1432 Old Waterburt Road, Southbury, 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 **1432 Old Waterburt Road, Southbury, 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	40
LTE	700 MHz	2	40
LTE	2300 MHz (WCS)	4	30
LTE	850 MHz	2	40
LTE	1900 MHz (PCS)	4	40
LTE	2100 MHz (AWS)	4	30

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, 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Kathrein 800-10121	195
A	2	CCI OPA-65R-LCUU-H6	195
A	3	Kathrein 800-10798	193
B	1	Kathrein 800-10121	195
B	2	CCI OPA-65R-LCUU-H6	195
B	3	Kathrein 800-10798	193
C	1	Kathrein 800-10121	195
C	2	CCI OPA-65R-LCUU-H6	195
C	3	Kathrein 800-10798	193

Table 2: Antenna Data

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

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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	Kathrein 800-10121	850 MHz	11.45	2	60	837.82	0.15
Antenna A2	CCI OPA-65R-LCUU-H6	700 MHz / 2300 MHz (WCS)	11.65 / 15.45	6	200	5,378.76	0.68
Antenna A3	Kathrein 800-10798	850 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	13.65 / 14.35 / 14.75	10	360	9,792.70	1.15
						Sector A Composite MPE%	**1.98**
Antenna B1	Kathrein 800-10121	850 MHz	11.45	2	60	837.82	0.15
Antenna B2	CCI OPA-65R-LCUU-H6	700 MHz / 2300 MHz (WCS)	11.65 / 15.45	6	200	5,378.76	0.68
Antenna B3	Kathrein 800-10798	850 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	13.65 / 14.35 / 14.75	10	360	9,792.70	1.15
						Sector B Composite MPE%	**1.98**
Antenna C1	Kathrein 800-10121	850 MHz	11.45	2	60	837.82	0.15
Antenna C2	CCI OPA-65R-LCUU-H6	700 MHz / 2300 MHz (WCS)	11.65 / 15.45	6	200	5,378.76	0.68
Antenna C3	Kathrein 800-10798	850 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	13.65 / 14.35 / 14.75	10	360	9,792.70	1.15
						Sector C Composite MPE%	**1.98**

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 Sector Value	**1.98 %**
MetroPCS	0.27 %
Sprint	1.86 %
T-Mobile	0.50 %
Verizon Wireless	0.92 %
Site Total MPE %:	**5.53 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	1.98 %
AT&T Sector B Total:	1.98 %
AT&T Sector C Total:	1.98 %
Site Total:	5.53 %

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	418.91	195	0.84	850 MHz	567	0.15%
AT&T 700 MHz LTE – Antenna 2	2	584.87	195	1.18	700 MHz	467	0.25%
AT&T 2300 MHz (WCS) LTE – Antenna 2	4	1,052.26	195	4.24	2300 MHz (WCS)	1000	0.42%
AT&T 850 MHz LTE – Antenna 3	2	926.96	193	1.91	850 MHz	567	0.34%
AT&T 1900 MHz (PCS) LTE – Antenna 3	4	1,089.08	193	4.48	1900 MHz (PCS)	1000	0.45%
AT&T 2100 MHz (AWS) LTE – Antenna 3	4	895.61	193	3.68	2100 MHz (AWS)	1000	0.37%
						Total:	**1.98%**

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:	1.98 %
Sector B:	1.98 %
Sector C:	1.98 %
AT&T Maximum Total (per sector):	1.98 %
Site Total:	5.53 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **5.53 %** 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

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING TOWER:
- NEW AT&T ANTENNAS: (800-10798) @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- NEW AT&T RRUS: RRU-32 (WCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 4426 B66 (AWS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T SURGE ARRESTOR: DC6-48-60-18-8C (TOTAL OF 1)
- NEW AT&T LOW BAND COMBINER: DBC0061F1V51-2 (TOTAL OF 3)
- INSTALL (2) DC TRUNKS, (1) FIBER & (1) ALARM CABLE.

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- ADD (3) 4478 B5 RADIOS TO GROUND WITH (12) TSXDC-4310FM
- ADD (1) 5216 & ADD (2) XMU
- ADD FIBER MANAGEMENT BOX
- ADD DC 12

ITEMS TO REMAIN:
- (6) ANTENNAS, (6) RRU'S, (12) COAX CABLES, (2) DC POWER & (1) FIBER.

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:	1432 OLD WATERBURY ROAD SOUTHBURY, CT 06488
LATITUDE:	41.493583 N, 41° 29' 36.9" N
LONGITUDE:	73.165278 W, 73° 9' 55" W
TYPE OF SITE:	MONOPOLE/ OUTDOOR EQUIPMENT
STRUCTURE HEIGHT:	225'±
RAD CENTER:	196'±
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
SN-1	STRUCTURAL NOTES	1
S-1	STRUCTURAL DETAILS	1
G-1	GROUNDING DETAILS	1
RF-1	RF PLUMBING DIAGRAM	1

CCI SITE NAME: NHV109 943107
CCI SITE #: 806358

SITE NUMBER: CT2087

SITE NAME: PRESTON HILL

FA CODE:10035332

PACE ID: MRCTB030968, MRCTB031994, MRCTB031323

PROJECT: LTE 3C_4C_5C 2019 UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:

HEAD NORTHEAST TOWARD LEGGATT McCALL CONN. TURN LEFT ONTO LEGGATT McCALL CONN. CONTINUE ONTO BURR ST. TURN LEFT ONTO COCHITUATE RD. TAKE RAMP TO I-90 E/MASSPIKE W/SPRINGFIELD.BOSTON. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR I-90 W/MASSPIKE/WORCESTER/SPRINGFIELD AND MERGE ONTO I-90 W/MASSPIKE. MERGE ONTO I-90 W/MASSPIKE. TAKE EXIT 9 FOR I-84 TOWARD US-20/HARTFORD/NEW YORK CITY. CONTINUE INTO I-84. KEEP RIGHT TO STAY ON I-84. KEEP LEFT TO STAY ON I-84. TAKE EXIT 16 FOR CT-188 TOWARD SOUTHBURY. TURN RIGHT ONTO CT-188 N. TURN LEFT ONTO OLD WATERBURY RD.

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: CT2087
SITE NAME: PRESTON HILL
CCI SITE #: 806358
1432 OLD WATERBURY ROAD
SOUTHBURY, CT 06488
NEW HAVEN COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/07/18	ISSUED FOR CONSTRUCTION	MR	AT	DJC

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

REGISTERED PROFESSIONAL ENGINEER — STATE OF CONNECTICUT — LICENSED

AT&T
TITLE SHEET
(LTE 3C-4C-5C)

SITE NUMBER	DRAWING NUMBER	REV
CT2087	T-1	A

GROUNDING NOTES

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

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

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

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		

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CENTERLINE COMMUNICATIONS
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WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT2087
SITE NAME: PRESTON HILL
CCI SITE #: 806358
1432 OLD WATERBURY ROAD
SOUTHBURY, CT 06488
NEW HAVEN COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/07/18	ISSUED FOR CONSTRUCTION	MR	AT	DJC

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

STATE OF CONNECTICUT
DEREK J. CREASER
No. 27354
LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
(LTE 3C-4C-5C)

SITE NUMBER	DRAWING NUMBER	REV
CT2087	GN-1	A

NOTE:

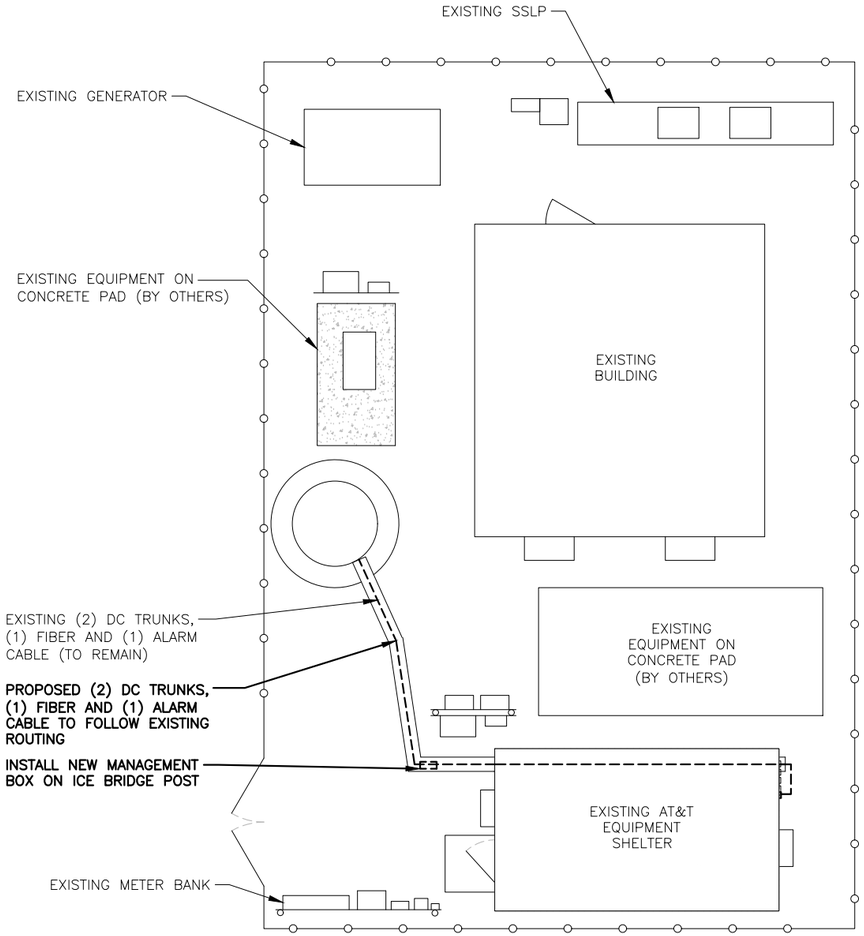
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

ALL ANTENNAS AND LINES TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL AT&T RF DATA SHEET.

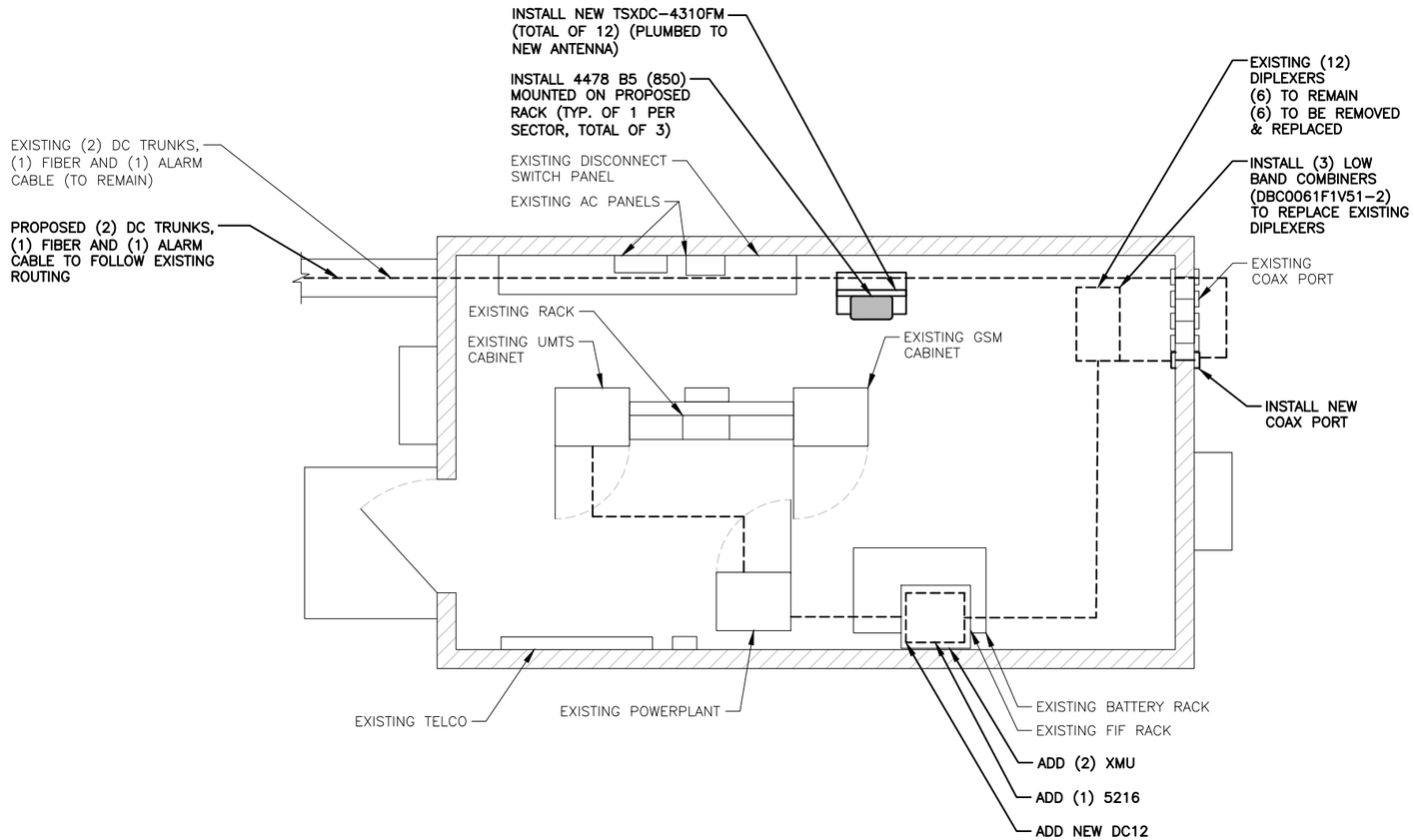
NOTE:

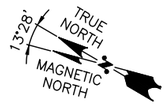
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: AUGUST 14, 2018



COMPOUND PLAN (1 / A-1)
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"

0 2'-8" 5'-4" 10'-8" 16'-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"

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

STATE OF CONNECTICUT
DEREK J. CREASER
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LICENSED PROFESSIONAL ENGINEER

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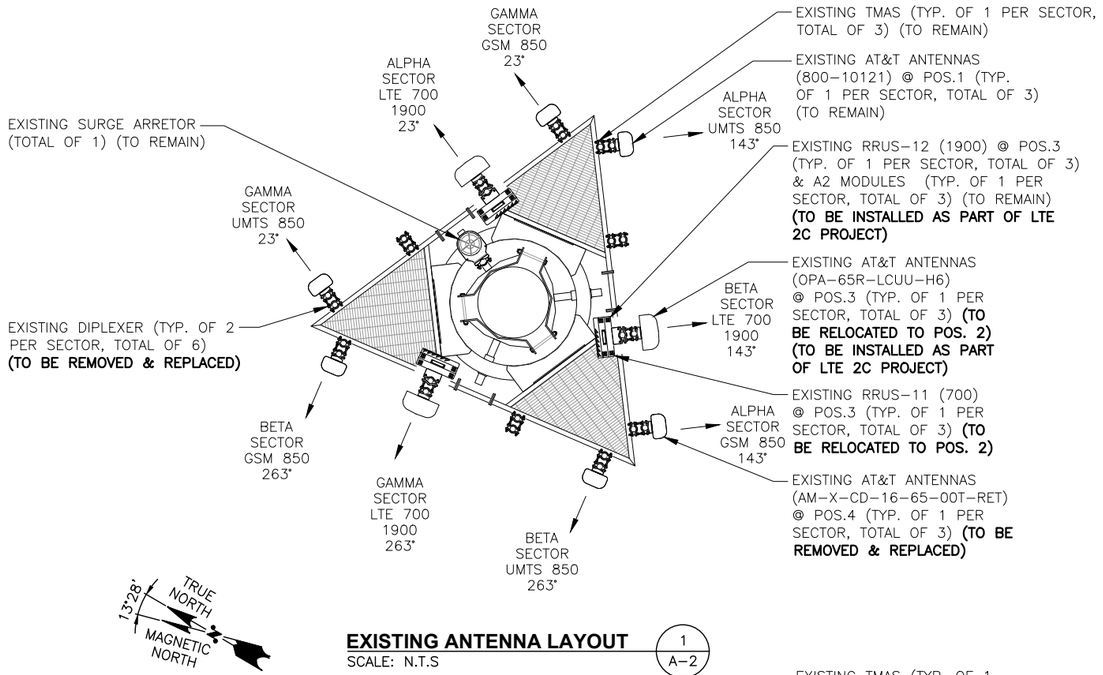
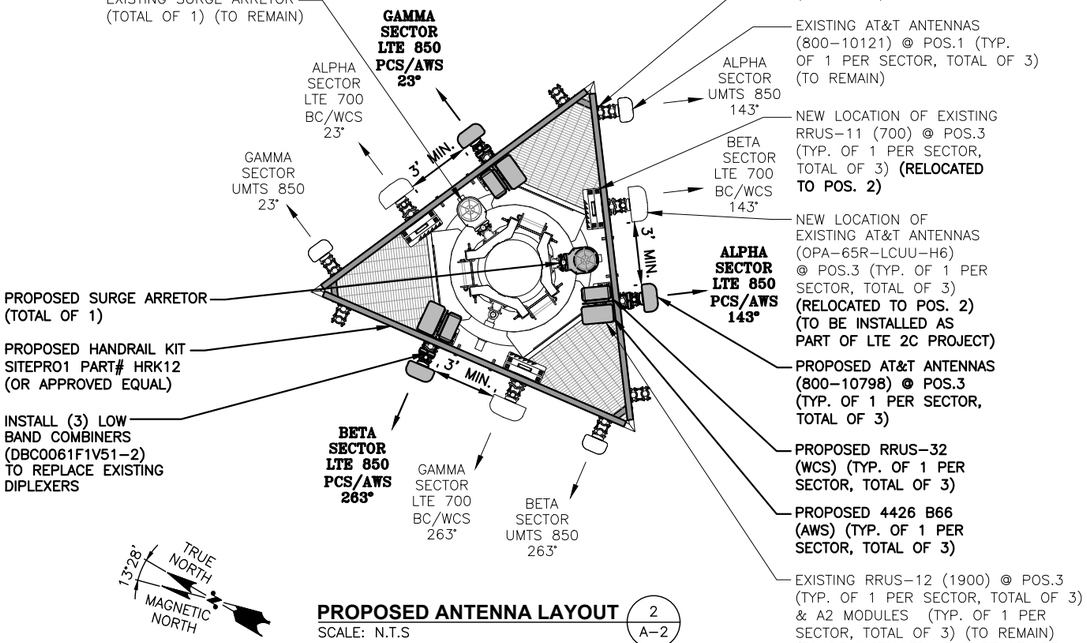
COMPOUND & EQUIPMENT PLAN
(LTE 3C-4C-5C)

SITE NUMBER	DRAWING NUMBER	REV
CT2087	A-1	A



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



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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NOTE:

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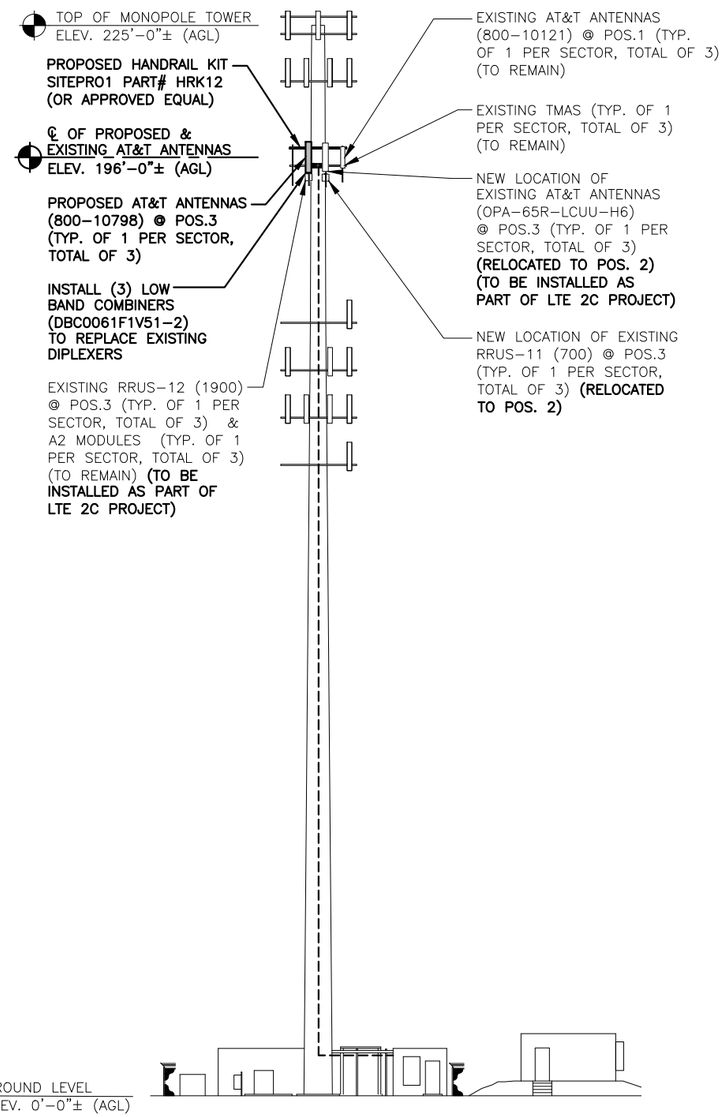
HUDSON DESIGN GROUP, LLC.
DATED: AUGUST 14, 2018

SPECIAL CONSTRUCTION/PLANNING NOTE:

EQUIPMENT SHOWN AS "TO BE INSTALLED AS PART OF LTE 2C PROJECT" REFERS TO RECORD DRAWINGS AND NOT ACTUAL FIELD CONDITIONS. DEPLOYMENT OF EQUIPMENT "TO BE INSTALLED AS PART OF LTE 2C PROJECT" UNDER A SEPARATE BUILDING PERMIT PRIOR TO CONSTRUCTION START OF THIS PROJECT.



ELEVATION (3 / A-2)
22x34 SCALE: 1/16"=1'-0"
11x17 SCALE: 1/32"=1'-0"
0 8'-0" 16'-0" 32'-0" 48'-0"

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

STATE OF CONNECTICUT
DEREK J. CREASER
LICENSED PROFESSIONAL ENGINEER
18.27358

AT&T

ANTENNA LAYOUT & ELEVATION
(LTE 3C-4C-5C)

SITE NUMBER	DRAWING NUMBER	REV
CT2087	A-2	A

SPECIAL CONSTRUCTION/PLANNING NOTE:

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NOTE:

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

NOTE:

ALL ANTENNAS AND LINES TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL AT&T RF DATA SHEET.

NOTE:

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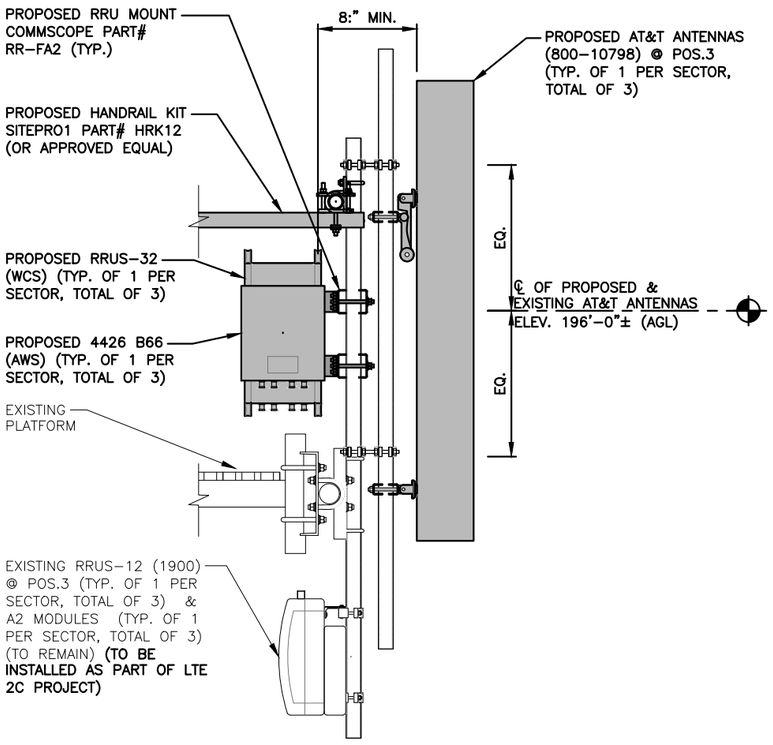


PROPOSED LTE ANTENNA & RRH MOUNTING DETAIL (1 / A-3)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

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

ANTENNA SCHEDULE

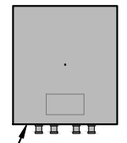
SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	UMTS 850	80010121	54.5X10.3X5.9	±196'	143°	(E) DTMABP7819VG12A	–	–	(2) 1-5/8 COAX (LENGTH 290' ±)	--
A2	EXISTING	LTE 700 BC/WCS	OPA-65R-LCUU-H6	72x14.8x7.4	±196'	23°	--	(E) RRUS-11 (700) **(P) RRUS-32 (WCS)**	– **27.2X12.1X7.0**	–	(E) (1) RAYCAP DC6-48-60-18-8C
A3	**PROPOSED**	**LTE 850 PCS/AWS**	**800-10798**	**59x20x6.9**	**±196'**	**143°**	**(P) DBC0061F1V51-2**	(E) RRUS-12 (1900) (E) A2 MODULES **(P)(G) 4478 B5 (850)** **(P) (1) 4428 B66 (AWS)**	– – **15x13.2x7.4** **15X13.2X7.4**	(2) 1-5/8 COAX (LENGTH 290' ±)	
A4	–	–	–	–	–	–	--	–	–	–	
B1	EXISTING	UMTS 850	80010121	54.5X10.3X5.9	±196'	263°	(E) DTMABP7819VG12A	–	–	(2) 1-5/8 COAX (LENGTH 290' ±)	--
B2	EXISTING	LTE 700 BC/WCS	OPA-65R-LCUU-H6	72x14.8x7.4	±196'	143°	--	(E) RRUS-11 (700) **(P) RRUS-32 (WCS)**	– **27.2X12.1X7.0**	–	**(P) RAYCAP DC6-48-60-18-8C**
B3	**PROPOSED**	**LTE 850 PCS/AWS**	**800-10798**	**59x20x6.9**	**±196'**	**263°**	**(P) DBC0061F1V51-2**	(E) RRUS-12 (1900) (E) A2 MODULES **(P)(G) 4478 B5 (850)** **(P) (1) 4428 B66 (AWS)**	– – **15x13.2x7.4** **15X13.2X7.4**	(2) 1-5/8 COAX (LENGTH 290' ±)	
B4	–	–	–	–	–	–	--	–	–	–	
C1	EXISTING	UMTS 850	80010121	54.5X10.3X5.9	±196'	23°	(E) DTMABP7819VG12A	–	–	(2) 1-5/8 COAX (LENGTH 290' ±)	--
C2	EXISTING	LTE 700 BC/WCS	OPA-65R-LCUU-H6	72x14.8x7.4	±196'	263°	--	(E) RRUS-11 (700) **(P) RRUS-32 (WCS)**	– **27.2X12.1X7.0**	–	SHARED
C3	**PROPOSED**	**LTE 850 PCS/AWS**	**800-10798**	**59x20x6.9**	**±196'**	**23°**	**(P) DBC0061F1V51-2**	(E) RRUS-12 (1900) (E) A2 MODULES **(P)(G) 4478 B5 (850)** **(P) (1) 4428 B66 (AWS)**	– – **15x13.2x7.4** **15X13.2X7.4**	(2) 1-5/8 COAX (LENGTH 290' ±)	
C4	–	–	–	–	–	–	--	–	–	–	

FINAL ANTENNA SCHEDULE (4 / A-3)
SCALE: N.T.S

RRU CHART				
QUANTITY	**MODEL**	**L**	**W**	**D**
3(E)	RRUS-11	19.7"	17.0"	7.2"
3(E)	RRUS-12	19.7"	17.0"	7.2"
3(E)	A2 MODS	19.7"	17.0"	7.2"
3(P)	RRUS-32	27.2"	12.1"	7.0"
3(P)	4426 B66	15.0"	13.2"	7.4"
3(P)(G)	4478 B5	15.0"	13.2"	7.4"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

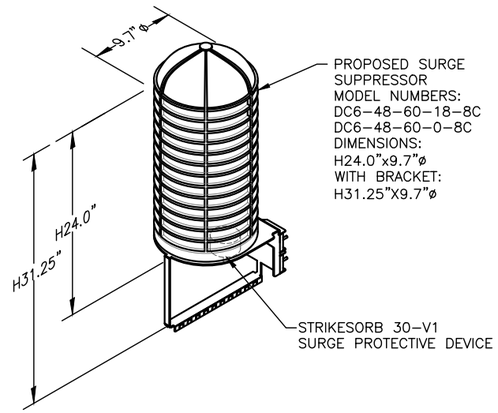
NOTE:
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



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

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NO.	DATE	REVISIONS	BY	CHK	APP'D
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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: MR

STATE OF CONNECTICUT — DEPARTMENT OF CONSUMER PROTECTION — LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
(LTE 3C-4C-5C)

SITE NUMBER	DRAWING NUMBER	REV
CT2087	A-3	A

STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND DI.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-70 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

SPECIAL INSPECTION CHECKLIST	
BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS [1]
N/A	MATERIAL SPECIFICATIONS REPORT [2]
N/A	FABRICATOR NDE INSPECTION
N/A	PACKING SLIPS [3]
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS [4]
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION [5]
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS [6]
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTES:

1. REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
2. PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
3. PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
4. HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
5. ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH HAS BEEN BASED ON ACI 355.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS. ADHESIVE ANCHORS REQUIRING CERTIFIED INSTALLATIONS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318-11 D.9.2.2. INSTALLATIONS REQUIRING CERTIFIED INSTALLERS SHALL BE INSPECTED PER ACI 318-11 D.8.2.4.
6. AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

NOTES:

1. ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
2. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
3. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
4. VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM. ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
5. CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
6. EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.

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

SITE NUMBER: CT2087
SITE NAME: PRESTON HILL
CCI SITE #: 806358
1432 OLD WATERBURY ROAD
SOUTHBURY, CT 06488
NEW HAVEN COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/07/18	ISSUED FOR CONSTRUCTION	MR	AT	DJC

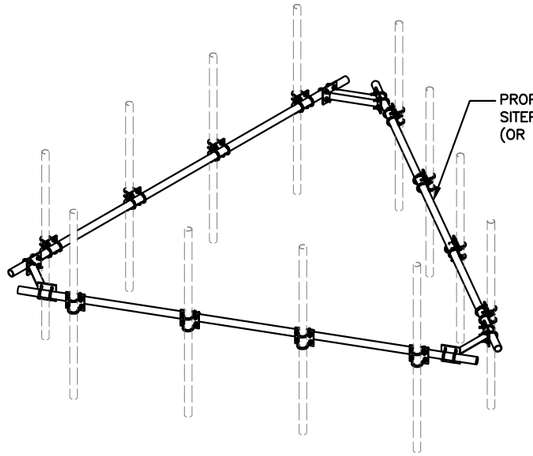
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: MR

STATE OF CONNECTICUT
DEREK J. CREASEY
No. 25354
LICENSED PROFESSIONAL ENGINEER

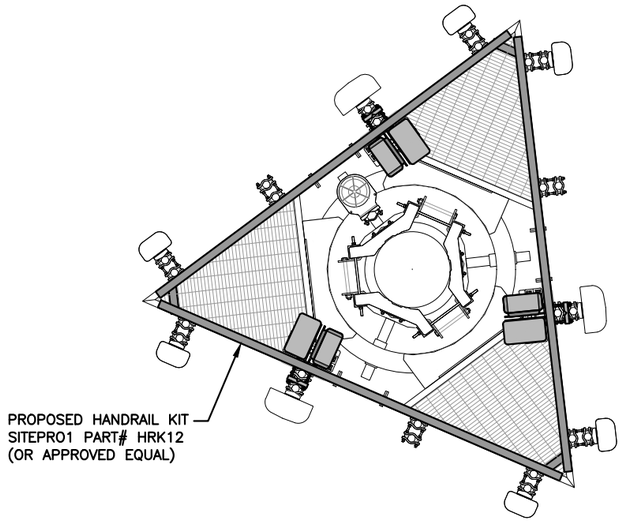
AT&T

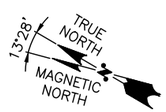
STRUCTURAL NOTES
(LTE 3C-4C-5C)

SITE NUMBER	DRAWING NUMBER	REV
CT2087	SN-1	A

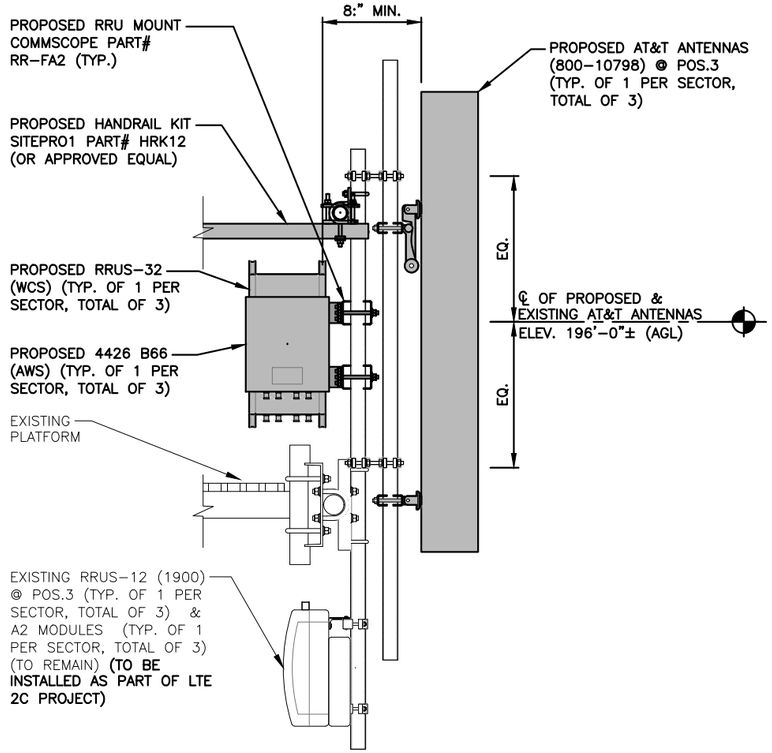


PROPOSED HANDRAIL KIT (1 / S-1)
SCALE: N.T.S





PROPOSED REINFOCEMENT PLAN (2 / S-1)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"
0 1'-0" 2'-0" 4'-0" 6'-0"



PROPOSED MOUNT MODIFICATIONS DETAIL (3 / S-1)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"
0 0'-6" 1'-0" 2'-0" 3'-0"

NOTE:

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

NOTE:

ALL ANTENNAS AND LINES TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL AT&T RF DATA SHEET.

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 14, 2018

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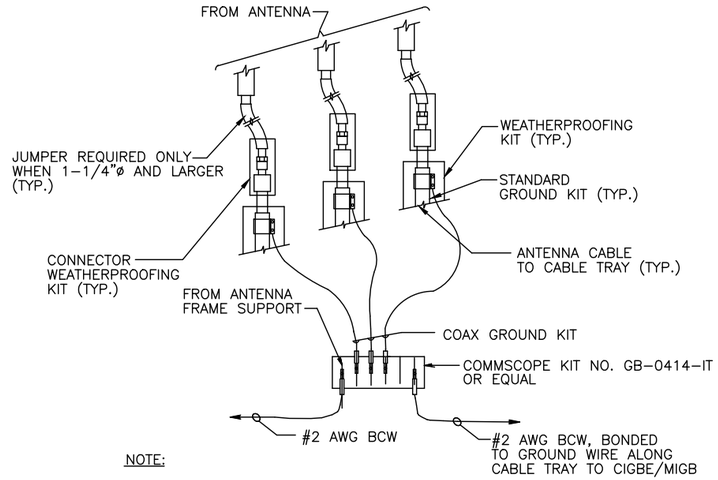
STATE OF CONNECTICUT
DEREK J. CREASEY
No. 25551
LICENSED PROFESSIONAL ENGINEER

AT&T

STRUCTURAL DETAILS
(LTE 3C-4C-5C)

SITE NUMBER	DRAWING NUMBER	REV
CT2087	S-1	A



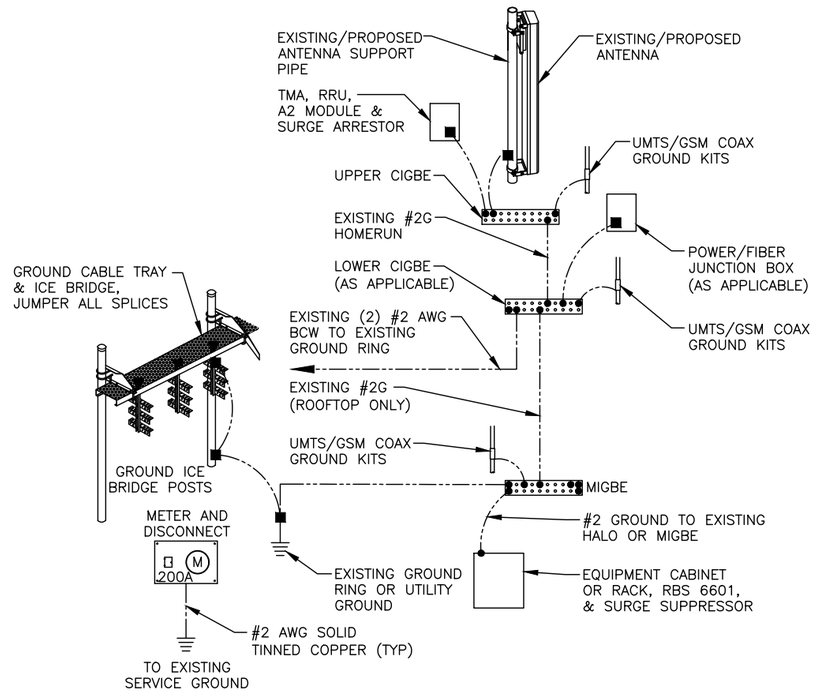
NOTE:

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

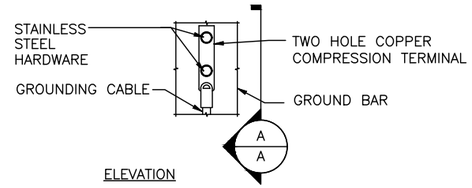
1 / G-1



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

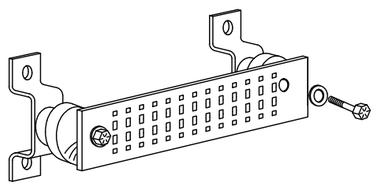
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

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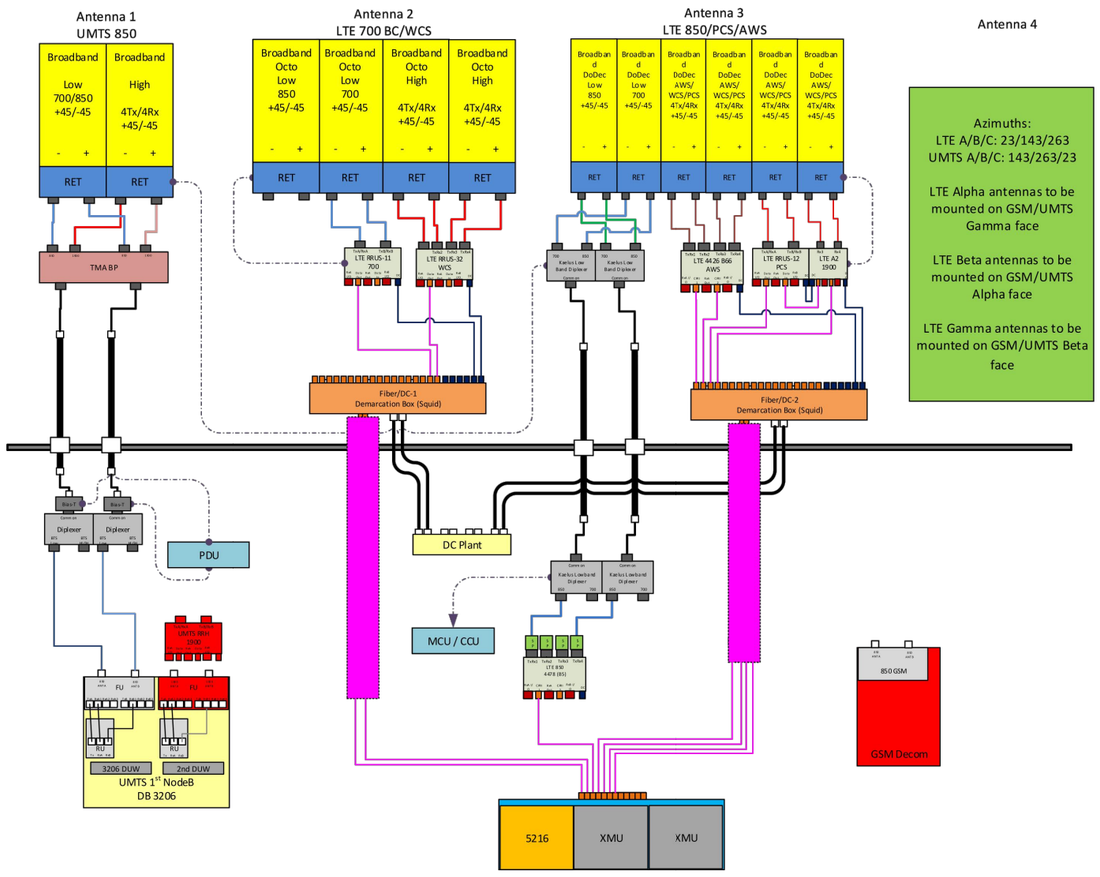
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: MR

STATE OF CONNECTICUT
DEREK J. CREASEY
No. 27556
LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS
(LTE 3C-4C-5C)

SITE NUMBER	DRAWING NUMBER	REV
CT2087	G-1	A



Azimuths:
LTE A/B/C: 23/143/263
UMTS A/B/C: 143/263/23

LTE Alpha antennas to be mounted on GSM/UMTS Gamma face

LTE Beta antennas to be mounted on GSM/UMTS Alpha face

LTE Gamma antennas to be mounted on GSM/UMTS Beta face

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

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

NOTE:

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

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

AT&T

RF PLUMBING DIAGRAM
(LTE 3C–4C–5C)

SITE NUMBER	DRAWING NUMBER	REV
CT2087	RF–1	A