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

November 27, 2018

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

RE: Notice of Exempt Modification // Site Number: CT5178
20 Barnabas Road, Newtown, CT 06470 (Site Name: HAWLEYVILLE)
N 41.4277778 // W -73.3437222

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains nine (9) antennas at the 135-foot level of the existing 180-foot lattice tower at 20 Barnabas Road, Newtown, CT 06470. The tower is owned by Eversource. The property is owned by Barnabas Realty Group. 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 135-foot level of the tower. AT&T also intends to install three (3) RRUs, replace three (3) RRUS, 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 twelve (12) antennas on November 14, 2000.

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 Daniel C. Rosenthal, First Selectman for the Town of Newtown, as well as the tower owner, Eversource and the ground owner, Barnabas Realty Group. A copy of this filing is also being sent to the respective building, zoning and planning offices in the Town of Newtown.

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 11/28/2018 by Hudson Design Group LLC, a structural analysis dated 8/21/2018 by All-Points Technology, a Mount Analysis dated 8/23/2018 by Hudson Design Group LLC and an Emissions Analysis Report dated 11/14/2018 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 All-Points Technology dated 8/21/2018 and the Mount Analysis by Hudson Design Group LLC, dated 8/23/2018

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: Daniel C. Rosenthal, First Selectman, Town of Newtown - as elected official
Eversource - as tower owner
Barnabas Realty Group - as property owner
Town of Newtown – Building/Zoning/Planning

Town of Newtown, CT

Property Listing Report

Map Block Lot **5-7-11-1C** Account **00696701C**

Property Information

Property Location	20 BARNABAS ROAD
Owner	BARNABAS REALTY GROUP
Co-Owner	CL&P PROPERTY TAX DEPT
Mailing Address	P.O. BOX 270 HARTFORD CT 06141
Land Use	4310 CELL SITE
Land Class	I
Zoning Code	
Census Tract	
Sub Lot	

Neighborhood	
Acreage	0
Utilities	Well,Septic
Lot Setting/Desc	
Survey Map	
TC Survey Numbers	

Photo

No Photo Available

Sketch

Primary Construction Details

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

Report Created On **11/27/2018**

Town of Newtown, CT

Property Listing Report | Map Block Lot **5-7-11-1C** | Account **00696701C**

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings		
Extras		
Outbuildings		
Land		
Total		

Outbuilding and Extra Items

Type	Description
Fence	19200 L.F.
Fence	1600 L.F.
Paving	340000 S.F.
Tower	1 UNITS
Cell Tower	1 Units
Shed 100 SF - 200 SF	144 S.F.
Cellular Shed	240 S.F.
Cellular Shed	216 S.F.
Cellular Shed	360 S.F.
Fence	600 L.F.

Sub Areas

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

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
BARNABAS REALTY GROUP	423/ 805	9/25/1990	

Report Created On **11/27/2018**

CECILIA AKINS
5088449030
CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

1 LBS

1 OF 1

DWT: 12,12,1

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

CT 067 9-06

UPS GROUND

TRACKING #: 1Z 9Y4 503 43 1978 8125

BILLING: P/P

Reference #1: CT5178 - 3x Filing to CSC

XOL 18.11.08 NV45 06.0A 10/2018

CECILIA AKINS
5088449030
CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

1 LBS

1 OF 1

DWT: 12,12,1

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

FL 332 6-07

UPS GROUND
TRACKING #: 1Z 9Y4 503 43 1741 5138

BILLING: P/P

Reference #1: CT5178 - CSC Filing to Tower owner

XOL 18.11.08 NV45 06.0A 10/2018

CECILIA AKINS
5088449030
CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

1 LBS

1 OF 1

DWT: 12,12,1

SHIP TO:
ATTN: FIRST SELECTMAN
TOWN OF NEWTOWN, CT
SELECTMAN'S OFFICE
3 PRIMROSE STREET
NEWTOWN CT 06470

CT 068 0-02

UPS GROUND

TRACKING #: 1Z 9Y4 503 43 0044 4147

BILLING: P/P

Reference #1: CT5178 - CSC Filing to First Select

XOL 18.11.08 NV45 06.0A 10/2018

CECILIA AKINS
5088449030
CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

1 LBS

1 OF 1

DWT: 12,12,1

SHIP TO:
ATTN: BUILDING/ZONING
TOWN OF NEWTOWN
BUILDING/ZONING
3 PRIMROSE STREET
NEWTOWN CT 06470

CT 068 0-02

UPS GROUND

TRACKING #: 1Z 9Y4 503 43 2597 9809

BILLING: P/P

Reference #1: CT5178 - CSC filing to build/zoning

XOL 18.11.08 NV45 06.0A 10/2018

CECILIA AKINS
5088449030
CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

1 LBS

1 OF 1

DWT: 12,12,1

SHIP TO:
ATTN: LANDLORD
BARNABAS REALTY GROUP
20 BARNABAS ROAD
NEWTOWN CT 06470

CT 068 0-02

UPS GROUND

TRACKING #: 1Z 9Y4 503 43 3973 9417

BILLING: P/P

Reference #1: CT5178 - CSC to Ground LL

XOL 18.11.08 NV45 06.0A 10/2018

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

1 LBS

1 OF 1

DWT: 12,12,1

SHIP TO:
EVERSOURCE CLEARING DESK
107 SELDEN STREET
BERLIN CT 06037

CT 061 9-02

UPS GROUND
TRACKING #: 1Z 9Y4 503 43 0338 8364

BILLING: P/P

Reference #1: CT5178 - CSC to Tower Owner

XOL 18.11.08 NV45 06.0A 10/2018

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT5178

FA#: 10071074

Hawleyville
20 Barnabas Road
Newtown, CT 6470

November 14, 2018

Centerline Communications Project Number: 950012-183

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**9.50 %**

November 14, 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: **CT5178 – Hawleyville**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **20 Barnabas Road, Newtown, 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 **20 Barnabas Road, Newtown, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

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

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

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

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz and 1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Kathrein 800-10121	130
A	2	Kathrein 800-10965	130
A	3	Powerwave P65-16-XLH-RR	130
B	1	Kathrein 800-10121	130
B	2	Kathrein 800-10965	130
B	3	Powerwave P65-16-XLH-RR	130
C	1	Kathrein 800-10121	130
C	2	Kathrein 800-10965	130
C	3	Powerwave P65-16-XLH-RR	130

Table 2: Antenna Data

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

RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Kathrein 800-10121	850 MHz	11.45	2	60	837.82	0.35
Antenna A2	Kathrein 800-10965	850 MHz / 1900 MHz (PCS)	13.45 / 15.65	8	290	8,753.54	2.56
Antenna A3	Powerwave P65-16-XLH-RR	700 MHz	12.7	2	80	1,489.67	0.75
						Sector A Composite MPE%	**3.65**
Antenna B1	Kathrein 800-10121	850 MHz	11.45	2	60	837.82	0.35
Antenna B2	Kathrein 800-10965	850 MHz / 1900 MHz (PCS)	13.45 / 15.65	8	290	8,753.54	2.56
Antenna B3	Powerwave P65-16-XLH-RR	700 MHz	12.7	2	80	1,489.67	0.75
						Sector B Composite MPE%	**3.65**
Antenna C1	Kathrein 800-10121	850 MHz	11.45	2	60	837.82	0.35
Antenna C2	Kathrein 800-10965	850 MHz / 1900 MHz (PCS)	13.45 / 15.65	8	290	8,753.54	2.56
Antenna C3	Powerwave P65-16-XLH-RR	700 MHz	12.7	2	80	1,489.67	0.75
						Sector C Composite MPE%	**3.65**

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	**3.65 %**
6755 MHz system	0.00 %
7.48, 37.74, 48.34, 154.46375 MHz systems	0.10 %
T-Mobile	0.67 %
Sprint	1.03 %
Verizon Wireless	4.05 %
Site Total MPE %:	**9.50 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	3.65 %
AT&T Sector B Total:	3.65 %
AT&T Sector C Total:	3.65 %
Site Total:	9.50 %

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	130	1.96	850 MHz	567	0.35%
AT&T 850 MHz LTE – Antenna 2	2	885.24	130	4.14	850 MHz	567	0.73%
AT&T 850 MHz 5G – Antenna 2	2	553.27	130	2.59	850 MHz	567	0.46%
AT&T 1900 MHz (PCS) LTE – Antenna 2	4	1,469.13	130	13.74	1900 MHz (PCS)	1000	1.37%
AT&T 700 MHz LTE – Antenna 3	2	744.83	130	3.48	700 MHz	467	0.75%
						Total:	**3.65%**

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:	3.65 %
Sector B:	3.65 %
Sector C:	3.65 %
AT&T Maximum Total (per sector):	3.65 %
Site Total:	9.50 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **9.50 %** 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

STRUCTURAL ANALYSIS REPORT
AND TOWER MODIFICATION DESIGN
180' SELF-SUPPORTING TOWER
NEWTOWN, CONNECTICUT

Prepared for
Centerline Communications, LLC

AT&T site: CT5178

November 5, 2018

APT Project #CT474260

3 SADDLEBROOK DRIVE · KILLINGWORTH, CT 06419 · PHONE 860-663-1697 · FAX 860-663-0935
⊗ 116 GRANDVIEW ROAD · CONWAY, NH 03818 · PHONE 603-496-5853 · FAX 603-447-2124

STRUCTURAL ANALYSIS REPORT
180' SELF-SUPPORTING TOWER
NEWTOWN, CONNECTICUT
prepared for
Centerline Communications, LLC

EXECUTIVE SUMMARY:

All-Points Technology Corporation, P.C. (APT) performed a structural analysis of Northeast Utilities' (Eversource Energy) 180-foot self-supporting tower. The analysis was performed for AT&T's proposed installation of three 800-10965 panel antennas, six remote radio heads (RRHs) and one additional "squid" power/fiber distribution box (D-box) at 130', fed by six 1-5/8" feed lines, and one fiber & two power lines inside one 3" conduit as detailed below.

APT's analysis indicates the tower meets the requirements of the Connecticut State Building Code and TIA-222 with Verizon Wireless's proposed equipment changes. In order for results to be valid, reinforcement designed by APT (project #CT1416241, dated October 25, 2018) must be installed.

The tower base foundations were also evaluated and determined to be adequately sized under the proposed changes. Deflection values were also found to be within Northeast Utilities Substation Standards requirements at 60-mph service wind speed as well as full design wind speed.

INTRODUCTION:

A structural analysis was performed on the above-mentioned communications tower by APT for Centerline Communications, LLC. The tower is located at 20 Barnabas Road in Newtown, Connecticut.

APT visited the tower site on June 7, 2018 to record the existing inventory and assess the condition of the tower. This analysis also utilized information provided by others, which included a structural analysis by AECOM (project #60519605/VZ5-207, dated February 16, 2017), and a listing of proposed equipment changes for AT&T.

The structure is a 180-foot, three-legged, galvanized steel self-supporting tower manufactured by ROHN. The tower features pipe steel legs, with angle steel bracing members arranged in an X-braced pattern.

The analysis was performed in accordance with TIA-222 using the following antenna inventory (proposed equipment changes shown in **bold** text):

Carrier	Antenna	Mount Ctr.	Rad Ctr.	Mount	Feed lines
	12' omnidirectional whip	182'	188'	5' x 4" pipe on leg	1/2"
	10' 2-bay dipole	181'	186'	Leg	7/8"
	20' omnidirectional whip	180'	190'	Leg	7/8"
	6' dish w/ radome	177'	177'	6' x 4-1/2" pipe on leg	EW63
	12' single dipole	173'	173'	3' standoff	1/2"
	(2) 5' omnidirectional whips, 18" x 18" x 6" junction box	157'	159.5', 157'	3' sidearm	(2) 7/8"
T-Mobile	(3) LNX-6512DS, (3) AIR 21 panel antennas, (3) TMAs	145'	146'	(3) 5' T-arms	(12) 1-5/8"
	10' 2-bay dipole	136'	141'	3' sidearm	7/8"
AT&T	(3) P65-16-XLH-RR, (3) 800-10121 & **(3) 800-10965** panels, (6) LGP21401 TMAs, (6) LGP-21901 diplexers, (6) 860-10025 RETs, (3) RRUS-11 RRHs, **(3) 415 B25 RRHs, (3) 4426 B66 RRHs, (2)** DC6-48-60-18-8F 'Squid' D-boxes	130'	130'	(3) 11' sector mounts	(6) 1-5/8", **(2)** fiber & **(4)** power in 3" conduit
Verizon Wireless	(3) BXA-70063-6CF, (9) SBNHH-1D65C panels, (3) RRH2x60-700U, (3) RRH2x60-PCS, (3) RRH2x90-AWS RRHs, (2) DB-T1-6Z-8AB-0Z D-boxes	121'	122'	(3) 12' sector mounts	(2) 1-5/8" hybrid
Sprint	(1) P40-16-XLPP-RR-A, (2) APXVSPP18-C-A20 panels, (3) 800 MHz, (3) 1900 MHz RRHs	88'	89'	(3) 12' sector mounts	(3) 1-1/4" hybrid
Sprint	GPS	56'	56'	3' standoff	1/2"

[1] Currently installed – three P65-16-XLH-RR, three 800-10121 panels, six LGP21401 TMAs, six LGP21901 diplexers, three RRUS-11 RRHs, and one DC6-48-60-18-8F 'Squid' D-box, fed by six 1-5/8" feed lines, one fiber & two power in one 3" conduit.

STRUCTURAL ANALYSIS:

Methodology:

The structural analysis was done in accordance with the Connecticut State Building Code and TIA-222, Revision G (TIA), Structural Standard for Antenna Supporting Structures and Antennas.

The analysis was conducted using a 3-second gust wind speed of 130 mph (ultimate) with no ice and 50-mph with ¾" radial ice in accordance with the Connecticut State Building Code. The following additional design criteria were used:

Structure Class:	III
Topographic Category:	1
Exposure Category:	B

Analysis Results:

Analysis of the tower was conducted in accordance with the criteria outlined herein with antenna changes as previously described. The following table summarizes the results of the analysis based on stresses of individual leg and bracing members after installation of reinforcement previously designed for Verizon Wireless:

Elevation	Legs	Bracing
160'-180'	11%	29%
140'-160'	28%	43%
120'-140'	34%	80%
100'-120'	34%	79%
80'-100'	42%	71%
60'-80'	73%	65%
40'-60'	55%	69%
20'-40'	66%	55%
0'-20'	65%	84%

Bracing, Splice and Anchor Bolts:

Connection bolts were evaluated under the proposed loading. All bolts were determined to be adequately sized.

Base Foundation:

Evaluation of the base foundations was performed using information provided on a structural analysis by AECOM. The foundations were determined to be adequately sized under the proposed loading.

Factored base reactions imposed with the equipment changes were calculated as follows:

Reactions	Calculated
Compression (kips)	241.5
Uplift (kips)	-198.1
Shear (kips)	31.5
Overturning Moment (ft-kips)	4778

Deflection:

Combined twist and sway was evaluated per Northeast Utilities Substation Standard SUB 090, Section 7 under service wind as well as design wind speeds. The tower was found to be within the allowable 0.5 degree total maximum at service wind speed of 60-mph as well as 130-mph Ultimate/101-mph Nominal wind speed after completion of leg reinforcement.

Results are summarized as follows:

Load Case	Tilt	Twist	Combined Max.
Service Wind – 60-mph	0.1027˚	0.0119˚	0.1034˚
Design Wind – 101-mph	0.4598˚	0.0537˚	0.4629˚

CONCLUSIONS AND RECOMMENDATIONS:

APT's structural analysis indicates this 180-foot self-supporting tower located in Newtown, Connecticut meets the requirements of the Connecticut State Building Code and TIA-222 with AT&T's proposed equipment changes. The tower base foundations were also evaluated and found to be structurally adequate. Results from this analysis are only valid once reinforcing designed by APT (project #CT1416241, dated October 25, 2018), has been installed.

LIMITATIONS:

This report is based on the following:

1. Tower is properly installed and maintained.
2. All members are in an undeteriorated condition.
3. All required members are in place.
4. All bolts are in place and are properly tightened.
5. Tower is in plumb condition.

6. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.

All-Points Technology Corporation, P.C. (APT) is not responsible for modifications completed prior to or hereafter which APT is not or was not directly involved. Modifications include but are not limited to:

1. Replacing or strengthening bracing members.
2. Reinforcing vertical members in any manner.
3. Adding or relocating torque arms or guys.
4. Installing antenna mounting gates or side arms.

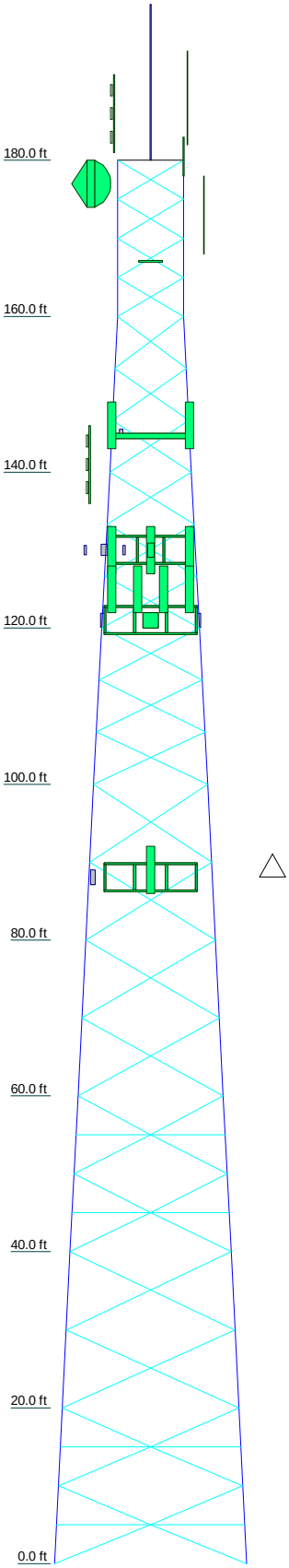
APT hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon the information contained and set forth herein. If you are aware of any information which is contrary to that which is contained herein, or you are aware of any defects arising from the original design, material, fabrication and erection deficiencies, you should disregard this report and immediately contact APT. APT disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

Appendix A

Tower Schematic

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9
Legs	ROHN 2.5 STD	ROHN 2.5 EH	3" Std with 1-1/4" SR	4" EH with 1-1/4" SR	5" EH with 1-1/4" SR	5" Std with 1-1/4" SR	5" EH with 1-1/4" SR	ROHN 6 EH	
Leg Grade	A572-50								
Diagonals	L1 3/4x1 3/4x3/16	L2x2x1/4	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x5/16	L3x3x3/8	L3 1/2x3 1/2x5/16	L3 1/2x3 1/2x3/8	L4x4x3/8	L4x4x5/16
Diagonal Grade	A36								
Top Girts	L2 1/2x2 1/2x3/16	N.A.							
Horizontals	N.A.						L3 1/2x3 1/2x1/4	N.A.	L4x4x1/4
Face Width (ft)	8.5417		10.5573	12.5729	14.5885	16.6042	18.6198	20.6354	22.651
# Panels @ (ft)	4 @ 5		9 @ 6.66667		4 @ 10		4 @ 5	2 @ 10	4 @ 5
Weight (lb)	928.6	1130.3	1444.7	2506.0	3097.1	2859.1	4408.9	4503.6	5173.5

26051.8



DESIGNED APPURTENANCE LOADING

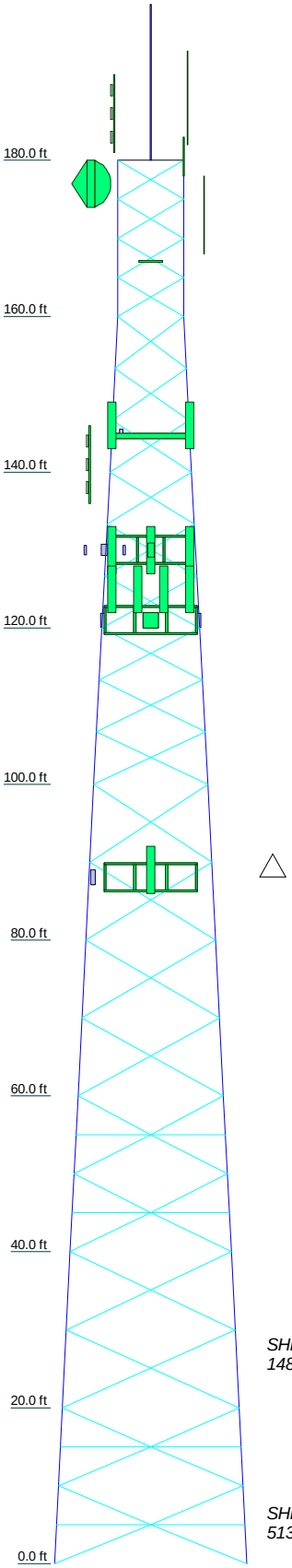
TYPE	ELEVATION
12' x 2" omni whip	182
10' 2-bay dipole	181
5'x4 1/2" Pipe Mount	180
5'x1-7/8" Pipe Mount	180
20' x 2.5" omni whip	180
12' single dipole	179 - 167
6'x4 1/2" Pipe Mount	177
6' dish with radome	177
3' x 3" standoff	167
5' x 2-1/4" omni whip	162 - 157
5' x 2-1/4" omni whip	157 - 152
3' sidearm	157
18" x 18" x 6" Junction box	157
10' 2-bay dipole (ATI)	146 - 136
LNX-6512DS-T4M (T-Mobile)	145
AIR 21 B2A B4P panel (T-Mobile)	145
AIR 21 B2A B4P panel (T-Mobile)	145
AIR 21 B2A B4P panel (T-Mobile)	145
RFS twin TMA (T-Mobile)	145
RFS twin TMA (T-Mobile)	145
RFS twin TMA (T-Mobile)	145
5' T-arm (T-Mobile)	145
5' T-arm (T-Mobile)	145
5' T-arm (T-Mobile)	145
LNX-6512DS-T4M (T-Mobile)	145
LNX-6512DS-T4M (T-Mobile)	145
3' sidearm (ATI)	136
P65-16-XLH-RR panel (ATI)	130
P65-16-XLH-RR panel (ATI)	130
800-10121 (ATI)	130
800-10121 (ATI)	130
800-10121 (ATI)	130
(2) 860-10025 RCU (ATI)	130
(2) 860-10025 RCU (ATI)	130
(2) 860-10025 RCU (ATI)	130
800-10965 (ATI)	130
800-10965 (ATI)	130
800-10965 (ATI)	130
(2) LGP2140X TMA (ATI)	130
(2) LGP2140X TMA (ATI)	130
(2) LGP2140X TMA (ATI)	130
(2) LGP2190X Diplexer (ATI)	130
(2) LGP2190X Diplexer (ATI)	130
(2) LGP2190X Diplexer (ATI)	130
Ericsson RRUS-11 (ATI)	130
Ericsson RRUS-11 (ATI)	130
Ericsson RRUS-11 (ATI)	130
Radio 4415 (ATI)	130
Radio 4415 (ATI)	130
Radio 4415 (ATI)	130
Radio 4426 (ATI)	130
Radio 4426 (ATI)	130
Radio 4426 (ATI)	130
Raycap DC6-48-60-18-8F surge suppressor (ATI)	130

TYPE	ELEVATION
Raycap DC6-48-60-18-8F surge suppressor (ATI)	130
SitePro VFA10-HD (ATI)	130
SitePro VFA10-HD (ATI)	130
SitePro VFA10-HD (ATI)	130
P65-16-XLH-RR panel (ATI)	130
BXA-70063/6 (Verizon Wireless)	124
BXA-70063/6 (Verizon Wireless)	124
(3) SBNHH-1D65C (Verizon Wireless)	124
(3) SBNHH-1D65C (Verizon Wireless)	124
(3) SBNHH-1D65C (Verizon Wireless)	124
BXA-70063/6 (Verizon Wireless)	124
ALU B25 RRH2x60 PCS w/bracket (Verizon Wireless)	121
ALU B25 RRH2x60 PCS w/bracket (Verizon Wireless)	121
ALU RRH2x90-AWS w/bracket (Verizon Wireless)	121
ALU RRH2x90-AWS w/bracket (Verizon Wireless)	121
ALU RRH2x90-AWS w/bracket (Verizon Wireless)	121
ALU RRH2x60-700 w/bracket (Verizon Wireless)	121
ALU RRH2x60-700 w/bracket (Verizon Wireless)	121
ALU RRH2x60-700 w/bracket (Verizon Wireless)	121
RFS DB-T1-6Z-8AB-0Z D-box (Verizon Wireless)	121
RFS DB-T1-6Z-8AB-0Z D-box (Verizon Wireless)	121
12' T-frame sector mnt (Verizon Wireless)	121
12' T-frame sector mnt (Verizon Wireless)	121
12' T-frame sector mnt (Verizon Wireless)	121
ALU B25 RRH2x60 PCS w/bracket (Verizon Wireless)	121
APXVSPP18-C-A20 (Sprint)	88
APXVSPP18-C-A20 (Sprint)	88
800 MHz RRH (Sprint)	88
800 MHz RRH (Sprint)	88
800 MHz RRH (Sprint)	88
1900 MHz RRH (Sprint)	88
1900 MHz RRH (Sprint)	88
1900 MHz RRH (Sprint)	88
12' T-frame sector mnt (Sprint)	88
12' T-frame sector mnt (Sprint)	88
12' T-frame sector mnt (Sprint)	88
P40-16-XLPP-RR-A (Sprint)	88
3' x 3" standoff	56
GPS on 3' standoff	56

All-Points Technology Corporation
116 Grandview Road
Conway, NH 03818
Phone: (603) 496-5853
FAX: (603) 447-2124

Job: ***180' Self-Supporting Tower***			
Project: ***CT474260 Hawleyville***			
Client: Centerline Communications, LLC; AT&T site: CT5178	Drawn by: Rob Adair	App'd:	
Code: TIA-222-G	Date: 11/05/18	Scale: NTS	
Path: Z:\Shared\NH Office\Jobs\3 AT&T\CT474260 Newtown CT5178\CT474260 Hawleyville Newtown.eri		Dwg No. E-1	

Section		T1	T2	T3	T4	T5	T6	T7	T8	T9
Legs		ROHN 2.5 STD	ROHN 2.5 EH	3" Std with 1-1/4" SR	4" EH with 1-1/4" SR	5" EH with 1-1/4" SR	5" Std with 1-1/4" SR	5" EH with 1-1/4" SR	ROHN 6 EH	
Leg Grade		A572-50								
Diagonals		L1 3/4x1 3/4x3/16	L2x2x1/4	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x5/16	L3x3x3/8	L3 1/2x3 1/2x5/16	L3 1/2x3 1/2x3/8	L4x4x3/8	L4x4x5/16
Diagonal Grade		A36								
Top Girts		L2 1/2x2 1/2x3/16	N.A.							
Horizontals		N.A.						L3 1/2x3 1/2x1/4	N.A.	L4x4x1/4
Face Width (ft)	24.6667	8.5417		10.5573	12.5729	14.5885	16.6042	18.6198	20.6354	22.651
# Panels @ (ft)		4 @ 5		9 @ 6.66667		4 @ 10		4 @ 5	2 @ 10	4 @ 5
Weight (lb)	26051.8	928.6	1130.3	1444.7	2506.0	3097.1	2859.1	4408.9	4503.6	5173.5



MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-G Standard.
2. Tower designed for a 101 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class III.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 92%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 241455 lb
SHEAR: 31541 lb

UPLIFT: -198143 lb
SHEAR: 26711 lb

AXIAL 157232 lb
SHEAR 14832 lb *MOMENT 1493295 lb-ft*
TORQUE 10915 lb-ft
50 mph WIND - 0.7500 in ICE
AXIAL 54060 lb
SHEAR 51352 lb *MOMENT 4778419 lb-ft*
TORQUE 27558 lb-ft
REACTIONS - 101 mph WIND

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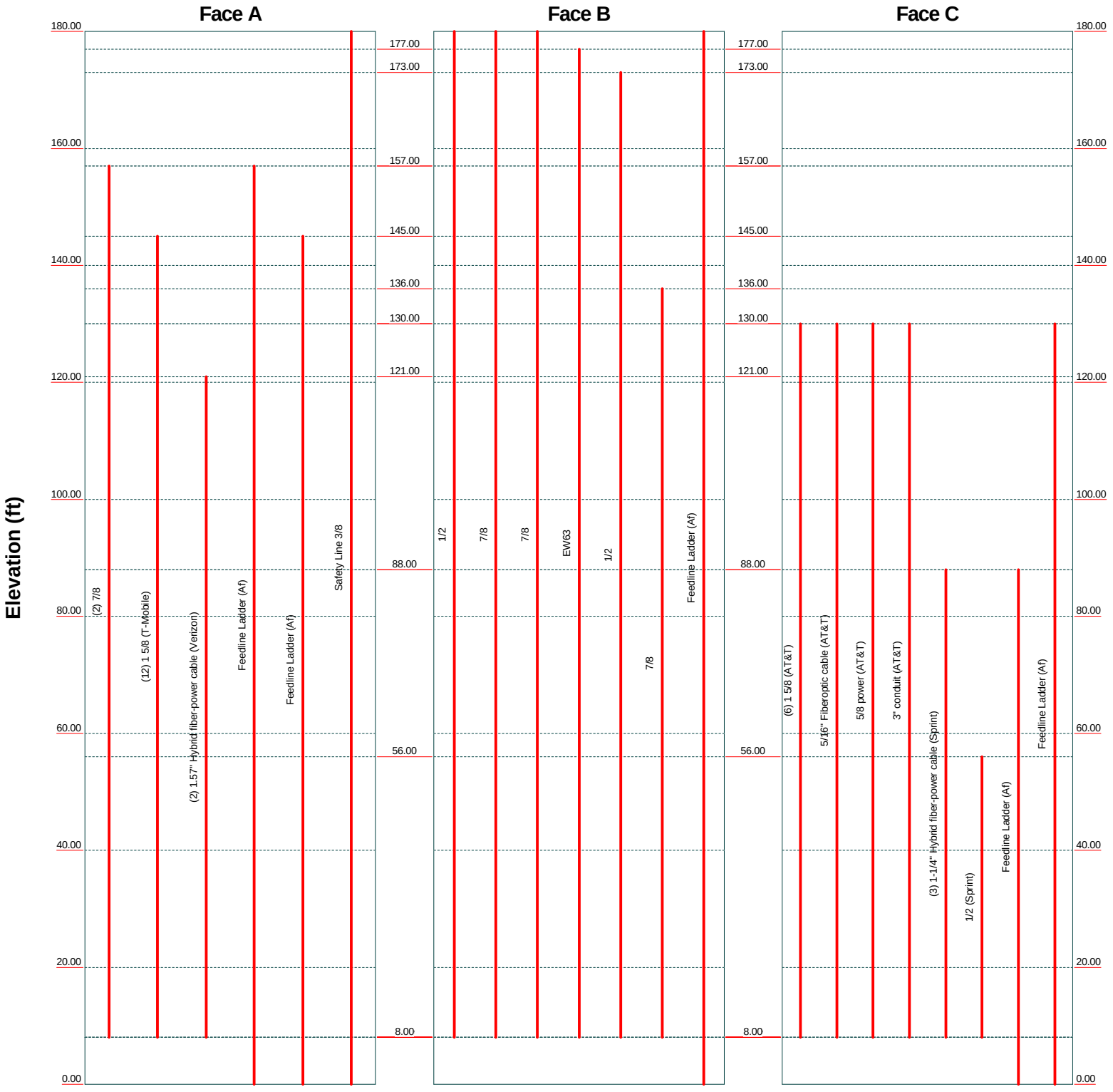
Client:	Centerline Communications, LLC; AT&T site: CT5178
Drawn by:	Rob Adair
App'd:	
Code:	TIA-222-G
Date:	11/05/18
Scale:	NTS
Path:	Z:\Shared\NH Office\Jobs\3 AT&T\CT474260 Newtown CT5178\CT474260 Hawleyville Newtown.eri
Dwg No.	E-1

Appendix B

Calculations

Feed Line Distribution Chart
0' - 180'

Round | Flat | App In Face | App Out Face | Truss Leg



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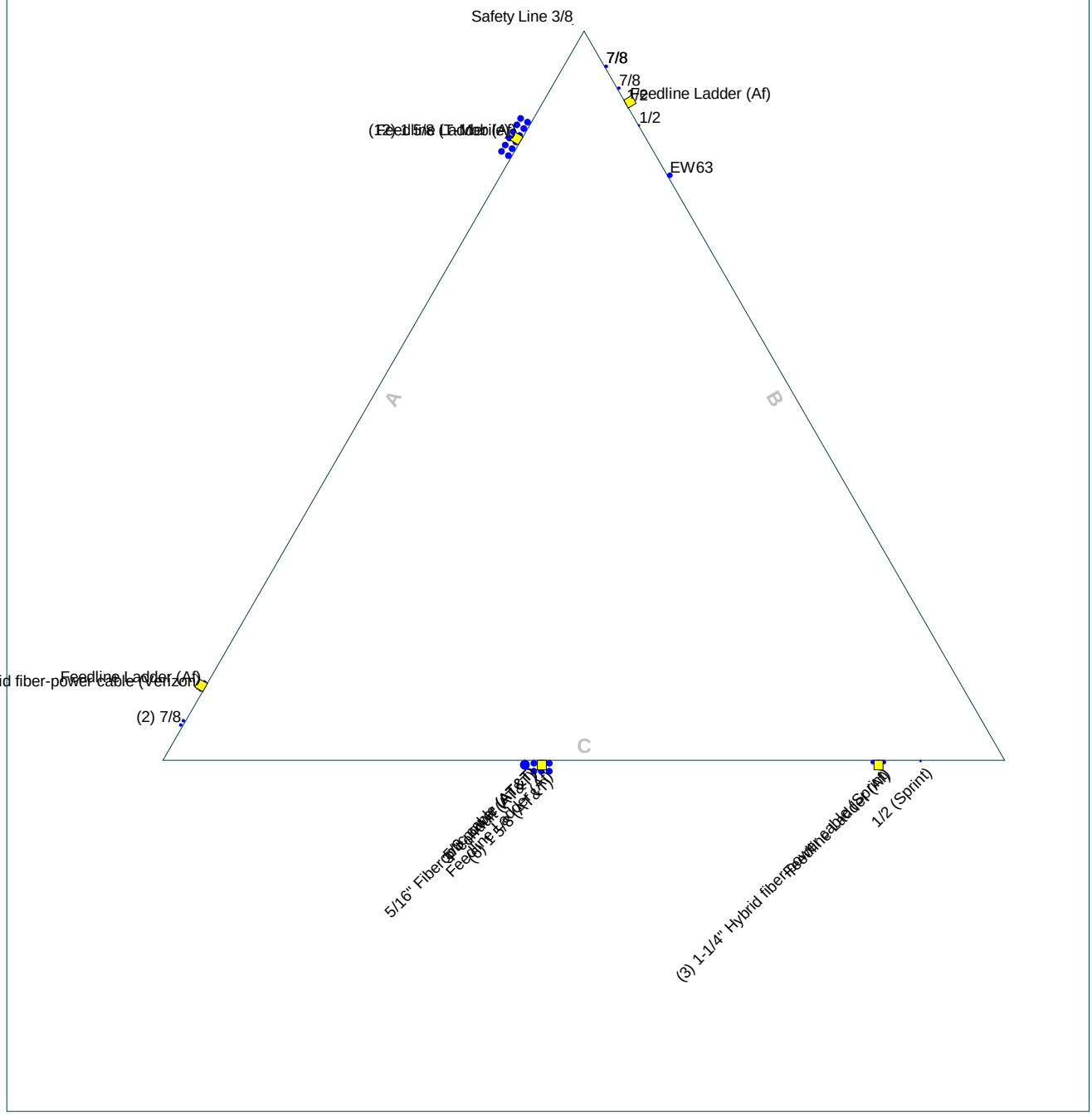
Path:	Z:\Shared\NH Office\Jobs\3 AT&T\CT474260 Newtown CT5178\CT474260 Hawleyville Newtown.eri		Dwg No. E-7

Feed Line Plan
20'

Round Flat App In Face App Out Face

Section @ 20'



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Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 8.54 ft at the top and 24.67 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
Basic wind speed of 101 mph.
Structure Class III.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned	√	Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area	√	SR Leg Bolts Resist Compression
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r	√	All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys	√	Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice		Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. Exemption
√	Include Bolts In Member Capacity	√	Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
√	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component		Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)	√	Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
√	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric				Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known

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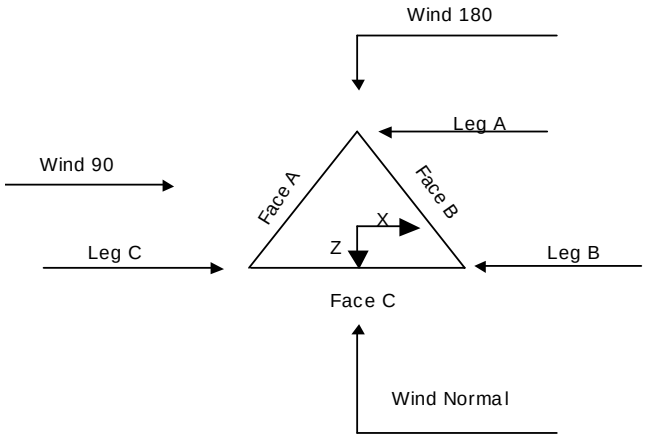

Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	180.00-160.00			8.54	1	20.00
T2	160.00-140.00			8.54	1	20.00
T3	140.00-120.00			10.56	1	20.00
T4	120.00-100.00			12.57	1	20.00
T5	100.00-80.00			14.59	1	20.00
T6	80.00-60.00			16.60	1	20.00
T7	60.00-40.00			18.62	1	20.00
T8	40.00-20.00			20.64	1	20.00
T9	20.00-0.00			22.65	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	180.00-160.00	5.00	X Brace	No	No	0.0000	0.0000
T2	160.00-140.00	6.67	X Brace	No	No	0.0000	0.0000
T3	140.00-120.00	6.67	X Brace	No	No	0.0000	0.0000
T4	120.00-100.00	6.67	X Brace	No	No	0.0000	0.0000
T5	100.00-80.00	10.00	X Brace	No	No	0.0000	0.0000
T6	80.00-60.00	10.00	X Brace	No	No	0.0000	0.0000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T7	60.00-40.00	5.00	Double K	No	Yes	0.0000	0.0000
T8	40.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T9	20.00-0.00	5.00	Double K	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180.00-160.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 160.00-140.00	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T3 140.00-120.00	Arbitrary Shape	3" Std with 1-1/4" SR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T4 120.00-100.00	Arbitrary Shape	4" EH with 1-1/4" SR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x5/16	A36 (36 ksi)
T5 100.00-80.00	Arbitrary Shape	5" EH with 1-1/4" SR	A572-50 (50 ksi)	Equal Angle	L3x3x3/8	A36 (36 ksi)
T6 80.00-60.00	Arbitrary Shape	5" Std with 1-1/4" SR	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)
T7 60.00-40.00	Arbitrary Shape	5" EH with 1-1/4" SR	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x3/8	A36 (36 ksi)
T8 40.00-20.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Equal Angle	L4x4x3/8	A36 (36 ksi)
T9 20.00-0.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Equal Angle	L4x4x5/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 180.00-160.00	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T7 60.00-40.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T9 20.00-0.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T2 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T3 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T4 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T5 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T6 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T7 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T8 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T9 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	No	No	1	1	1	1	1	1	1	1
180.00-160.00				1	1	1	1	1	1	1
T2	No	No	1	1	1	1	1	1	1	1
160.00-140.00				1	1	1	1	1	1	1
T3	No	No	1	1	1	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1
T4	No	No	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T5	No	No	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T6	No	No	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T7	No	No	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T8	No	No	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T9 20.00-0.00	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 180.00-160.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 160.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 140.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 120.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 180.00-160.00	Flange	0.6250 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 160.00-140.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 140.00-120.00	Flange	0.8750 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 120.00-100.00	Flange	1.0000 A325N	4	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 100.00-80.00	Flange	1.0000 A325N	4	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 80.00-60.00	Flange	1.0000 A325N	4	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 60.00-40.00	Flange	1.0000 A325N	6	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T8 40.00-20.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 20.00-0.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1/2	B	No	Ar (CaAa)	180.00 - 8.00	0.0000	-0.4	1	1	0.5000	0.5800		0.25
7/8	B	No	Ar (CaAa)	180.00 - 8.00	0.0000	-0.45	1	1	0.5000	1.1100		0.54
7/8	B	No	Ar (CaAa)	180.00 - 8.00	0.0000	-0.45	1	1	0.5000	1.1100		0.54
EW63	B	No	Ar (CaAa)	177.00 - 8.00	0.0000	-0.3	1	1	0.5000	1.5742		0.51
1/2	B	No	Ar (CaAa)	173.00 - 8.00	0.0000	-0.37	1	1	0.5000	0.5800		0.25
7/8	A	No	Ar (CaAa)	157.00 - 8.00	0.0000	-0.45	2	2	0.5000	1.1100		0.54
1 5/8 (T-Mobile)	A	No	Ar (CaAa)	145.00 - 8.00	0.0000	0.35	12	6	0.5000	1.9800		1.04
7/8	B	No	Ar (CaAa)	136.00 - 8.00	0.0000	-0.42	1	1	0.5000	1.1100		0.54
1 5/8 (AT&T)	C	No	Ar (CaAa)	130.00 - 8.00	0.0000	0.05	6	3	0.5000	1.9800		1.04
5/16" Fiberoptic cable (AT&T)	C	No	Ar (CaAa)	130.00 - 8.00	0.0000	0.07	1	1	0.3125	0.3125		0.25
5/8 power (AT&T)	C	No	Ar (CaAa)	130.00 - 8.00	0.0000	0.07	1	1	0.6450	0.6450		0.40
3" conduit (AT&T)	C	No	Ar (CaAa)	130.00 - 8.00	0.0000	0.07	1	1	3.0100	3.0100		1.78
1.57" Hybrid fiber-power cable (Verizon)	A	No	Ar (CaAa)	121.00 - 8.00	0.0000	-0.4	2	2	0.5000	1.5700		0.66
1-1/4" Hybrid fiber-power cable (Sprint)	C	No	Ar (CaAa)	88.00 - 8.00	0.0000	-0.35	3	3	0.5000	1.2500		0.66
1/2 (Sprint)	C	No	Ar (CaAa)	56.00 - 8.00	0.0000	-0.4	1	1	0.5000	0.5800		0.25
Feedline Ladder (Af)	A	No	Af (CaAa)	157.00 - 0.00	0.0000	-0.4	1	1	3.0000	3.0000		8.40
Feedline Ladder (Af)	A	No	Af (CaAa)	145.00 - 0.00	0.0000	0.35	1	1	3.0000	3.0000		8.40
Feedline Ladder (Af)	B	No	Af (CaAa)	180.00 - 0.00	0.0000	-0.4	1	1	3.0000	3.0000		8.40
Feedline Ladder (Af)	C	No	Af (CaAa)	88.00 - 0.00	0.0000	-0.35	1	1	3.0000	3.0000		8.40
Feedline Ladder (Af)	C	No	Af (CaAa)	130.00 - 0.00	0.0000	0.05	1	1	3.0000	3.0000		8.40
Safety Line 3/8	A	No	Ar (CaAa)	180.00 - 0.00	4.0000	0.5	1	1	0.3750	0.3750		0.22

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	180.00-160.00	A	0.000	0.000	0.750	0.000	4.40
		B	0.000	0.000	19.030	0.000	206.52
		C	0.000	0.000	0.000	0.000	0.00
T2	160.00-140.00	A	0.000	0.000	27.404	0.000	269.96
		B	0.000	0.000	19.908	0.000	209.80
		C	0.000	0.000	0.000	0.000	0.00
T3	140.00-120.00	A	0.000	0.000	73.024	0.000	612.92
		B	0.000	0.000	21.684	0.000	218.44
		C	0.000	0.000	20.848	0.000	170.70
T4	120.00-100.00	A	0.000	0.000	78.990	0.000	638.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B	0.000	0.000	22.128	0.000	220.60
		C	0.000	0.000	41.695	0.000	341.40
T5	100.00-80.00	A	0.000	0.000	78.990	0.000	638.00
		B	0.000	0.000	22.128	0.000	220.60
		C	0.000	0.000	48.695	0.000	424.44
T6	80.00-60.00	A	0.000	0.000	78.990	0.000	638.00
		B	0.000	0.000	22.128	0.000	220.60
		C	0.000	0.000	59.195	0.000	549.00
T7	60.00-40.00	A	0.000	0.000	78.990	0.000	638.00
		B	0.000	0.000	22.128	0.000	220.60
		C	0.000	0.000	60.123	0.000	553.00
T8	40.00-20.00	A	0.000	0.000	78.990	0.000	638.00
		B	0.000	0.000	22.128	0.000	220.60
		C	0.000	0.000	60.355	0.000	554.00
T9	20.00-0.00	A	0.000	0.000	55.694	0.000	518.96
		B	0.000	0.000	17.277	0.000	199.56
		C	0.000	0.000	44.213	0.000	466.80

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	180.00-160.00	A	2.209	0.000	0.000	9.586	0.000	143.87
		B		0.000	0.000	67.628	0.000	1336.61
		C		0.000	0.000	0.000	0.000	0.00
T2	160.00-140.00	A	2.182	0.000	0.000	62.043	0.000	1218.24
		B		0.000	0.000	72.265	0.000	1399.03
		C		0.000	0.000	0.000	0.000	0.00
T3	140.00-120.00	A	2.151	0.000	0.000	121.535	0.000	2584.42
		B		0.000	0.000	80.179	0.000	1517.73
		C		0.000	0.000	43.987	0.000	891.11
T4	120.00-100.00	A	2.115	0.000	0.000	143.826	0.000	2825.60
		B		0.000	0.000	81.346	0.000	1518.80
		C		0.000	0.000	87.153	0.000	1750.26
T5	100.00-80.00	A	2.073	0.000	0.000	142.455	0.000	2772.90
		B		0.000	0.000	80.169	0.000	1477.68
		C		0.000	0.000	103.907	0.000	2042.46
T6	80.00-60.00	A	2.021	0.000	0.000	140.776	0.000	2709.12
		B		0.000	0.000	78.729	0.000	1428.17
		C		0.000	0.000	128.745	0.000	2471.12
T7	60.00-40.00	A	1.955	0.000	0.000	138.594	0.000	2627.45
		B		0.000	0.000	76.856	0.000	1365.20
		C		0.000	0.000	133.662	0.000	2488.18
T8	40.00-20.00	A	1.857	0.000	0.000	135.420	0.000	2511.09
		B		0.000	0.000	74.130	0.000	1276.37
		C		0.000	0.000	131.773	0.000	2383.92
T9	20.00-0.00	A	1.664	0.000	0.000	93.763	0.000	1732.12
		B		0.000	0.000	47.894	0.000	827.89
		C		0.000	0.000	88.002	0.000	1606.92

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	180.00-160.00	5.6175	-51.1753	4.0712	-52.6023
T2	160.00-140.00	-15.0766	-33.7160	-12.0009	-36.7573
T3	140.00-120.00	-15.1545	-32.8931	-13.7049	-32.4352
T4	120.00-100.00	-19.2038	-23.9803	-19.5530	-22.1732
T5	100.00-80.00	-16.4415	-22.5710	-17.1001	-20.6803
T6	80.00-60.00	-10.8533	-18.5532	-11.8654	-16.6512
T7	60.00-40.00	-11.2529	-20.0464	-10.7824	-16.6024
T8	40.00-20.00	-12.1591	-21.9419	-11.2890	-17.7699
T9	20.00-0.00	-12.4455	-21.4036	-11.7564	-20.8695

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	1/2	160.00 - 180.00	0.6000	0.6000
T1	2	7/8	160.00 - 180.00	0.6000	0.6000
T1	3	7/8	160.00 - 180.00	0.6000	0.6000
T1	4	EW63	160.00 - 177.00	0.6000	0.6000
T1	5	1/2	160.00 - 173.00	0.6000	0.6000
T1	18	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T1	21	Safety Line 3/8	160.00 - 180.00	1.0000	1.0000
T2	1	1/2	140.00 - 160.00	0.6000	0.6000
T2	2	7/8	140.00 - 160.00	0.6000	0.6000
T2	3	7/8	140.00 - 160.00	0.6000	0.6000
T2	4	EW63	140.00 - 160.00	0.6000	0.6000
T2	5	1/2	140.00 - 160.00	0.6000	0.6000
T2	6	7/8	140.00 - 157.00	0.6000	0.6000
T2	7	1 5/8	140.00 - 145.00	0.6000	0.6000
T2	16	Feedline Ladder (Af)	140.00 - 157.00	0.6000	0.6000
T2	17	Feedline Ladder (Af)	140.00 - 145.00	0.6000	0.6000
T2	18	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T2	21	Safety Line 3/8	140.00 - 160.00	1.0000	1.0000
T3	1	1/2	120.00 - 140.00	0.6000	0.6000
T3	2	7/8	120.00 - 140.00	0.6000	0.6000
T3	3	7/8	120.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T3	4	EW63	120.00 - 140.00	0.6000	0.6000
T3	5	1/2	120.00 - 140.00	0.6000	0.6000
T3	6	7/8	120.00 - 140.00	0.6000	0.6000
T3	7	1 5/8	120.00 - 140.00	0.6000	0.6000
T3	8	7/8	120.00 - 136.00	0.6000	0.6000
T3	9	1 5/8	120.00 - 130.00	0.6000	0.6000
T3	10	5/16" Fiberoptic cable	120.00 - 130.00	0.6000	0.6000
T3	11	5/8 power	120.00 - 130.00	0.6000	0.6000
T3	12	3" conduit	120.00 - 130.00	0.6000	0.6000
T3	13	1.57" Hybrid fiber-power cable	120.00 - 121.00	0.6000	0.6000
T3	16	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T3	17	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T3	18	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T3	20	Feedline Ladder (Af)	120.00 - 130.00	0.6000	0.6000
T3	21	Safety Line 3/8	120.00 - 140.00	1.0000	1.0000
T4	1	1/2	100.00 - 120.00	0.6000	0.6000
T4	2	7/8	100.00 - 120.00	0.6000	0.6000
T4	3	7/8	100.00 - 120.00	0.6000	0.6000
T4	4	EW63	100.00 - 120.00	0.6000	0.6000
T4	5	1/2	100.00 - 120.00	0.6000	0.6000
T4	6	7/8	100.00 - 120.00	0.6000	0.6000
T4	7	1 5/8	100.00 - 120.00	0.6000	0.6000
T4	8	7/8	100.00 - 120.00	0.6000	0.6000
T4	9	1 5/8	100.00 - 120.00	0.6000	0.6000
T4	10	5/16" Fiberoptic cable	100.00 - 120.00	0.6000	0.6000
T4	11	5/8 power	100.00 - 120.00	0.6000	0.6000
T4	12	3" conduit	100.00 - 120.00	0.6000	0.6000
T4	13	1.57" Hybrid fiber-power cable	100.00 - 120.00	0.6000	0.6000
T4	16	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T4	17	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T4	18	Feedline Ladder (Af)	100.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			120.00		
T4	20	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T4	21	Safety Line 3/8	100.00 - 120.00	1.0000	1.0000
T5	1	1/2	80.00 - 100.00	0.6000	0.6000
T5	2	7/8	80.00 - 100.00	0.6000	0.6000
T5	3	7/8	80.00 - 100.00	0.6000	0.6000
T5	4	EW63	80.00 - 100.00	0.6000	0.6000
T5	5	1/2	80.00 - 100.00	0.6000	0.6000
T5	6	7/8	80.00 - 100.00	0.6000	0.6000
T5	7	1 5/8	80.00 - 100.00	0.6000	0.6000
T5	8	7/8	80.00 - 100.00	0.6000	0.6000
T5	9	1 5/8	80.00 - 100.00	0.6000	0.6000
T5	10	5/16" Fiberoptic cable	80.00 - 100.00	0.6000	0.6000
T5	11	5/8 power	80.00 - 100.00	0.6000	0.6000
T5	12	3" conduit	80.00 - 100.00	0.6000	0.6000
T5	13	1.57" Hybrid fiber-power cable	80.00 - 100.00	0.6000	0.6000
T5	14	1-1/4" Hybrid fiber-power cable	80.00 - 88.00	0.6000	0.6000
T5	16	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T5	17	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T5	18	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T5	19	Feedline Ladder (Af)	80.00 - 88.00	0.6000	0.6000
T5	20	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T5	21	Safety Line 3/8	80.00 - 100.00	1.0000	1.0000
T6	1	1/2	60.00 - 80.00	0.6000	0.6000
T6	2	7/8	60.00 - 80.00	0.6000	0.6000
T6	3	7/8	60.00 - 80.00	0.6000	0.6000
T6	4	EW63	60.00 - 80.00	0.6000	0.6000
T6	5	1/2	60.00 - 80.00	0.6000	0.6000
T6	6	7/8	60.00 - 80.00	0.6000	0.6000
T6	7	1 5/8	60.00 - 80.00	0.6000	0.6000
T6	8	7/8	60.00 - 80.00	0.6000	0.6000
T6	9	1 5/8	60.00 - 80.00	0.6000	0.6000
T6	10	5/16" Fiberoptic cable	60.00 - 80.00	0.6000	0.6000
T6	11	5/8 power	60.00 - 80.00	0.6000	0.6000
T6	12	3" conduit	60.00 - 80.00	0.6000	0.6000
T6	13	1.57" Hybrid fiber-power cable	60.00 - 80.00	0.6000	0.6000
T6	14	1-1/4" Hybrid fiber-power cable	60.00 - 80.00	0.6000	0.6000
T6	16	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T6	17	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T6	18	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T6	19	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T6	20	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T6	21	Safety Line 3/8	60.00 - 80.00	1.0000	1.0000
T7	1	1/2	40.00 - 60.00	0.6000	0.6000
T7	2	7/8	40.00 - 60.00	0.6000	0.6000
T7	3	7/8	40.00 - 60.00	0.6000	0.6000
T7	4	EW63	40.00 - 60.00	0.6000	0.6000
T7	5	1/2	40.00 - 60.00	0.6000	0.6000
T7	6	7/8	40.00 - 60.00	0.6000	0.6000
T7	7	1 5/8	40.00 - 60.00	0.6000	0.6000
T7	8	7/8	40.00 - 60.00	0.6000	0.6000
T7	9	1 5/8	40.00 - 60.00	0.6000	0.6000
T7	10	5/16" Fiberoptic cable	40.00 - 60.00	0.6000	0.6000
T7	11	5/8 power	40.00 - 60.00	0.6000	0.6000
T7	12	3" conduit	40.00 - 60.00	0.6000	0.6000
T7	13	1.57" Hybrid fiber-power	40.00 - 60.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		cable			
T7	14	1-1/4" Hybrid fiber-power cable	40.00 - 60.00	0.6000	0.6000
T7	15	1/2	40.00 - 56.00	0.6000	0.6000
T7	16	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T7	17	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T7	18	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T7	19	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T7	20	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T7	21	Safety Line 3/8	40.00 - 60.00	1.0000	1.0000
T8	1	1/2	20.00 - 40.00	0.6000	0.6000
T8	2	7/8	20.00 - 40.00	0.6000	0.6000
T8	3	7/8	20.00 - 40.00	0.6000	0.6000
T8	4	EW63	20.00 - 40.00	0.6000	0.6000
T8	5	1/2	20.00 - 40.00	0.6000	0.6000
T8	6	7/8	20.00 - 40.00	0.6000	0.6000
T8	7	1 5/8	20.00 - 40.00	0.6000	0.6000
T8	8	7/8	20.00 - 40.00	0.6000	0.6000
T8	9	1 5/8	20.00 - 40.00	0.6000	0.6000
T8	10	5/16" Fiberoptic cable	20.00 - 40.00	0.6000	0.6000
T8	11	5/8 power	20.00 - 40.00	0.6000	0.6000
T8	12	3" conduit	20.00 - 40.00	0.6000	0.6000
T8	13	1.57" Hybrid fiber-power cable	20.00 - 40.00	0.6000	0.6000
T8	14	1-1/4" Hybrid fiber-power cable	20.00 - 40.00	0.6000	0.6000
T8	15	1/2	20.00 - 40.00	0.6000	0.6000
T8	16	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T8	17	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T8	18	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T8	19	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T8	20	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T8	21	Safety Line 3/8	20.00 - 40.00	1.0000	1.0000
T9	1	1/2	8.00 - 20.00	0.6000	0.6000
T9	2	7/8	8.00 - 20.00	0.6000	0.6000
T9	3	7/8	8.00 - 20.00	0.6000	0.6000
T9	4	EW63	8.00 - 20.00	0.6000	0.6000
T9	5	1/2	8.00 - 20.00	0.6000	0.6000
T9	6	7/8	8.00 - 20.00	0.6000	0.6000
T9	7	1 5/8	8.00 - 20.00	0.6000	0.6000
T9	8	7/8	8.00 - 20.00	0.6000	0.6000
T9	9	1 5/8	8.00 - 20.00	0.6000	0.6000
T9	10	5/16" Fiberoptic cable	8.00 - 20.00	0.6000	0.6000
T9	11	5/8 power	8.00 - 20.00	0.6000	0.6000
T9	12	3" conduit	8.00 - 20.00	0.6000	0.6000
T9	13	1.57" Hybrid fiber-power cable	8.00 - 20.00	0.6000	0.6000
T9	14	1-1/4" Hybrid fiber-power cable	8.00 - 20.00	0.6000	0.6000
T9	15	1/2	8.00 - 20.00	0.6000	0.6000
T9	16	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T9	17	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T9	18	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T9	19	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T9	20	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T9	21	Safety Line 3/8	0.00 - 20.00	1.0000	1.0000

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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* lb
12' x 2" omni whip	B	From Leg	0.50	0.0000	182.00	No Ice	2.40	2.40	70.00
			0.00			1/2" Ice	3.63	3.63	88.56
			6.00			1" Ice	4.87	4.87	114.80
5'x4 1/2" Pipe Mount	B	From Leg	0.00	0.0000	180.00	No Ice	1.50	1.50	53.90
			0.00			1/2" Ice	2.08	2.08	69.94
			0.50			1" Ice	2.40	2.40	89.65
10' 2-bay dipole	C	From Leg	0.50	0.0000	181.00	No Ice	2.50	2.50	75.00
			0.00			1/2" Ice	3.53	3.53	93.64
			5.00			1" Ice	4.58	4.58	118.79
5'x1-7/8" Pipe Mount	C	From Leg	0.00	0.0000	180.00	No Ice	0.95	0.95	13.60
			0.00			1/2" Ice	1.37	1.37	21.14
			0.00			1" Ice	1.68	1.68	32.09
20' x 2.5" omni whip	A	From Leg	0.00	0.0000	180.00	No Ice	5.00	5.00	50.00
			0.00			1/2" Ice	7.03	7.03	86.96
			10.00			1" Ice	9.07	9.07	136.55
6'x4 1/2" Pipe Mount	C	None		0.0000	177.00	No Ice	1.87	1.87	64.70
						1/2" Ice	2.62	2.62	83.80
						1" Ice	3.00	3.00	107.17
12' single dipole	B	From Leg	3.00	0.0000	179.00 - 167.00	No Ice	2.25	2.25	30.00
			0.00			1/2" Ice	4.83	4.83	51.65
			0.00			1" Ice	7.43	7.43	89.22
3' x 3" standoff	B	None		0.0000	167.00	No Ice	0.90	0.07	30.00
						1/2" Ice	1.12	0.11	38.69
						1" Ice	1.35	0.16	50.29
5' x 2-1/4" omni whip	A	From Leg	3.00	0.0000	162.00 - 157.00	No Ice	1.13	1.13	25.00
			0.00			1/2" Ice	1.46	1.46	33.67
			0.00			1" Ice	1.77	1.77	45.77
18" x 18" x 6" Junction box	A	From Leg	1.50	0.0000	157.00	No Ice	3.33	1.03	60.00
			0.00			1/2" Ice	3.56	1.17	82.26
			0.00			1" Ice	3.79	1.32	107.70
5' x 2-1/4" omni whip	A	From Leg	3.00	0.0000	152.00 - 157.00	No Ice	1.13	1.13	25.00
			0.00			1/2" Ice	1.46	1.46	33.67
			0.00			1" Ice	1.77	1.77	45.77
3' sidearm	A	None		0.0000	157.00	No Ice	1.43	0.72	30.00
						1/2" Ice	2.18	1.09	65.00
						1" Ice	2.93	1.47	105.00
LNX-6512DS-T4M (T-Mobile)	A	From Face	2.00	0.0000	145.00	No Ice	5.09	3.33	30.00
			0.00			1/2" Ice	5.42	3.63	64.82
			1.00			1" Ice	5.75	3.94	104.21
LNX-6512DS-T4M (T-Mobile)	B	From Face	2.00	0.0000	145.00	No Ice	5.09	3.33	30.00
			0.00			1/2" Ice	5.42	3.63	64.82
			1.00			1" Ice	5.75	3.94	104.21
LNX-6512DS-T4M (T-Mobile)	C	From Face	2.00	0.0000	145.00	No Ice	5.09	3.33	30.00
			0.00			1/2" Ice	5.42	3.63	64.82
			1.00			1" Ice	5.75	3.94	104.21
AIR 21 B2A B4P panel (T-Mobile)	A	From Face	2.00	0.0000	145.00	No Ice	6.09	4.31	95.00
			0.00			1/2" Ice	6.46	4.66	136.89
			1.00			1" Ice	6.84	5.02	183.90
AIR 21 B2A B4P panel (T-Mobile)	B	From Face	2.00	0.0000	145.00	No Ice	6.09	4.31	95.00
			0.00			1/2" Ice	6.46	4.66	136.89
			1.00			1" Ice	6.84	5.02	183.90
AIR 21 B2A B4P panel	C	From Face	2.00	0.0000	145.00	No Ice	6.09	4.31	95.00

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Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* lb
(T-Mobile)			0.00			1/2" Ice	6.46	4.66	136.89
			1.00			1" Ice	6.84	5.02	183.90
RFS twin TMA	A	From Face	1.50	0.0000	145.00	No Ice	1.00	0.41	13.00
(T-Mobile)			0.00			1/2" Ice	1.13	0.50	20.62
			0.00			1" Ice	1.26	0.59	30.11
RFS twin TMA	B	From Face	1.50	0.0000	145.00	No Ice	1.00	0.41	13.00
(T-Mobile)			0.00			1/2" Ice	1.13	0.50	20.62
			0.00			1" Ice	1.26	0.59	30.11
RFS twin TMA	C	From Face	1.50	0.0000	145.00	No Ice	1.00	0.41	13.00
(T-Mobile)			0.00			1/2" Ice	1.13	0.50	20.62
			0.00			1" Ice	1.26	0.59	30.11
5' T-arm	A	None		0.0000	145.00	No Ice	2.65	4.96	140.00
(T-Mobile)						1/2" Ice	3.56	6.81	240.00
						1" Ice	4.48	8.66	340.00
5' T-arm	B	None		0.0000	145.00	No Ice	2.65	4.96	140.00
(T-Mobile)						1/2" Ice	3.56	6.81	240.00
						1" Ice	4.48	8.66	340.00
5' T-arm	C	None		0.0000	145.00	No Ice	2.65	4.96	140.00
(T-Mobile)						1/2" Ice	3.56	6.81	240.00
						1" Ice	4.48	8.66	340.00
10' 2-bay dipole	C	From Leg	3.00	0.0000	146.00 - 136.00	No Ice	2.50	2.50	75.00
(AT&T)			0.00			1/2" Ice	3.53	3.53	93.64
			0.00			1" Ice	4.58	4.58	118.79
3' sidearm	C	None		0.0000	136.00	No Ice	1.43	0.72	30.00
(AT&T)						1/2" Ice	2.18	1.09	65.00
						1" Ice	2.93	1.47	105.00
P65-16-XLH-RR panel	A	From Face	4.00	0.0000	130.00	No Ice	8.13	4.70	45.00
(AT&T)			0.00			1/2" Ice	8.59	5.15	92.28
			0.00			1" Ice	9.05	5.60	145.59
P65-16-XLH-RR panel	B	From Face	4.00	0.0000	130.00	No Ice	8.13	4.70	45.00
(AT&T)			0.00			1/2" Ice	8.59	5.15	92.28
			0.00			1" Ice	9.05	5.60	145.59
P65-16-XLH-RR panel	C	From Face	4.00	0.0000	130.00	No Ice	8.13	4.70	45.00
(AT&T)			0.00			1/2" Ice	8.59	5.15	92.28
			0.00			1" Ice	9.05	5.60	145.59
800-10121	A	From Face	4.00	0.0000	130.00	No Ice	5.16	3.29	50.00
(AT&T)			0.00			1/2" Ice	5.51	3.64	82.91
			0.00			1" Ice	5.87	3.99	120.59
800-10121	B	From Face	4.00	0.0000	130.00	No Ice	5.16	3.29	50.00
(AT&T)			0.00			1/2" Ice	5.51	3.64	82.91
			0.00			1" Ice	5.87	3.99	120.59
800-10121	C	From Face	4.00	0.0000	130.00	No Ice	5.16	3.29	50.00
(AT&T)			0.00			1/2" Ice	5.51	3.64	82.91
			0.00			1" Ice	5.87	3.99	120.59
(2) 860-10025 RCU	A	From Face	4.00	0.0000	130.00	No Ice	0.12	0.10	3.00
(AT&T)			0.00			1/2" Ice	0.17	0.15	4.36
			0.00			1" Ice	0.23	0.20	6.59
(2) 860-10025 RCU	B	From Face	4.00	0.0000	130.00	No Ice	0.12	0.10	3.00
(AT&T)			0.00			1/2" Ice	0.17	0.15	4.36
			0.00			1" Ice	0.23	0.20	6.59
(2) 860-10025 RCU	C	From Face	4.00	0.0000	130.00	No Ice	0.12	0.10	3.00
(AT&T)			0.00			1/2" Ice	0.17	0.15	4.36
			0.00			1" Ice	0.23	0.20	6.59
800-10965	A	From Face	4.00	0.0000	130.00	No Ice	13.81	5.83	45.00
(AT&T)			0.00			1/2" Ice	14.35	6.32	121.53
			0.00			1" Ice	14.89	6.82	205.11
800-10965	B	From Face	4.00	0.0000	130.00	No Ice	13.81	5.83	45.00

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(AT&T)			0.00			1/2" Ice	14.35	6.32	121.53
			0.00			1" Ice	14.89	6.82	205.11
800-10965	C	From Face	4.00	0.0000	130.00	No Ice	13.81	5.83	45.00
(AT&T)			0.00			1/2" Ice	14.35	6.32	121.53
			0.00			1" Ice	14.89	6.82	205.11
(2) LGP2140X TMA	A	From Face	3.50	0.0000	130.00	No Ice	1.08	0.36	20.00
(AT&T)			0.00			1/2" Ice	1.21	0.45	27.13
			0.00			1" Ice	1.35	0.56	36.14
(2) LGP2140X TMA	B	From Face	3.50	0.0000	130.00	No Ice	1.08	0.36	20.00
(AT&T)			0.00			1/2" Ice	1.21	0.45	27.13
			0.00			1" Ice	1.35	0.56	36.14
(2) LGP2140X TMA	C	From Face	3.50	0.0000	130.00	No Ice	1.08	0.36	20.00
(AT&T)			0.00			1/2" Ice	1.21	0.45	27.13
			0.00			1" Ice	1.35	0.56	36.14
(2) LGP2190X Diplexer	A	From Face	3.50	0.0000	130.00	No Ice	0.23	0.11	6.00
(AT&T)			0.00			1/2" Ice	0.29	0.15	8.41
			0.00			1" Ice	0.36	0.21	11.91
(2) LGP2190X Diplexer	B	From Face	3.50	0.0000	130.00	No Ice	0.23	0.11	6.00
(AT&T)			0.00			1/2" Ice	0.29	0.15	8.41
			0.00			1" Ice	0.36	0.21	11.91
(2) LGP2190X Diplexer	C	From Face	3.50	0.0000	130.00	No Ice	0.23	0.11	6.00
(AT&T)			0.00			1/2" Ice	0.29	0.15	8.41
			0.00			1" Ice	0.36	0.21	11.91
Ericsson RRUS-11	A	From Face	3.50	0.0000	130.00	No Ice	2.79	1.02	55.00
(AT&T)			0.00			1/2" Ice	3.00	1.16	75.86
			0.00			1" Ice	3.21	1.30	99.77
Ericsson RRUS-11	B	From Face	3.50	0.0000	130.00	No Ice	2.79	1.02	55.00
(AT&T)			0.00			1/2" Ice	3.00	1.16	75.86
			0.00			1" Ice	3.21	1.30	99.77
Ericsson RRUS-11	C	From Face	3.50	0.0000	130.00	No Ice	2.79	1.02	55.00
(AT&T)			0.00			1/2" Ice	3.00	1.16	75.86
			0.00			1" Ice	3.21	1.30	99.77
Radio 4415	A	From Face	3.50	0.0000	130.00	No Ice	1.84	0.82	50.00
(AT&T)			0.00			1/2" Ice	2.01	0.94	64.07
			0.00			1" Ice	2.19	1.07	80.66
Radio 4415	B	From Face	3.50	0.0000	130.00	No Ice	1.84	0.82	50.00
(AT&T)			0.00			1/2" Ice	2.01	0.94	64.07
			0.00			1" Ice	2.19	1.07	80.66
Radio 4415	C	From Face	3.50	0.0000	130.00	No Ice	1.84	0.82	50.00
(AT&T)			0.00			1/2" Ice	2.01	0.94	64.07
			0.00			1" Ice	2.19	1.07	80.66
Radio 4426	A	From Face	3.50	0.0000	130.00	No Ice	1.63	0.72	50.00
(AT&T)			0.00			1/2" Ice	1.79	0.84	62.72
			0.00			1" Ice	1.95	0.96	77.82
Radio 4426	B	From Face	3.50	0.0000	130.00	No Ice	1.63	0.72	50.00
(AT&T)			0.00			1/2" Ice	1.79	0.84	62.72
			0.00			1" Ice	1.95	0.96	77.82
Radio 4426	C	From Face	3.50	0.0000	130.00	No Ice	1.63	0.72	50.00
(AT&T)			0.00			1/2" Ice	1.79	0.84	62.72
			0.00			1" Ice	1.95	0.96	77.82
Raycap DC6-48-60-18-8F surge suppressor	C	None		0.0000	130.00	No Ice	0.74	0.74	30.00
(AT&T)						1/2" Ice	1.20	1.20	44.34
						1" Ice	1.37	1.37	60.93
Raycap DC6-48-60-18-8F surge suppressor	A	None		0.0000	130.00	No Ice	0.74	0.74	30.00
(AT&T)						1/2" Ice	1.20	1.20	44.34
						1" Ice	1.37	1.37	60.93
SitePro VFA10-HD	A	None		0.0000	130.00	No Ice	12.13	8.42	500.00

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Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* lb
(AT&T)						1/2" Ice	15.16	10.53	575.00
						1" Ice	19.20	12.63	650.00
SitePro VFA10-HD	B	None		0.0000	130.00	No Ice	12.13	8.42	500.00
(AT&T)						1/2" Ice	15.16	10.53	575.00
						1" Ice	19.20	12.63	650.00
SitePro VFA10-HD	C	None		0.0000	130.00	No Ice	12.13	8.42	500.00
(AT&T)						1/2" Ice	15.16	10.53	575.00
						1" Ice	19.20	12.63	650.00
BXA-70063/6	A	From Face	4.00	0.0000	124.00	No Ice	7.57	3.76	25.00
(Verizon Wireless)			0.00			1/2" Ice	8.02	4.19	65.60
			1.00			1" Ice	8.47	4.63	112.01
BXA-70063/6	B	From Face	4.00	0.0000	124.00	No Ice	7.57	3.76	25.00
(Verizon Wireless)			0.00			1/2" Ice	8.02	4.19	65.60
			1.00			1" Ice	8.47	4.63	112.01
BXA-70063/6	C	From Face	4.00	0.0000	124.00	No Ice	7.57	3.76	25.00
(Verizon Wireless)			0.00			1/2" Ice	8.02	4.19	65.60
			1.00			1" Ice	8.47	4.63	112.01
(3) SBNHH-1D65C	A	From Face	4.00	0.0000	124.00	No Ice	11.47	7.72	55.00
(Verizon Wireless)			0.00			1/2" Ice	12.09	8.31	121.00
			1.00			1" Ice	12.72	8.91	194.68
(3) SBNHH-1D65C	B	From Face	4.00	0.0000	124.00	No Ice	11.47	7.72	55.00
(Verizon Wireless)			0.00			1/2" Ice	12.09	8.31	121.00
			1.00			1" Ice	12.72	8.91	194.68
(3) SBNHH-1D65C	C	From Face	4.00	0.0000	124.00	No Ice	11.47	7.72	55.00
(Verizon Wireless)			0.00			1/2" Ice	12.09	8.31	121.00
			1.00			1" Ice	12.72	8.91	194.68
ALU B25 RRH2x60 PCS	A	From Face	3.50	0.0000	121.00	No Ice	2.14	1.31	60.00
w/bracket			0.00			1/2" Ice	2.33	1.46	77.46
(Verizon Wireless)			0.00			1" Ice	2.53	1.63	97.75
ALU B25 RRH2x60 PCS	B	From Face	3.50	0.0000	121.00	No Ice	2.14	1.31	60.00
w/bracket			0.00			1/2" Ice	2.33	1.46	77.46
(Verizon Wireless)			0.00			1" Ice	2.53	1.63	97.75
ALU B25 RRH2x60 PCS	C	From Face	3.50	0.0000	121.00	No Ice	2.14	1.31	60.00
w/bracket			0.00			1/2" Ice	2.33	1.46	77.46
(Verizon Wireless)			0.00			1" Ice	2.53	1.63	97.75
ALU RRH2x90-AWS	A	From Leg	3.50	0.0000	121.00	No Ice	2.58	1.63	80.00
w/bracket			0.00			1/2" Ice	2.79	1.81	100.47
(Verizon Wireless)			0.00			1" Ice	3.01	2.00	124.06
ALU RRH2x90-AWS	B	From Leg	3.50	0.0000	121.00	No Ice	2.58	1.63	80.00
w/bracket			0.00			1/2" Ice	2.79	1.81	100.47
(Verizon Wireless)			0.00			1" Ice	3.01	2.00	124.06
ALU RRH2x90-AWS	C	From Leg	3.50	0.0000	121.00	No Ice	2.58	1.63	80.00
w/bracket			0.00			1/2" Ice	2.79	1.81	100.47
(Verizon Wireless)			0.00			1" Ice	3.01	2.00	124.06
ALU RRH2x60-700	A	From Face	3.50	0.0000	121.00	No Ice	3.35	2.02	60.00
w/bracket			0.00			1/2" Ice	3.60	2.25	83.19
(Verizon Wireless)			0.00			1" Ice	3.87	2.49	110.02
ALU RRH2x60-700	B	From Face	3.50	0.0000	121.00	No Ice	3.35	2.02	60.00
w/bracket			0.00			1/2" Ice	3.60	2.25	83.19
(Verizon Wireless)			0.00			1" Ice	3.87	2.49	110.02
ALU RRH2x60-700	C	From Face	3.50	0.0000	121.00	No Ice	3.35	2.02	60.00
w/bracket			0.00			1/2" Ice	3.60	2.25	83.19
(Verizon Wireless)			0.00			1" Ice	3.87	2.49	110.02
RFS DB-T1-6Z-8AB-0Z	A	None		0.0000	121.00	No Ice	4.80	2.00	45.00
D-box						1/2" Ice	5.07	2.19	81.13
(Verizon Wireless)						1" Ice	5.35	2.39	121.22
RFS DB-T1-6Z-8AB-0Z	C	None		0.0000	121.00	No Ice	4.80	2.00	45.00

All-Points Technology Corporation
116 Grandview Road
Conway, NH 03818
Phone: (603) 496-5853
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Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* lb
D-box						1/2" Ice	5.07	2.19	81.13
(Verizon Wireless)						1" Ice	5.35	2.39	121.22
12' T-frame sector mnt	A	None		0.0000	121.00	No Ice	10.20	5.10	465.00
(Verizon Wireless)						1/2" Ice	13.80	6.90	600.00
						1" Ice	17.40	8.70	735.00
12' T-frame sector mnt	B	None		0.0000	121.00	No Ice	10.20	5.10	465.00
(Verizon Wireless)						1/2" Ice	13.80	6.90	600.00
						1" Ice	17.40	8.70	735.00
12' T-frame sector mnt	C	None		0.0000	121.00	No Ice	10.20	5.10	465.00
(Verizon Wireless)						1/2" Ice	13.80	6.90	600.00
						1" Ice	17.40	8.70	735.00
P40-16-XLPP-RR-A	A	From Face	4.00	0.0000	88.00	No Ice	9.07	3.52	48.00
(Sprint)			0.00			1/2" Ice	9.47	3.87	101.23
			1.00			1" Ice	9.87	4.22	159.87
APXVSPP18-C-A20	B	From Face	4.00	0.0000	88.00	No Ice	8.02	5.28	107.00
(Sprint)			0.00			1/2" Ice	8.48	5.74	156.52
			1.00			1" Ice	8.94	6.20	212.12
APXVSPP18-C-A20	C	From Face	4.00	0.0000	88.00	No Ice	8.02	5.28	107.00
(Sprint)			0.00			1/2" Ice	8.48	5.74	156.52
			1.00			1" Ice	8.94	6.20	212.12
800 MHz RRH	A	From Face	4.00	0.0000	88.00	No Ice	2.43	2.95	82.00
(Sprint)			0.00			1/2" Ice	2.62	3.17	112.15
			0.00			1" Ice	2.83	3.39	145.84
800 MHz RRH	B	From Face	4.00	0.0000	88.00	No Ice	2.43	2.95	82.00
(Sprint)			0.00			1/2" Ice	2.62	3.17	112.15
			0.00			1" Ice	2.83	3.39	145.84
800 MHz RRH	C	From Face	4.00	0.0000	88.00	No Ice	2.43	2.95	82.00
(Sprint)			0.00			1/2" Ice	2.62	3.17	112.15
			0.00			1" Ice	2.83	3.39	145.84
1900 MHz RRH	A	From Face	4.00	0.0000	88.00	No Ice	3.26	2.49	144.00
(Sprint)			0.00			1/2" Ice	3.48	2.70	175.27
			0.00			1" Ice	3.72	2.91	210.18
1900 MHz RRH	B	From Face	4.00	0.0000	88.00	No Ice	3.26	2.49	144.00
(Sprint)			0.00			1/2" Ice	3.48	2.70	175.27
			0.00			1" Ice	3.72	2.91	210.18
1900 MHz RRH	C	From Face	4.00	0.0000	88.00	No Ice	3.26	2.49	144.00
(Sprint)			0.00			1/2" Ice	3.48	2.70	175.27
			0.00			1" Ice	3.72	2.91	210.18
12' T-frame sector mnt	A	None		0.0000	88.00	No Ice	10.20	5.10	465.00
(Sprint)						1/2" Ice	13.80	6.90	600.00
						1" Ice	17.40	8.70	735.00
12' T-frame sector mnt	B	None		0.0000	88.00	No Ice	10.20	5.10	465.00
(Sprint)						1/2" Ice	13.80	6.90	600.00
						1" Ice	17.40	8.70	735.00
12' T-frame sector mnt	C	None		0.0000	88.00	No Ice	10.20	5.10	465.00
(Sprint)						1/2" Ice	13.80	6.90	600.00
						1" Ice	17.40	8.70	735.00
GPS on 3' standoff	A	From Leg	3.00	0.0000	56.00	No Ice	0.60	0.60	50.00
			0.00			1/2" Ice	0.79	0.79	55.81
			0.00			1" Ice	0.99	0.99	63.86
3' x 3" standoff	A	None		0.0000	56.00	No Ice	0.90	0.07	30.00
						1/2" Ice	1.12	0.11	38.69
						1" Ice	1.35	0.16	50.29

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral / Vert (ft)	Azimuth Adjustment (°)	3 dB Beam Width (°)	Elevation (ft)	Outside Diameter (ft)		Aperture Area (ft^2)	Weight (lb)
6' dish with radome	C	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		177.00	6.00	No Ice 1/2" Ice 1" Ice	28.27 29.07 29.86	250.00 400.00 550.00

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
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service

Comb. No.	Description
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 Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	2.466	39	0.1027	0.0119
T2	160 - 140	2.034	39	0.1002	0.0106
T3	140 - 120	1.621	39	0.0924	0.0092
T4	120 - 100	1.234	39	0.0833	0.0072
T5	100 - 80	0.882	39	0.0733	0.0054
T6	80 - 60	0.582	39	0.0625	0.0042
T7	60 - 40	0.339	43	0.0448	0.0030
T8	40 - 20	0.166	43	0.0297	0.0019
T9	20 - 0	0.055	43	0.0153	0.0010

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
182.00	12' x 2" omni whip	39	2.466	0.1027	0.0119	725683
181.00	10' 2-bay dipole	39	2.466	0.1027	0.0119	725683
180.00	5'x4 1/2" Pipe Mount	39	2.466	0.1027	0.0119	725683
179.00	12' single dipole	39	2.445	0.1026	0.0118	725683
177.00	6' dish with radome	39	2.401	0.1025	0.0116	725683
173.00	12' single dipole	39	2.314	0.1022	0.0113	518342
167.00	12' single dipole	39	2.184	0.1016	0.0108	279108
162.00	5' x 2-1/4" omni whip	39	2.076	0.1007	0.0107	203781
159.50	5' x 2-1/4" omni whip	39	2.023	0.1001	0.0106	187974
157.00	5' x 2-1/4" omni whip	39	1.970	0.0993	0.0104	184191
154.50	5' x 2-1/4" omni whip	39	1.918	0.0985	0.0103	185556
152.00	5' x 2-1/4" omni whip	39	1.866	0.0976	0.0101	187499
146.00	10' 2-bay dipole	39	1.742	0.0951	0.0097	192293
145.00	LNX-6512DS-T4M	39	1.722	0.0947	0.0096	190890
141.00	10' 2-bay dipole	39	1.641	0.0929	0.0092	185102
136.00	10' 2-bay dipole	39	1.541	0.0907	0.0088	175887
130.00	P65-16-XLH-RR panel	39	1.424	0.0880	0.0082	164780
124.00	BXA-70063/6	39	1.309	0.0852	0.0076	154959
121.00	ALU B25 RRH2x60 PCS w/bracket	39	1.252	0.0838	0.0073	148771
88.00	P40-16-XLPP-RR-A	39	0.696	0.0675	0.0047	89136
56.00	GPS on 3' standoff	43	0.299	0.0415	0.0027	65990

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	11.139	11	0.4598	0.0537
T2	160 - 140	9.205	11	0.4472	0.0479
T3	140 - 120	7.357	11	0.4142	0.0416
T4	120 - 100	5.617	11	0.3753	0.0326
T5	100 - 80	4.026	11	0.3313	0.0246
T6	80 - 60	2.663	11	0.2832	0.0191
T7	60 - 40	1.555	11	0.2038	0.0135
T8	40 - 20	0.760	11	0.1355	0.0088
T9	20 - 0	0.251	11	0.0698	0.0047

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
182.00	12' x 2" omni whip	11	11.139	0.4598	0.0537	173140
181.00	10' 2-bay dipole	11	11.139	0.4598	0.0537	173140
180.00	5'x4 1/2" Pipe Mount	11	11.139	0.4598	0.0537	173140
179.00	12' single dipole	11	11.042	0.4594	0.0534	173140
177.00	6' dish with radome	11	10.847	0.4586	0.0526	173140
173.00	12' single dipole	11	10.457	0.4569	0.0511	123672
167.00	12' single dipole	11	9.876	0.4535	0.0491	66592
162.00	5' x 2-1/4" omni whip	11	9.396	0.4493	0.0483	48592
159.50	5' x 2-1/4" omni whip	11	9.158	0.4466	0.0478	44704
157.00	5' x 2-1/4" omni whip	11	8.922	0.4434	0.0473	43566
154.50	5' x 2-1/4" omni whip	11	8.687	0.4398	0.0466	43579
152.00	5' x 2-1/4" omni whip	11	8.454	0.4359	0.0459	43583
146.00	10' 2-bay dipole	11	7.901	0.4254	0.0439	43562
145.00	LNX-6512DS-T4M	11	7.810	0.4236	0.0435	43545
141.00	10' 2-bay dipole	11	7.447	0.4161	0.0419	43265
136.00	10' 2-bay dipole	11	7.000	0.4067	0.0400	41465
130.00	P65-16-XLH-RR panel	11	6.472	0.3953	0.0373	38411
124.00	BXA-70063/6	11	5.955	0.3836	0.0345	35768
121.00	ALU B25 RRH2x60 PCS w/bracket	11	5.701	0.3774	0.0331	34179
88.00	P40-16-XLPP-RR-A	11	3.180	0.3055	0.0212	20029
56.00	GPS on 3' standoff	11	1.371	0.1886	0.0125	14580

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	180	Leg	A325N	0.6250	4	1193.40	20708.70	0.058 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	1390.48	6198.75	0.224 ✔	1	Member Bearing
		Top Girt	A325N	0.5000	1	160.85	7952.16	0.020 ✔	1	Bolt Shear
T2	160	Leg	A325N	0.7500	4	3307.20	29820.60	0.111 ✔	1	Bolt Tension

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load / Allowable	Allowable Ratio	Criteria
		Diagonal	A325N	0.5000	1	2524.77	7952.16	0.317 ✔	1	Bolt Shear
T3	140	Leg	A325N	0.8750	4	6996.23	40589.10	0.172 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	5705.32	6198.75	0.920 ✔	1	Member Bearing
T4	120	Leg	A325N	1.0000	4	14093.50	53014.40	0.266 ✔	1	Bolt Tension
		Diagonal	A325N	0.7500	1	7112.85	15768.80	0.451 ✔	1	Member Bearing
T5	100	Leg	A325N	1.0000	4	20360.90	53014.40	0.384 ✔	1	Bolt Tension
		Diagonal	A325N	0.7500	1	8912.96	17892.40	0.498 ✔	1	Bolt Shear
T6	80	Leg	A325N	1.0000	4	27525.70	53014.40	0.519 ✔	1	Bolt Tension
		Diagonal	A325N	0.7500	1	9262.38	15768.80	0.587 ✔	1	Member Bearing
T7	60	Leg	A325N	1.0000	6	23028.90	53014.40	0.434 ✔	1	Bolt Tension
		Diagonal	A325N	0.7500	1	10064.50	17892.40	0.563 ✔	1	Bolt Shear
		Horizontal	A325N	0.6250	2	1454.47	12425.20	0.117 ✔	1	Bolt Shear
T8	40	Leg	A325N	1.0000	6	27595.60	53014.40	0.521 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	1	10355.60	25447.50	0.407 ✔	1	Member Bearing
T9	20	Leg	A325N	1.0000	6	31912.10	53014.40	0.602 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	1	10529.90	21206.30	0.497 ✔	1	Member Bearing
		Horizontal	A325N	0.6250	2	2021.86	12425.20	0.163 ✔	1	Bolt Shear

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	**180 - 160**	**Leg**	**ROHN 2.5 STD**	**1**	**-6083.26**	**57192.30**	**10.6**	**Pass**
		Diagonal	L1 3/4x1 3/4x3/16	11	-1427.69	4967.99	28.7	Pass
		Top Girt	L2 1/2x2 1/2x3/16	6	-160.85	5030.60	3.2	Pass
T2	**160 - 140**	**Leg**	**ROHN 2.5 EH**	**31**	**-16427.40**	**58514.60**	**28.1**	**Pass**
		Diagonal	L2x2x1/4	38	-2524.77	5928.93	42.6	Pass
T3	**140 - 120**	**Leg**	**3" Std with 1-1/4" SR**	**54**	**-37338.10**	**109741.00**	**34.0**	**Pass**
		Diagonal	L2 1/2x2 1/2x3/16	59	-5760.41	7211.17	79.9 92.0 (b)	Pass
T4	**120 - 100**	**Leg**	**4" EH with 1-1/4" SR**	**75**	**-69882.80**	**204722.00**	**34.1**	**Pass**
		Diagonal	L2 1/2x2 1/2x5/16	80	-7164.14	9028.06	79.4	Pass
T5	**100 - 80**	**Leg**	**5" EH with 1-1/4" SR**	**95**	**-100257.00**	**241664.00**	**41.5**	**Pass**
		Diagonal	L3x3x3/8	101	-8912.96	12634.40	70.5	Pass
T6	**80 - 60**	**Leg**	**5" Std with 1-1/4" SR**	**110**	**-134128.00**	**184454.00**	**72.7**	**Pass**
		Diagonal	L3 1/2x3 1/2x5/16	116	-9390.58	14515.40	64.7	Pass
T7	**60 - 40**	**Leg**	**5" EH with 1-1/4" SR**	**125**	**-167735.00**	**305388.00**	**54.9**	**Pass**
		Diagonal	L3 1/2x3 1/2x3/8	134	-10064.50	14616.00	68.9	Pass
		Horizontal	L3 1/2x3 1/2x1/4	127	-2908.95	13204.60	22.0	Pass
T8	**40 - 20**	**Leg**	**ROHN 6 EH**	**158**	**-200943.00**	**303744.00**	**66.2**	**Pass**
		Diagonal	L4x4x3/8	164	-10494.60	18952.50	55.4	Pass
T9	**20 - 0**	**Leg**	**ROHN 6 EH**	**173**	**-233168.00**	**358045.00**	**65.1**	**Pass**
		Diagonal	L4x4x5/16	179	-11670.70	13915.70	83.9	Pass
		Horizontal	L4x4x1/4	175	-4043.71	13802.50	29.3	Pass
						Summary		
						Leg (T6)	72.7	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
						Diagonal (T3)	92.0	Pass
						Horizontal (T9)	29.3	Pass
						Top Girt (T1)	3.2	Pass
						Bolt Checks	92.0	Pass
						RATING =	**92.0**	**Pass**

All-Points Technology Corp., P.C.
116 Grandview Road
Conway, NH 03818
(603) 496-5853

Client:	**Centerline Communications**	Site:	**CT5178**
Job:	**Newtown, CT**	Job No.:	**CT474260**
Calculated By:	**R. Adair**	Date:	**5-Nov-18**

References: TIA-222, Structural Standards for Towers
Wang & Salmon, Reinforced Concrete Design, Chapter 20

ORIGINAL TOWER FOUNDATION EVALUATION - neglect additional mat

Program assumes:

Footing is square in plan view.
Pier above footing is cylindrical in shape.

Unit weight of concrete =	150	pcf
Submerged unit wt of concrete =	87.6	pcf
Unit weight of soil =	100	pcf
Submerged unit weight of soil =	37.6	pcf
Concrete strength =	3000	psi
Reinforcing strength =	60000	psi

Information to be provided:

C = Compression force to be resisted	C =	241.5	kips
T = Uplift force to be resisted	T =	198.1	kips
q = Allowable bearing capacity	q =	3.00	ksf
H = Height from ground surface to bottom of footing	H =	7.1	feet
w = depth from ground surface to water table	w =	7.1	feet
y = Height of footing	y =	2.0	feet
x = Width of footing	x =	10.00	feet
d =Diameter of pier	d =	2.50	feet
S.F. = Safety factor	S.F. =	1.1	

Input satisfactory

OUTPUT:

Depth of footing =	d =	20	in.	
Factored Live & Dead Loads=		276.73	kips	
Total Uplift Resistance =		111.10	kips	
Uplift Factor of Safety =		0.56		FOUNDATION UNDERSIZED
Net Bearing Pressure=		2.77	ksf	SATISFACTORY
Concrete Quantity =		**8.3**	**c.y. per foundation**	
Tension Reinf. Req'd =		**5.50**	**in^2**	

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Client:	Centerline Communications	Site:	CT5178
Job:	Newtown, CT	Job No.:	CT474260
Calculated By:	R. Adair	Date:	11/5/2018

FOOTING REINFORCEMENT DESIGN:

Shear Reinforcement - Two Way

Ultimate shear =	V_U =	263.14	kips	
	v_n =	77.40	psi	
	v_c =	219.09	psi	**No shear reinf. needed**

Shear Reinforcement - One Way

Ultimate shear =	V_U =	57.65	kips	
	v_n =	28.26	psi	
	v_c =	109.54	psi	**No shear reinf. needed**

Transfer of Load at Base of Column

Compressive design strength =	1261.74	kips	**No dowels needed**
Area of Dowels Req'd =	**None**	**Required**	

Calculate Required Footing Steel

Ultimate moment =	M_U =	195	ft-kips			
	R_U =	90	psi			
Reinforcement ratio =	p =	0.00153				
Area of Steel Req'd =	**A_S =**	**3.67**	**in^2**	**or**	**0.37**	**in^2/ft of width**

C/a =	306	kips/in.	
T =	220	kips	
a =	0.72	in.	
M_n =	324	ft-kips	**O.K.**

All-Points Technology Corp., P.C.
116 Grandview Road
Conway, NH 03860
(603) 496-5853

Client:	Centerline Communications		
Job:	Newtown, CT	Job No.:	CT474260
Calculated By:	R. Adair	Date:	11/5/2018

References: TIA-222-G, Structural Standards for Towers...
Wang & Salmon, Reinforced Concrete Design, Chapter 20

TOWER PIER/FOOTING DESIGN

Program assumes:

Water table is below bottom of ballast

Unit weight of concrete =	150	pcf
Unit weight of soil =	100	pcf
Uplift force to be resisted * F.S.	217.91	kips

Information to be provided:

T_{PROV} = Uplift resistance provided by exist. foundation	T_{PROV} =	111.1	kips
B_{AG} = Ballast depth above grade	B_{AG} =	0	feet
B_{BG} = Ballast depth below grade	B_{BG} =	6	feet
Area of added concrete ballast	B_{Add} =	121.8	sf

OUTPUT:

Additional Uplift Required =	106.8	kips	
Option 1: Square pad at each pier =	18.9	feet square	
Option 2: Triangular pad over all piers =	49.7	feet per side	
Net Bearing Pressure (free ballast) =	3.53	ksf	Must pin ballast to piers
Net Bearing Pressure (pinned ballast) =	1.79	ksf	O.K.
Concrete quantity (total)=	237.4	c.y.	

August 23, 2018

CENTERLINE COMMUNICATIONS at&t

Centerline Communications
95 Ryan Drive
Raynham, MA 02767

RE:		
	Site Number:	CT5178 (LTE 2C/3C)
	FA Number:	10071074
	PACE Number:	MRCTB030809
	PT Number:	2051A0GJD7
	Site Name:	Hawleyville (CT5178)
	Site Address:	20 Barnabas Road Newtown, CT 06470

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 mounts to determine their capability of supporting the following additional loading:

- (3) 800-10121 Antennas (54.5"x10.3"x5.9"– Wt. = 45 lbs. /each)
- (3) P65-16-XLH-RR Antennas (72.0"x12.0"x6.0"– Wt. = 50 lbs. /each)
- (3) RRUS-11 RRH's (19.7"x17.0"x7.2" – Wt. = 51 lbs. /each)
- (6) LGP21401 TMA's (14.4"x9.0"x2.7" – Wt. = 19 lbs. /each)
- (1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each)
- **(3) 800-10965 Antennas (78.7"x20.0"x6.9"– Wt. = 109 lbs. /each)**
- **(3) 4415 B25 RRH's (15.0"x13.2"x5.4" – Wt. = 44 lbs. /each)**
- **(3) 4426 B66 RRH's (15.0"x13.2"x7.4" – Wt. = 49 lbs. /each)**
- **(1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each)**

**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 August 15, 2018.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-G, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2012 with 2005 Connecticut Supplement with 2016 Amendments, and AT&T Mount Technical Directive – R9.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-G Annex B, the max basic wind speed for this site is equal to 110 mph with a max basic wind speed with ice of 50 mph. Per the AT&T Mount Technical Directive and Appendix N of the Connecticut State Building Code, an ultimate wind speed of 125 mph converted to a nominal wind speed of 97 mph was used for this analysis.

- HDG considers this site to be exposure category C; tower is located near large, flat, open, terrain/grasslands.
- 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 3.
- 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 mounts **ARE NOT CAPABLE** of supporting the proposed installation. HDG recommends the following modifications:

- **Install new mount, SitePro1 P/N VFA12-H10-2120 (or approved equal) (typ. of 1 per sector, total of 3).**
- **Install new 2" std. (2.38" O.D.) steel diagonal pipe braces secured to proposed standoff (typ. of 2 per sector, total of 6).**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing 2C/3C Mount Rating	1	LC1	372%	**FAIL**
Proposed 2C/3C Mount Rating	51	LC20	51%	**PASS**

Reference Documents:

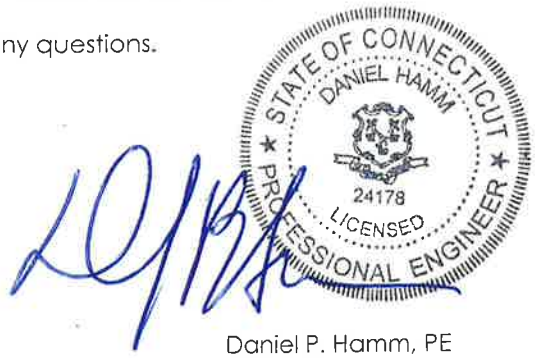
- Mount mapping report prepared by ProVertic LLC.

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 proposed 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:

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

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

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 8/23/2018
Project Name: Hawleyville
Project Number: CT5178
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=	135 (ft)
	z_g=	900 (ft)
K_z= 1.348	α=	9.5

$Kzmin \le Kz \le 2.01$

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}= 1.072506551

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

Category= **3**

K_h=	14.88	
K_e=	1	(from Table 2-4)
K_t=	0.53	(from Table 2-5)
f=	2	(from Table 2-5)
z=	135	
H=	100	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.07	
K_{iz} =	1.15	(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} = 1.77 in

Date: 8/23/2018
Project Name: Hawleyville
Project Number: CT5178
Designed By: JP Checked By: MSC

HUDSON Design Group LLC

2.6.7 Gust Effect Factor

2.6.7.1 Self Supporting Lattice Structures

Gh = 1.0 Latticed Structures > 600 ft

Gh = 0.85 Latticed Structures 450 ft or less

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

h=	180	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} = 125 mph

Nomial Design Wind Speed, $V_{asd} = V_{ult}\sqrt{(0.6)}$ V_{asd} = 97 mph

V_{asd} per the AT&T Mount Technical Directive and Connecticut State Building Code, Latest Edition.

Per TIA-222-G, V_{min} = 90 mph V_{max} = 110 mph

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

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

		K_z=	1.348
		K_{zt}=	1.1
q_z=	32.97	K_d=	0.95
$q_{z\,(ice)}$=	8.79	V_{asd}=	97 mph
$q_{z\,(30)}$=	3.16	$V_{max\,(ice)}$=	50 mph
		V_{30}=	30 mph
		I=	1.0

Table 2-2

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

Date: 8/23/2018
Project Name: Hawleyville
Project Number: CT5178
Designed By: JP Checked By: MSC

HUDSON Design Group LLC

Determine Ca:

Table 2-8

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

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

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

Ice Thickness = 1.77 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)
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	6.00	1.36	268	97	26
800-10965 Antenna	78.7	20.0	6.9	10.93	3.94	1.26	455	149	44
800-10121 Antenna	54.5	10.3	5.9	3.90	5.29	1.32	170	65	16
4415 B25 RRH	15.0	13.2	5.4	1.38	1.14	1.20	54	23	5
4478 B5 RRH	18.1	13.4	8.3	1.68	1.35	1.20	67	27	6
RRUS-11 RRH	19.7	17.0	7.2	2.33	1.16	1.20	92	35	9
LGP21401 TMA	14.4	9.0	2.7	0.90	1.60	1.20	36	16	3
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	37	16	4
1-1/4" Pipe	1.7	12.0		0.14	0.14	1.20	5	6	1
2" Pipe	2.4	12.0		0.20	0.20	1.20	8	7	1
2-1/2" Pipe	2.9	12.0		0.24	0.24	1.20	9	7	1
4" Pipe	4.5	12.0		0.38	0.38	1.20	15	9	1

Date: 8/23/2018
Project Name: Hawleyville
Project Number: CT5178
Designed By: JP Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 30 (deg) | Ice Thickness = 1.77 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)
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	268	155	240
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	455	192	390
800-10121 Antenna	54.5	10.3	5.9	3.90	2.23	5.29	9.24	1.32	1.47	170	109	155
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	54	22	46
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	67	41	60
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	92	39	79
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	36	12	30
WIND LOADS WITH ICE:												
P65-16-XLH-RR Antenna	75.5	15.5	9.5	8.15	5.00	4.86	7.92	1.30	1.43	94	63	86
800-10965 Antenna	82.2	23.5	10.4	13.44	5.96	3.49	7.88	1.24	1.43	147	75	129
800-10121 Antenna	58.0	13.8	9.4	5.58	3.80	4.19	6.15	1.28	1.36	63	46	58
4415 B25 RRH	18.5	16.7	8.9	2.16	1.15	1.11	2.07	1.20	1.20	23	12	20
4478 B5 RRH	21.6	16.9	11.8	2.55	1.78	1.28	1.83	1.20	1.20	27	19	25
RRUS-11 RRH	23.2	20.5	10.7	3.31	1.73	1.13	2.16	1.20	1.20	35	18	31
LGP21401 TMA	17.9	12.5	6.2	1.56	0.78	1.43	2.88	1.20	1.22	16	8	14
WIND LOADS AT 30 MPH:												
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	26	15	23
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	44	18	37
800-10121 Antenna	54.5	10.3	5.9	3.90	2.23	5.29	9.24	1.32	1.47	16	10	15
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	5	2	4
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	6
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	9	4	8
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	3	1	3

Date: 8/23/2018
Project Name: Hawleyville
Project Number: CT5178
Designed By: JP Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.77	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)
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	268	155	183
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	455	192	258
800-10121 Antenna	54.5	10.3	5.9	3.90	2.23	5.29	9.24	1.32	1.47	170	109	124
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	54	22	30
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	67	41	48
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	92	39	52
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	36	12	18

WIND LOADS WITH ICE:

P65-16-XLH-RR Antenna	75.5	15.5	9.5	8.15	5.00	4.86	7.92	1.30	1.43	94	63	71
800-10965 Antenna	82.2	23.5	10.4	13.44	5.96	3.49	7.88	1.24	1.43	147	75	93
800-10121 Antenna	58.0	13.8	9.4	5.58	3.80	4.19	6.15	1.28	1.36	63	46	50
4415 B25 RRH	18.5	16.7	8.9	2.16	1.15	1.11	2.07	1.20	1.20	23	12	15
4478 B5 RRH	21.6	16.9	11.8	2.55	1.78	1.28	1.83	1.20	1.20	27	19	21
RRUS-11 RRH	23.2	20.5	10.7	3.31	1.73	1.13	2.16	1.20	1.20	35	18	22
LGP21401 TMA	17.9	12.5	6.2	1.56	0.78	1.43	2.88	1.20	1.22	16	8	10

WIND LOADS AT 30 MPH:

P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	26	15	18
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	44	18	25
800-10121 Antenna	54.5	10.3	5.9	3.90	2.23	5.29	9.24	1.32	1.47	16	10	12
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	5	2	3
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	5
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	9	4	5
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	3	1	2

Date: 8/23/2018
Project Name: Hawleyville
Project Number: CT5178
Designed By: JP Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.77	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)
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	268	155	155
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	455	192	192
800-10121 Antenna	54.5	10.3	5.9	3.90	2.23	5.29	9.24	1.32	1.47	170	109	109
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	54	22	22
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	67	41	41
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	92	39	39
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	36	12	12
WIND LOADS WITH ICE:												
P65-16-XLH-RR Antenna	75.5	15.5	9.5	8.15	5.00	4.86	7.92	1.30	1.43	94	63	63
800-10965 Antenna	82.2	23.5	10.4	13.44	5.96	3.49	7.88	1.24	1.43	147	75	75
800-10121 Antenna	58.0	13.8	9.4	5.58	3.80	4.19	6.15	1.28	1.36	63	46	46
4415 B25 RRH	18.5	16.7	8.9	2.16	1.15	1.11	2.07	1.20	1.20	23	12	12
4478 B5 RRH	21.6	16.9	11.8	2.55	1.78	1.28	1.83	1.20	1.20	27	19	19
RRUS-11 RRH	23.2	20.5	10.7	3.31	1.73	1.13	2.16	1.20	1.20	35	18	18
LGP21401 TMA	17.9	12.5	6.2	1.56	0.78	1.43	2.88	1.20	1.22	16	8	8
WIND LOADS AT 30 MPH:												
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	26	15	15
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	44	18	18
800-10121 Antenna	54.5	10.3	5.9	3.90	2.23	5.29	9.24	1.32	1.47	16	10	10
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	5	2	2
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	4
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	9	4	4
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	3	1	1

Date: 8/23/2018
Project Name: Hawleyville
Project Number: CT5178
Designed By: JP Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 120 (deg) | Ice Thickness = 1.77 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)
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	268	155	183
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	455	192	258
800-10121 Antenna	54.5	10.3	5.9	3.90	2.23	5.29	9.24	1.32	1.47	170	109	124
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	54	22	30
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	67	41	48
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	92	39	52
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	36	12	18
WIND LOADS WITH ICE:												
P65-16-XLH-RR Antenna	75.5	15.5	9.5	8.15	5.00	4.86	7.92	1.30	1.43	94	63	71
800-10965 Antenna	82.2	23.5	10.4	13.44	5.96	3.49	7.88	1.24	1.43	147	75	93
800-10121 Antenna	58.0	13.8	9.4	5.58	3.80	4.19	6.15	1.28	1.36	63	46	50
4415 B25 RRH	18.5	16.7	8.9	2.16	1.15	1.11	2.07	1.20	1.20	23	12	15
4478 B5 RRH	21.6	16.9	11.8	2.55	1.78	1.28	1.83	1.20	1.20	27	19	21
RRUS-11 RRH	23.2	20.5	10.7	3.31	1.73	1.13	2.16	1.20	1.20	35	18	22
LGP21401 TMA	17.9	12.5	6.2	1.56	0.78	1.43	2.88	1.20	1.22	16	8	10
WIND LOADS AT 30 MPH:												
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	26	15	18
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	44	18	25
800-10121 Antenna	54.5	10.3	5.9	3.90	2.23	5.29	9.24	1.32	1.47	16	10	12
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	5	2	3
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	5
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	9	4	5
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	3	1	2

Date: 8/23/2018
Project Name: Hawleyville
Project Number: CT5178
Designed By: JP Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.77	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)
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	268	155	240
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	455	192	390
800-10121 Antenna	54.5	10.3	5.9	3.90	2.23	5.29	9.24	1.32	1.47	170	109	155
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	54	22	46
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	67	41	60
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	92	39	79
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	36	12	30

WIND LOADS WITH ICE:

P65-16-XLH-RR Antenna	75.5	15.5	9.5	8.15	5.00	4.86	7.92	1.30	1.43	94	63	86
800-10965 Antenna	82.2	23.5	10.4	13.44	5.96	3.49	7.88	1.24	1.43	147	75	129
800-10121 Antenna	58.0	13.8	9.4	5.58	3.80	4.19	6.15	1.28	1.36	63	46	58
4415 B25 RRH	18.5	16.7	8.9	2.16	1.15	1.11	2.07	1.20	1.20	23	12	20
4478 B5 RRH	21.6	16.9	11.8	2.55	1.78	1.28	1.83	1.20	1.20	27	19	25
RRUS-11 RRH	23.2	20.5	10.7	3.31	1.73	1.13	2.16	1.20	1.20	35	18	31
LGP21401 TMA	17.9	12.5	6.2	1.56	0.78	1.43	2.88	1.20	1.22	16	8	14

WIND LOADS AT 30 MPH:

P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	26	15	23
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	44	18	37
800-10121 Antenna	54.5	10.3	5.9	3.90	2.23	5.29	9.24	1.32	1.47	16	10	15
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	5	2	4
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	6
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	9	4	8
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	3	1	3

Date: 8/23/2018
Project Name: Hawleyville
Project Number: CT5178
Designed By: JP **Checked By**: MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.77 in.
Density of ice: 56 pcf

P65-16-XLH-RR Antenna

Weight of ice based on total radial SF area:

Height (in):	72.0	
Width (in):	12.0	
Depth (in):	6.0	
Total weight of ice on object:		197 lbs
Weight of object:	50 lbs	
Combined weight of ice and object:		247 lbs

800-10965 Antenna

Weight of ice based on total radial SF area:

Height (in):	78.7	
Width (in):	20.0	
Depth (in):	6.9	
Total weight of ice on object:		325 lbs
Weight of object:	109 lbs	
Combined weight of ice and object:		434 lbs

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:		134 lbs
Weight of object:	45 lbs	
Combined weight of ice and object:		179 lbs

4415 B25 RRH

Weight of ice based on total radial SF area:

Height (in):	15.0	
Width (in):	13.2	
Depth (in):	5.4	
Total weight of ice on object:		43 lbs
Weight of object:	44 lbs	
Combined weight of ice and object:		87 lbs

4478 B5 RRH

Weight of ice based on total radial SF area:

Height (in):	18.1	
Width (in):	13.4	
Depth (in):	8.3	
Total weight of ice on object:		57 lbs
Weight of object:	44 lbs	
Combined weight of ice and object:		101 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:		72 lbs
Weight of object:	51 lbs	
Combined weight of ice and object:		123 lbs

LGP21401 TMA

Weight of ice based on total radial SF area:

Height (in):	14.4	
Width (in):	9.0	
Depth (in):	2.7	
Total weight of ice on object:		29 lbs
Weight of object:	19 lbs	
Combined weight of ice and object:		48 lbs

4478 B5 RRH

Weight of ice based on total radial SF area:

Height (in):	18.1	
Width (in):	13.4	
Depth (in):	8.3	
Total weight of ice on object:		57 lbs
Weight of object:	60 lbs	
Combined weight of ice and object:		117 lbs

Date: 8/23/2018
Project Name: Hawleyville
Project Number: CT5178
Designed By: JP **Checked By**: MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.77 in.
Density of ice: 56 pcf

LGP21401 TMA

Weight of ice based on total radial SF area:

Height (in):	14.4	
Width (in):	9.0	
Depth (in):	2.7	
Total weight of ice on object:		29 lbs
Weight of object:	19 lbs	
Combined weight of ice and object:		48 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:		50 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		83 lbs

1-1/4" Pipe

Per foot weight of ice:

diameter (in):	1.66	
Per foot weight of ice on object:		7 plf

2" pipe

Per foot weight of ice:

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

2-1/2" pipe

Per foot weight of ice:

diameter (in):	2.88	
Per foot weight of ice on object:		10 plf

4" Pipe

Per foot weight of ice:

diameter (in):	4.5	
Per foot weight of ice on object:		14 plf

5/8" Round Bar

Per foot weight of ice:

diameter (in):	0.625	
Per foot weight of ice on object:		5 plf

3/4" Round Bar

Per foot weight of ice:

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

1" Round Bar

Per foot weight of ice:

diameter (in):	1	
Per foot weight of ice on object:		6 plf

1-1/4" Round Bar

Per foot weight of ice:

diameter (in):	1.25	
Per foot weight of ice on object:		7 plf

HUDSON
Design Group LLC

2C/3C Mount Calculations
(Existing Conditions)

Bentley

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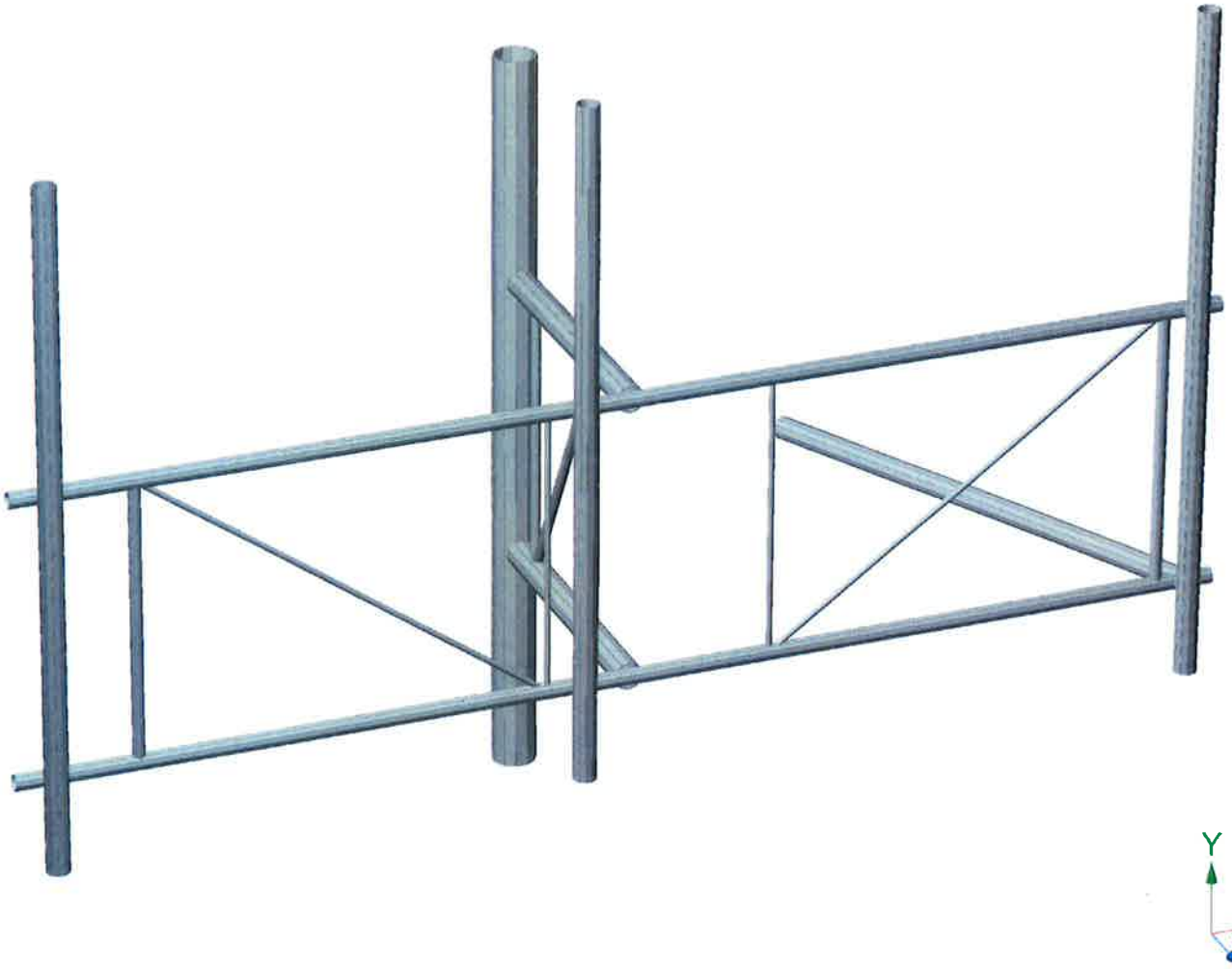

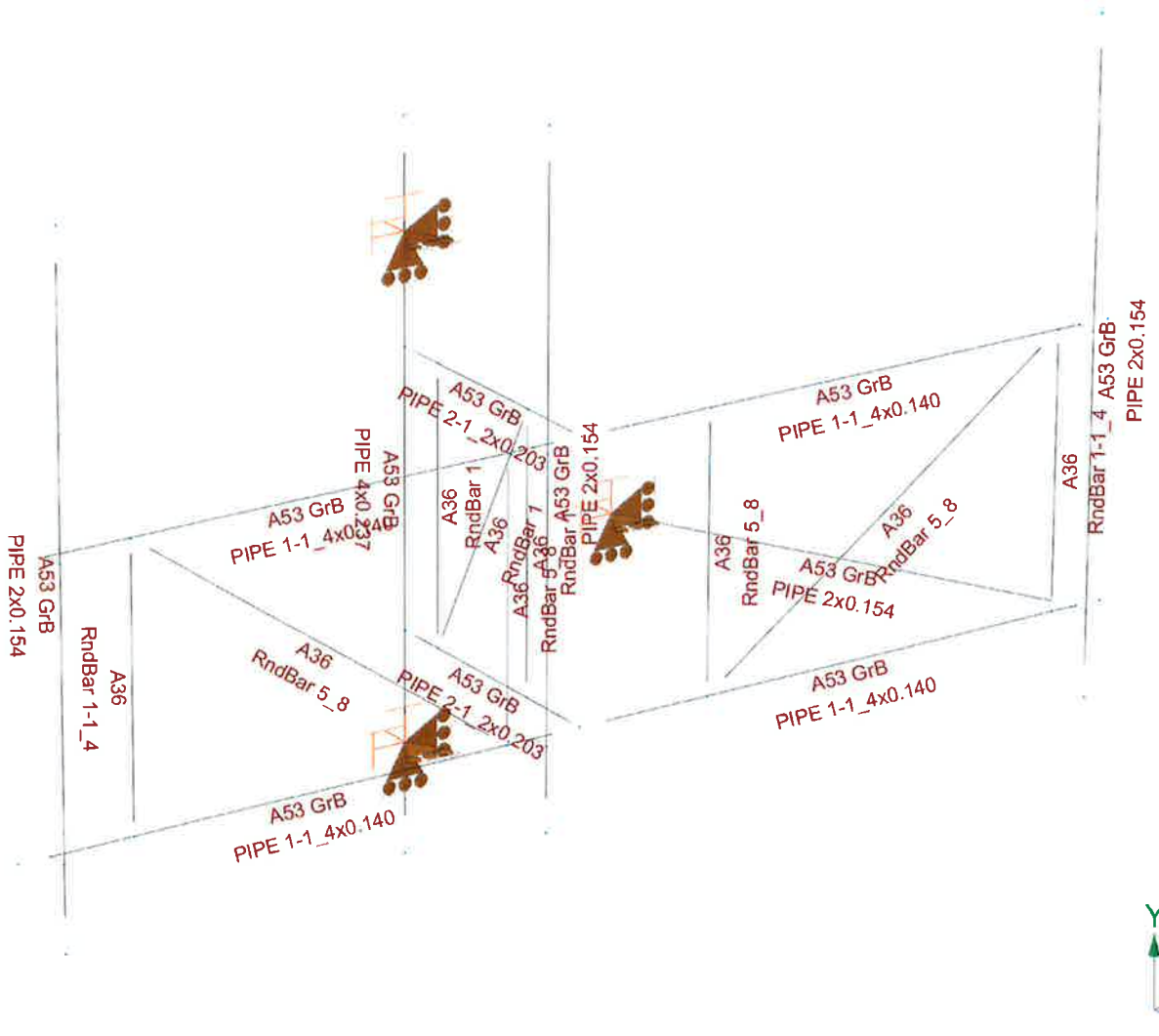
A53 GrB
PIPE 2x0.154
A36
RndBar 1-1_4
A53 GrB
PIPE 1-1_4x0.140
A53 GrB
PIPE 2-1_2x0.203
A36
RndBar 5_8
A53 GrB
PIPE 4x0.237
A36
RndBar 1
A53 GrB
PIPE 2x0.154
A36
RndBar 5_8
A53 GrB
PIPE 2x0.154
A36
RndBar 5_8
A53 GrB
PIPE 1-1_4x0.140
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RndBar 1-1_4
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PIPE 2x0.154
A53 GrB
PIPE 2-1_2x0.203
A36
RndBar 5_8
A53 GrB
PIPE 1-1_4x0.140
Y
X
Z

Bentley

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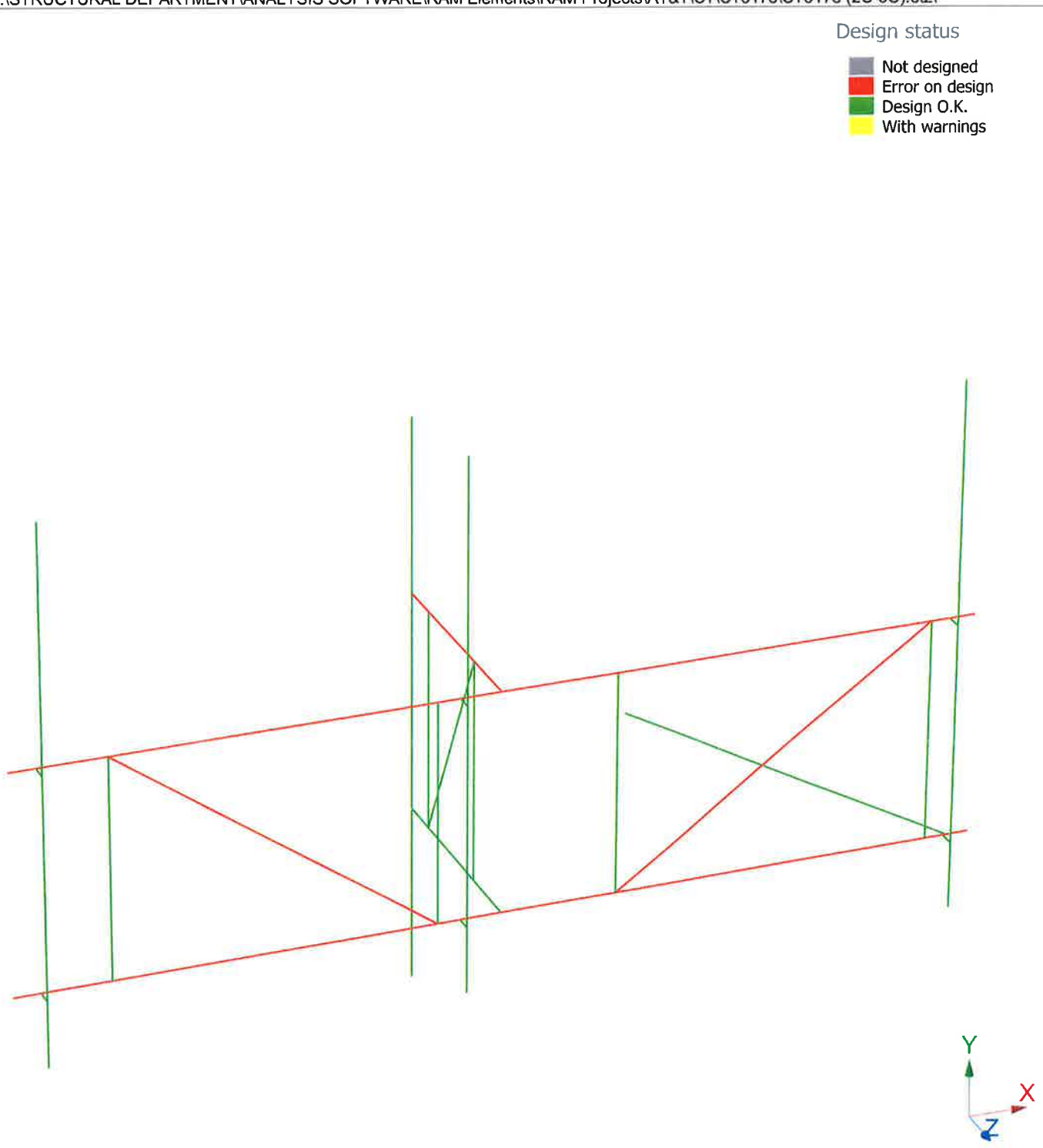

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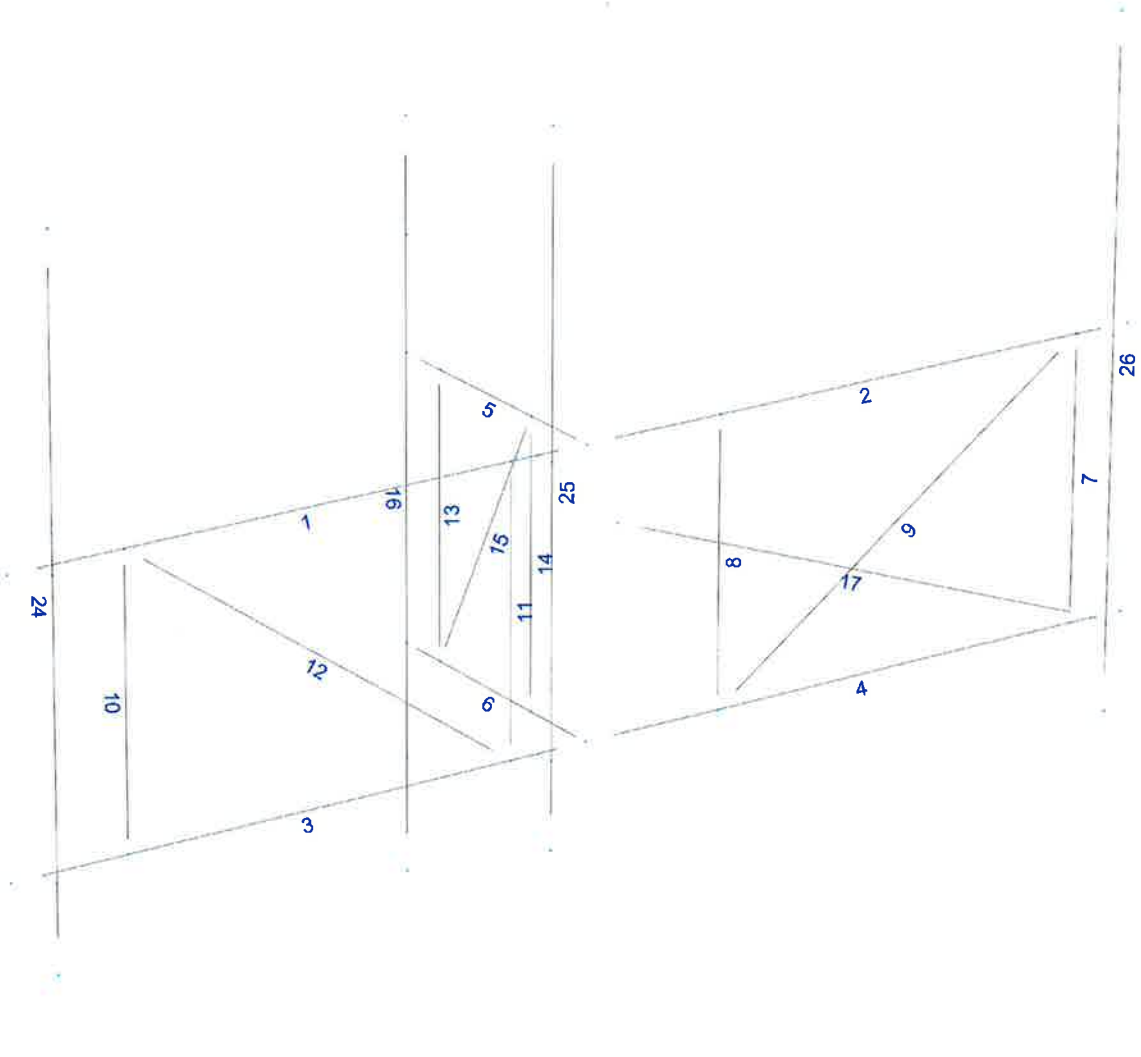

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Load data

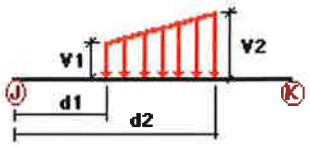
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND
LL1	250 lb Live Load on Left End	No	LL
LL2	250 lb Live Load on Center	No	LL
LL3	250 lb Live Load on Right End	No	LL
LLa1	250 lb Live Load on Antenna 1	No	LL
LLa2	250 lb Live Load on Antenna 2	No	LL
LLa3	250 lb Live Load on Antenna 3	No	LL
LLa4	250 lb Live Load on Antenna 4	No	LL
W180	-Wo	Yes	
W210	-W30	Yes	
W240	-W60	Yes	
W270	-W90	Yes	
W300	-W120	Yes	
W330	-W150	Yes	
WI180	-WI0	Yes	
WI210	-WI30	Yes	
WI240	-WI60	Yes	
WI270	-WI90	Yes	
WI300	-WI120	Yes	
WI330	-WI150	Yes	
WL180	-WL0	Yes	
WL210	-WL30	Yes	
WL240	-WL60	Yes	
WL270	-WL90	Yes	
WL300	-WL120	Yes	
WL330	-WL150	Yes	

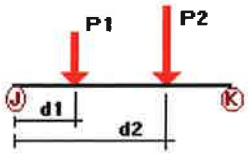
Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	1	Z	-0.005	-0.005	0.00	Yes	100.00	Yes
	2	Z	-0.005	-0.005	0.00	Yes	100.00	Yes
	3	Z	-0.005	-0.005	0.00	Yes	100.00	Yes
	4	Z	-0.005	-0.005	0.00	Yes	100.00	Yes
	24	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	25	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	26	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
W30	1	Z	-0.005	-0.005	0.00	Yes	100.00	Yes
	2	Z	-0.005	-0.005	0.00	Yes	100.00	Yes
	3	Z	-0.005	-0.005	0.00	Yes	100.00	Yes
	4	Z	-0.005	-0.005	0.00	Yes	100.00	Yes
	24	2	-0.008	-0.008	0.00	Yes	100.00	Yes
	25	2	-0.008	-0.008	0.00	Yes	100.00	Yes
	26	2	-0.008	-0.008	0.00	Yes	100.00	Yes
W60	1	Z	-0.005	-0.005	0.00	Yes	100.00	Yes
	2	Z	-0.005	-0.005	0.00	Yes	100.00	Yes
	3	Z	-0.005	-0.005	0.00	Yes	100.00	Yes
	4	Z	-0.005	-0.005	0.00	Yes	100.00	Yes
	24	2	-0.008	-0.008	0.00	Yes	100.00	Yes
	25	2	-0.008	-0.008	0.00	Yes	100.00	Yes
	26	2	-0.008	-0.008	0.00	Yes	100.00	Yes
W90	5	X	-0.009	-0.009	0.00	Yes	100.00	Yes
	6	X	-0.009	-0.009	0.00	Yes	100.00	Yes
	16	X	-0.015	-0.015	0.00	Yes	100.00	Yes
	17	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	24	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	25	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	26	X	-0.008	-0.008	0.00	Yes	100.00	Yes
W120	1	Z	0.005	0.005	0.00	Yes	100.00	Yes
	2	Z	0.005	0.005	0.00	Yes	100.00	Yes
	3	Z	0.005	0.005	0.00	Yes	100.00	Yes
	4	Z	0.005	0.005	0.00	Yes	100.00	Yes
	24	3	0.008	0.008	0.00	Yes	100.00	Yes
	25	3	0.008	0.008	0.00	Yes	100.00	Yes
	26	3	0.008	0.008	0.00	Yes	100.00	Yes
W150	1	Z	0.005	0.005	0.00	Yes	100.00	Yes
	2	Z	0.005	0.005	0.00	Yes	100.00	Yes
	3	Z	0.005	0.005	0.00	Yes	100.00	Yes
	4	Z	0.005	0.005	0.00	Yes	100.00	Yes
	24	3	0.008	0.008	0.00	Yes	100.00	Yes
	25	3	0.008	0.008	0.00	Yes	100.00	Yes
	26	3	0.008	0.008	0.00	Yes	100.00	Yes
Di	1	Y	-0.007	-0.007	0.00	Yes	100.00	Yes
	2	Y	-0.007	-0.007	0.00	Yes	100.00	Yes
	3	Y	-0.007	-0.007	0.00	Yes	100.00	Yes

4	Y	-0.007	-0.007	0.00	Yes	100.00	Yes
5	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
6	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
7	Y	-0.007	-0.007	0.00	Yes	100.00	Yes
8	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
9	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
10	Y	-0.007	-0.007	0.00	Yes	100.00	Yes
11	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
12	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
13	Y	-0.006	-0.006	0.00	Yes	100.00	Yes
14	Y	-0.006	-0.006	0.00	Yes	100.00	Yes
15	Y	-0.006	-0.006	0.00	Yes	100.00	Yes
16	Y	-0.014	-0.014	0.00	Yes	100.00	Yes
17	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
24	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
25	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
26	Y	-0.009	-0.009	0.00	Yes	100.00	Yes

Concentrated forces on members



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D	16	y	-0.051	2.00	No
		y	-0.033	4.00	No
	24	y	-0.025	1.00	No
		y	-0.025	5.00	No
	25	y	-0.055	1.00	No
		y	-0.055	5.00	No
		y	-0.044	2.00	No
		y	-0.06	4.00	No
	26	y	-0.023	1.00	No
		y	-0.023	5.00	No
		y	-0.038	3.00	No
Wo	16	z	-0.092	2.00	No
		z	-0.037	4.00	No
	24	z	-0.135	1.00	No
		z	-0.135	5.00	No
	25	z	-0.228	1.00	No
		z	-0.228	5.00	No
	26	z	-0.086	1.00	No
		z	-0.086	5.00	No
W30	16	2	-0.079	2.00	No
		2	-0.037	4.00	No
	24	2	-0.12	1.00	No
		2	-0.12	5.00	No
	25	2	-0.195	1.00	No
		2	-0.195	5.00	No
		2	-0.046	2.00	No
		2	-0.06	4.00	No
	26	2	-0.078	1.00	No

		2	-0.078	5.00	No
		2	-0.03	3.00	No
W60	16	2	-0.052	2.00	No
		2	-0.037	4.00	No
	24	2	-0.092	1.00	No
		2	-0.092	5.00	No
	25	2	-0.13	1.00	No
		2	-0.13	5.00	No
		2	-0.03	2.00	No
		2	-0.048	4.00	No
	26	2	-0.062	1.00	No
		2	-0.062	5.00	No
		2	-0.018	3.00	No
W90	16	x	-0.039	2.00	No
		x	-0.037	4.00	No
	24	x	-0.078	1.00	No
		x	-0.078	5.00	No
	25	x	-0.097	1.00	No
		x	-0.097	5.00	No
		x	-0.022	2.00	No
		x	-0.041	4.00	No
	26	x	-0.055	1.00	No
		x	-0.055	5.00	No
		x	-0.012	3.00	No
W120	16	3	0.052	2.00	No
		3	0.037	4.00	No
	24	3	0.092	1.00	No
		3	0.092	5.00	No
	25	3	0.13	1.00	No
		3	0.13	5.00	No
		3	0.03	2.00	No
		3	0.048	4.00	No
	26	3	0.062	1.00	No
		3	0.062	5.00	No
		3	0.018	3.00	No
W150	16	3	0.079	2.00	No
		3	0.037	4.00	No
	24	3	0.12	1.00	No
		3	0.12	5.00	No
	25	3	0.195	1.00	No
		3	0.195	5.00	No
		3	0.046	2.00	No
		3	0.06	4.00	No
	26	3	0.078	1.00	No
		3	0.078	5.00	No
		3	0.03	3.00	No
Di	16	y	-0.072	2.00	No
		y	-0.05	4.00	No
	24	y	-0.099	1.00	No
		y	-0.099	5.00	No
	25	y	-0.163	1.00	No
		y	-0.163	5.00	No
		y	-0.043	2.00	No
		y	-0.057	4.00	No
	26	y	-0.067	1.00	No
		y	-0.067	5.00	No
		y	-0.058	3.00	No
WI0	16	z	-0.035	2.00	No
		z	-0.016	4.00	No
	24	z	-0.049	1.00	No

		z	-0.049	5.00	No
	25	z	-0.075	1.00	No
		z	-0.075	5.00	No
	26	z	-0.033	1.00	No
		z	-0.033	5.00	No
WI30	16	2	-0.031	2.00	No
		2	-0.016	4.00	No
	24	2	-0.043	1.00	No
		2	-0.043	5.00	No
	25	2	-0.065	1.00	No
		2	-0.065	5.00	No
		2	-0.02	2.00	No
		2	-0.025	4.00	No
	26	2	-0.03	1.00	No
		2	-0.03	5.00	No
		2	-0.014	3.00	No
WI60	16	2	-0.022	2.00	No
		2	-0.016	4.00	No
	24	2	-0.036	1.00	No
		2	-0.036	5.00	No
	25	2	-0.047	1.00	No
		2	-0.047	5.00	No
		2	-0.015	2.00	No
		2	-0.021	4.00	No
	26	2	-0.025	1.00	No
		2	-0.025	5.00	No
		2	-0.01	3.00	No
WI90	16	x	-0.018	2.00	No
		x	-0.016	4.00	No
	24	x	-0.032	1.00	No
		x	-0.032	5.00	No
	25	x	-0.038	1.00	No
		x	-0.038	5.00	No
		x	-0.012	2.00	No
		x	-0.019	4.00	No
	26	x	-0.023	1.00	No
		x	-0.023	5.00	No
		x	-0.008	3.00	No
WI120	16	3	0.022	2.00	No
		3	0.016	4.00	No
	24	3	0.036	1.00	No
		3	0.036	5.00	No
	25	3	0.047	1.00	No
		3	0.047	5.00	No
		3	0.015	2.00	No
		3	0.021	4.00	No
	26	3	0.025	1.00	No
		3	0.025	5.00	No
		3	0.01	3.00	No
WI150	16	3	0.031	2.00	No
		3	0.016	4.00	No
	24	3	0.043	1.00	No
		3	0.043	5.00	No
	25	3	0.065	1.00	No
		3	0.065	5.00	No
		3	0.02	2.00	No
		3	0.025	4.00	No
	26	3	0.03	1.00	No
		3	0.03	5.00	No
		3	0.014	3.00	No

WL0	16	z	-0.009	2.00	No
		z	-0.004	4.00	No
	24	z	-0.013	1.00	No
		z	-0.013	5.00	No
	25	z	-0.022	1.00	No
		z	-0.022	5.00	No
	26	z	-0.009	1.00	No
		z	-0.009	5.00	No
WL30	16	2	-0.008	2.00	No
		2	-0.004	4.00	No
	24	2	-0.012	1.00	No
		2	-0.012	5.00	No
	25	2	-0.019	1.00	No
		2	-0.019	5.00	No
		2	-0.005	2.00	No
		2	-0.006	4.00	No
	26	2	-0.008	1.00	No
		2	-0.008	5.00	No
		2	-0.003	3.00	No
WL60	16	2	-0.006	2.00	No
		2	-0.004	4.00	No
	24	2	-0.009	1.00	No
		2	-0.009	5.00	No
	25	2	-0.013	1.00	No
		2	-0.013	5.00	No
		2	-0.003	2.00	No
		2	-0.005	4.00	No
	26	2	-0.006	1.00	No
		2	-0.006	5.00	No
		2	-0.002	3.00	No
WL90	16	x	-0.004	2.00	No
		x	-0.004	4.00	No
	24	x	-0.008	1.00	No
		x	-0.008	5.00	No
	25	x	-0.01	1.00	No
		x	-0.01	5.00	No
		x	-0.003	2.00	No
		x	-0.004	4.00	No
	26	x	-0.006	1.00	No
		x	-0.006	5.00	No
		x	-0.002	3.00	No
WL120	16	3	0.006	2.00	No
		3	0.004	4.00	No
	24	3	0.009	1.00	No
		3	0.009	5.00	No
	25	3	0.013	1.00	No
		3	0.013	5.00	No
		3	0.003	2.00	No
		3	0.005	4.00	No
	26	3	0.006	1.00	No
		3	0.006	5.00	No
		3	0.002	3.00	No
WL150	16	3	0.008	2.00	No
		3	0.004	4.00	No
	24	3	0.012	1.00	No
		3	0.012	5.00	No
	25	3	0.019	1.00	No
		3	0.019	5.00	No
		3	0.005	2.00	No
		3	0.006	4.00	No

	26	3	0.008	1.00	No
		3	0.008	5.00	No
		3	0.003	3.00	No
LL1	2	y	-0.25	5.25	No
LL2	2	y	-0.25	0.00	No
LL3	1	y	-0.25	0.00	No
LLa1	26	y	-0.25	3.00	No
LLa3	25	y	-0.25	3.00	No
LLa4	24	y	-0.25	3.00	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00
LL1	250 lb Live Load on Left End	No	0.00	0.00	0.00
LL2	250 lb Live Load on Center	No	0.00	0.00	0.00
LL3	250 lb Live Load on Right End	No	0.00	0.00	0.00
LLa1	250 lb Live Load on Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load on Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load on Antenna 3	No	0.00	0.00	0.00
LLa4	250 lb Live Load on Antenna 4	No	0.00	0.00	0.00
W180	-Wo	Yes	0.00	0.00	0.00
W210	-W30	Yes	0.00	0.00	0.00
W240	-W60	Yes	0.00	0.00	0.00
W270	-W90	Yes	0.00	0.00	0.00
W300	-W120	Yes	0.00	0.00	0.00
W330	-W150	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
WI240	-WI60	Yes	0.00	0.00	0.00
WI270	-WI90	Yes	0.00	0.00	0.00
WI300	-WI120	Yes	0.00	0.00	0.00
WI330	-WI150	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

WL240	-WL60	Yes	0.00	0.00	0.00
WL270	-WL90	Yes	0.00	0.00	0.00
WL300	-WL120	Yes	0.00	0.00	0.00
WL330	-WL150	Yes	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00
WI0	0.00	0.00	0.00
WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00
WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LL3	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00
W180	0.00	0.00	0.00
W210	0.00	0.00	0.00
W240	0.00	0.00	0.00
W270	0.00	0.00	0.00
W300	0.00	0.00	0.00
W330	0.00	0.00	0.00
WI180	0.00	0.00	0.00
WI210	0.00	0.00	0.00
WI240	0.00	0.00	0.00
WI270	0.00	0.00	0.00
WI300	0.00	0.00	0.00
WI330	0.00	0.00	0.00
WL180	0.00	0.00	0.00
WL210	0.00	0.00	0.00
WL240	0.00	0.00	0.00
WL270	0.00	0.00	0.00
WL300	0.00	0.00	0.00
WL330	0.00	0.00	0.00

Bentley

Current Date: 8/23/2018 1:42 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT5178\CT5178 (2C-3C).etz\

Steel Code Check

Report: Summary - For all selected load conditions

Load conditions to be included in design :

LC1=1.2D+1.6Wo
LC2=1.2D+1.6W30
LC3=1.2D+1.6W60
LC4=1.2D+1.6W90
LC5=1.2D+1.6W120
LC6=1.2D+1.6W150
LC7=1.2D-1.6Wo
LC8=1.2D-1.6W30
LC9=1.2D-1.6W60
LC10=1.2D-1.6W90
LC11=1.2D-1.6W120
LC12=1.2D-1.6W150
LC13=0.9D+1.6Wo
LC14=0.9D+1.6W30
LC15=0.9D+1.6W60
LC16=0.9D+1.6W90
LC17=0.9D+1.6W120
LC18=0.9D+1.6W150
LC19=0.9D-1.6Wo
LC20=0.9D-1.6W30
LC21=0.9D-1.6W60
LC22=0.9D-1.6W90
LC23=0.9D-1.6W120
LC24=0.9D-1.6W150
LC25=1.2D+Di+Wl0
LC26=1.2D+Di+Wl30
LC27=1.2D+Di+Wl60
LC28=1.2D+Di+Wl90
LC29=1.2D+Di+Wl120
LC30=1.2D+Di+Wl150
LC31=1.2D+Di-Wl0
LC32=1.2D+Di-Wl30
LC33=1.2D+Di-Wl60
LC34=1.2D+Di-Wl90
LC35=1.2D+Di-Wl120
LC36=1.2D+Di-Wl150
LC37=0.9D
LC38=1.2D+1.6LL1
LC39=1.2D+1.6LL2
LC40=1.2D+1.6LL3
LC41=1.2D+WL0+LLa1
LC42=1.2D+WL30+LLa1
LC43=1.2D+WL60+LLa1
LC44=1.2D+WL90+LLa1
LC45=1.2D+WL120+LLa1
LC46=1.2D+WL150+LLa1
LC47=1.2D-WL0+LLa1
LC48=1.2D-WL30+LLa1
LC49=1.2D-WL60+LLa1
LC50=1.2D-WL90+LLa1
LC51=1.2D-WL120+LLa1
LC52=1.2D-WL150+LLa1
LC53=1.2D+WL0+LLa2

LC54=1.2D+WL30+LLa2
LC55=1.2D+WL60+LLa2
LC56=1.2D+WL90+LLa2
LC57=1.2D+WL120+LLa2
LC58=1.2D+WL150+LLa2
LC59=1.2D-WL0+LLa2
LC60=1.2D-WL30+LLa2
LC61=1.2D-WL60+LLa2
LC62=1.2D-WL90+LLa2
LC63=1.2D-WL120+LLa2
LC64=1.2D-WL150+LLa2
LC65=1.2D+WL0+LLa3
LC66=1.2D+WL30+LLa3
LC67=1.2D+WL60+LLa3
LC68=1.2D+WL90+LLa3
LC69=1.2D+WL120+LLa3
LC70=1.2D+WL150+LLa3
LC71=1.2D-WL0+LLa3
LC72=1.2D-WL30+LLa3
LC73=1.2D-WL60+LLa3
LC74=1.2D-WL90+LLa3
LC75=1.2D-WL120+LLa3
LC76=1.2D-WL150+LLa3
LC77=1.2D+WL0+LLa4
LC78=1.2D+WL30+LLa4
LC79=1.2D+WL60+LLa4
LC80=1.2D+WL90+LLa4
LC81=1.2D+WL120+LLa4
LC82=1.2D+WL150+LLa4
LC83=1.2D-WL0+LLa4
LC84=1.2D-WL30+LLa4
LC85=1.2D-WL60+LLa4
LC86=1.2D-WL90+LLa4
LC87=1.2D-WL120+LLa4
LC88=1.2D-WL150+LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 1-1_4x0.140	1	LC1 at 100.00%	**3.72**	**N.G.**	Eq. H3-6
			LC10 at 92.50%	0.37	OK	
			LC11 at 100.00%	1.78	N.G.	
			LC12 at 100.00%	2.43	N.G.	
			LC13 at 100.00%	3.70	N.G.	
			LC14 at 100.00%	2.76	N.G.	
			LC15 at 100.00%	2.21	N.G.	
			LC16 at 100.00%	0.37	OK	
			LC17 at 100.00%	2.00	N.G.	
			LC18 at 100.00%	2.47	N.G.	
			LC19 at 100.00%	3.67	N.G.	
			LC2 at 100.00%	2.79	N.G.	
			LC20 at 100.00%	2.61	N.G.	
			LC21 at 100.00%	2.06	N.G.	
			LC22 at 92.50%	0.36	OK	
			LC23 at 100.00%	1.78	N.G.	
			LC24 at 100.00%	2.43	N.G.	
			LC25 at 100.00%	0.98	OK	
			LC26 at 100.00%	0.83	OK	
			LC27 at 100.00%	0.74	OK	
			LC28 at 100.00%	0.65	OK	
			LC29 at 100.00%	0.94	OK	
			LC3 at 100.00%	2.24	N.G.	
			LC30 at 100.00%	1.01	N.G.	
			LC31 at 100.00%	1.17	N.G.	
			LC32 at 100.00%	0.92	OK	
			LC33 at 100.00%	0.87	OK	

	LC34 at 100.00%	0.56	OK
	LC35 at 100.00%	0.64	OK
	LC36 at 100.00%	0.69	OK
	LC37 at 100.00%	0.12	OK
	LC38 at 92.50%	0.42	OK
	LC39 at 100.00%	0.12	OK
	LC4 at 100.00%	0.40	OK
	LC40 at 100.00%	0.82	OK
	LC41 at 92.50%	0.38	OK
	LC42 at 92.50%	0.33	OK
	LC43 at 92.50%	0.31	OK
	LC44 at 92.50%	0.26	OK
	LC45 at 92.50%	0.20	OK
	LC46 at 92.50%	0.18	OK
	LC47 at 92.50%	0.15	OK
	LC48 at 92.50%	0.20	OK
	LC49 at 92.50%	0.22	OK
	LC5 at 100.00%	2.04	N.G.
	LC50 at 92.50%	0.27	OK
	LC51 at 92.50%	0.33	OK
	LC52 at 92.50%	0.35	OK
	LC53 at 100.00%	0.28	OK
	LC54 at 100.00%	0.24	OK
	LC55 at 100.00%	0.21	OK
	LC56 at 100.00%	0.17	OK
	LC57 at 100.00%	0.24	OK
	LC58 at 100.00%	0.27	OK
	LC59 at 100.00%	0.31	OK
	LC6 at 100.00%	2.51	N.G.
	LC60 at 100.00%	0.25	OK
	LC61 at 100.00%	0.23	OK
	LC62 at 100.00%	0.15	OK
	LC63 at 100.00%	0.18	OK
	LC64 at 100.00%	0.20	OK
	LC65 at 100.00%	0.32	OK
	LC66 at 100.00%	0.28	OK
	LC67 at 100.00%	0.25	OK
	LC68 at 100.00%	0.25	OK
	LC69 at 100.00%	0.33	OK
	LC7 at 100.00%	3.67	N.G.
	LC70 at 100.00%	0.36	OK
	LC71 at 100.00%	0.39	OK
	LC72 at 100.00%	0.33	OK
	LC73 at 100.00%	0.31	OK
	LC74 at 100.00%	0.23	OK
	LC75 at 100.00%	0.22	OK
	LC76 at 100.00%	0.25	OK
	LC77 at 100.00%	0.42	OK
	LC78 at 100.00%	0.49	OK
	LC79 at 100.00%	0.51	OK
	LC8 at 100.00%	2.58	N.G.
	LC80 at 100.00%	0.59	OK
	LC81 at 100.00%	0.66	OK
	LC82 at 100.00%	0.69	OK
	LC83 at 100.00%	0.73	OK
	LC84 at 100.00%	0.66	OK
	LC85 at 100.00%	0.64	OK
	LC86 at 100.00%	0.56	OK
	LC87 at 100.00%	0.49	OK
	LC88 at 100.00%	0.46	OK
	LC9 at 100.00%	2.03	N.G.
2	LC1 at 0.00%	0.96	OK
	LC10 at 0.00%	0.55	OK

LC11 at 0.00%	0.25	OK
LC12 at 0.00%	0.24	OK
LC13 at 0.00%	0.93	OK
LC14 at 0.00%	1.17	N.G.
LC15 at 0.00%	0.94	OK
LC16 at 0.00%	0.52	OK
LC17 at 0.00%	0.49	OK
LC18 at 0.00%	0.53	OK
LC19 at 0.00%	1.20	N.G.
LC2 at 0.00%	1.20	N.G.
LC20 at 0.00%	1.30	N.G.
LC21 at 0.00%	1.08	N.G.
LC22 at 0.00%	0.50	OK
LC23 at 0.00%	0.22	OK
LC24 at 0.00%	0.25	OK
LC25 at 0.00%	0.56	OK
LC26 at 0.00%	0.61	OK
LC27 at 0.00%	0.57	OK
LC28 at 0.00%	0.51	OK
LC29 at 0.00%	0.61	OK
LC3 at 0.00%	0.97	OK
LC30 at 0.00%	0.62	OK
LC31 at 0.00%	0.74	OK
LC32 at 0.00%	0.77	OK
LC33 at 0.00%	0.73	OK
LC34 at 0.00%	0.64	OK
LC35 at 0.00%	0.52	OK
LC36 at 0.00%	0.51	OK
LC37 at 0.00%	0.15	OK
LC38 at 0.00%	0.75	OK
LC39 at 0.00%	0.17	OK
LC4 at 0.00%	0.55	OK
LC40 at 0.00%	0.41	OK
LC41 at 0.00%	0.52	OK
LC42 at 0.00%	0.51	OK
LC43 at 0.00%	0.52	OK
LC44 at 0.00%	0.55	OK
LC45 at 0.00%	0.58	OK
LC46 at 0.00%	0.58	OK
LC47 at 0.00%	0.61	OK
LC48 at 0.00%	0.62	OK
LC49 at 0.00%	0.60	OK
LC5 at 0.00%	0.54	OK
LC50 at 0.00%	0.58	OK
LC51 at 0.00%	0.55	OK
LC52 at 0.00%	0.55	OK
LC53 at 0.00%	0.16	OK
LC54 at 0.00%	0.17	OK
LC55 at 0.00%	0.16	OK
LC56 at 0.00%	0.18	OK
LC57 at 0.00%	0.21	OK
LC58 at 0.00%	0.21	OK
LC59 at 0.00%	0.25	OK
LC6 at 0.00%	0.58	OK
LC60 at 0.00%	0.25	OK
LC61 at 0.00%	0.24	OK
LC62 at 0.00%	0.22	OK
LC63 at 0.00%	0.19	OK
LC64 at 0.00%	0.18	OK
LC65 at 0.00%	0.17	OK
LC66 at 0.00%	0.18	OK
LC67 at 0.00%	0.17	OK
LC68 at 0.00%	0.18	OK
LC69 at 0.00%	0.21	OK

	LC7 at 0.00%	1.24	N.G.	
	LC70 at 0.00%	0.21	OK	
	LC71 at 0.00%	0.25	OK	
	LC72 at 0.00%	0.26	OK	
	LC73 at 0.00%	0.24	OK	
	LC74 at 0.00%	0.22	OK	
	LC75 at 0.00%	0.19	OK	
	LC76 at 0.00%	0.19	OK	
	LC77 at 0.00%	0.32	OK	
	LC78 at 0.00%	0.34	OK	
	LC79 at 0.00%	0.32	OK	
	LC8 at 0.00%	**1.35**	**N.G.**	Eq. H1-1b
	LC80 at 0.00%	0.31	OK	
	LC81 at 0.00%	0.28	OK	
	LC82 at 0.00%	0.28	OK	
	LC83 at 0.00%	0.25	OK	
	LC84 at 0.00%	0.23	OK	
	LC85 at 0.00%	0.25	OK	
	LC86 at 0.00%	0.26	OK	
	LC87 at 0.00%	0.29	OK	
	LC88 at 0.00%	0.29	OK	
	LC9 at 0.00%	1.13	N.G.	
3	LC1 at 100.00%	**2.84**	**N.G.**	Eq. H1-1b
	LC10 at 92.50%	0.45	OK	
	LC11 at 100.00%	1.30	N.G.	
	LC12 at 100.00%	1.51	N.G.	
	LC13 at 100.00%	2.79	N.G.	
	LC14 at 100.00%	2.44	N.G.	
	LC15 at 100.00%	1.99	N.G.	
	LC16 at 100.00%	0.54	OK	
	LC17 at 100.00%	1.38	N.G.	
	LC18 at 100.00%	1.65	N.G.	
	LC19 at 92.50%	2.65	N.G.	
	LC2 at 100.00%	2.48	N.G.	
	LC20 at 100.00%	2.25	N.G.	
	LC21 at 92.50%	1.82	N.G.	
	LC22 at 92.50%	0.44	OK	
	LC23 at 100.00%	1.26	N.G.	
	LC24 at 100.00%	1.53	N.G.	
	LC25 at 100.00%	1.09	N.G.	
	LC26 at 100.00%	1.02	N.G.	
	LC27 at 100.00%	0.95	OK	
	LC28 at 100.00%	0.71	OK	
	LC29 at 100.00%	0.59	OK	
	LC3 at 100.00%	2.03	N.G.	
	LC30 at 100.00%	0.63	OK	
	LC31 at 100.00%	0.81	OK	
	LC32 at 100.00%	0.67	OK	
	LC33 at 100.00%	0.62	OK	
	LC34 at 100.00%	0.53	OK	
	LC35 at 100.00%	0.80	OK	
	LC36 at 100.00%	0.83	OK	
	LC37 at 100.00%	0.11	OK	
	LC38 at 92.50%	0.42	OK	
	LC39 at 100.00%	0.20	OK	
	LC4 at 100.00%	0.58	OK	
	LC40 at 100.00%	0.85	OK	
	LC41 at 92.50%	0.14	OK	
	LC42 at 92.50%	0.16	OK	
	LC43 at 92.50%	0.19	OK	
	LC44 at 92.50%	0.24	OK	
	LC45 at 92.50%	0.31	OK	
	LC46 at 92.50%	0.32	OK	

	LC47 at 92.50%	0.39	OK	
	LC48 at 92.50%	0.37	OK	
	LC49 at 92.50%	0.34	OK	
	LC5 at 100.00%	1.41	N.G.	
	LC50 at 92.50%	0.29	OK	
	LC51 at 92.50%	0.22	OK	
	LC52 at 92.50%	0.21	OK	
	LC53 at 100.00%	0.29	OK	
	LC54 at 100.00%	0.27	OK	
	LC55 at 100.00%	0.24	OK	
	LC56 at 100.00%	0.17	OK	
	LC57 at 100.00%	0.17	OK	
	LC58 at 100.00%	0.19	OK	
	LC59 at 100.00%	0.23	OK	
	LC6 at 100.00%	1.68	N.G.	
	LC60 at 100.00%	0.20	OK	
	LC61 at 100.00%	0.18	OK	
	LC62 at 100.00%	0.13	OK	
	LC63 at 100.00%	0.21	OK	
	LC64 at 100.00%	0.22	OK	
	LC65 at 100.00%	0.37	OK	
	LC66 at 100.00%	0.35	OK	
	LC67 at 100.00%	0.32	OK	
	LC68 at 100.00%	0.27	OK	
	LC69 at 100.00%	0.21	OK	
	LC7 at 92.50%	2.67	N.G.	Eq. H1-1b
	LC70 at 100.00%	0.22	OK	
	LC71 at 100.00%	0.27	OK	
	LC72 at 100.00%	0.24	OK	
	LC73 at 100.00%	0.21	OK	
	LC74 at 100.00%	0.20	OK	
	LC75 at 100.00%	0.29	OK	
	LC76 at 100.00%	0.30	OK	
	LC77 at 100.00%	0.72	OK	
	LC78 at 100.00%	0.71	OK	
	LC79 at 100.00%	0.68	OK	
	LC8 at 92.50%	2.27	N.G.	
	LC80 at 100.00%	0.62	OK	
	LC81 at 100.00%	0.55	OK	
	LC82 at 100.00%	0.54	OK	
	LC83 at 100.00%	0.47	OK	
	LC84 at 100.00%	0.49	OK	
	LC85 at 100.00%	0.51	OK	
	LC86 at 100.00%	0.57	OK	
	LC87 at 100.00%	0.64	OK	
	LC88 at 100.00%	0.65	OK	
	LC9 at 92.50%	1.84	N.G.	
4	LC1 at 95.00%	1.25	N.G.	
	LC10 at 95.00%	0.42	OK	
	LC11 at 95.00%	0.95	OK	
	LC12 at 95.00%	1.38	N.G.	
	LC13 at 95.00%	1.26	N.G.	
	LC14 at 95.00%	0.82	OK	
	LC15 at 95.00%	0.65	OK	
	LC16 at 0.00%	0.45	OK	
	LC17 at 95.00%	0.98	OK	
	LC18 at 95.00%	1.42	N.G.	
	LC19 at 95.00%	1.31	N.G.	
	LC2 at 95.00%	0.82	OK	
	LC20 at 95.00%	0.83	OK	
	LC21 at 95.00%	0.66	OK	
	LC22 at 95.00%	0.42	OK	
	LC23 at 95.00%	0.95	OK	

LC24 at 95.00%	1.39	N.G.	
LC25 at 0.00%	0.57	OK	
LC26 at 0.00%	0.61	OK	
LC27 at 0.00%	0.60	OK	
LC28 at 0.00%	0.59	OK	
LC29 at 0.00%	0.54	OK	
LC3 at 95.00%	0.65	OK	
LC30 at 0.00%	0.54	OK	Eq. H1-1b
LC31 at 0.00%	0.59	OK	
LC32 at 0.00%	0.60	OK	
LC33 at 0.00%	0.58	OK	
LC34 at 0.00%	0.54	OK	
LC35 at 0.00%	0.49	OK	
LC36 at 0.00%	0.49	OK	
LC37 at 0.00%	0.12	OK	
LC38 at 0.00%	0.62	OK	
LC39 at 0.00%	0.19	OK	
LC4 at 0.00%	0.49	OK	
LC40 at 0.00%	0.37	OK	
LC41 at 0.00%	0.48	OK	
LC42 at 0.00%	0.49	OK	
LC43 at 0.00%	0.49	OK	
LC44 at 0.00%	0.48	OK	
LC45 at 0.00%	0.48	OK	
LC46 at 0.00%	0.48	OK	
LC47 at 0.00%	0.46	OK	
LC48 at 0.00%	0.44	OK	
LC49 at 0.00%	0.45	OK	
LC5 at 95.00%	0.98	OK	
LC50 at 0.00%	0.45	OK	
LC51 at 0.00%	0.46	OK	
LC52 at 0.00%	0.46	OK	
LC53 at 0.00%	0.17	OK	
LC54 at 0.00%	0.18	OK	
LC55 at 0.00%	0.18	OK	
LC56 at 0.00%	0.18	OK	
LC57 at 0.00%	0.17	OK	
LC58 at 0.00%	0.17	OK	
LC59 at 0.00%	0.17	OK	
LC6 at 95.00%	**1.42**	**N.G.**	Eq. H3-6
LC60 at 0.00%	0.17	OK	
LC61 at 0.00%	0.16	OK	
LC62 at 0.00%	0.16	OK	
LC63 at 0.00%	0.16	OK	
LC64 at 0.00%	0.16	OK	
LC65 at 0.00%	0.18	OK	
LC66 at 0.00%	0.19	OK	
LC67 at 0.00%	0.18	OK	
LC68 at 0.00%	0.18	OK	
LC69 at 0.00%	0.18	OK	
LC7 at 95.00%	1.31	N.G.	
LC70 at 0.00%	0.18	OK	
LC71 at 0.00%	0.18	OK	
LC72 at 0.00%	0.17	OK	
LC73 at 0.00%	0.17	OK	
LC74 at 0.00%	0.17	OK	
LC75 at 0.00%	0.17	OK	
LC76 at 0.00%	0.16	OK	
LC77 at 0.00%	0.25	OK	
LC78 at 0.00%	0.25	OK	
LC79 at 0.00%	0.25	OK	
LC8 at 95.00%	0.83	OK	
LC80 at 0.00%	0.26	OK	
LC81 at 0.00%	0.28	OK	

		LC82 at 0.00%	0.28	OK	
		LC83 at 0.00%	0.30	OK	
		LC84 at 0.00%	0.30	OK	
		LC85 at 0.00%	0.30	OK	
		LC86 at 0.00%	0.29	OK	
		LC87 at 0.00%	0.27	OK	
		LC88 at 0.00%	0.27	OK	
		LC9 at 95.00%	0.66	OK	
PIPE 2-1_2x0.203	**5**	LC1 at 100.00%	0.64	OK	Eq. H1-1b
		LC10 at 0.00%	0.77	OK	
		LC11 at 100.00%	0.40	OK	
		LC12 at 100.00%	0.51	OK	
		LC13 at 100.00%	0.64	OK	
		LC14 at 0.00%	1.11	N.G.	
		LC15 at 0.00%	0.85	OK	
		LC16 at 0.00%	0.75	OK	
		LC17 at 0.00%	0.39	OK	
		LC18 at 0.00%	0.53	OK	
		LC19 at 70.83%	0.65	OK	
		LC2 at 0.00%	1.10	N.G.	
		LC20 at 0.00%	1.21	N.G.	
		LC21 at 0.00%	0.94	OK	
		LC22 at 0.00%	0.75	OK	
		LC23 at 100.00%	0.40	OK	
		LC24 at 100.00%	0.51	OK	
		LC25 at 68.75%	0.36	OK	
		LC26 at 0.00%	0.39	OK	
		LC27 at 68.75%	0.35	OK	
		LC28 at 0.00%	0.33	OK	
		LC29 at 68.75%	0.31	OK	
		LC3 at 0.00%	0.85	OK	
		LC30 at 68.75%	0.31	OK	
		LC31 at 68.75%	0.38	OK	
		LC32 at 68.75%	0.38	OK	
		LC33 at 68.75%	0.36	OK	
		LC34 at 68.75%	0.31	OK	
		LC35 at 68.75%	0.30	OK	
		LC36 at 68.75%	0.30	OK	
		LC37 at 68.75%	0.07	OK	
		LC38 at 0.00%	0.37	OK	
		LC39 at 68.75%	0.17	OK	
		LC4 at 0.00%	0.76	OK	
		LC40 at 0.00%	0.41	OK	
		LC41 at 0.00%	0.22	OK	
		LC42 at 0.00%	0.19	OK	
		LC43 at 0.00%	0.21	OK	
		LC44 at 0.00%	0.21	OK	
		LC45 at 0.00%	0.23	OK	
		LC46 at 0.00%	0.23	OK	
		LC47 at 0.00%	0.28	OK	
		LC48 at 0.00%	0.31	OK	
		LC49 at 0.00%	0.29	OK	
		LC5 at 0.00%	0.40	OK	
		LC50 at 0.00%	0.29	OK	
		LC51 at 0.00%	0.26	OK	
		LC52 at 0.00%	0.27	OK	
		LC53 at 68.75%	0.11	OK	
		LC54 at 68.75%	0.11	OK	
		LC55 at 68.75%	0.11	OK	
		LC56 at 68.75%	0.10	OK	
		LC57 at 68.75%	0.10	OK	
		LC58 at 68.75%	0.10	OK	
		LC59 at 68.75%	0.12	OK	

	LC6 at 0.00%	0.54	OK	
	LC60 at 0.00%	0.12	OK	
	LC61 at 68.75%	0.11	OK	
	LC62 at 68.75%	0.10	OK	
	LC63 at 68.75%	0.10	OK	
	LC64 at 68.75%	0.10	OK	
	LC65 at 68.75%	0.15	OK	
	LC66 at 68.75%	0.15	OK	
	LC67 at 68.75%	0.15	OK	
	LC68 at 68.75%	0.14	OK	
	LC69 at 68.75%	0.14	OK	
	LC7 at 70.83%	0.68	OK	Eq. H1-1b
	LC70 at 68.75%	0.14	OK	
	LC71 at 68.75%	0.16	OK	
	LC72 at 68.75%	0.16	OK	
	LC73 at 68.75%	0.15	OK	
	LC74 at 68.75%	0.14	OK	
	LC75 at 68.75%	0.13	OK	
	LC76 at 68.75%	0.13	OK	
	LC77 at 0.00%	0.28	OK	
	LC78 at 0.00%	0.31	OK	
	LC79 at 0.00%	0.30	OK	
	LC8 at 0.00%	**1.22**	**N.G.**	Eq. H1-1b
	LC80 at 0.00%	0.30	OK	
	LC81 at 0.00%	0.28	OK	
	LC82 at 0.00%	0.29	OK	
	LC83 at 0.00%	0.24	OK	
	LC84 at 0.00%	0.20	OK	
	LC85 at 0.00%	0.22	OK	
	LC86 at 0.00%	0.22	OK	
	LC87 at 0.00%	0.24	OK	
	LC88 at 0.00%	0.23	OK	
	LC9 at 0.00%	0.96	OK	
6	LC1 at 100.00%	0.53	OK	Eq. H1-1b
	LC10 at 0.00%	0.46	OK	
	LC11 at 100.00%	0.29	OK	
	LC12 at 0.00%	0.37	OK	
	LC13 at 100.00%	0.53	OK	
	LC14 at 0.00%	0.66	OK	
	LC15 at 0.00%	0.52	OK	
	LC16 at 0.00%	0.49	OK	
	LC17 at 0.00%	0.27	OK	
	LC18 at 0.00%	0.34	OK	
	LC19 at 70.83%	0.57	OK	
	LC2 at 0.00%	**0.69**	**OK**	Eq. H1-1b
	LC20 at 0.00%	0.55	OK	
	LC21 at 0.00%	0.43	OK	
	LC22 at 0.00%	0.44	OK	
	LC23 at 100.00%	0.29	OK	
	LC24 at 0.00%	0.35	OK	
	LC25 at 70.83%	0.32	OK	
	LC26 at 0.00%	0.34	OK	
	LC27 at 0.00%	0.32	OK	
	LC28 at 0.00%	0.32	OK	
	LC29 at 70.83%	0.28	OK	
	LC3 at 0.00%	0.55	OK	
	LC30 at 70.83%	0.28	OK	
	LC31 at 70.83%	0.34	OK	
	LC32 at 0.00%	0.36	OK	
	LC33 at 0.00%	0.34	OK	
	LC34 at 0.00%	0.34	OK	
	LC35 at 0.00%	0.31	OK	
	LC36 at 0.00%	0.33	OK	

		LC37 at 70.83%	0.07	OK	
		LC38 at 0.00%	0.40	OK	
		LC39 at 0.00%	0.13	OK	
		LC4 at 0.00%	0.52	OK	
		LC40 at 0.00%	0.43	OK	
		LC41 at 0.00%	0.30	OK	
		LC42 at 0.00%	0.31	OK	
		LC43 at 0.00%	0.31	OK	
		LC44 at 0.00%	0.30	OK	
		LC45 at 0.00%	0.29	OK	
		LC46 at 0.00%	0.30	OK	
		LC47 at 0.00%	0.27	OK	
		LC48 at 0.00%	0.25	OK	
		LC49 at 0.00%	0.26	OK	
		LC5 at 0.00%	0.30	OK	
		LC50 at 0.00%	0.26	OK	
		LC51 at 0.00%	0.27	OK	
		LC52 at 0.00%	0.27	OK	
		LC53 at 70.83%	0.10	OK	
		LC54 at 0.00%	0.12	OK	
		LC55 at 0.00%	0.11	OK	
		LC56 at 0.00%	0.11	OK	
		LC57 at 0.00%	0.10	OK	
		LC58 at 0.00%	0.10	OK	
		LC59 at 70.83%	0.10	OK	
		LC6 at 0.00%	0.37	OK	
		LC60 at 70.83%	0.10	OK	
		LC61 at 70.83%	0.09	OK	
		LC62 at 70.83%	0.08	OK	
		LC63 at 70.83%	0.09	OK	
		LC64 at 70.83%	0.09	OK	
		LC65 at 70.83%	0.14	OK	
		LC66 at 70.83%	0.14	OK	
		LC67 at 70.83%	0.14	OK	
		LC68 at 70.83%	0.13	OK	
		LC69 at 70.83%	0.12	OK	
		LC7 at 70.83%	0.59	OK	Eq. H1-1b
		LC70 at 70.83%	0.12	OK	
		LC71 at 70.83%	0.14	OK	
		LC72 at 70.83%	0.13	OK	
		LC73 at 70.83%	0.13	OK	
		LC74 at 70.83%	0.12	OK	
		LC75 at 70.83%	0.13	OK	
		LC76 at 70.83%	0.13	OK	
		LC77 at 0.00%	0.27	OK	
		LC78 at 0.00%	0.26	OK	
		LC79 at 0.00%	0.26	OK	
		LC8 at 0.00%	0.56	OK	
		LC80 at 0.00%	0.26	OK	
		LC81 at 0.00%	0.27	OK	
		LC82 at 0.00%	0.27	OK	
		LC83 at 0.00%	0.29	OK	
		LC84 at 0.00%	0.31	OK	
		LC85 at 0.00%	0.30	OK	
		LC86 at 0.00%	0.30	OK	
		LC87 at 0.00%	0.29	OK	
		LC88 at 0.00%	0.30	OK	
		LC9 at 0.00%	0.45	OK	
PIPE 2x0.154	**17**	LC1 at 0.00%	0.55	OK	
		LC10 at 100.00%	0.53	OK	
		LC11 at 0.00%	0.34	OK	
		LC12 at 0.00%	0.42	OK	
		LC13 at 0.00%	0.56	OK	

LC14 at 100.00%	0.68	OK	
LC15 at 100.00%	0.51	OK	
LC16 at 100.00%	0.44	OK	
LC17 at 0.00%	0.36	OK	
LC18 at 0.00%	0.43	OK	
LC19 at 0.00%	0.56	OK	
LC2 at 100.00%	0.66	OK	
LC20 at 100.00%	0.75	OK	
LC21 at 100.00%	0.58	OK	
LC22 at 100.00%	0.52	OK	
LC23 at 0.00%	0.34	OK	
LC24 at 0.00%	0.43	OK	
LC25 at 100.00%	0.14	OK	
LC26 at 100.00%	0.12	OK	
LC27 at 100.00%	0.12	OK	
LC28 at 100.00%	0.09	OK	
LC29 at 0.00%	0.11	OK	
LC3 at 100.00%	0.49	OK	
LC30 at 0.00%	0.12	OK	
LC31 at 100.00%	0.17	OK	
LC32 at 100.00%	0.25	OK	
LC33 at 100.00%	0.22	OK	
LC34 at 100.00%	0.21	OK	
LC35 at 100.00%	0.16	OK	
LC36 at 100.00%	0.17	OK	
LC37 at 100.00%	0.04	OK	
LC38 at 100.00%	0.56	OK	
LC39 at 100.00%	0.07	OK	
LC4 at 100.00%	0.43	OK	
LC40 at 100.00%	0.42	OK	
LC41 at 100.00%	0.36	OK	
LC42 at 100.00%	0.36	OK	
LC43 at 100.00%	0.36	OK	
LC44 at 100.00%	0.35	OK	
LC45 at 100.00%	0.35	OK	
LC46 at 100.00%	0.34	OK	
LC47 at 100.00%	0.34	OK	
LC48 at 100.00%	0.34	OK	
LC49 at 100.00%	0.35	OK	
LC5 at 0.00%	0.36	OK	
LC50 at 100.00%	0.35	OK	
LC51 at 100.00%	0.36	OK	
LC52 at 100.00%	0.36	OK	
LC53 at 100.00%	0.07	OK	
LC54 at 100.00%	0.07	OK	
LC55 at 100.00%	0.07	OK	
LC56 at 100.00%	0.06	OK	
LC57 at 100.00%	0.05	OK	
LC58 at 100.00%	0.05	OK	
LC59 at 100.00%	0.07	OK	
LC6 at 0.00%	0.44	OK	
LC60 at 100.00%	0.09	OK	
LC61 at 100.00%	0.08	OK	
LC62 at 100.00%	0.08	OK	
LC63 at 100.00%	0.07	OK	
LC64 at 100.00%	0.07	OK	
LC65 at 100.00%	0.06	OK	
LC66 at 100.00%	0.05	OK	
LC67 at 100.00%	0.05	OK	
LC68 at 100.00%	0.05	OK	
LC69 at 100.00%	0.04	OK	
LC7 at 0.00%	0.57	OK	Eq. H1-1b
LC70 at 100.00%	0.04	OK	
LC71 at 100.00%	0.06	OK	

	LC72 at 100.00%	0.08	OK	
	LC73 at 100.00%	0.07	OK	
	LC74 at 100.00%	0.07	OK	
	LC75 at 100.00%	0.06	OK	
	LC76 at 100.00%	0.06	OK	
	LC77 at 100.00%	0.20	OK	
	LC78 at 100.00%	0.21	OK	
	LC79 at 100.00%	0.21	OK	
	LC8 at 100.00%	**0.76**	**OK**	Eq. H1-1b
	LC80 at 100.00%	0.22	OK	
	LC81 at 100.00%	0.22	OK	
	LC82 at 100.00%	0.22	OK	
	LC83 at 100.00%	0.23	OK	
	LC84 at 100.00%	0.22	OK	
	LC85 at 100.00%	0.22	OK	
	LC86 at 100.00%	0.22	OK	
	LC87 at 100.00%	0.21	OK	
	LC88 at 100.00%	0.21	OK	
	LC9 at 100.00%	0.60	OK	
24	LC1 at 43.75%	**0.45**	**OK**	Eq. H1-1b
	LC10 at 43.75%	0.28	OK	
	LC11 at 43.75%	0.23	OK	
	LC12 at 43.75%	0.29	OK	
	LC13 at 43.75%	0.45	OK	
	LC14 at 43.75%	0.29	OK	
	LC15 at 43.75%	0.23	OK	
	LC16 at 43.75%	0.28	OK	
	LC17 at 43.75%	0.23	OK	
	LC18 at 43.75%	0.29	OK	
	LC19 at 43.75%	0.45	OK	
	LC2 at 43.75%	0.29	OK	
	LC20 at 43.75%	0.29	OK	
	LC21 at 43.75%	0.23	OK	
	LC22 at 43.75%	0.28	OK	
	LC23 at 43.75%	0.23	OK	
	LC24 at 43.75%	0.29	OK	
	LC25 at 43.75%	0.09	OK	
	LC26 at 45.83%	0.12	OK	
	LC27 at 45.83%	0.11	OK	
	LC28 at 45.83%	0.12	OK	
	LC29 at 45.83%	0.11	OK	
	LC3 at 43.75%	0.23	OK	
	LC30 at 45.83%	0.12	OK	
	LC31 at 43.75%	0.10	OK	
	LC32 at 45.83%	0.07	OK	
	LC33 at 85.42%	0.07	OK	
	LC34 at 43.75%	0.07	OK	
	LC35 at 85.42%	0.06	OK	
	LC36 at 43.75%	0.06	OK	
	LC37 at 45.83%	0.01	OK	
	LC38 at 45.83%	0.02	OK	
	LC39 at 45.83%	0.02	OK	
	LC4 at 43.75%	0.28	OK	
	LC40 at 45.83%	0.20	OK	
	LC41 at 43.75%	0.02	OK	
	LC42 at 45.83%	0.03	OK	
	LC43 at 45.83%	0.03	OK	
	LC44 at 45.83%	0.03	OK	
	LC45 at 45.83%	0.03	OK	
	LC46 at 45.83%	0.03	OK	
	LC47 at 43.75%	0.03	OK	
	LC48 at 43.75%	0.02	OK	
	LC49 at 85.42%	0.01	OK	

	LC5 at 43.75%	0.23	OK	
	LC50 at 43.75%	0.02	OK	
	LC51 at 85.42%	0.01	OK	
	LC52 at 43.75%	0.02	OK	
	LC53 at 43.75%	0.02	OK	
	LC54 at 45.83%	0.03	OK	
	LC55 at 45.83%	0.03	OK	
	LC56 at 45.83%	0.03	OK	
	LC57 at 45.83%	0.03	OK	
	LC58 at 45.83%	0.03	OK	
	LC59 at 43.75%	0.03	OK	
	LC6 at 43.75%	0.29	OK	
	LC60 at 45.83%	0.02	OK	
	LC61 at 85.42%	0.02	OK	
	LC62 at 43.75%	0.02	OK	
	LC63 at 85.42%	0.02	OK	
	LC64 at 43.75%	0.02	OK	
	LC65 at 43.75%	0.02	OK	
	LC66 at 45.83%	0.03	OK	
	LC67 at 45.83%	0.03	OK	
	LC68 at 45.83%	0.03	OK	
	LC69 at 45.83%	0.03	OK	
	LC7 at 43.75%	0.45	OK	
	LC70 at 45.83%	0.03	OK	
	LC71 at 43.75%	0.03	OK	
	LC72 at 45.83%	0.02	OK	
	LC73 at 45.83%	0.01	OK	
	LC74 at 43.75%	0.02	OK	
	LC75 at 85.42%	0.01	OK	
	LC76 at 43.75%	0.02	OK	
	LC77 at 45.83%	0.08	OK	
	LC78 at 45.83%	0.09	OK	
	LC79 at 45.83%	0.09	OK	
	LC8 at 43.75%	0.29	OK	
	LC80 at 45.83%	0.09	OK	
	LC81 at 45.83%	0.09	OK	
	LC82 at 45.83%	0.09	OK	
	LC83 at 45.83%	0.08	OK	
	LC84 at 85.42%	0.07	OK	
	LC85 at 85.42%	0.07	OK	
	LC86 at 85.42%	0.07	OK	
	LC87 at 45.83%	0.07	OK	
	LC88 at 85.42%	0.07	OK	
	LC9 at 43.75%	0.23	OK	
25	LC1 at 43.75%	**0.73**	**OK**	Eq. H1-1b
	LC10 at 43.75%	0.37	OK	
	LC11 at 43.75%	0.34	OK	
	LC12 at 43.75%	0.48	OK	
	LC13 at 43.75%	0.73	OK	
	LC14 at 43.75%	0.48	OK	
	LC15 at 43.75%	0.33	OK	
	LC16 at 43.75%	0.37	OK	
	LC17 at 45.83%	0.38	OK	
	LC18 at 45.83%	0.51	OK	
	LC19 at 43.75%	0.73	OK	
	LC2 at 43.75%	0.48	OK	
	LC20 at 43.75%	0.48	OK	
	LC21 at 45.83%	0.34	OK	
	LC22 at 43.75%	0.37	OK	
	LC23 at 43.75%	0.33	OK	
	LC24 at 43.75%	0.48	OK	
	LC25 at 43.75%	0.15	OK	
	LC26 at 45.83%	0.16	OK	

LC27 at 45.83%	0.14	OK
LC28 at 45.83%	0.19	OK
LC29 at 45.83%	0.26	OK
LC3 at 43.75%	0.34	OK
LC30 at 45.83%	0.28	OK
LC31 at 45.83%	0.31	OK
LC32 at 45.83%	0.27	OK
LC33 at 45.83%	0.25	OK
LC34 at 45.83%	0.18	OK
LC35 at 85.42%	0.14	OK
LC36 at 85.42%	0.13	OK
LC37 at 45.83%	0.05	OK
LC38 at 45.83%	0.13	OK
LC39 at 85.42%	0.09	OK
LC4 at 43.75%	0.37	OK
LC40 at 45.83%	0.11	OK
LC41 at 45.83%	0.09	OK
LC42 at 45.83%	0.10	OK
LC43 at 45.83%	0.10	OK
LC44 at 45.83%	0.10	OK
LC45 at 45.83%	0.10	OK
LC46 at 45.83%	0.11	OK
LC47 at 45.83%	0.10	OK
LC48 at 85.42%	0.09	OK
LC49 at 85.42%	0.09	OK
LC5 at 45.83%	0.39	OK
LC50 at 85.42%	0.09	OK
LC51 at 85.42%	0.08	OK
LC52 at 85.42%	0.08	OK
LC53 at 43.75%	0.05	OK
LC54 at 45.83%	0.06	OK
LC55 at 45.83%	0.05	OK
LC56 at 45.83%	0.06	OK
LC57 at 45.83%	0.08	OK
LC58 at 45.83%	0.09	OK
LC59 at 45.83%	0.10	OK
LC6 at 45.83%	0.52	OK
LC60 at 45.83%	0.08	OK
LC61 at 45.83%	0.08	OK
LC62 at 45.83%	0.06	OK
LC63 at 85.42%	0.05	OK
LC64 at 85.42%	0.04	OK
LC65 at 85.42%	0.07	OK
LC66 at 45.83%	0.08	OK
LC67 at 45.83%	0.09	OK
LC68 at 45.83%	0.10	OK
LC69 at 45.83%	0.12	OK
LC7 at 43.75%	0.73	OK
LC70 at 45.83%	0.13	OK
LC71 at 45.83%	0.14	OK
LC72 at 45.83%	0.12	OK
LC73 at 45.83%	0.12	OK
LC74 at 45.83%	0.10	OK
LC75 at 45.83%	0.09	OK
LC76 at 85.42%	0.08	OK
LC77 at 45.83%	0.07	OK
LC78 at 45.83%	0.08	OK
LC79 at 45.83%	0.09	OK
LC8 at 43.75%	0.48	OK
LC80 at 45.83%	0.10	OK
LC81 at 45.83%	0.12	OK
LC82 at 45.83%	0.13	OK
LC83 at 45.83%	0.14	OK
LC84 at 45.83%	0.12	OK

	LC85 at 45.83%	0.12	OK	
	LC86 at 45.83%	0.10	OK	
	LC87 at 45.83%	0.08	OK	
	LC88 at 45.83%	0.08	OK	
	LC9 at 45.83%	0.35	OK	
26	LC1 at 43.75%	0.31	OK	Eq. H1-1b
	LC10 at 43.75%	0.21	OK	
	LC11 at 85.42%	0.26	OK	
	LC12 at 85.42%	0.32	OK	Eq. H1-1b
	LC13 at 43.75%	0.31	OK	
	LC14 at 43.75%	0.20	OK	
	LC15 at 43.75%	0.17	OK	
	LC16 at 43.75%	0.21	OK	
	LC17 at 85.42%	0.26	OK	
	LC18 at 85.42%	**0.33**	**OK**	Eq. H1-1b
	LC19 at 43.75%	0.31	OK	
	LC2 at 43.75%	0.20	OK	
	LC20 at 43.75%	0.20	OK	
	LC21 at 43.75%	0.17	OK	
	LC22 at 43.75%	0.21	OK	
	LC23 at 85.42%	0.26	OK	
	LC24 at 85.42%	0.32	OK	
	LC25 at 43.75%	0.07	OK	
	LC26 at 43.75%	0.04	OK	
	LC27 at 43.75%	0.04	OK	
	LC28 at 43.75%	0.05	OK	
	LC29 at 85.42%	0.06	OK	
	LC3 at 43.75%	0.17	OK	
	LC30 at 85.42%	0.07	OK	
	LC31 at 43.75%	0.07	OK	
	LC32 at 45.83%	0.04	OK	
	LC33 at 45.83%	0.04	OK	
	LC34 at 43.75%	0.04	OK	
	LC35 at 85.42%	0.05	OK	
	LC36 at 85.42%	0.06	OK	
	LC37 at 45.83%	0.01	OK	
	LC38 at 45.83%	0.13	OK	
	LC39 at 45.83%	0.01	OK	
	LC4 at 43.75%	0.21	OK	
	LC40 at 85.42%	0.08	OK	
	LC41 at 85.42%	0.06	OK	
	LC42 at 85.42%	0.05	OK	
	LC43 at 85.42%	0.05	OK	
	LC44 at 85.42%	0.04	OK	
	LC45 at 85.42%	0.04	OK	
	LC46 at 45.83%	0.03	OK	
	LC47 at 45.83%	0.04	OK	
	LC48 at 85.42%	0.05	OK	
	LC49 at 85.42%	0.05	OK	
	LC5 at 85.42%	0.26	OK	
	LC50 at 85.42%	0.05	OK	
	LC51 at 85.42%	0.06	OK	
	LC52 at 85.42%	0.06	OK	
	LC53 at 43.75%	0.02	OK	
	LC54 at 43.75%	0.01	OK	
	LC55 at 43.75%	0.01	OK	
	LC56 at 43.75%	0.01	OK	
	LC57 at 50.00%	0.01	OK	
	LC58 at 85.42%	0.01	OK	
	LC59 at 43.75%	0.02	OK	
	LC6 at 85.42%	0.33	OK	
	LC60 at 45.83%	0.01	OK	
	LC61 at 45.83%	0.01	OK	

		LC62 at 45.83%	0.01	OK
		LC63 at 85.42%	0.01	OK
		LC64 at 85.42%	0.02	OK
		LC65 at 43.75%	0.02	OK
		LC66 at 43.75%	0.01	OK
		LC67 at 43.75%	0.01	OK
		LC68 at 43.75%	0.01	OK
		LC69 at 50.00%	0.01	OK
		LC7 at 43.75%	0.31	OK
		LC70 at 85.42%	0.02	OK
		LC71 at 43.75%	0.02	OK
		LC72 at 45.83%	0.01	OK
		LC73 at 45.83%	0.01	OK
		LC74 at 45.83%	0.01	OK
		LC75 at 45.83%	0.01	OK
		LC76 at 45.83%	0.02	OK
		LC77 at 85.42%	0.03	OK
		LC78 at 85.42%	0.04	OK
		LC79 at 85.42%	0.04	OK
		LC8 at 43.75%	0.20	OK
		LC80 at 85.42%	0.05	OK
		LC81 at 85.42%	0.06	OK
		LC82 at 85.42%	0.06	OK
		LC83 at 85.42%	0.06	OK
		LC84 at 85.42%	0.05	OK
		LC85 at 85.42%	0.05	OK
		LC86 at 85.42%	0.04	OK
		LC87 at 85.42%	0.03	OK
		LC88 at 85.42%	0.03	OK
		LC9 at 43.75%	0.17	OK
PIPE 4x0.237	**16**	LC1 at 16.25%	0.15	OK
		LC10 at 16.25%	0.23	OK
		LC11 at 16.25%	0.10	OK
		LC12 at 16.25%	0.14	OK
		LC13 at 16.25%	0.16	OK
		LC14 at 16.25%	0.35	OK
		LC15 at 16.25%	0.27	OK
		LC16 at 16.25%	0.23	OK
		LC17 at 16.25%	0.13	OK
		LC18 at 16.25%	0.16	OK
		LC19 at 16.25%	0.21	OK
		LC2 at 16.25%	0.35	OK
		LC20 at 16.25%	0.35	OK
		LC21 at 16.25%	0.27	OK
		LC22 at 16.25%	0.23	OK
		LC23 at 16.25%	0.10	OK
		LC24 at 16.25%	0.14	OK
		LC25 at 70.00%	0.16	OK
		LC26 at 70.00%	0.16	OK
		LC27 at 70.00%	0.16	OK
		LC28 at 70.00%	0.16	OK
		LC29 at 16.25%	0.17	OK
		LC3 at 16.25%	0.27	OK
		LC30 at 16.25%	0.17	OK
		LC31 at 16.25%	0.18	OK
		LC32 at 16.25%	0.17	OK
		LC33 at 16.25%	0.17	OK
		LC34 at 70.00%	0.16	OK
		LC35 at 70.00%	0.16	OK
		LC36 at 70.00%	0.16	OK
		LC37 at 70.00%	0.04	OK
		LC38 at 16.25%	0.07	OK
		LC39 at 70.00%	0.08	OK

		LC4 at 16.25%	0.23	OK	
		LC40 at 70.00%	0.09	OK	
		LC41 at 70.00%	0.06	OK	
		LC42 at 70.00%	0.06	OK	
		LC43 at 70.00%	0.06	OK	
		LC44 at 16.25%	0.06	OK	
		LC45 at 16.25%	0.07	OK	
		LC46 at 16.25%	0.07	OK	
		LC47 at 16.25%	0.07	OK	
		LC48 at 16.25%	0.07	OK	
		LC49 at 16.25%	0.07	OK	
		LC5 at 16.25%	0.14	OK	
		LC50 at 16.25%	0.06	OK	
		LC51 at 70.00%	0.06	OK	
		LC52 at 70.00%	0.06	OK	
		LC53 at 70.00%	0.05	OK	
		LC54 at 70.00%	0.05	OK	
		LC55 at 70.00%	0.05	OK	
		LC56 at 70.00%	0.05	OK	
		LC57 at 70.00%	0.05	OK	
		LC58 at 16.25%	0.05	OK	
		LC59 at 16.25%	0.06	OK	
		LC6 at 16.25%	0.17	OK	
		LC60 at 16.25%	0.05	OK	
		LC61 at 16.25%	0.05	OK	
		LC62 at 16.25%	0.05	OK	
		LC63 at 70.00%	0.05	OK	
		LC64 at 70.00%	0.05	OK	
		LC65 at 70.00%	0.07	OK	
		LC66 at 70.00%	0.07	OK	
		LC67 at 70.00%	0.07	OK	
		LC68 at 70.00%	0.07	OK	
		LC69 at 70.00%	0.07	OK	
		LC7 at 16.25%	0.22	OK	Eq. H1-1b
		LC70 at 70.00%	0.07	OK	
		LC71 at 16.25%	0.08	OK	
		LC72 at 16.25%	0.07	OK	
		LC73 at 16.25%	0.07	OK	
		LC74 at 70.00%	0.07	OK	
		LC75 at 70.00%	0.07	OK	
		LC76 at 70.00%	0.07	OK	
		LC77 at 70.00%	0.08	OK	
		LC78 at 70.00%	0.08	OK	
		LC79 at 70.00%	0.08	OK	
		LC8 at 16.25%	**0.35**	**OK**	Eq. H3-1
		LC80 at 70.00%	0.08	OK	
		LC81 at 70.00%	0.08	OK	
		LC82 at 70.00%	0.08	OK	
		LC83 at 16.25%	0.08	OK	
		LC84 at 70.00%	0.08	OK	
		LC85 at 70.00%	0.08	OK	
		LC86 at 70.00%	0.08	OK	
		LC87 at 70.00%	0.08	OK	
		LC88 at 70.00%	0.08	OK	
		LC9 at 16.25%	0.27	OK	
RndBar 1	**13**	LC1 at 100.00%	0.02	OK	
		LC10 at 0.00%	0.02	OK	
		LC11 at 100.00%	0.02	OK	
		LC12 at 100.00%	0.02	OK	
		LC13 at 0.00%	0.02	OK	
		LC14 at 0.00%	0.04	OK	
		LC15 at 0.00%	0.03	OK	
		LC16 at 0.00%	0.02	OK	

LC17 at 100.00%	0.03	OK	
LC18 at 100.00%	0.03	OK	
LC19 at 100.00%	0.03	OK	
LC2 at 0.00%	0.04	OK	
LC20 at 0.00%	0.04	OK	
LC21 at 0.00%	0.03	OK	
LC22 at 0.00%	0.02	OK	
LC23 at 100.00%	0.01	OK	
LC24 at 100.00%	0.01	OK	
LC25 at 100.00%	0.07	OK	
LC26 at 100.00%	0.07	OK	
LC27 at 100.00%	0.07	OK	
LC28 at 100.00%	0.07	OK	
LC29 at 100.00%	0.07	OK	
LC3 at 0.00%	0.03	OK	
LC30 at 100.00%	0.07	OK	
LC31 at 100.00%	**0.07**	**OK**	Eq. Sec. D2
LC32 at 100.00%	0.07	OK	
LC33 at 100.00%	0.07	OK	
LC34 at 100.00%	0.07	OK	
LC35 at 100.00%	0.07	OK	
LC36 at 100.00%	0.07	OK	
LC37 at 100.00%	0.02	OK	
LC38 at 0.00%	0.04	OK	
LC39 at 100.00%	0.04	OK	
LC4 at 100.00%	0.02	OK	
LC40 at 0.00%	0.04	OK	Eq. H3-1
LC41 at 0.00%	0.03	OK	
LC42 at 0.00%	0.03	OK	
LC43 at 0.00%	0.03	OK	
LC44 at 0.00%	0.03	OK	
LC45 at 0.00%	0.03	OK	
LC46 at 0.00%	0.03	OK	
LC47 at 0.00%	0.03	OK	
LC48 at 0.00%	0.03	OK	
LC49 at 0.00%	0.03	OK	
LC5 at 100.00%	0.03	OK	
LC50 at 0.00%	0.03	OK	
LC51 at 0.00%	0.03	OK	
LC52 at 0.00%	0.03	OK	
LC53 at 100.00%	0.02	OK	
LC54 at 100.00%	0.02	OK	
LC55 at 100.00%	0.02	OK	
LC56 at 100.00%	0.02	OK	
LC57 at 100.00%	0.02	OK	
LC58 at 100.00%	0.02	OK	
LC59 at 100.00%	0.02	OK	
LC6 at 100.00%	0.04	OK	
LC60 at 100.00%	0.02	OK	
LC61 at 100.00%	0.02	OK	
LC62 at 100.00%	0.02	OK	
LC63 at 100.00%	0.02	OK	
LC64 at 100.00%	0.02	OK	
LC65 at 100.00%	0.03	OK	
LC66 at 100.00%	0.03	OK	
LC67 at 100.00%	0.03	OK	
LC68 at 100.00%	0.03	OK	
LC69 at 100.00%	0.03	OK	
LC7 at 100.00%	0.04	OK	
LC70 at 100.00%	0.03	OK	
LC71 at 100.00%	0.03	OK	
LC72 at 100.00%	0.03	OK	
LC73 at 100.00%	0.03	OK	
LC74 at 100.00%	0.03	OK	

	LC75 at 100.00%	0.03	OK	
	LC76 at 100.00%	0.03	OK	
	LC77 at 100.00%	0.03	OK	
	LC78 at 100.00%	0.03	OK	
	LC79 at 100.00%	0.03	OK	
	LC8 at 0.00%	0.04	OK	
	LC80 at 100.00%	0.03	OK	
	LC81 at 100.00%	0.03	OK	
	LC82 at 100.00%	0.03	OK	
	LC83 at 100.00%	0.03	OK	
	LC84 at 100.00%	0.03	OK	
	LC85 at 100.00%	0.03	OK	
	LC86 at 100.00%	0.03	OK	
	LC87 at 100.00%	0.03	OK	
	LC88 at 100.00%	0.03	OK	
	LC9 at 0.00%	0.03	OK	
14	LC1 at 0.00%	0.04	OK	
	LC10 at 100.00%	0.11	OK	
	LC11 at 100.00%	0.06	OK	
	LC12 at 100.00%	0.06	OK	
	LC13 at 0.00%	0.04	OK	
	LC14 at 100.00%	0.11	OK	
	LC15 at 100.00%	0.09	OK	
	LC16 at 100.00%	0.11	OK	
	LC17 at 0.00%	0.10	OK	
	LC18 at 0.00%	0.12	OK	
	LC19 at 0.00%	0.12	OK	
	LC2 at 100.00%	0.12	OK	
	LC20 at 100.00%	0.15	OK	
	LC21 at 100.00%	0.13	OK	
	LC22 at 100.00%	0.10	OK	
	LC23 at 100.00%	0.05	OK	
	LC24 at 100.00%	0.05	OK	
	LC25 at 100.00%	0.18	OK	
	LC26 at 100.00%	0.20	OK	
	LC27 at 100.00%	0.19	OK	
	LC28 at 100.00%	0.20	OK	
	LC29 at 100.00%	0.19	OK	
	LC3 at 100.00%	0.10	OK	
	LC30 at 100.00%	**0.20**	**OK**	Eq. H1-1b
	LC31 at 100.00%	0.18	OK	
	LC32 at 100.00%	0.17	OK	
	LC33 at 100.00%	0.17	OK	
	LC34 at 100.00%	0.17	OK	
	LC35 at 100.00%	0.17	OK	
	LC36 at 100.00%	0.17	OK	
	LC37 at 100.00%	0.04	OK	
	LC38 at 100.00%	0.15	OK	
	LC39 at 100.00%	0.09	OK	
	LC4 at 100.00%	0.12	OK	
	LC40 at 100.00%	0.19	OK	
	LC41 at 100.00%	0.11	OK	
	LC42 at 100.00%	0.10	OK	
	LC43 at 100.00%	0.11	OK	
	LC44 at 100.00%	0.11	OK	
	LC45 at 100.00%	0.11	OK	
	LC46 at 100.00%	0.11	OK	
	LC47 at 100.00%	0.11	OK	
	LC48 at 100.00%	0.12	OK	
	LC49 at 100.00%	0.11	OK	
	LC5 at 0.00%	0.11	OK	
	LC50 at 100.00%	0.11	OK	
	LC51 at 100.00%	0.11	OK	

	LC52 at 100.00%	0.11	OK
	LC53 at 100.00%	0.05	OK
	LC54 at 100.00%	0.05	OK
	LC55 at 100.00%	0.05	OK
	LC56 at 100.00%	0.05	OK
	LC57 at 100.00%	0.06	OK
	LC58 at 100.00%	0.06	OK
	LC59 at 100.00%	0.06	OK
	LC6 at 0.00%	0.13	OK
	LC60 at 100.00%	0.06	OK
	LC61 at 100.00%	0.06	OK
	LC62 at 100.00%	0.06	OK
	LC63 at 100.00%	0.06	OK
	LC64 at 100.00%	0.06	OK
	LC65 at 100.00%	0.08	OK
	LC66 at 100.00%	0.08	OK
	LC67 at 100.00%	0.08	OK
	LC68 at 100.00%	0.08	OK
	LC69 at 100.00%	0.09	OK
	LC7 at 0.00%	0.13	OK
	LC70 at 100.00%	0.09	OK
	LC71 at 100.00%	0.09	OK
	LC72 at 100.00%	0.09	OK
	LC73 at 100.00%	0.09	OK
	LC74 at 100.00%	0.09	OK
	LC75 at 100.00%	0.09	OK
	LC76 at 100.00%	0.09	OK
	LC77 at 100.00%	0.14	OK
	LC78 at 100.00%	0.14	OK
	LC79 at 100.00%	0.14	OK
	LC8 at 100.00%	0.17	OK
	LC80 at 100.00%	0.14	OK
	LC81 at 100.00%	0.14	OK
	LC82 at 100.00%	0.14	OK
	LC83 at 100.00%	0.14	OK
	LC84 at 100.00%	0.13	OK
	LC85 at 100.00%	0.13	OK
	LC86 at 100.00%	0.13	OK
	LC87 at 100.00%	0.13	OK
	LC88 at 100.00%	0.13	OK
	LC9 at 100.00%	0.14	OK
15	LC1 at 100.00%	0.13	OK
	LC10 at 0.00%	0.15	OK
	LC11 at 0.00%	0.12	OK
	LC12 at 0.00%	0.10	OK
	LC13 at 100.00%	0.10	OK
	LC14 at 0.00%	0.15	OK
	LC15 at 0.00%	0.13	OK
	LC16 at 0.00%	0.15	OK
	LC17 at 0.00%	0.18	OK
	LC18 at 0.00%	0.20	OK
	LC19 at 100.00%	0.19	OK
	LC2 at 0.00%	0.17	OK
	LC20 at 0.00%	0.17	OK
	LC21 at 100.00%	0.15	OK
	LC22 at 0.00%	0.12	OK
	LC23 at 0.00%	0.07	OK
	LC24 at 0.00%	0.07	OK
	LC25 at 100.00%	0.58	OK
	LC26 at 100.00%	0.59	OK
	LC27 at 100.00%	0.59	OK
	LC28 at 100.00%	0.60	OK
	LC29 at 100.00%	0.60	OK

LC3 at 0.00%	0.15	OK	
LC30 at 100.00%	**0.61**	**OK**	Eq. H1-1a
LC31 at 100.00%	0.61	OK	
LC32 at 100.00%	0.60	OK	
LC33 at 100.00%	0.60	OK	
LC34 at 100.00%	0.59	OK	
LC35 at 100.00%	0.58	OK	
LC36 at 100.00%	0.58	OK	
LC37 at 0.00%	0.13	OK	
LC38 at 100.00%	0.33	OK	
LC39 at 100.00%	0.32	OK	
LC4 at 0.00%	0.19	OK	
LC40 at 0.00%	0.37	OK	Eq. H1-1a
LC41 at 100.00%	0.25	OK	
LC42 at 100.00%	0.25	OK	
LC43 at 100.00%	0.25	OK	
LC44 at 100.00%	0.26	OK	
LC45 at 100.00%	0.26	OK	
LC46 at 100.00%	0.26	OK	
LC47 at 100.00%	0.26	OK	
LC48 at 100.00%	0.26	OK	
LC49 at 100.00%	0.26	OK	
LC5 at 100.00%	0.25	OK	
LC50 at 100.00%	0.25	OK	
LC51 at 100.00%	0.25	OK	
LC52 at 100.00%	0.25	OK	
LC53 at 0.00%	0.17	OK	
LC54 at 0.00%	0.17	OK	
LC55 at 0.00%	0.17	OK	
LC56 at 0.00%	0.17	OK	
LC57 at 0.00%	0.17	OK	
LC58 at 0.00%	0.17	OK	
LC59 at 0.00%	0.17	OK	
LC6 at 100.00%	0.27	OK	
LC60 at 0.00%	0.17	OK	
LC61 at 0.00%	0.17	OK	
LC62 at 0.00%	0.17	OK	
LC63 at 0.00%	0.17	OK	
LC64 at 0.00%	0.17	OK	
LC65 at 100.00%	0.27	OK	
LC66 at 100.00%	0.27	OK	
LC67 at 100.00%	0.27	OK	
LC68 at 100.00%	0.27	OK	
LC69 at 100.00%	0.27	OK	
LC7 at 100.00%	0.32	OK	
LC70 at 100.00%	0.28	OK	
LC71 at 100.00%	0.28	OK	
LC72 at 100.00%	0.27	OK	
LC73 at 100.00%	0.27	OK	
LC74 at 100.00%	0.27	OK	
LC75 at 100.00%	0.27	OK	
LC76 at 100.00%	0.27	OK	
LC77 at 100.00%	0.28	OK	
LC78 at 100.00%	0.28	OK	
LC79 at 100.00%	0.28	OK	
LC8 at 100.00%	0.20	OK	
LC80 at 100.00%	0.29	OK	
LC81 at 100.00%	0.29	OK	
LC82 at 100.00%	0.29	OK	
LC83 at 100.00%	0.29	OK	
LC84 at 100.00%	0.29	OK	
LC85 at 100.00%	0.29	OK	
LC86 at 100.00%	0.28	OK	
LC87 at 100.00%	0.28	OK	

		LC88 at 100.00%	0.28	OK	
		LC9 at 0.00%	0.19	OK	
RndBar 1-1_4	**7**	LC1 at 0.00%	0.15	OK	
		LC10 at 0.00%	0.07	OK	
		LC11 at 0.00%	0.17	OK	
		LC12 at 0.00%	0.21	OK	
		LC13 at 0.00%	0.15	OK	
		LC14 at 0.00%	0.11	OK	
		LC15 at 0.00%	0.08	OK	
		LC16 at 0.00%	0.08	OK	
		LC17 at 0.00%	0.16	OK	
		LC18 at 0.00%	0.20	OK	
		LC19 at 0.00%	0.15	OK	
		LC2 at 0.00%	0.10	OK	
		LC20 at 0.00%	0.12	OK	
		LC21 at 0.00%	0.09	OK	
		LC22 at 0.00%	0.07	OK	
		LC23 at 0.00%	0.17	OK	
		LC24 at 0.00%	**0.21**	**OK**	Eq. H1-1b
		LC25 at 0.00%	0.03	OK	
		LC26 at 100.00%	0.03	OK	
		LC27 at 100.00%	0.03	OK	
		LC28 at 100.00%	0.04	OK	
		LC29 at 0.00%	0.05	OK	
		LC3 at 0.00%	0.08	OK	
		LC30 at 0.00%	0.06	OK	
		LC31 at 100.00%	0.05	OK	
		LC32 at 100.00%	0.04	OK	
		LC33 at 100.00%	0.04	OK	
		LC34 at 100.00%	0.03	OK	
		LC35 at 0.00%	0.03	OK	
		LC36 at 0.00%	0.04	OK	
		LC37 at 100.00%	0.01	OK	
		LC38 at 100.00%	0.06	OK	
		LC39 at 100.00%	0.01	OK	
		LC4 at 0.00%	0.08	OK	
		LC40 at 0.00%	0.04	OK	
		LC41 at 0.00%	0.02	OK	
		LC42 at 0.00%	0.02	OK	
		LC43 at 0.00%	0.03	OK	
		LC44 at 0.00%	0.03	OK	
		LC45 at 0.00%	0.03	OK	
		LC46 at 0.00%	0.03	OK	
		LC47 at 0.00%	0.04	OK	
		LC48 at 0.00%	0.04	OK	
		LC49 at 0.00%	0.03	OK	
		LC5 at 0.00%	0.16	OK	
		LC50 at 0.00%	0.03	OK	
		LC51 at 0.00%	0.03	OK	
		LC52 at 0.00%	0.03	OK	
		LC53 at 0.00%	0.01	OK	
		LC54 at 100.00%	0.01	OK	
		LC55 at 100.00%	0.01	OK	
		LC56 at 100.00%	0.01	OK	
		LC57 at 100.00%	0.01	OK	
		LC58 at 0.00%	0.01	OK	
		LC59 at 0.00%	0.01	OK	
		LC6 at 0.00%	0.20	OK	Eq. H1-1b
		LC60 at 0.00%	0.01	OK	
		LC61 at 0.00%	0.01	OK	
		LC62 at 0.00%	0.01	OK	
		LC63 at 0.00%	0.01	OK	
		LC64 at 0.00%	0.01	OK	

	LC65 at 0.00%	0.01	OK	
	LC66 at 100.00%	0.01	OK	
	LC67 at 100.00%	0.01	OK	
	LC68 at 100.00%	0.01	OK	
	LC69 at 100.00%	0.01	OK	
	LC7 at 0.00%	0.15	OK	
	LC70 at 100.00%	0.01	OK	
	LC71 at 100.00%	0.01	OK	
	LC72 at 0.00%	0.01	OK	
	LC73 at 0.00%	0.01	OK	
	LC74 at 100.00%	0.01	OK	
	LC75 at 0.00%	0.01	OK	
	LC76 at 0.00%	0.01	OK	
	LC77 at 100.00%	0.02	OK	
	LC78 at 0.00%	0.02	OK	
	LC79 at 0.00%	0.02	OK	
	LC8 at 0.00%	0.12	OK	
	LC80 at 0.00%	0.03	OK	
	LC81 at 0.00%	0.03	OK	
	LC82 at 0.00%	0.03	OK	
	LC83 at 0.00%	0.03	OK	
	LC84 at 0.00%	0.02	OK	
	LC85 at 0.00%	0.02	OK	
	LC86 at 100.00%	0.02	OK	
	LC87 at 100.00%	0.02	OK	
	LC88 at 100.00%	0.02	OK	
	LC9 at 0.00%	0.09	OK	
10	LC1 at 0.00%	0.17	OK	
	LC10 at 0.00%	0.02	OK	
	LC11 at 0.00%	0.08	OK	
	LC12 at 0.00%	0.10	OK	
	LC13 at 0.00%	0.17	OK	
	LC14 at 0.00%	0.11	OK	
	LC15 at 0.00%	0.09	OK	
	LC16 at 0.00%	0.04	OK	
	LC17 at 0.00%	0.09	OK	
	LC18 at 0.00%	0.12	OK	
	LC19 at 0.00%	0.18	OK	
	LC2 at 0.00%	0.11	OK	
	LC20 at 0.00%	0.12	OK	
	LC21 at 0.00%	0.10	OK	
	LC22 at 0.00%	0.02	OK	
	LC23 at 0.00%	0.08	OK	
	LC24 at 0.00%	0.11	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%	0.06	OK	
	LC29 at 0.00%	0.07	OK	
	LC3 at 0.00%	0.09	OK	
	LC30 at 0.00%	0.07	OK	
	LC31 at 0.00%	0.08	OK	
	LC32 at 0.00%	0.07	OK	
	LC33 at 0.00%	0.07	OK	
	LC34 at 0.00%	0.06	OK	
	LC35 at 0.00%	0.06	OK	
	LC36 at 0.00%	0.06	OK	
	LC37 at 0.00%	0.01	OK	
	LC38 at 0.00%	0.02	OK	
	LC39 at 100.00%	0.01	OK	
	LC4 at 0.00%	0.04	OK	
	LC40 at 0.00%	0.14	OK	Eq. H1-1b
	LC41 at 100.00%	0.02	OK	

		LC42 at 100.00%	0.02	OK	
		LC43 at 100.00%	0.02	OK	
		LC44 at 0.00%	0.02	OK	
		LC45 at 0.00%	0.02	OK	
		LC46 at 0.00%	0.02	OK	
		LC47 at 0.00%	0.02	OK	
		LC48 at 0.00%	0.02	OK	
		LC49 at 0.00%	0.02	OK	
		LC5 at 0.00%	0.10	OK	
		LC50 at 0.00%	0.02	OK	
		LC51 at 100.00%	0.02	OK	
		LC52 at 100.00%	0.02	OK	
		LC53 at 0.00%	0.02	OK	
		LC54 at 0.00%	0.02	OK	
		LC55 at 0.00%	0.02	OK	
		LC56 at 0.00%	0.02	OK	
		LC57 at 0.00%	0.02	OK	
		LC58 at 0.00%	0.02	OK	
		LC59 at 0.00%	0.02	OK	
		LC6 at 0.00%	0.12	OK	
		LC60 at 0.00%	0.02	OK	
		LC61 at 0.00%	0.02	OK	
		LC62 at 100.00%	0.01	OK	
		LC63 at 0.00%	0.01	OK	
		LC64 at 0.00%	0.01	OK	
		LC65 at 0.00%	0.02	OK	
		LC66 at 0.00%	0.02	OK	
		LC67 at 0.00%	0.02	OK	
		LC68 at 0.00%	0.01	OK	
		LC69 at 0.00%	0.01	OK	
		LC7 at 0.00%	**0.18**	**OK**	Eq. H3-1
		LC70 at 0.00%	0.01	OK	
		LC71 at 0.00%	0.02	OK	
		LC72 at 0.00%	0.01	OK	
		LC73 at 0.00%	0.01	OK	
		LC74 at 100.00%	0.01	OK	
		LC75 at 0.00%	0.01	OK	
		LC76 at 0.00%	0.01	OK	
		LC77 at 0.00%	0.08	OK	
		LC78 at 0.00%	0.08	OK	
		LC79 at 0.00%	0.08	OK	
		LC8 at 0.00%	0.12	OK	
		LC80 at 100.00%	0.07	OK	
		LC81 at 100.00%	0.07	OK	
		LC82 at 100.00%	0.07	OK	
		LC83 at 0.00%	0.07	OK	
		LC84 at 0.00%	0.07	OK	
		LC85 at 100.00%	0.07	OK	
		LC86 at 100.00%	0.07	OK	
		LC87 at 100.00%	0.07	OK	
		LC88 at 100.00%	0.07	OK	
		LC9 at 0.00%	0.10	OK	
RndBar 5_8	**8**	LC1 at 0.00%	0.15	OK	
		LC10 at 100.00%	0.10	OK	
		LC11 at 100.00%	0.03	OK	
		LC12 at 100.00%	0.05	OK	
		LC13 at 0.00%	0.15	OK	
		LC14 at 100.00%	0.23	OK	
		LC15 at 100.00%	0.18	OK	
		LC16 at 0.00%	0.12	OK	
		LC17 at 100.00%	0.17	OK	
		LC18 at 100.00%	0.20	OK	
		LC19 at 100.00%	0.22	OK	

LC2 at 100.00%	0.24	OK	
LC20 at 100.00%	0.22	OK	
LC21 at 100.00%	0.17	OK	
LC22 at 100.00%	0.10	OK	
LC23 at 100.00%	0.05	OK	
LC24 at 100.00%	0.07	OK	
LC25 at 100.00%	0.23	OK	
LC26 at 100.00%	0.24	OK	
LC27 at 100.00%	0.25	OK	
LC28 at 100.00%	0.26	OK	
LC29 at 100.00%	0.28	OK	
LC3 at 100.00%	0.19	OK	
LC30 at 100.00%	0.29	OK	
LC31 at 100.00%	**0.29**	**OK**	Eq. H1-1b
LC32 at 100.00%	0.28	OK	
LC33 at 100.00%	0.28	OK	
LC34 at 100.00%	0.26	OK	
LC35 at 100.00%	0.24	OK	
LC36 at 100.00%	0.23	OK	
LC37 at 100.00%	0.06	OK	
LC38 at 0.00%	0.23	OK	
LC39 at 100.00%	0.10	OK	
LC4 at 0.00%	0.12	OK	
LC40 at 0.00%	0.18	OK	
LC41 at 0.00%	0.17	OK	
LC42 at 0.00%	0.18	OK	
LC43 at 0.00%	0.18	OK	
LC44 at 0.00%	0.18	OK	
LC45 at 0.00%	0.19	OK	
LC46 at 0.00%	0.19	OK	
LC47 at 0.00%	0.19	OK	
LC48 at 0.00%	0.19	OK	
LC49 at 0.00%	0.18	OK	
LC5 at 100.00%	0.19	OK	
LC50 at 0.00%	0.18	OK	
LC51 at 0.00%	0.18	OK	
LC52 at 0.00%	0.18	OK	
LC53 at 100.00%	0.08	OK	
LC54 at 100.00%	0.08	OK	
LC55 at 100.00%	0.08	OK	
LC56 at 100.00%	0.08	OK	
LC57 at 100.00%	0.09	OK	
LC58 at 100.00%	0.09	OK	
LC59 at 100.00%	0.09	OK	
LC6 at 100.00%	0.22	OK	
LC60 at 100.00%	0.09	OK	
LC61 at 100.00%	0.09	OK	
LC62 at 100.00%	0.08	OK	
LC63 at 100.00%	0.08	OK	
LC64 at 100.00%	0.08	OK	
LC65 at 100.00%	0.08	OK	
LC66 at 100.00%	0.09	OK	
LC67 at 100.00%	0.09	OK	
LC68 at 100.00%	0.09	OK	
LC69 at 100.00%	0.09	OK	
LC7 at 100.00%	0.24	OK	
LC70 at 100.00%	0.10	OK	
LC71 at 100.00%	0.10	OK	
LC72 at 100.00%	0.09	OK	
LC73 at 100.00%	0.09	OK	
LC74 at 100.00%	0.09	OK	
LC75 at 100.00%	0.08	OK	
LC76 at 100.00%	0.08	OK	
LC77 at 0.00%	0.12	OK	

	LC78 at 0.00%	0.12	OK	
	LC79 at 0.00%	0.12	OK	
	LC8 at 100.00%	0.22	OK	
	LC80 at 0.00%	0.11	OK	
	LC81 at 0.00%	0.11	OK	
	LC82 at 0.00%	0.11	OK	
	LC83 at 100.00%	0.10	OK	
	LC84 at 100.00%	0.10	OK	
	LC85 at 0.00%	0.10	OK	
	LC86 at 0.00%	0.10	OK	
	LC87 at 0.00%	0.11	OK	
	LC88 at 0.00%	0.11	OK	
	LC9 at 100.00%	0.17	OK	
9	LC1 at 93.75%	0.52	With warnings	
	LC10 at 100.00%	0.20	With warnings	
	LC11 at 0.00%	0.08	With warnings	
	LC12 at 0.00%	0.09	With warnings	
	LC13 at 100.00%	0.35	With warnings	
	LC14 at 100.00%	0.95	With warnings	
	LC15 at 100.00%	0.82	With warnings	
	LC16 at 0.00%	1.05	N.G.	
	LC17 at 50.00%	1.19	N.G.	
	LC18 at 50.00%	1.37	N.G.	
	LC19 at 100.00%	0.88	With warnings	
	LC2 at 100.00%	1.12	N.G.	
	LC20 at 100.00%	0.21	With warnings	
	LC21 at 100.00%	0.37	With warnings	
	LC22 at 100.00%	0.04	With warnings	
	LC23 at 0.00%	0.07	With warnings	
	LC24 at 0.00%	0.09	With warnings	
	LC25 at 0.00%	2.28	N.G.	
	LC26 at 0.00%	2.39	N.G.	
	LC27 at 0.00%	2.38	N.G.	
	LC28 at 0.00%	2.43	N.G.	
	LC29 at 0.00%	2.44	N.G.	
	LC3 at 93.75%	1.00	With warnings	
	LC30 at 0.00%	**2.47**	**N.G.**	Eq. H1-1a
	LC31 at 0.00%	2.36	N.G.	
	LC32 at 0.00%	2.25	N.G.	
	LC33 at 0.00%	2.27	N.G.	
	LC34 at 0.00%	2.22	N.G.	
	LC35 at 0.00%	2.20	N.G.	
	LC36 at 0.00%	2.17	N.G.	
	LC37 at 0.00%	0.54	With warnings	
	LC38 at 0.00%	1.86	N.G.	
	LC39 at 0.00%	0.71	With warnings	
	LC4 at 62.50%	1.21	N.G.	
	LC40 at 68.75%	1.45	N.G.	
	LC41 at 0.00%	1.46	N.G.	
	LC42 at 0.00%	1.49	N.G.	
	LC43 at 0.00%	1.49	N.G.	
	LC44 at 0.00%	1.50	N.G.	
	LC45 at 0.00%	1.50	N.G.	
	LC46 at 0.00%	1.51	N.G.	
	LC47 at 0.00%	1.48	N.G.	
	LC48 at 0.00%	1.45	N.G.	
	LC49 at 0.00%	1.46	N.G.	
	LC5 at 50.00%	1.37	N.G.	
	LC50 at 0.00%	1.45	N.G.	
	LC51 at 0.00%	1.45	N.G.	
	LC52 at 0.00%	1.43	N.G.	
	LC53 at 0.00%	0.70	With warnings	
	LC54 at 0.00%	0.74	With warnings	

	LC55 at 0.00%	0.73	With warnings	
	LC56 at 0.00%	0.74	With warnings	
	LC57 at 0.00%	0.74	With warnings	
	LC58 at 0.00%	0.75	With warnings	
	LC59 at 0.00%	0.73	With warnings	
	LC6 at 50.00%	1.55	N.G.	Eq. H1-1a
	LC60 at 0.00%	0.69	With warnings	
	LC61 at 0.00%	0.70	With warnings	
	LC62 at 0.00%	0.69	With warnings	
	LC63 at 0.00%	0.69	With warnings	
	LC64 at 0.00%	0.68	With warnings	
	LC65 at 0.00%	0.72	With warnings	
	LC66 at 0.00%	0.75	With warnings	
	LC67 at 0.00%	0.74	With warnings	
	LC68 at 0.00%	0.75	With warnings	
	LC69 at 0.00%	0.75	With warnings	
	LC7 at 100.00%	1.05	N.G.	
	LC70 at 0.00%	0.77	With warnings	
	LC71 at 0.00%	0.74	With warnings	
	LC72 at 0.00%	0.71	With warnings	
	LC73 at 0.00%	0.71	With warnings	
	LC74 at 0.00%	0.70	With warnings	
	LC75 at 0.00%	0.70	With warnings	
	LC76 at 0.00%	0.69	With warnings	
	LC77 at 0.00%	1.13	N.G.	
	LC78 at 0.00%	1.16	N.G.	
	LC79 at 0.00%	1.15	N.G.	
	LC8 at 100.00%	0.46	With warnings	
	LC80 at 0.00%	1.16	N.G.	
	LC81 at 0.00%	1.16	N.G.	
	LC82 at 0.00%	1.18	N.G.	
	LC83 at 0.00%	1.15	N.G.	
	LC84 at 0.00%	1.11	N.G.	
	LC85 at 0.00%	1.12	N.G.	
	LC86 at 0.00%	1.11	N.G.	
	LC87 at 0.00%	1.11	N.G.	
	LC88 at 0.00%	1.10	N.G.	
	LC9 at 100.00%	0.55	With warnings	
11	LC1 at 100.00%	0.34	OK	
	LC10 at 0.00%	0.04	OK	
	LC11 at 100.00%	0.06	OK	
	LC12 at 100.00%	0.08	OK	
	LC13 at 100.00%	**0.36**	**OK**	Eq. H1-1a
	LC14 at 100.00%	0.33	OK	
	LC15 at 0.00%	0.18	OK	
	LC16 at 0.00%	0.07	OK	
	LC17 at 100.00%	0.11	OK	
	LC18 at 100.00%	0.13	OK	
	LC19 at 100.00%	0.19	OK	
	LC2 at 100.00%	0.32	OK	
	LC20 at 100.00%	0.13	OK	
	LC21 at 100.00%	0.11	OK	
	LC22 at 0.00%	0.03	OK	
	LC23 at 100.00%	0.06	OK	
	LC24 at 100.00%	0.08	OK	
	LC25 at 0.00%	0.09	OK	
	LC26 at 0.00%	0.10	OK	
	LC27 at 100.00%	0.10	OK	
	LC28 at 100.00%	0.12	OK	
	LC29 at 100.00%	0.13	OK	
	LC3 at 0.00%	0.17	OK	
	LC30 at 100.00%	0.14	OK	
	LC31 at 100.00%	0.15	OK	

LC32 at 100.00%	0.14	OK	
LC33 at 100.00%	0.13	OK	
LC34 at 100.00%	0.12	OK	
LC35 at 0.00%	0.10	OK	
LC36 at 0.00%	0.10	OK	
LC37 at 100.00%	0.03	OK	
LC38 at 100.00%	0.05	OK	
LC39 at 0.00%	0.05	OK	
LC4 at 100.00%	0.07	OK	
LC40 at 100.00%	0.06	OK	
LC41 at 0.00%	0.04	OK	
LC42 at 100.00%	0.04	OK	
LC43 at 100.00%	0.04	OK	
LC44 at 100.00%	0.04	OK	
LC45 at 100.00%	0.05	OK	
LC46 at 100.00%	0.05	OK	
LC47 at 100.00%	0.05	OK	
LC48 at 100.00%	0.05	OK	
LC49 at 100.00%	0.05	OK	
LC5 at 100.00%	0.11	OK	
LC50 at 100.00%	0.04	OK	
LC51 at 0.00%	0.04	OK	
LC52 at 0.00%	0.04	OK	
LC53 at 0.00%	0.03	OK	
LC54 at 0.00%	0.03	OK	
LC55 at 100.00%	0.03	OK	
LC56 at 100.00%	0.04	OK	
LC57 at 100.00%	0.04	OK	
LC58 at 100.00%	0.04	OK	
LC59 at 100.00%	0.05	OK	
LC6 at 100.00%	0.14	OK	
LC60 at 100.00%	0.04	OK	
LC61 at 100.00%	0.04	OK	
LC62 at 100.00%	0.04	OK	
LC63 at 0.00%	0.03	OK	
LC64 at 0.00%	0.03	OK	
LC65 at 0.00%	0.05	OK	
LC66 at 100.00%	0.05	OK	
LC67 at 100.00%	0.05	OK	
LC68 at 100.00%	0.05	OK	
LC69 at 100.00%	0.06	OK	
LC7 at 100.00%	0.20	OK	Eq. H1-1b
LC70 at 100.00%	0.06	OK	
LC71 at 100.00%	0.06	OK	
LC72 at 100.00%	0.06	OK	
LC73 at 100.00%	0.06	OK	
LC74 at 100.00%	0.05	OK	
LC75 at 100.00%	0.05	OK	
LC76 at 0.00%	0.05	OK	
LC77 at 0.00%	0.05	OK	
LC78 at 100.00%	0.05	OK	
LC79 at 100.00%	0.06	OK	
LC8 at 100.00%	0.14	OK	
LC80 at 100.00%	0.06	OK	
LC81 at 100.00%	0.06	OK	
LC82 at 100.00%	0.07	OK	
LC83 at 100.00%	0.07	OK	
LC84 at 100.00%	0.07	OK	
LC85 at 100.00%	0.06	OK	
LC86 at 100.00%	0.06	OK	
LC87 at 0.00%	0.06	OK	
LC88 at 0.00%	0.06	OK	
LC9 at 100.00%	0.11	OK	

12	LC1 at 100.00%	0.99	With warnings	
	LC10 at 0.00%	0.53	With warnings	
	LC11 at 100.00%	0.75	With warnings	
	LC12 at 100.00%	0.79	With warnings	
	LC13 at 100.00%	0.86	With warnings	
	LC14 at 100.00%	0.75	With warnings	
	LC15 at 100.00%	0.68	With warnings	
	LC16 at 100.00%	0.44	With warnings	
	LC17 at 100.00%	0.65	With warnings	
	LC18 at 100.00%	0.71	With warnings	
	LC19 at 100.00%	0.88	With warnings	
	LC2 at 100.00%	0.88	With warnings	
	LC20 at 100.00%	0.73	With warnings	
	LC21 at 100.00%	0.67	With warnings	
	LC22 at 100.00%	0.42	With warnings	
	LC23 at 100.00%	0.62	With warnings	
	LC24 at 100.00%	0.66	With warnings	
	LC25 at 100.00%	2.10	N.G.	
	LC26 at 100.00%	2.07	N.G.	
	LC27 at 100.00%	2.06	N.G.	
	LC28 at 100.00%	2.01	N.G.	
	LC29 at 100.00%	2.02	N.G.	
	LC3 at 100.00%	0.82	With warnings	
	LC30 at 100.00%	2.07	N.G.	
	LC31 at 100.00%	2.10	N.G.	Eq. H1-1a
	LC32 at 100.00%	2.07	N.G.	
	LC33 at 100.00%	2.06	N.G.	
	LC34 at 100.00%	2.01	N.G.	
	LC35 at 100.00%	2.01	N.G.	
	LC36 at 100.00%	2.05	N.G.	
	LC37 at 0.00%	0.40	With warnings	
	LC38 at 0.00%	0.58	With warnings	
	LC39 at 0.00%	0.54	With warnings	
	LC4 at 100.00%	0.55	With warnings	
	LC40 at 0.00%	**2.24**	**N.G.**	Eq. H1-1a
	LC41 at 0.00%	0.56	With warnings	
	LC42 at 0.00%	0.56	With warnings	
	LC43 at 0.00%	0.56	With warnings	
	LC44 at 0.00%	0.56	With warnings	
	LC45 at 0.00%	0.56	With warnings	
	LC46 at 100.00%	0.58	With warnings	
	LC47 at 100.00%	0.59	With warnings	
	LC48 at 100.00%	0.58	With warnings	
	LC49 at 0.00%	0.56	With warnings	
	LC5 at 100.00%	0.79	With warnings	
	LC50 at 0.00%	0.56	With warnings	
	LC51 at 0.00%	0.56	With warnings	
	LC52 at 0.00%	0.56	With warnings	
	LC53 at 0.00%	0.54	With warnings	
	LC54 at 0.00%	0.54	With warnings	
	LC55 at 0.00%	0.54	With warnings	
	LC56 at 0.00%	0.54	With warnings	
	LC57 at 0.00%	0.54	With warnings	
	LC58 at 0.00%	0.54	With warnings	
	LC59 at 0.00%	0.54	With warnings	
	LC6 at 100.00%	0.85	With warnings	
	LC60 at 0.00%	0.54	With warnings	
	LC61 at 0.00%	0.54	With warnings	
	LC62 at 0.00%	0.54	With warnings	
	LC63 at 0.00%	0.54	With warnings	
	LC64 at 0.00%	0.54	With warnings	
	LC65 at 0.00%	0.56	With warnings	
	LC66 at 0.00%	0.56	With warnings	
	LC67 at 0.00%	0.56	With warnings	

LC68 at 0.00%	0.56	With warnings
LC69 at 0.00%	0.55	With warnings
LC7 at 100.00%	1.01	N.G.
LC70 at 0.00%	0.56	With warnings
LC71 at 0.00%	0.55	With warnings
LC72 at 0.00%	0.55	With warnings
LC73 at 0.00%	0.55	With warnings
LC74 at 0.00%	0.55	With warnings
LC75 at 0.00%	0.55	With warnings
LC76 at 0.00%	0.55	With warnings
LC77 at 0.00%	1.59	N.G.
LC78 at 0.00%	1.59	N.G.
LC79 at 0.00%	1.59	N.G.
LC8 at 100.00%	0.86	With warnings
LC80 at 0.00%	1.59	N.G.
LC81 at 0.00%	1.59	N.G.
LC82 at 0.00%	1.59	N.G.
LC83 at 0.00%	1.59	N.G.
LC84 at 0.00%	1.59	N.G.
LC85 at 0.00%	1.59	N.G.
LC86 at 0.00%	1.59	N.G.
LC87 at 0.00%	1.59	N.G.
LC88 at 0.00%	1.59	N.G.
LC9 at 100.00%	0.81	With warnings

Bentley

Current Date: 8/23/2018 1:43 PM
Units system: English
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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	0.00	0.00	0.00	0
2	5.25	0.00	0.00	0
3	-5.25	0.00	0.00	0
4	0.00	2.50	0.00	0
5	5.25	2.50	0.00	0
6	-5.25	2.50	0.00	0
7	0.00	0.00	-2.625	0
8	0.00	2.50	-2.625	0
9	4.75	0.00	0.00	0
10	4.75	2.50	0.00	0
11	1.25	0.00	0.00	0
12	1.25	2.50	0.00	0
13	-4.2083	0.00	0.00	0
14	-4.2083	2.50	0.00	0
15	-0.7083	0.00	0.00	0
16	-0.7083	2.50	0.00	0
17	0.00	0.00	-2.125	0
18	0.00	2.50	-2.125	0
19	0.00	0.00	-0.792	0
20	0.00	2.50	-0.792	0
21	0.00	3.50	-2.625	0
22	0.00	4.50	-2.625	0

23	0.00	-1.00	-2.625	0
24	0.00	-2.00	-2.625	0
25	3.00	0.00	-4.00	0
39	-4.9583	5.25	0.20	0
40	-0.4583	5.25	0.20	0
41	4.9583	5.25	0.20	0
42	-4.9583	-0.75	0.20	0
43	-0.4583	-0.75	0.20	0
44	4.9583	-0.75	0.20	0
26	5.00	0.00	0.00	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
21	1	1	1	1	1	1
23	1	1	1	1	1	1
25	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	6	4		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
2	4	5		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
3	3	1		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
4	1	2		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
5	8	4		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
6	7	1		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
7	9	10		RndBar 1-1_4	A36	0.00	0.00	0.00
8	11	12		RndBar 5_8	A36	0.00	0.00	0.00
9	10	11		RndBar 5_8	A36	0.00	0.00	0.00
10	13	14		RndBar 1-1_4	A36	0.00	0.00	0.00
11	15	16		RndBar 5_8	A36	0.00	0.00	0.00
12	14	15		RndBar 5_8	A36	0.00	0.00	0.00
13	17	18		RndBar 1	A36	0.00	0.00	0.00
14	19	20		RndBar 1	A36	0.00	0.00	0.00
15	17	20		RndBar 1	A36	0.00	0.00	0.00
16	22	24		PIPE 4x0.237	A53 GrB	0.00	0.00	0.00
17	26	25		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
24	39	42		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
25	40	43		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
26	41	44		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
16	45.00	0	0.00	0.00	0.00
24	45.00	0	0.00	0.00	0.00
25	45.00	0	0.00	0.00	0.00
26	45.00	0	0.00	0.00	0.00

HUDSON
Design Group LLC

2C/3C Mount Calculations
(Proposed Conditions)

Bentley

Current Date: 8/23/2018 1:23 PM
Units system: English
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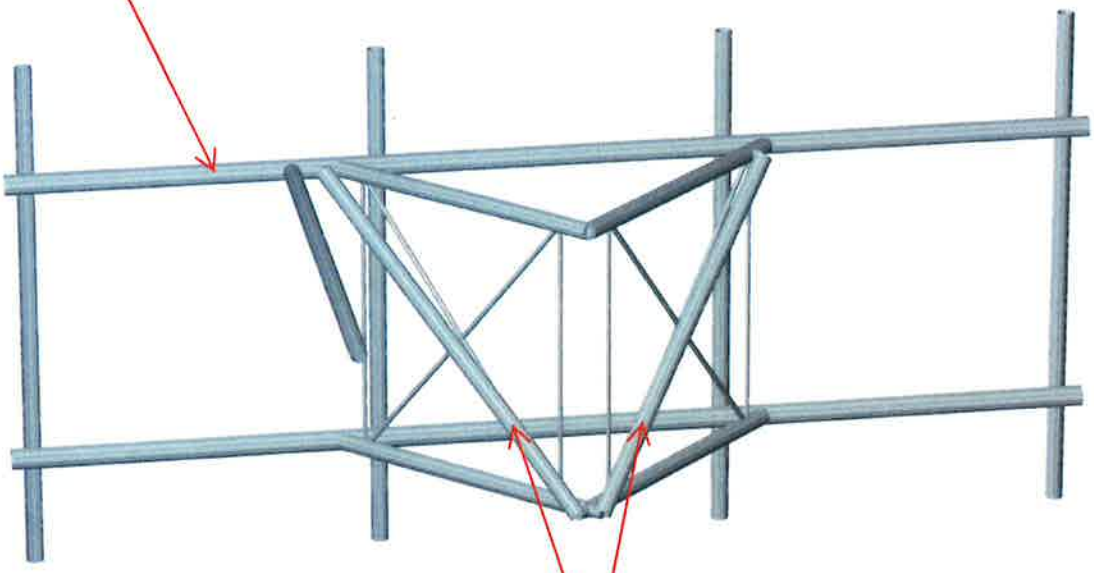
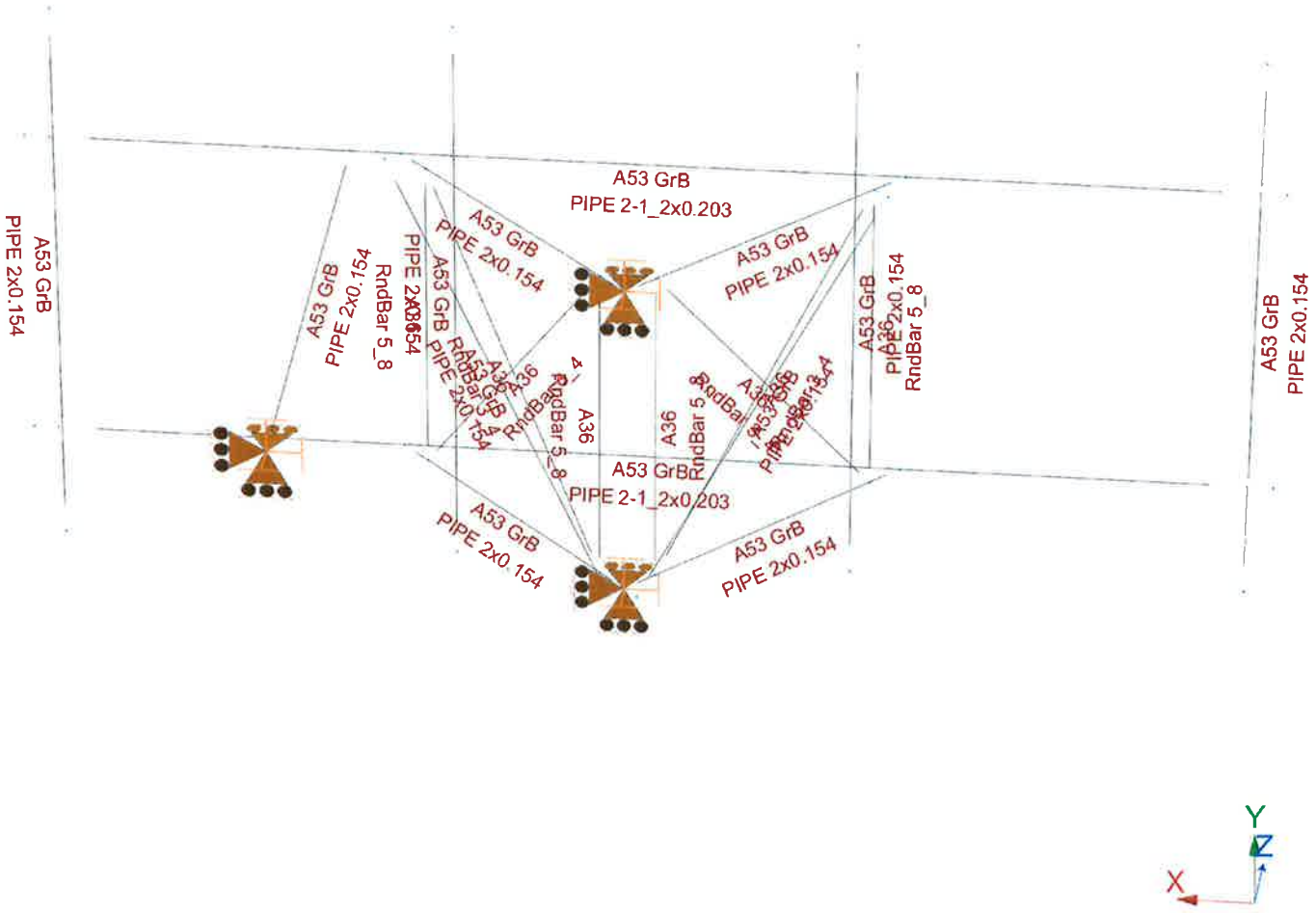
Install new mount, SitePro1 P/N VFA12-H10-2120 (or approved equal) (typ. of 1 per sector, total of 3).

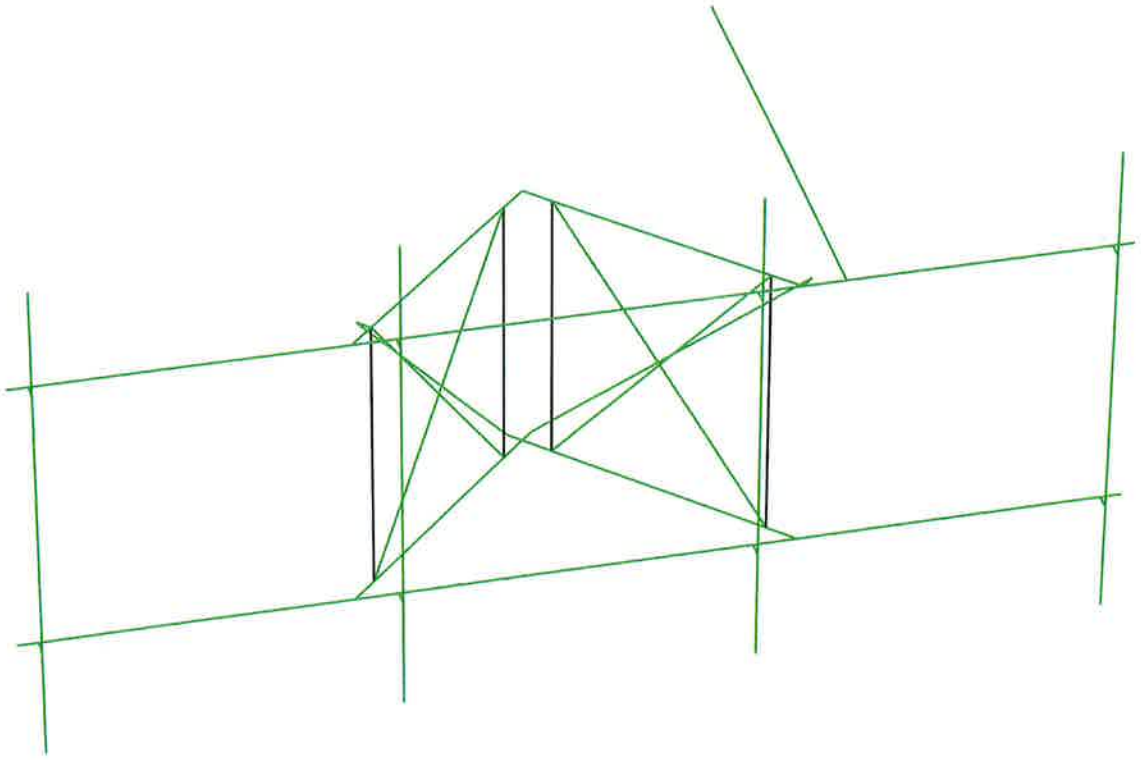


Install new 2" std. (2.38" O.D.) steel diagonal pipe braces secured to proposed standoff (typ. of 2 per sector, total of 6).


A53 GrB
PIPE 2-1_2x0.203
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
RndBar 5_8
A53 GrB
PIPE 2-1_2x0.203
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A36
A36
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
RndBar 5_8
A53 GrB
PIPE 2x0.154
Y
Z
X

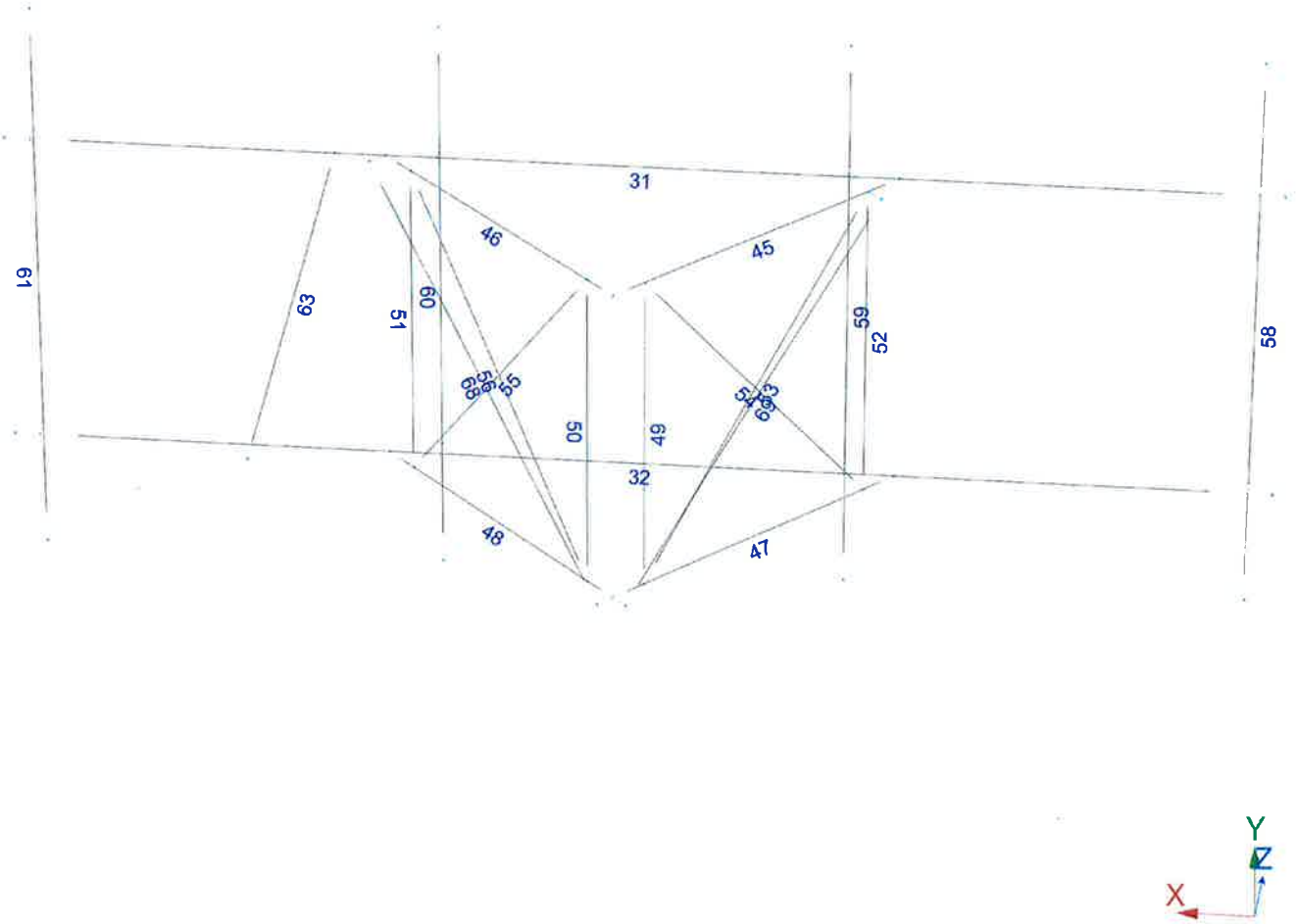
Design status

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



Bentley

Current Date: 8/23/2018 1:55 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT5178\CT5178 (2C-3C) (MOD).etz\



Bentley

Current Date: 8/23/2018 1:56 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT5178\CT5178 (2C-3C) (MOD).etz\

Load data

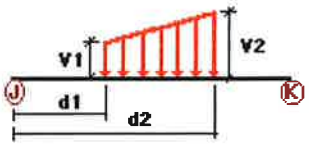
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND
LL1	250 lb Live Load on Left End	No	LL
LL2	250 lb Live Load on Center	No	LL
LL3	250 lb Live Load on Right End	No	LL
LLa1	250 lb Live Load on Antenna 1	No	LL
LLa2	250 lb Live Load on Antenna 2	No	LL
LLa3	250 lb Live Load on Antenna 3	No	LL
LLa4	250 lb Live Load on Antenna 4	No	LL
W180	-Wo	Yes	
W210	-W30	Yes	
W240	-W60	Yes	
W270	-W90	Yes	
W300	-W120	Yes	
W330	-W150	Yes	
WI180	-WI0	Yes	
WI210	-WI30	Yes	
WI240	-WI60	Yes	
WI270	-WI90	Yes	
WI300	-WI120	Yes	
WI330	-WI150	Yes	
WL180	-WL0	Yes	
WL210	-WL30	Yes	
WL240	-WL60	Yes	
WL270	-WL90	Yes	
WL300	-WL120	Yes	
WL330	-WL150	Yes	

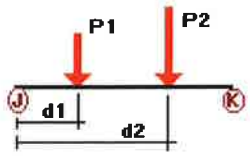
Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	31	Z	-0.009	-0.009	0.00	Yes	100.00	Yes
	32	Z	-0.009	-0.009	0.00	Yes	100.00	Yes
	45	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	46	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	47	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	48	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	58	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	59	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	60	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	61	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
W30	31	Z	-0.009	-0.009	0.00	Yes	100.00	Yes
	32	Z	-0.009	-0.009	0.00	Yes	100.00	Yes
	45	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	46	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	47	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	48	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	58	2	-0.008	-0.008	0.00	Yes	100.00	Yes
	59	2	-0.008	-0.008	0.00	Yes	100.00	Yes
	60	2	-0.008	-0.008	0.00	Yes	100.00	Yes
	61	2	-0.008	-0.008	0.00	Yes	100.00	Yes
W60	31	Z	-0.009	-0.009	0.00	Yes	100.00	Yes
	32	Z	-0.009	-0.009	0.00	Yes	100.00	Yes
	45	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	46	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	47	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	48	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	58	2	-0.008	-0.008	0.00	Yes	100.00	Yes
	59	2	-0.008	-0.008	0.00	Yes	100.00	Yes
	60	2	-0.008	-0.008	0.00	Yes	100.00	Yes
	61	2	-0.008	-0.008	0.00	Yes	100.00	Yes
W90	45	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	46	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	47	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	48	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	58	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	59	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	60	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	61	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	63	X	-0.008	-0.008	0.00	Yes	100.00	Yes
W120	31	Z	0.009	0.009	0.00	Yes	100.00	Yes
	32	Z	0.009	0.009	0.00	Yes	100.00	Yes
	45	Z	0.008	0.008	0.00	Yes	100.00	Yes
	46	Z	0.008	0.008	0.00	Yes	100.00	Yes
	47	Z	0.008	0.008	0.00	Yes	100.00	Yes
	48	Z	0.008	0.008	0.00	Yes	100.00	Yes

	58	3	0.008	0.008	0.00	Yes	100.00	Yes
	59	3	0.008	0.008	0.00	Yes	100.00	Yes
	60	3	0.008	0.008	0.00	Yes	100.00	Yes
	61	3	0.008	0.008	0.00	Yes	100.00	Yes
W150	31	Z	0.009	0.009	0.00	Yes	100.00	Yes
	32	Z	0.009	0.009	0.00	Yes	100.00	Yes
	45	Z	0.008	0.008	0.00	Yes	100.00	Yes
	46	Z	0.008	0.008	0.00	Yes	100.00	Yes
	47	Z	0.008	0.008	0.00	Yes	100.00	Yes
	48	Z	0.008	0.008	0.00	Yes	100.00	Yes
	58	3	0.008	0.008	0.00	Yes	100.00	Yes
	59	3	0.008	0.008	0.00	Yes	100.00	Yes
	60	3	0.008	0.008	0.00	Yes	100.00	Yes
	61	3	0.008	0.008	0.00	Yes	100.00	Yes
Di	31	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	32	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	45	Y	-0.009	-0.009	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
	51	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	52	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	53	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	54	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	55	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	56	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	58	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
	59	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
	60	Y	-0.014	-0.014	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

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	58	y	-0.025	1.00	No
		y	-0.025	5.00	No
	59	y	-0.055	1.00	No
		y	-0.055	5.00	No
		y	-0.044	2.00	No
		y	-0.06	4.00	No
	60	y	-0.051	2.00	No
		y	-0.033	4.00	No
	61	y	-0.023	1.00	No
		y	-0.023	5.00	No
		y	-0.038	3.00	No
Wo	58	z	-0.135	1.00	No
		z	-0.135	5.00	No
	59	z	-0.228	1.00	No

		z	-0.228	5.00	No
	60	z	-0.092	2.00	No
		z	-0.037	4.00	No
	61	z	-0.086	1.00	No
		z	-0.086	5.00	No
W30	58	2	-0.12	1.00	No
		2	-0.12	5.00	No
	59	2	-0.195	1.00	No
		2	-0.195	5.00	No
		2	-0.046	2.00	No
		2	-0.06	4.00	No
	60	2	-0.079	2.00	No
		2	-0.037	4.00	No
	61	2	-0.078	1.00	No
		2	-0.078	5.00	No
		2	-0.03	3.00	No
W60	58	2	-0.092	1.00	No
		2	-0.092	5.00	No
	59	2	-0.13	1.00	No
		2	-0.13	5.00	No
		2	-0.03	2.00	No
		2	-0.048	4.00	No
	60	2	-0.052	2.00	No
		2	-0.037	4.00	No
	61	2	-0.062	1.00	No
		2	-0.062	5.00	No
		2	-0.018	3.00	No
W90	58	x	-0.078	1.00	No
		x	-0.078	5.00	No
	59	x	-0.097	1.00	No
		x	-0.097	5.00	No
		x	-0.022	2.00	No
		x	-0.041	4.00	No
	60	x	-0.039	2.00	No
		x	-0.037	4.00	No
	61	x	-0.055	1.00	No
		x	-0.055	5.00	No
		x	-0.012	3.00	No
W120	58	3	0.092	1.00	No
		3	0.092	5.00	No
	59	3	0.13	1.00	No
		3	0.13	5.00	No
		3	0.03	2.00	No
		3	0.048	4.00	No
	60	3	0.052	2.00	No
		3	0.037	4.00	No
	61	3	0.062	1.00	No
		3	0.062	5.00	No
		3	0.018	3.00	No
W150	58	3	0.12	1.00	No
		3	0.12	5.00	No
	59	3	0.195	1.00	No
		3	0.195	5.00	No
		3	0.046	2.00	No
		3	0.06	4.00	No
	60	3	0.079	2.00	No
		3	0.037	4.00	No
	61	3	0.078	1.00	No
		3	0.078	5.00	No
		3	0.03	3.00	No

Di	58	y	-0.099	1.00	No
		y	-0.099	5.00	No
	59	y	-0.163	1.00	No
		y	-0.163	5.00	No
		y	-0.043	2.00	No
		y	-0.057	4.00	No
	60	y	-0.072	2.00	No
		y	-0.05	4.00	No
	61	y	-0.067	1.00	No
		y	-0.067	5.00	No
		y	-0.058	3.00	No
WI0	58	z	-0.049	1.00	No
		z	-0.049	5.00	No
	59	z	-0.075	1.00	No
		z	-0.075	5.00	No
	60	z	-0.035	2.00	No
		z	-0.016	4.00	No
	61	z	-0.033	1.00	No
		z	-0.033	5.00	No
WI30	58	2	-0.043	1.00	No
		2	-0.043	5.00	No
	59	2	-0.065	1.00	No
		2	-0.065	5.00	No
		2	-0.02	2.00	No
		2	-0.025	4.00	No
	60	2	-0.031	2.00	No
		2	-0.016	4.00	No
	61	2	-0.03	1.00	No
		2	-0.03	5.00	No
		2	-0.014	3.00	No
WI60	58	2	-0.036	1.00	No
		2	-0.036	5.00	No
	59	2	-0.047	1.00	No
		2	-0.047	5.00	No
		2	-0.015	2.00	No
		2	-0.021	4.00	No
	60	2	-0.022	2.00	No
		2	-0.016	4.00	No
	61	2	-0.025	1.00	No
		2	-0.025	5.00	No
		2	-0.01	3.00	No
WI90	58	x	-0.032	1.00	No
		x	-0.032	5.00	No
	59	x	-0.038	1.00	No
		x	-0.038	5.00	No
		x	-0.012	2.00	No
		x	-0.019	4.00	No
	60	x	-0.018	2.00	No
		x	-0.016	4.00	No
	61	x	-0.023	1.00	No
		x	-0.023	5.00	No
		x	-0.008	3.00	No
WI120	58	3	0.036	1.00	No
		3	0.036	5.00	No
	59	3	0.047	1.00	No
		3	0.047	5.00	No
		3	0.015	2.00	No
		3	0.021	4.00	No
	60	3	0.022	2.00	No
		3	0.016	4.00	No

	61	3	0.025	1.00	No
		3	0.025	5.00	No
		3	0.01	3.00	No
WI150	58	3	0.043	1.00	No
		3	0.043	5.00	No
	59	3	0.065	1.00	No
		3	0.065	5.00	No
		3	0.02	2.00	No
		3	0.025	4.00	No
	60	3	0.031	2.00	No
		3	0.016	4.00	No
	61	3	0.03	1.00	No
		3	0.03	5.00	No
		3	0.014	3.00	No
WL0	58	z	-0.013	1.00	No
		z	-0.013	5.00	No
	59	z	-0.022	1.00	No
		z	-0.022	5.00	No
	60	z	-0.009	2.00	No
		z	-0.004	4.00	No
	61	z	-0.009	1.00	No
		z	-0.009	5.00	No
WL30	58	2	-0.012	1.00	No
		2	-0.012	5.00	No
	59	2	-0.019	1.00	No
		2	-0.019	5.00	No
		2	-0.005	2.00	No
		2	-0.006	4.00	No
	60	2	-0.008	2.00	No
		2	-0.004	4.00	No
	61	2	-0.008	1.00	No
		2	-0.008	5.00	No
		2	-0.003	3.00	No
WL60	58	2	-0.009	1.00	No
		2	-0.009	5.00	No
	59	2	-0.013	1.00	No
		2	-0.013	5.00	No
		2	-0.003	2.00	No
		2	-0.005	4.00	No
	60	2	-0.006	2.00	No
		2	-0.004	4.00	No
	61	2	-0.006	1.00	No
		2	-0.006	5.00	No
		2	-0.002	3.00	No
WL90	58	x	-0.008	1.00	No
		x	-0.008	5.00	No
	59	x	-0.01	1.00	No
		x	-0.01	5.00	No
		x	-0.003	2.00	No
		x	-0.004	4.00	No
	60	x	-0.004	2.00	No
		x	-0.004	4.00	No
	61	x	-0.006	1.00	No
		x	-0.006	5.00	No
		x	-0.002	3.00	No
WL120	58	3	0.009	1.00	No
		3	0.009	5.00	No
	59	3	0.013	1.00	No
		3	0.013	5.00	No
		3	0.003	2.00	No

		3	0.005	4.00	No
	60	3	0.006	2.00	No
		3	0.004	4.00	No
	61	3	0.006	1.00	No
		3	0.006	5.00	No
		3	0.002	3.00	No
WL150	58	3	0.012	1.00	No
		3	0.012	5.00	No
	59	3	0.019	1.00	No
		3	0.019	5.00	No
		3	0.005	2.00	No
		3	0.006	4.00	No
	60	3	0.008	2.00	No
		3	0.004	4.00	No
	61	3	0.008	1.00	No
		3	0.008	5.00	No
		3	0.003	3.00	No
LLa1	61	y	-0.25	3.00	No
LLa3	59	y	-0.25	3.00	No
LLa4	58	y	-0.25	3.00	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00
LL1	250 lb Live Load on Left End	No	0.00	0.00	0.00
LL2	250 lb Live Load on Center	No	0.00	0.00	0.00
LL3	250 lb Live Load on Right End	No	0.00	0.00	0.00
LLa1	250 lb Live Load on Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load on Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load on Antenna 3	No	0.00	0.00	0.00
LLa4	250 lb Live Load on Antenna 4	No	0.00	0.00	0.00
W180	-Wo	Yes	0.00	0.00	0.00
W210	-W30	Yes	0.00	0.00	0.00
W240	-W60	Yes	0.00	0.00	0.00

W270	-W90	Yes	0.00	0.00	0.00
W300	-W120	Yes	0.00	0.00	0.00
W330	-W150	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
WI240	-WI60	Yes	0.00	0.00	0.00
WI270	-WI90	Yes	0.00	0.00	0.00
WI300	-WI120	Yes	0.00	0.00	0.00
WI330	-WI150	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
WL240	-WL60	Yes	0.00	0.00	0.00
WL270	-WL90	Yes	0.00	0.00	0.00
WL300	-WL120	Yes	0.00	0.00	0.00
WL330	-WL150	Yes	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00
WI0	0.00	0.00	0.00
WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00
WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LL3	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00
W180	0.00	0.00	0.00
W210	0.00	0.00	0.00
W240	0.00	0.00	0.00
W270	0.00	0.00	0.00
W300	0.00	0.00	0.00
W330	0.00	0.00	0.00
WI180	0.00	0.00	0.00
WI210	0.00	0.00	0.00

WI240	0.00	0.00	0.00
WI270	0.00	0.00	0.00
WI300	0.00	0.00	0.00
WI330	0.00	0.00	0.00
WL180	0.00	0.00	0.00
WL210	0.00	0.00	0.00
WL240	0.00	0.00	0.00
WL270	0.00	0.00	0.00
WL300	0.00	0.00	0.00
WL330	0.00	0.00	0.00

Bentley

Current Date: 8/23/2018 1:55 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT5178\CT5178 (2C-3C) (MOD).etz\

Steel Code Check

Report: Summary - For all selected load conditions

Load conditions to be included in design :

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

LC54=1.2D+WL30+LLa2
LC55=1.2D+WL60+LLa2
LC56=1.2D+WL90+LLa2
LC57=1.2D+WL120+LLa2
LC58=1.2D+WL150+LLa2
LC59=1.2D-WL0+LLa2
LC60=1.2D-WL30+LLa2
LC61=1.2D-WL60+LLa2
LC62=1.2D-WL90+LLa2
LC63=1.2D-WL120+LLa2
LC64=1.2D-WL150+LLa2
LC65=1.2D+WL0+LLa3
LC66=1.2D+WL30+LLa3
LC67=1.2D+WL60+LLa3
LC68=1.2D+WL90+LLa3
LC69=1.2D+WL120+LLa3
LC70=1.2D+WL150+LLa3
LC71=1.2D-WL0+LLa3
LC72=1.2D-WL30+LLa3
LC73=1.2D-WL60+LLa3
LC74=1.2D-WL90+LLa3
LC75=1.2D-WL120+LLa3
LC76=1.2D-WL150+LLa3
LC77=1.2D+WL0+LLa4
LC78=1.2D+WL30+LLa4
LC79=1.2D+WL60+LLa4
LC80=1.2D+WL90+LLa4
LC81=1.2D+WL120+LLa4
LC82=1.2D+WL150+LLa4
LC83=1.2D-WL0+LLa4
LC84=1.2D-WL30+LLa4
LC85=1.2D-WL60+LLa4
LC86=1.2D-WL90+LLa4
LC87=1.2D-WL120+LLa4
LC88=1.2D-WL150+LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 2-1_2x0.203	**31**	LC1 at 29.69%	**0.49**	**OK**	Eq. H1-1b
			LC10 at 70.31%	0.17	OK	
			LC11 at 74.22%	0.28	OK	
			LC12 at 29.69%	0.32	OK	
			LC13 at 29.69%	0.48	OK	
			LC14 at 70.31%	0.42	OK	
			LC15 at 70.31%	0.35	OK	
			LC16 at 70.31%	0.21	OK	
			LC17 at 74.22%	0.29	OK	
			LC18 at 74.22%	0.34	OK	
			LC19 at 29.69%	0.48	OK	
			LC2 at 70.31%	0.45	OK	Eq. H1-1b
			LC20 at 29.69%	0.43	OK	
			LC21 at 29.69%	0.36	OK	
			LC22 at 34.38%	0.15	OK	
			LC23 at 29.69%	0.26	OK	
			LC24 at 29.69%	0.31	OK	
			LC25 at 70.31%	0.30	OK	
			LC26 at 70.31%	0.31	OK	
			LC27 at 70.31%	0.30	OK	
			LC28 at 70.31%	0.27	OK	
			LC29 at 70.31%	0.25	OK	
			LC3 at 70.31%	0.37	OK	
			LC30 at 70.31%	0.26	OK	
			LC31 at 29.69%	0.29	OK	
			LC32 at 70.31%	0.29	OK	
			LC33 at 70.31%	0.28	OK	

	LC34 at 70.31%	0.25	OK	
	LC35 at 70.31%	0.26	OK	
	LC36 at 70.31%	0.26	OK	
	LC37 at 70.31%	0.07	OK	
	LC38 at 70.31%	0.09	OK	
	LC39 at 70.31%	0.09	OK	
	LC4 at 70.31%	0.23	OK	
	LC40 at 70.31%	0.09	OK	
	LC41 at 70.31%	0.23	OK	
	LC42 at 70.31%	0.23	OK	
	LC43 at 70.31%	0.22	OK	
	LC44 at 70.31%	0.22	OK	
	LC45 at 70.31%	0.22	OK	
	LC46 at 70.31%	0.22	OK	
	LC47 at 70.31%	0.23	OK	
	LC48 at 70.31%	0.23	OK	
	LC49 at 70.31%	0.23	OK	
	LC5 at 74.22%	0.31	OK	
	LC50 at 70.31%	0.22	OK	
	LC51 at 70.31%	0.21	OK	
	LC52 at 70.31%	0.22	OK	
	LC53 at 70.31%	0.10	OK	
	LC54 at 70.31%	0.10	OK	
	LC55 at 70.31%	0.10	OK	
	LC56 at 70.31%	0.09	OK	
	LC57 at 70.31%	0.09	OK	
	LC58 at 70.31%	0.09	OK	
	LC59 at 70.31%	0.10	OK	
	LC6 at 74.22%	0.35	OK	Eq. H1-1b
	LC60 at 70.31%	0.10	OK	
	LC61 at 70.31%	0.09	OK	
	LC62 at 70.31%	0.09	OK	
	LC63 at 70.31%	0.09	OK	
	LC64 at 70.31%	0.09	OK	
	LC65 at 70.31%	0.10	OK	
	LC66 at 70.31%	0.10	OK	
	LC67 at 70.31%	0.10	OK	
	LC68 at 70.31%	0.09	OK	
	LC69 at 70.31%	0.09	OK	
	LC7 at 29.69%	0.49	OK	
	LC70 at 70.31%	0.10	OK	
	LC71 at 70.31%	0.10	OK	
	LC72 at 70.31%	0.10	OK	
	LC73 at 70.31%	0.10	OK	
	LC74 at 70.31%	0.09	OK	
	LC75 at 70.31%	0.09	OK	
	LC76 at 70.31%	0.09	OK	
	LC77 at 29.69%	0.18	OK	
	LC78 at 29.69%	0.18	OK	
	LC79 at 29.69%	0.18	OK	
	LC8 at 29.69%	0.45	OK	
	LC80 at 29.69%	0.19	OK	
	LC81 at 29.69%	0.20	OK	
	LC82 at 29.69%	0.20	OK	
	LC83 at 29.69%	0.21	OK	
	LC84 at 29.69%	0.21	OK	
	LC85 at 29.69%	0.21	OK	
	LC86 at 29.69%	0.20	OK	
	LC87 at 29.69%	0.19	OK	
	LC88 at 29.69%	0.18	OK	
	LC9 at 29.69%	0.37	OK	
32	LC1 at 29.46%	0.41	OK	
	LC10 at 70.54%	0.11	OK	

LC11 at 29.46%	0.30	OK	
LC12 at 29.46%	0.35	OK	
LC13 at 29.46%	0.40	OK	
LC14 at 70.54%	0.38	OK	
LC15 at 70.54%	0.31	OK	
LC16 at 70.54%	0.14	OK	
LC17 at 29.46%	0.27	OK	
LC18 at 29.46%	0.32	OK	
LC19 at 29.46%	0.43	OK	
LC2 at 70.54%	0.39	OK	Eq. H1-1b
LC20 at 70.54%	0.33	OK	
LC21 at 70.54%	0.28	OK	
LC22 at 70.54%	0.09	OK	
LC23 at 29.46%	0.29	OK	
LC24 at 29.46%	0.34	OK	
LC25 at 29.46%	0.25	OK	
LC26 at 70.54%	0.24	OK	
LC27 at 70.54%	0.23	OK	
LC28 at 70.54%	0.19	OK	
LC29 at 29.46%	0.19	OK	
LC3 at 70.54%	0.33	OK	
LC30 at 29.46%	0.20	OK	
LC31 at 29.46%	0.23	OK	
LC32 at 70.54%	0.21	OK	
LC33 at 70.54%	0.20	OK	
LC34 at 30.36%	0.19	OK	
LC35 at 29.46%	0.23	OK	
LC36 at 29.46%	0.24	OK	
LC37 at 70.54%	0.05	OK	
LC38 at 70.54%	0.06	OK	
LC39 at 70.54%	0.06	OK	
LC4 at 70.54%	0.15	OK	
LC40 at 70.54%	0.06	OK	
LC41 at 70.54%	0.19	OK	
LC42 at 70.54%	0.19	OK	
LC43 at 70.54%	0.18	OK	
LC44 at 70.54%	0.18	OK	
LC45 at 70.54%	0.17	OK	
LC46 at 70.54%	0.17	OK	
LC47 at 70.54%	0.16	OK	
LC48 at 70.54%	0.16	OK	
LC49 at 70.54%	0.16	OK	
LC5 at 29.46%	0.28	OK	
LC50 at 70.54%	0.17	OK	
LC51 at 70.54%	0.18	OK	
LC52 at 70.54%	0.18	OK	
LC53 at 70.54%	0.08	OK	
LC54 at 70.54%	0.08	OK	
LC55 at 70.54%	0.07	OK	
LC56 at 70.54%	0.07	OK	
LC57 at 70.54%	0.06	OK	
LC58 at 70.54%	0.06	OK	
LC59 at 70.54%	0.07	OK	
LC6 at 29.46%	0.33	OK	
LC60 at 70.54%	0.07	OK	
LC61 at 70.54%	0.06	OK	
LC62 at 70.54%	0.06	OK	
LC63 at 70.54%	0.07	OK	
LC64 at 70.54%	0.07	OK	
LC65 at 70.54%	0.08	OK	
LC66 at 70.54%	0.08	OK	
LC67 at 70.54%	0.08	OK	
LC68 at 70.54%	0.07	OK	
LC69 at 70.54%	0.06	OK	

		LC7 at 29.46%	**0.44**	**OK**	Eq. H1-1b
		LC70 at 70.54%	0.06	OK	
		LC71 at 70.54%	0.07	OK	
		LC72 at 70.54%	0.07	OK	
		LC73 at 70.54%	0.06	OK	
		LC74 at 30.36%	0.07	OK	
		LC75 at 30.36%	0.07	OK	
		LC76 at 30.36%	0.07	OK	
		LC77 at 29.46%	0.19	OK	
		LC78 at 29.46%	0.18	OK	
		LC79 at 29.46%	0.18	OK	
		LC8 at 70.54%	0.35	OK	
		LC80 at 29.46%	0.17	OK	
		LC81 at 29.46%	0.16	OK	
		LC82 at 29.46%	0.16	OK	
		LC83 at 29.46%	0.16	OK	
		LC84 at 29.46%	0.16	OK	
		LC85 at 29.46%	0.16	OK	
		LC86 at 29.46%	0.17	OK	
		LC87 at 29.46%	0.18	OK	
		LC88 at 29.46%	0.18	OK	
		LC9 at 70.54%	0.29	OK	
PIPE 2x0.154	**45**	LC1 at 10.42%	**0.43**	**OK**	Eq. H1-1b
		LC10 at 12.50%	0.11	OK	
		LC11 at 10.42%	0.21	OK	
		LC12 at 0.00%	0.24	OK	
		LC13 at 0.00%	0.41	OK	
		LC14 at 10.42%	0.37	OK	
		LC15 at 10.42%	0.31	OK	
		LC16 at 10.42%	0.13	OK	
		LC17 at 10.42%	0.18	OK	
		LC18 at 0.00%	0.22	OK	
		LC19 at 0.00%	0.40	OK	Eq. H1-1b
		LC2 at 10.42%	0.39	OK	
		LC20 at 0.00%	0.35	OK	
		LC21 at 0.00%	0.29	OK	
		LC22 at 0.00%	0.10	OK	
		LC23 at 0.00%	0.20	OK	
		LC24 at 0.00%	0.24	OK	
		LC25 at 10.42%	0.29	OK	
		LC26 at 10.42%	0.28	OK	
		LC27 at 10.42%	0.27	OK	
		LC28 at 10.42%	0.25	OK	
		LC29 at 12.50%	0.22	OK	
		LC3 at 10.42%	0.33	OK	
		LC30 at 12.50%	0.22	OK	
		LC31 at 12.50%	0.25	OK	
		LC32 at 12.50%	0.24	OK	
		LC33 at 12.50%	0.24	OK	
		LC34 at 10.42%	0.22	OK	
		LC35 at 10.42%	0.25	OK	
		LC36 at 10.42%	0.25	OK	
		LC37 at 10.42%	0.06	OK	
		LC38 at 10.42%	0.07	OK	
		LC39 at 10.42%	0.07	OK	
		LC4 at 10.42%	0.15	OK	
		LC40 at 10.42%	0.07	OK	
		LC41 at 10.42%	0.09	OK	
		LC42 at 10.42%	0.09	OK	
		LC43 at 10.42%	0.09	OK	
		LC44 at 10.42%	0.08	OK	
		LC45 at 10.42%	0.07	OK	
		LC46 at 10.42%	0.07	OK	

	LC47 at 12.50%	0.07	OK	
	LC48 at 12.50%	0.07	OK	
	LC49 at 10.42%	0.07	OK	
	LC5 at 10.42%	0.20	OK	
	LC50 at 10.42%	0.08	OK	
	LC51 at 10.42%	0.08	OK	
	LC52 at 10.42%	0.08	OK	
	LC53 at 10.42%	0.09	OK	
	LC54 at 10.42%	0.09	OK	
	LC55 at 10.42%	0.08	OK	
	LC56 at 10.42%	0.08	OK	
	LC57 at 10.42%	0.07	OK	
	LC58 at 10.42%	0.07	OK	
	LC59 at 12.50%	0.07	OK	
	LC6 at 10.42%	0.22	OK	
	LC60 at 12.50%	0.07	OK	
	LC61 at 12.50%	0.07	OK	
	LC62 at 10.42%	0.07	OK	
	LC63 at 10.42%	0.08	OK	
	LC64 at 10.42%	0.08	OK	
	LC65 at 10.42%	0.11	OK	
	LC66 at 10.42%	0.11	OK	
	LC67 at 10.42%	0.10	OK	
	LC68 at 10.42%	0.10	OK	
	LC69 at 100.00%	0.09	OK	
	LC7 at 0.00%	0.40	OK	
	LC70 at 100.00%	0.09	OK	
	LC71 at 100.00%	0.10	OK	
	LC72 at 100.00%	0.10	OK	
	LC73 at 100.00%	0.10	OK	
	LC74 at 100.00%	0.09	OK	
	LC75 at 10.42%	0.10	OK	
	LC76 at 10.42%	0.10	OK	
	LC77 at 10.42%	0.18	OK	
	LC78 at 10.42%	0.18	OK	
	LC79 at 10.42%	0.18	OK	
	LC8 at 0.00%	0.34	OK	
	LC80 at 10.42%	0.17	OK	
	LC81 at 10.42%	0.16	OK	
	LC82 at 10.42%	0.16	OK	
	LC83 at 12.50%	0.16	OK	
	LC84 at 12.50%	0.16	OK	
	LC85 at 12.50%	0.16	OK	
	LC86 at 10.42%	0.16	OK	
	LC87 at 10.42%	0.17	OK	
	LC88 at 10.42%	0.17	OK	
	LC9 at 0.00%	0.28	OK	
46	LC1 at 100.00%	0.34	OK	
	LC10 at 89.58%	0.17	OK	
	LC11 at 100.00%	0.14	OK	
	LC12 at 100.00%	0.15	OK	
	LC13 at 100.00%	0.33	OK	
	LC14 at 100.00%	0.39	OK	
	LC15 at 100.00%	0.31	OK	
	LC16 at 100.00%	0.14	OK	
	LC17 at 100.00%	0.11	OK	
	LC18 at 100.00%	0.12	OK	
	LC19 at 100.00%	0.32	OK	
	LC2 at 100.00%	**0.39**	**OK**	Eq. H1-1b
	LC20 at 100.00%	0.37	OK	Eq. H1-1b
	LC21 at 100.00%	0.29	OK	
	LC22 at 89.58%	0.16	OK	
	LC23 at 100.00%	0.13	OK	

LC24 at 100.00%	0.15	OK
LC25 at 100.00%	0.15	OK
LC26 at 100.00%	0.14	OK
LC27 at 100.00%	0.15	OK
LC28 at 100.00%	0.17	OK
LC29 at 100.00%	0.19	OK
LC3 at 100.00%	0.31	OK
LC30 at 100.00%	0.19	OK
LC31 at 100.00%	0.22	OK
LC32 at 100.00%	0.23	OK
LC33 at 100.00%	0.22	OK
LC34 at 100.00%	0.20	OK
LC35 at 100.00%	0.18	OK
LC36 at 100.00%	0.18	OK
LC37 at 100.00%	0.05	OK
LC38 at 100.00%	0.06	OK
LC39 at 100.00%	0.06	OK
LC4 at 100.00%	0.15	OK
LC40 at 100.00%	0.06	OK
LC41 at 100.00%	0.15	OK
LC42 at 100.00%	0.15	OK
LC43 at 100.00%	0.15	OK
LC44 at 100.00%	0.15	OK
LC45 at 100.00%	0.16	OK
LC46 at 100.00%	0.16	OK
LC47 at 100.00%	0.17	OK
LC48 at 100.00%	0.17	OK
LC49 at 100.00%	0.17	OK
LC5 at 100.00%	0.12	OK
LC50 at 100.00%	0.16	OK
LC51 at 100.00%	0.16	OK
LC52 at 100.00%	0.16	OK
LC53 at 100.00%	0.05	OK
LC54 at 100.00%	0.05	OK
LC55 at 100.00%	0.05	OK
LC56 at 100.00%	0.06	OK
LC57 at 100.00%	0.06	OK
LC58 at 100.00%	0.06	OK
LC59 at 100.00%	0.07	OK
LC6 at 100.00%	0.13	OK
LC60 at 100.00%	0.07	OK
LC61 at 100.00%	0.07	OK
LC62 at 100.00%	0.07	OK
LC63 at 100.00%	0.06	OK
LC64 at 100.00%	0.06	OK
LC65 at 100.00%	0.05	OK
LC66 at 100.00%	0.05	OK
LC67 at 100.00%	0.05	OK
LC68 at 100.00%	0.06	OK
LC69 at 100.00%	0.06	OK
LC7 at 100.00%	0.31	OK
LC70 at 100.00%	0.06	OK
LC71 at 100.00%	0.07	OK
LC72 at 100.00%	0.07	OK
LC73 at 100.00%	0.07	OK
LC74 at 100.00%	0.07	OK
LC75 at 100.00%	0.06	OK
LC76 at 100.00%	0.06	OK
LC77 at 100.00%	0.06	OK
LC78 at 100.00%	0.06	OK
LC79 at 100.00%	0.06	OK
LC8 at 100.00%	0.36	OK
LC80 at 100.00%	0.06	OK
LC81 at 100.00%	0.07	OK

	LC82 at 100.00%	0.07	OK	
	LC83 at 100.00%	0.08	OK	
	LC84 at 100.00%	0.08	OK	
	LC85 at 100.00%	0.08	OK	
	LC86 at 100.00%	0.07	OK	
	LC87 at 100.00%	0.07	OK	
	LC88 at 100.00%	0.07	OK	
	LC9 at 100.00%	0.29	OK	
47	LC1 at 0.00%	0.34	OK	
	LC10 at 100.00%	0.25	OK	
	LC11 at 0.00%	0.26	OK	
	LC12 at 0.00%	0.29	OK	
	LC13 at 0.00%	0.34	OK	
	LC14 at 100.00%	0.29	OK	Eq. H1-1b
	LC15 at 100.00%	0.21	OK	
	LC16 at 100.00%	0.24	OK	
	LC17 at 0.00%	0.24	OK	
	LC18 at 0.00%	0.28	OK	
	LC19 at 0.00%	0.37	OK	
	LC2 at 100.00%	0.28	OK	
	LC20 at 100.00%	0.27	OK	
	LC21 at 100.00%	0.20	OK	
	LC22 at 100.00%	0.25	OK	
	LC23 at 0.00%	0.25	OK	
	LC24 at 0.00%	0.29	OK	
	LC25 at 10.42%	0.20	OK	
	LC26 at 12.50%	0.20	OK	
	LC27 at 12.50%	0.19	OK	
	LC28 at 12.50%	0.18	OK	
	LC29 at 10.42%	0.19	OK	
	LC3 at 100.00%	0.21	OK	
	LC30 at 10.42%	0.20	OK	
	LC31 at 10.42%	0.20	OK	
	LC32 at 12.50%	0.18	OK	
	LC33 at 12.50%	0.18	OK	
	LC34 at 12.50%	0.18	OK	
	LC35 at 12.50%	0.18	OK	
	LC36 at 10.42%	0.19	OK	
	LC37 at 12.50%	0.04	OK	
	LC38 at 12.50%	0.06	OK	
	LC39 at 12.50%	0.06	OK	
	LC4 at 100.00%	0.24	OK	
	LC40 at 12.50%	0.06	OK	
	LC41 at 12.50%	0.06	OK	
	LC42 at 10.42%	0.07	OK	
	LC43 at 10.42%	0.07	OK	
	LC44 at 10.42%	0.07	OK	
	LC45 at 10.42%	0.08	OK	
	LC46 at 10.42%	0.08	OK	
	LC47 at 10.42%	0.08	OK	
	LC48 at 10.42%	0.07	OK	
	LC49 at 10.42%	0.07	OK	
	LC5 at 10.42%	0.25	OK	
	LC50 at 10.42%	0.07	OK	
	LC51 at 10.42%	0.06	OK	
	LC52 at 12.50%	0.06	OK	
	LC53 at 12.50%	0.06	OK	
	LC54 at 12.50%	0.06	OK	
	LC55 at 12.50%	0.06	OK	
	LC56 at 12.50%	0.06	OK	
	LC57 at 10.42%	0.06	OK	
	LC58 at 10.42%	0.06	OK	
	LC59 at 10.42%	0.06	OK	

	LC6 at 0.00%	0.29	OK	
	LC60 at 12.50%	0.06	OK	
	LC61 at 12.50%	0.06	OK	
	LC62 at 12.50%	0.06	OK	
	LC63 at 12.50%	0.06	OK	
	LC64 at 12.50%	0.06	OK	
	LC65 at 12.50%	0.08	OK	
	LC66 at 12.50%	0.08	OK	
	LC67 at 12.50%	0.07	OK	
	LC68 at 12.50%	0.07	OK	
	LC69 at 12.50%	0.07	OK	
	LC7 at 0.00%	**0.37**	**OK**	Eq. H1-1b
	LC70 at 12.50%	0.08	OK	
	LC71 at 12.50%	0.08	OK	
	LC72 at 12.50%	0.07	OK	
	LC73 at 12.50%	0.07	OK	
	LC74 at 12.50%	0.07	OK	
	LC75 at 12.50%	0.07	OK	
	LC76 at 12.50%	0.07	OK	
	LC77 at 10.42%	0.13	OK	
	LC78 at 10.42%	0.13	OK	
	LC79 at 12.50%	0.13	OK	
	LC8 at 100.00%	0.27	OK	
	LC80 at 12.50%	0.13	OK	
	LC81 at 12.50%	0.13	OK	
	LC82 at 12.50%	0.13	OK	
	LC83 at 12.50%	0.13	OK	
	LC84 at 12.50%	0.13	OK	
	LC85 at 12.50%	0.13	OK	
	LC86 at 12.50%	0.13	OK	
	LC87 at 10.42%	0.13	OK	
	LC88 at 10.42%	0.13	OK	
	LC9 at 100.00%	0.20	OK	
48	LC1 at 100.00%	0.41	OK	
	LC10 at 0.00%	0.25	OK	
	LC11 at 89.58%	0.16	OK	
	LC12 at 89.58%	0.18	OK	
	LC13 at 100.00%	0.41	OK	
	LC14 at 100.00%	**0.49**	**OK**	Eq. H1-1b
	LC15 at 100.00%	0.39	OK	
	LC16 at 0.00%	0.27	OK	
	LC17 at 100.00%	0.13	OK	
	LC18 at 100.00%	0.16	OK	
	LC19 at 100.00%	0.40	OK	
	LC2 at 100.00%	0.49	OK	
	LC20 at 100.00%	0.49	OK	Eq. H1-1b
	LC21 at 100.00%	0.39	OK	
	LC22 at 0.00%	0.25	OK	
	LC23 at 89.58%	0.15	OK	
	LC24 at 89.58%	0.17	OK	
	LC25 at 87.50%	0.18	OK	
	LC26 at 87.50%	0.18	OK	
	LC27 at 87.50%	0.17	OK	
	LC28 at 89.58%	0.14	OK	
	LC29 at 89.58%	0.14	OK	
	LC3 at 100.00%	0.39	OK	
	LC30 at 89.58%	0.14	OK	
	LC31 at 89.58%	0.18	OK	
	LC32 at 89.58%	0.19	OK	
	LC33 at 87.50%	0.18	OK	
	LC34 at 89.58%	0.15	OK	
	LC35 at 89.58%	0.14	OK	
	LC36 at 89.58%	0.14	OK	

	LC37 at 87.50%	0.04	OK
	LC38 at 87.50%	0.05	OK
	LC39 at 87.50%	0.05	OK
	LC4 at 0.00%	0.27	OK
	LC40 at 87.50%	0.05	OK
	LC41 at 89.58%	0.12	OK
	LC42 at 87.50%	0.13	OK
	LC43 at 89.58%	0.12	OK
	LC44 at 89.58%	0.11	OK
	LC45 at 89.58%	0.11	OK
	LC46 at 89.58%	0.11	OK
	LC47 at 87.50%	0.11	OK
	LC48 at 87.50%	0.11	OK
	LC49 at 87.50%	0.11	OK
	LC5 at 100.00%	0.13	OK
	LC50 at 89.58%	0.11	OK
	LC51 at 89.58%	0.11	OK
	LC52 at 89.58%	0.12	OK
	LC53 at 89.58%	0.06	OK
	LC54 at 89.58%	0.06	OK
	LC55 at 89.58%	0.05	OK
	LC56 at 89.58%	0.05	OK
	LC57 at 87.50%	0.05	OK
	LC58 at 89.58%	0.05	OK
	LC59 at 89.58%	0.06	OK
	LC6 at 100.00%	0.15	OK
	LC60 at 89.58%	0.06	OK
	LC61 at 89.58%	0.06	OK
	LC62 at 89.58%	0.05	OK
	LC63 at 87.50%	0.05	OK
	LC64 at 89.58%	0.05	OK
	LC65 at 89.58%	0.06	OK
	LC66 at 89.58%	0.06	OK
	LC67 at 89.58%	0.05	OK
	LC68 at 89.58%	0.05	OK
	LC69 at 87.50%	0.05	OK
	LC7 at 100.00%	0.40	OK
	LC70 at 87.50%	0.05	OK
	LC71 at 89.58%	0.06	OK
	LC72 at 89.58%	0.06	OK
	LC73 at 89.58%	0.05	OK
	LC74 at 87.50%	0.05	OK
	LC75 at 89.58%	0.05	OK
	LC76 at 89.58%	0.05	OK
	LC77 at 89.58%	0.05	OK
	LC78 at 89.58%	0.05	OK
	LC79 at 87.50%	0.05	OK
	LC8 at 100.00%	0.49	OK
	LC80 at 89.58%	0.06	OK
	LC81 at 89.58%	0.06	OK
	LC82 at 89.58%	0.07	OK
	LC83 at 89.58%	0.08	OK
	LC84 at 89.58%	0.08	OK
	LC85 at 89.58%	0.08	OK
	LC86 at 89.58%	0.07	OK
	LC87 at 89.58%	0.06	OK
	LC88 at 89.58%	0.06	OK
	LC9 at 100.00%	0.39	OK
58	LC1 at 22.92%	0.11	OK
	LC10 at 22.92%	0.07	OK
	LC11 at 77.08%	0.07	OK
	LC12 at 77.08%	0.08	OK
	LC13 at 22.92%	0.09	OK

LC14 at 22.92%	0.16	OK	
LC15 at 22.92%	0.14	OK	
LC16 at 22.92%	0.14	OK	
LC17 at 22.92%	0.11	OK	
LC18 at 22.92%	0.12	OK	
LC19 at 22.92%	0.10	OK	
LC2 at 22.92%	0.18	OK	
LC20 at 22.92%	0.12	OK	
LC21 at 22.92%	0.10	OK	
LC22 at 22.92%	0.06	OK	
LC23 at 77.08%	0.07	OK	
LC24 at 77.08%	0.08	OK	
LC25 at 22.92%	0.30	OK	
LC26 at 22.92%	**0.31**	**OK**	Eq. H1-1b
LC27 at 22.92%	0.31	OK	
LC28 at 22.92%	0.31	OK	
LC29 at 22.92%	0.30	OK	
LC3 at 22.92%	0.16	OK	
LC30 at 22.92%	0.31	OK	
LC31 at 22.92%	0.29	OK	
LC32 at 77.08%	0.28	OK	
LC33 at 77.08%	0.28	OK	
LC34 at 77.08%	0.28	OK	
LC35 at 22.92%	0.29	OK	
LC36 at 77.08%	0.28	OK	
LC37 at 22.92%	0.06	OK	
LC38 at 22.92%	0.08	OK	
LC39 at 22.92%	0.08	OK	
LC4 at 22.92%	0.16	OK	
LC40 at 22.92%	0.08	OK	
LC41 at 22.92%	0.10	OK	
LC42 at 22.92%	0.10	OK	
LC43 at 22.92%	0.10	OK	
LC44 at 22.92%	0.10	OK	
LC45 at 22.92%	0.10	OK	
LC46 at 22.92%	0.10	OK	
LC47 at 22.92%	0.10	OK	
LC48 at 22.92%	0.09	OK	
LC49 at 22.92%	0.09	OK	
LC5 at 22.92%	0.13	OK	
LC50 at 22.92%	0.09	OK	
LC51 at 22.92%	0.10	OK	
LC52 at 22.92%	0.09	OK	
LC53 at 22.92%	0.08	OK	
LC54 at 22.92%	0.09	OK	
LC55 at 22.92%	0.09	OK	
LC56 at 22.92%	0.09	OK	
LC57 at 22.92%	0.08	OK	
LC58 at 22.92%	0.08	OK	
LC59 at 22.92%	0.08	OK	
LC6 at 22.92%	0.15	OK	
LC60 at 77.08%	0.08	OK	
LC61 at 22.92%	0.08	OK	
LC62 at 77.08%	0.08	OK	
LC63 at 22.92%	0.08	OK	
LC64 at 22.92%	0.08	OK	
LC65 at 22.92%	0.08	OK	
LC66 at 22.92%	0.09	OK	
LC67 at 22.92%	0.08	OK	
LC68 at 22.92%	0.08	OK	
LC69 at 22.92%	0.08	OK	
LC7 at 22.92%	0.11	OK	
LC70 at 22.92%	0.08	OK	
LC71 at 22.92%	0.08	OK	

	LC72 at 22.92%	0.08	OK	
	LC73 at 22.92%	0.08	OK	
	LC74 at 22.92%	0.08	OK	
	LC75 at 22.92%	0.08	OK	
	LC76 at 22.92%	0.08	OK	
	LC77 at 22.92%	0.26	OK	
	LC78 at 22.92%	0.27	OK	
	LC79 at 22.92%	0.27	OK	
	LC8 at 22.92%	0.13	OK	
	LC80 at 22.92%	0.27	OK	
	LC81 at 22.92%	0.26	OK	
	LC82 at 22.92%	0.27	OK	
	LC83 at 22.92%	0.26	OK	
	LC84 at 77.08%	0.26	OK	
	LC85 at 22.92%	0.26	OK	
	LC86 at 22.92%	0.26	OK	
	LC87 at 22.92%	0.26	OK	
	LC88 at 22.92%	0.26	OK	
	LC9 at 22.92%	0.10	OK	
59	LC1 at 20.83%	0.12	OK	Eq. H1-1b
	LC10 at 22.92%	0.15	OK	
	LC11 at 77.08%	0.13	OK	
	LC12 at 77.08%	0.16	OK	
	LC13 at 20.83%	0.12	OK	
	LC14 at 22.92%	0.26	OK	
	LC15 at 22.92%	0.20	OK	
	LC16 at 22.92%	0.21	OK	
	LC17 at 22.92%	0.15	OK	
	LC18 at 22.92%	0.18	OK	
	LC19 at 20.83%	0.12	OK	
	LC2 at 22.92%	**0.27**	**OK**	Eq. H1-1b
	LC20 at 22.92%	0.20	OK	
	LC21 at 22.92%	0.15	OK	
	LC22 at 22.92%	0.16	OK	
	LC23 at 77.08%	0.12	OK	
	LC24 at 77.08%	0.15	OK	
	LC25 at 77.08%	0.15	OK	
	LC26 at 22.92%	0.16	OK	
	LC27 at 77.08%	0.15	OK	
	LC28 at 22.92%	0.15	OK	
	LC29 at 77.08%	0.14	OK	
	LC3 at 22.92%	0.21	OK	
	LC30 at 22.92%	0.14	OK	
	LC31 at 22.92%	0.12	OK	
	LC32 at 22.92%	0.14	OK	
	LC33 at 22.92%	0.13	OK	
	LC34 at 77.08%	0.14	OK	
	LC35 at 77.08%	0.14	OK	
	LC36 at 77.08%	0.14	OK	
	LC37 at 77.08%	0.03	OK	
	LC38 at 77.08%	0.04	OK	
	LC39 at 77.08%	0.04	OK	
	LC4 at 22.92%	0.22	OK	
	LC40 at 77.08%	0.04	OK	
	LC41 at 77.08%	0.09	OK	
	LC42 at 77.08%	0.09	OK	
	LC43 at 77.08%	0.09	OK	
	LC44 at 77.08%	0.09	OK	
	LC45 at 77.08%	0.08	OK	
	LC46 at 77.08%	0.08	OK	
	LC47 at 77.08%	0.08	OK	
	LC48 at 77.08%	0.08	OK	
	LC49 at 77.08%	0.08	OK	

	LC5 at 22.92%	0.16	OK
	LC50 at 77.08%	0.08	OK
	LC51 at 77.08%	0.08	OK
	LC52 at 77.08%	0.08	OK
	LC53 at 77.08%	0.04	OK
	LC54 at 77.08%	0.05	OK
	LC55 at 77.08%	0.05	OK
	LC56 at 77.08%	0.04	OK
	LC57 at 77.08%	0.04	OK
	LC58 at 77.08%	0.04	OK
	LC59 at 22.92%	0.04	OK
	LC6 at 22.92%	0.19	OK
	LC60 at 22.92%	0.05	OK
	LC61 at 22.92%	0.05	OK
	LC62 at 77.08%	0.05	OK
	LC63 at 77.08%	0.05	OK
	LC64 at 77.08%	0.05	OK
	LC65 at 77.08%	0.08	OK
	LC66 at 77.08%	0.08	OK
	LC67 at 77.08%	0.08	OK
	LC68 at 77.08%	0.08	OK
	LC69 at 77.08%	0.07	OK
	LC7 at 20.83%	0.12	OK
	LC70 at 77.08%	0.07	OK
	LC71 at 77.08%	0.08	OK
	LC72 at 77.08%	0.08	OK
	LC73 at 77.08%	0.08	OK
	LC74 at 77.08%	0.08	OK
	LC75 at 77.08%	0.08	OK
	LC76 at 77.08%	0.08	OK
	LC77 at 77.08%	0.09	OK
	LC78 at 77.08%	0.10	OK
	LC79 at 77.08%	0.10	OK
	LC8 at 22.92%	0.20	OK
	LC80 at 77.08%	0.09	OK
	LC81 at 77.08%	0.09	OK
	LC82 at 77.08%	0.09	OK
	LC83 at 77.08%	0.09	OK
	LC84 at 77.08%	0.08	OK
	LC85 at 77.08%	0.09	OK
	LC86 at 77.08%	0.09	OK
	LC87 at 77.08%	0.09	OK
	LC88 at 77.08%	0.09	OK
	LC9 at 22.92%	0.14	OK
60	LC1 at 77.08%	0.13	OK
	LC10 at 22.92%	0.21	OK
	LC11 at 22.92%	0.12	OK
	LC12 at 22.92%	0.15	OK
	LC13 at 77.08%	0.12	OK
	LC14 at 22.92%	0.24	OK
	LC15 at 22.92%	0.18	OK
	LC16 at 22.92%	0.18	OK
	LC17 at 22.92%	0.10	OK
	LC18 at 22.92%	0.12	OK
	LC19 at 22.92%	0.11	OK
	LC2 at 22.92%	0.24	OK
	LC20 at 22.92%	0.27	OK
	LC21 at 22.92%	0.21	OK
	LC22 at 22.92%	0.20	OK
	LC23 at 22.92%	0.12	OK
	LC24 at 22.92%	0.14	OK
	LC25 at 77.08%	0.08	OK
	LC26 at 77.08%	0.08	OK

LC27 at 22.92%	0.08	OK	
LC28 at 22.92%	0.08	OK	
LC29 at 77.08%	0.08	OK	
LC3 at 22.92%	0.18	OK	
LC30 at 77.08%	0.08	OK	
LC31 at 77.08%	0.11	OK	
LC32 at 77.08%	0.13	OK	
LC33 at 77.08%	0.12	OK	
LC34 at 77.08%	0.12	OK	
LC35 at 77.08%	0.10	OK	
LC36 at 77.08%	0.11	OK	
LC37 at 22.92%	0.02	OK	
LC38 at 22.92%	0.03	OK	
LC39 at 22.92%	0.03	OK	
LC4 at 22.92%	0.18	OK	
LC40 at 22.92%	0.03	OK	
LC41 at 77.08%	0.06	OK	
LC42 at 77.08%	0.06	OK	
LC43 at 77.08%	0.06	OK	
LC44 at 77.08%	0.06	OK	
LC45 at 77.08%	0.07	OK	
LC46 at 77.08%	0.06	OK	
LC47 at 77.08%	0.07	OK	
LC48 at 77.08%	0.08	OK	
LC49 at 77.08%	0.07	OK	
LC5 at 22.92%	0.09	OK	
LC50 at 77.08%	0.07	OK	
LC51 at 77.08%	0.07	OK	
LC52 at 77.08%	0.07	OK	
LC53 at 77.08%	0.03	OK	
LC54 at 22.92%	0.03	OK	
LC55 at 22.92%	0.03	OK	
LC56 at 22.92%	0.03	OK	
LC57 at 22.92%	0.03	OK	
LC58 at 22.92%	0.03	OK	
LC59 at 77.08%	0.03	OK	
LC6 at 22.92%	0.12	OK	
LC60 at 77.08%	0.04	OK	
LC61 at 77.08%	0.03	OK	
LC62 at 77.08%	0.03	OK	
LC63 at 77.08%	0.03	OK	
LC64 at 77.08%	0.03	OK	
LC65 at 77.08%	0.04	OK	
LC66 at 77.08%	0.04	OK	
LC67 at 22.92%	0.04	OK	
LC68 at 22.92%	0.04	OK	
LC69 at 22.92%	0.04	OK	
LC7 at 22.92%	0.12	OK	
LC70 at 22.92%	0.04	OK	
LC71 at 22.92%	0.03	OK	
LC72 at 22.92%	0.03	OK	
LC73 at 22.92%	0.03	OK	
LC74 at 22.92%	0.03	OK	
LC75 at 77.08%	0.03	OK	
LC76 at 77.08%	0.03	OK	
LC77 at 77.08%	0.06	OK	
LC78 at 77.08%	0.06	OK	
LC79 at 77.08%	0.06	OK	
LC8 at 22.92%	**0.27**	**OK**	Eq. H1-1b
LC80 at 77.08%	0.06	OK	
LC81 at 77.08%	0.07	OK	
LC82 at 77.08%	0.07	OK	
LC83 at 77.08%	0.07	OK	
LC84 at 77.08%	0.08	OK	

	LC85 at 77.08%	0.08	OK	
	LC86 at 77.08%	0.08	OK	
	LC87 at 77.08%	0.07	OK	
	LC88 at 77.08%	0.07	OK	
	LC9 at 22.92%	0.21	OK	
61	LC1 at 77.08%	0.08	OK	
	LC10 at 22.92%	0.19	OK	
	LC11 at 22.92%	0.16	OK	
	LC12 at 22.92%	0.17	OK	
	LC13 at 77.08%	0.07	OK	
	LC14 at 77.08%	0.14	OK	
	LC15 at 77.08%	0.11	OK	
	LC16 at 22.92%	0.11	OK	
	LC17 at 22.92%	0.11	OK	
	LC18 at 22.92%	0.13	OK	
	LC19 at 77.08%	0.12	OK	
	LC2 at 77.08%	0.14	OK	
	LC20 at 22.92%	0.19	OK	
	LC21 at 22.92%	0.16	OK	
	LC22 at 22.92%	0.17	OK	
	LC23 at 22.92%	0.13	OK	
	LC24 at 22.92%	0.15	OK	
	LC25 at 22.92%	0.30	OK	
	LC26 at 22.92%	0.28	OK	
	LC27 at 22.92%	0.29	OK	
	LC28 at 22.92%	0.29	OK	
	LC29 at 22.92%	0.29	OK	
	LC3 at 77.08%	0.11	OK	
	LC30 at 22.92%	0.29	OK	
	LC31 at 22.92%	0.31	OK	
	LC32 at 22.92%	**0.32**	**OK**	Eq. H1-1b
	LC33 at 22.92%	0.32	OK	
	LC34 at 22.92%	0.32	OK	
	LC35 at 22.92%	0.31	OK	
	LC36 at 22.92%	0.32	OK	
	LC37 at 22.92%	0.08	OK	
	LC38 at 22.92%	0.10	OK	
	LC39 at 22.92%	0.10	OK	
	LC4 at 22.92%	0.11	OK	
	LC40 at 22.92%	0.10	OK	
	LC41 at 22.92%	0.28	OK	
	LC42 at 22.92%	0.27	OK	
	LC43 at 22.92%	0.27	OK	
	LC44 at 22.92%	0.27	OK	
	LC45 at 22.92%	0.28	OK	
	LC46 at 22.92%	0.27	OK	
	LC47 at 22.92%	0.28	OK	
	LC48 at 22.92%	0.28	OK	
	LC49 at 22.92%	0.28	OK	
	LC5 at 22.92%	0.11	OK	
	LC50 at 22.92%	0.28	OK	
	LC51 at 22.92%	0.28	OK	
	LC52 at 22.92%	0.28	OK	
	LC53 at 22.92%	0.10	OK	
	LC54 at 22.92%	0.10	OK	
	LC55 at 22.92%	0.10	OK	
	LC56 at 22.92%	0.10	OK	
	LC57 at 22.92%	0.10	OK	
	LC58 at 22.92%	0.10	OK	
	LC59 at 22.92%	0.10	OK	
	LC6 at 22.92%	0.13	OK	
	LC60 at 22.92%	0.11	OK	
	LC61 at 22.92%	0.11	OK	

	LC62 at 22.92%	0.11	OK	
	LC63 at 22.92%	0.11	OK	
	LC64 at 22.92%	0.11	OK	
	LC65 at 22.92%	0.10	OK	
	LC66 at 22.92%	0.09	OK	
	LC67 at 22.92%	0.09	OK	
	LC68 at 22.92%	0.09	OK	
	LC69 at 22.92%	0.10	OK	
	LC7 at 77.08%	0.14	OK	
	LC70 at 22.92%	0.10	OK	
	LC71 at 22.92%	0.10	OK	
	LC72 at 22.92%	0.10	OK	
	LC73 at 22.92%	0.10	OK	
	LC74 at 22.92%	0.10	OK	
	LC75 at 22.92%	0.10	OK	
	LC76 at 22.92%	0.10	OK	
	LC77 at 22.92%	0.12	OK	
	LC78 at 22.92%	0.11	OK	
	LC79 at 22.92%	0.11	OK	
	LC8 at 22.92%	0.21	OK	
	LC80 at 22.92%	0.11	OK	
	LC81 at 22.92%	0.12	OK	
	LC82 at 22.92%	0.12	OK	
	LC83 at 22.92%	0.12	OK	
	LC84 at 22.92%	0.12	OK	
	LC85 at 22.92%	0.12	OK	
	LC86 at 22.92%	0.12	OK	
	LC87 at 22.92%	0.12	OK	
	LC88 at 22.92%	0.12	OK	
	LC9 at 22.92%	0.19	OK	
63	LC1 at 100.00%	0.18	OK	
	LC10 at 100.00%	0.11	OK	
	LC11 at 100.00%	0.13	OK	
	LC12 at 100.00%	0.15	OK	
	LC13 at 100.00%	0.19	OK	
	LC14 at 100.00%	0.24	OK	Eq. H1-1b
	LC15 at 100.00%	0.18	OK	
	LC16 at 0.00%	0.11	OK	
	LC17 at 100.00%	0.13	OK	
	LC18 at 100.00%	0.15	OK	
	LC19 at 100.00%	0.22	OK	
	LC2 at 100.00%	0.23	OK	
	LC20 at 100.00%	0.28	OK	
	LC21 at 100.00%	0.22	OK	
	LC22 at 0.00%	0.11	OK	
	LC23 at 100.00%	0.13	OK	
	LC24 at 100.00%	0.15	OK	
	LC25 at 0.00%	0.05	OK	
	LC26 at 0.00%	0.06	OK	
	LC27 at 0.00%	0.06	OK	
	LC28 at 0.00%	0.07	OK	
	LC29 at 0.00%	0.07	OK	
	LC3 at 100.00%	0.18	OK	
	LC30 at 0.00%	0.08	OK	
	LC31 at 100.00%	0.08	OK	
	LC32 at 100.00%	0.09	OK	
	LC33 at 100.00%	0.09	OK	
	LC34 at 0.00%	0.06	OK	
	LC35 at 0.00%	0.05	OK	
	LC36 at 0.00%	0.05	OK	
	LC37 at 0.00%	0.02	OK	
	LC38 at 0.00%	0.02	OK	
	LC39 at 0.00%	0.02	OK	

	LC4 at 0.00%	0.11	OK	
	LC40 at 0.00%	0.02	OK	
	LC41 at 0.00%	0.04	OK	
	LC42 at 0.00%	0.04	OK	
	LC43 at 0.00%	0.04	OK	
	LC44 at 0.00%	0.04	OK	
	LC45 at 0.00%	0.04	OK	
	LC46 at 0.00%	0.04	OK	
	LC47 at 0.00%	0.04	OK	
	LC48 at 0.00%	0.05	OK	
	LC49 at 0.00%	0.04	OK	
	LC5 at 100.00%	0.13	OK	
	LC50 at 0.00%	0.04	OK	
	LC51 at 0.00%	0.04	OK	
	LC52 at 0.00%	0.04	OK	
	LC53 at 0.00%	0.02	OK	
	LC54 at 0.00%	0.02	OK	
	LC55 at 0.00%	0.02	OK	
	LC56 at 0.00%	0.02	OK	
	LC57 at 0.00%	0.02	OK	
	LC58 at 0.00%	0.02	OK	
	LC59 at 0.00%	0.03	OK	
	LC6 at 100.00%	0.15	OK	
	LC60 at 100.00%	0.03	OK	
	LC61 at 100.00%	0.03	OK	
	LC62 at 0.00%	0.02	OK	
	LC63 at 0.00%	0.02	OK	
	LC64 at 0.00%	0.02	OK	
	LC65 at 0.00%	0.02	OK	
	LC66 at 0.00%	0.02	OK	
	LC67 at 0.00%	0.02	OK	
	LC68 at 0.00%	0.02	OK	
	LC69 at 0.00%	0.02	OK	
	LC7 at 100.00%	0.22	OK	
	LC70 at 0.00%	0.02	OK	
	LC71 at 100.00%	0.03	OK	
	LC72 at 100.00%	0.03	OK	
	LC73 at 100.00%	0.03	OK	
	LC74 at 100.00%	0.02	OK	
	LC75 at 0.00%	0.02	OK	
	LC76 at 0.00%	0.02	OK	
	LC77 at 0.00%	0.02	OK	
	LC78 at 0.00%	0.02	OK	
	LC79 at 0.00%	0.02	OK	
	LC8 at 100.00%	**0.28**	**OK**	Eq. H1-1b
	LC80 at 0.00%	0.02	OK	
	LC81 at 0.00%	0.02	OK	
	LC82 at 0.00%	0.02	OK	
	LC83 at 100.00%	0.03	OK	
	LC84 at 100.00%	0.03	OK	
	LC85 at 100.00%	0.02	OK	
	LC86 at 100.00%	0.02	OK	
	LC87 at 0.00%	0.01	OK	
	LC88 at 0.00%	0.01	OK	
	LC9 at 100.00%	0.22	OK	
68	LC1 at 100.00%	0.11	OK	
	LC10 at 100.00%	0.08	OK	
	LC11 at 100.00%	0.03	OK	
	LC12 at 100.00%	0.04	OK	
	LC13 at 100.00%	0.11	OK	
	LC14 at 100.00%	0.13	OK	
	LC15 at 100.00%	0.10	OK	
	LC16 at 100.00%	0.06	OK	

LC17 at 100.00%	0.03	OK	
LC18 at 100.00%	0.03	OK	
LC19 at 100.00%	0.10	OK	
LC2 at 100.00%	**0.13**	**OK**	Eq. H1-1b
LC20 at 100.00%	0.13	OK	
LC21 at 100.00%	0.10	OK	
LC22 at 100.00%	0.07	OK	
LC23 at 100.00%	0.03	OK	
LC24 at 100.00%	0.03	OK	
LC25 at 100.00%	0.08	OK	
LC26 at 100.00%	0.08	OK	Eq. H1-2
LC27 at 100.00%	0.08	OK	
LC28 at 100.00%	0.08	OK	
LC29 at 100.00%	0.08	OK	
LC3 at 100.00%	0.11	OK	
LC30 at 100.00%	0.08	OK	
LC31 at 100.00%	0.07	OK	
LC32 at 100.00%	0.07	OK	
LC33 at 100.00%	0.07	OK	
LC34 at 100.00%	0.08	OK	
LC35 at 100.00%	0.08	OK	
LC36 at 100.00%	0.08	OK	
LC37 at 100.00%	0.02	OK	
LC38 at 100.00%	0.03	OK	
LC39 at 100.00%	0.03	OK	
LC4 at 100.00%	0.07	OK	
LC40 at 100.00%	0.03	OK	
LC41 at 100.00%	0.06	OK	
LC42 at 100.00%	0.06	OK	
LC43 at 100.00%	0.06	OK	
LC44 at 100.00%	0.06	OK	
LC45 at 100.00%	0.06	OK	
LC46 at 100.00%	0.06	OK	
LC47 at 100.00%	0.06	OK	
LC48 at 100.00%	0.06	OK	
LC49 at 100.00%	0.06	OK	
LC5 at 100.00%	0.04	OK	
LC50 at 100.00%	0.06	OK	
LC51 at 100.00%	0.06	OK	
LC52 at 100.00%	0.06	OK	
LC53 at 100.00%	0.03	OK	
LC54 at 100.00%	0.03	OK	
LC55 at 100.00%	0.03	OK	
LC56 at 100.00%	0.03	OK	
LC57 at 100.00%	0.03	OK	
LC58 at 100.00%	0.03	OK	
LC59 at 100.00%	0.03	OK	
LC6 at 100.00%	0.04	OK	
LC60 at 100.00%	0.03	OK	
LC61 at 100.00%	0.03	OK	
LC62 at 100.00%	0.03	OK	
LC63 at 100.00%	0.03	OK	
LC64 at 100.00%	0.03	OK	
LC65 at 0.00%	0.03	OK	
LC66 at 0.00%	0.03	OK	
LC67 at 0.00%	0.03	OK	
LC68 at 0.00%	0.03	OK	
LC69 at 100.00%	0.03	OK	
LC7 at 100.00%	0.11	OK	
LC70 at 100.00%	0.03	OK	
LC71 at 100.00%	0.03	OK	
LC72 at 100.00%	0.03	OK	
LC73 at 100.00%	0.03	OK	
LC74 at 100.00%	0.03	OK	

	LC75 at 100.00%	0.03	OK	
	LC76 at 100.00%	0.03	OK	
	LC77 at 100.00%	0.03	OK	
	LC78 at 100.00%	0.03	OK	
	LC79 at 100.00%	0.03	OK	
	LC8 at 100.00%	0.13	OK	Eq. H1-1b
	LC80 at 100.00%	0.03	OK	
	LC81 at 100.00%	0.03	OK	
	LC82 at 100.00%	0.03	OK	
	LC83 at 100.00%	0.03	OK	
	LC84 at 100.00%	0.03	OK	
	LC85 at 100.00%	0.03	OK	
	LC86 at 100.00%	0.03	OK	
	LC87 at 100.00%	0.03	OK	
	LC88 at 100.00%	0.03	OK	
	LC9 at 100.00%	0.11	OK	
69	LC1 at 100.00%	0.05	OK	
	LC10 at 100.00%	0.04	OK	
	LC11 at 100.00%	0.04	OK	
	LC12 at 0.00%	0.04	OK	
	LC13 at 100.00%	0.07	OK	
	LC14 at 100.00%	0.04	OK	
	LC15 at 100.00%	0.04	OK	
	LC16 at 100.00%	0.04	OK	
	LC17 at 100.00%	0.05	OK	
	LC18 at 100.00%	0.05	OK	
	LC19 at 100.00%	0.05	OK	
	LC2 at 100.00%	0.05	OK	
	LC20 at 0.00%	0.04	OK	
	LC21 at 100.00%	0.04	OK	
	LC22 at 0.00%	0.03	OK	
	LC23 at 0.00%	0.03	OK	
	LC24 at 100.00%	0.04	OK	
	LC25 at 100.00%	0.10	OK	
	LC26 at 100.00%	0.10	OK	
	LC27 at 100.00%	0.10	OK	
	LC28 at 100.00%	0.10	OK	
	LC29 at 100.00%	0.10	OK	
	LC3 at 100.00%	0.05	OK	
	LC30 at 100.00%	0.10	OK	
	LC31 at 100.00%	**0.10**	**OK**	Eq. H1-1b
	LC32 at 100.00%	0.10	OK	
	LC33 at 100.00%	0.10	OK	
	LC34 at 100.00%	0.10	OK	
	LC35 at 100.00%	0.10	OK	
	LC36 at 100.00%	0.10	OK	
	LC37 at 100.00%	0.03	OK	
	LC38 at 100.00%	0.04	OK	
	LC39 at 100.00%	0.04	OK	
	LC4 at 100.00%	0.04	OK	
	LC40 at 100.00%	0.04	OK	
	LC41 at 100.00%	0.03	OK	
	LC42 at 100.00%	0.03	OK	
	LC43 at 100.00%	0.03	OK	
	LC44 at 100.00%	0.03	OK	
	LC45 at 100.00%	0.03	OK	
	LC46 at 100.00%	0.03	OK	
	LC47 at 100.00%	0.03	OK	
	LC48 at 100.00%	0.03	OK	
	LC49 at 100.00%	0.03	OK	
	LC5 at 100.00%	0.06	OK	
	LC50 at 100.00%	0.03	OK	
	LC51 at 100.00%	0.03	OK	

		LC52 at 100.00%	0.03	OK	
		LC53 at 100.00%	0.03	OK	
		LC54 at 100.00%	0.04	OK	
		LC55 at 100.00%	0.04	OK	
		LC56 at 100.00%	0.04	OK	
		LC57 at 100.00%	0.04	OK	
		LC58 at 100.00%	0.04	OK	
		LC59 at 100.00%	0.04	OK	
		LC6 at 100.00%	0.06	OK	
		LC60 at 100.00%	0.04	OK	
		LC61 at 100.00%	0.04	OK	
		LC62 at 100.00%	0.04	OK	
		LC63 at 100.00%	0.03	OK	
		LC64 at 100.00%	0.03	OK	
		LC65 at 100.00%	0.07	OK	
		LC66 at 100.00%	0.07	OK	
		LC67 at 100.00%	0.07	OK	
		LC68 at 100.00%	0.07	OK	
		LC69 at 100.00%	0.07	OK	
		LC7 at 100.00%	0.06	OK	
		LC70 at 100.00%	0.07	OK	Eq. H1-1b
		LC71 at 100.00%	0.07	OK	
		LC72 at 100.00%	0.07	OK	
		LC73 at 100.00%	0.07	OK	
		LC74 at 100.00%	0.07	OK	
		LC75 at 100.00%	0.07	OK	
		LC76 at 100.00%	0.07	OK	
		LC77 at 100.00%	0.07	OK	
		LC78 at 100.00%	0.07	OK	
		LC79 at 100.00%	0.07	OK	
		LC8 at 100.00%	0.05	OK	
		LC80 at 100.00%	0.06	OK	
		LC81 at 100.00%	0.06	OK	
		LC82 at 100.00%	0.06	OK	
		LC83 at 100.00%	0.06	OK	
		LC84 at 100.00%	0.06	OK	
		LC85 at 100.00%	0.06	OK	
		LC86 at 100.00%	0.06	OK	
		LC87 at 100.00%	0.06	OK	
		LC88 at 100.00%	0.06	OK	
		LC9 at 100.00%	0.05	OK	
RndBar 3_4	**53**	LC1 at 0.00%	0.04	OK	
		LC10 at 0.00%	0.05	OK	
		LC11 at 0.00%	0.03	OK	
		LC12 at 0.00%	0.04	OK	
		LC13 at 0.00%	0.04	OK	
		LC14 at 0.00%	0.07	OK	
		LC15 at 0.00%	0.05	OK	
		LC16 at 0.00%	0.04	OK	
		LC17 at 50.00%	0.03	OK	
		LC18 at 50.00%	0.03	OK	
		LC19 at 0.00%	0.03	OK	
		LC2 at 0.00%	0.07	OK	
		LC20 at 0.00%	0.05	OK	
		LC21 at 0.00%	0.04	OK	
		LC22 at 0.00%	0.04	OK	
		LC23 at 0.00%	0.03	OK	
		LC24 at 0.00%	0.03	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%	0.06	OK	

LC3 at 0.00%	0.05	OK	
LC30 at 0.00%	0.06	OK	
LC31 at 0.00%	0.07	OK	
LC32 at 0.00%	**0.07**	**OK**	Eq. H1-1b
LC33 at 0.00%	0.07	OK	
LC34 at 0.00%	0.07	OK	
LC35 at 0.00%	0.07	OK	
LC36 at 0.00%	0.07	OK	
LC37 at 0.00%	0.02	OK	
LC38 at 0.00%	0.02	OK	
LC39 at 0.00%	0.02	OK	
LC4 at 0.00%	0.05	OK	
LC40 at 0.00%	0.02	OK	
LC41 at 0.00%	0.02	OK	
LC42 at 0.00%	0.03	OK	
LC43 at 0.00%	0.03	OK	
LC44 at 0.00%	0.02	OK	
LC45 at 0.00%	0.02	OK	
LC46 at 0.00%	0.02	OK	
LC47 at 0.00%	0.02	OK	
LC48 at 0.00%	0.02	OK	
LC49 at 0.00%	0.02	OK	
LC5 at 50.00%	0.03	OK	
LC50 at 0.00%	0.02	OK	
LC51 at 0.00%	0.02	OK	
LC52 at 0.00%	0.02	OK	
LC53 at 0.00%	0.02	OK	
LC54 at 0.00%	0.02	OK	
LC55 at 0.00%	0.02	OK	
LC56 at 0.00%	0.02	OK	
LC57 at 0.00%	0.02	OK	
LC58 at 0.00%	0.02	OK	
LC59 at 0.00%	0.02	OK	
LC6 at 50.00%	0.03	OK	Eq. H1-1b
LC60 at 0.00%	0.02	OK	
LC61 at 0.00%	0.02	OK	
LC62 at 0.00%	0.02	OK	
LC63 at 0.00%	0.02	OK	
LC64 at 0.00%	0.02	OK	
LC65 at 0.00%	0.03	OK	
LC66 at 0.00%	0.03	OK	
LC67 at 0.00%	0.03	OK	
LC68 at 0.00%	0.03	OK	
LC69 at 0.00%	0.03	OK	
LC7 at 0.00%	0.04	OK	
LC70 at 0.00%	0.03	OK	
LC71 at 0.00%	0.03	OK	
LC72 at 0.00%	0.03	OK	
LC73 at 0.00%	0.03	OK	
LC74 at 0.00%	0.03	OK	
LC75 at 0.00%	0.03	OK	
LC76 at 0.00%	0.03	OK	
LC77 at 0.00%	0.04	OK	
LC78 at 0.00%	0.04	OK	
LC79 at 0.00%	0.04	OK	
LC8 at 0.00%	0.06	OK	
LC80 at 0.00%	0.04	OK	
LC81 at 0.00%	0.04	OK	
LC82 at 0.00%	0.04	OK	
LC83 at 0.00%	0.04	OK	
LC84 at 0.00%	0.04	OK	
LC85 at 0.00%	0.04	OK	
LC86 at 0.00%	0.04	OK	
LC87 at 0.00%	0.04	OK	

	LC88 at 0.00%	0.04	OK	
	LC9 at 0.00%	0.05	OK	
54	LC1 at 100.00%	0.05	OK	
	LC10 at 100.00%	0.07	OK	
	LC11 at 100.00%	0.07	OK	
	LC12 at 100.00%	0.07	OK	
	LC13 at 100.00%	0.04	OK	
	LC14 at 50.00%	0.06	OK	
	LC15 at 50.00%	0.05	OK	
	LC16 at 100.00%	0.06	OK	
	LC17 at 100.00%	0.08	OK	
	LC18 at 100.00%	0.09	OK	
	LC19 at 100.00%	0.08	OK	
	LC2 at 50.00%	0.06	OK	
	LC20 at 50.00%	0.10	OK	
	LC21 at 50.00%	0.08	OK	
	LC22 at 50.00%	0.07	OK	
	LC23 at 100.00%	0.06	OK	
	LC24 at 100.00%	0.06	OK	
	LC25 at 100.00%	0.14	OK	
	LC26 at 100.00%	0.15	OK	
	LC27 at 100.00%	0.15	OK	
	LC28 at 100.00%	0.15	OK	
	LC29 at 100.00%	0.15	OK	
	LC3 at 50.00%	0.05	OK	
	LC30 at 100.00%	**0.16**	**OK**	Eq. H1-1b
	LC31 at 100.00%	0.15	OK	
	LC32 at 100.00%	0.15	OK	
	LC33 at 100.00%	0.15	OK	
	LC34 at 100.00%	0.14	OK	
	LC35 at 100.00%	0.14	OK	
	LC36 at 100.00%	0.14	OK	
	LC37 at 100.00%	0.03	OK	
	LC38 at 100.00%	0.05	OK	
	LC39 at 100.00%	0.05	OK	
	LC4 at 100.00%	0.07	OK	
	LC40 at 100.00%	0.05	OK	
	LC41 at 100.00%	0.05	OK	
	LC42 at 100.00%	0.05	OK	
	LC43 at 100.00%	0.05	OK	
	LC44 at 100.00%	0.05	OK	
	LC45 at 100.00%	0.06	OK	
	LC46 at 100.00%	0.06	OK	
	LC47 at 100.00%	0.06	OK	
	LC48 at 100.00%	0.05	OK	
	LC49 at 100.00%	0.05	OK	
	LC5 at 100.00%	0.09	OK	
	LC50 at 100.00%	0.05	OK	
	LC51 at 100.00%	0.05	OK	
	LC52 at 100.00%	0.05	OK	
	LC53 at 100.00%	0.04	OK	
	LC54 at 100.00%	0.05	OK	
	LC55 at 100.00%	0.05	OK	
	LC56 at 100.00%	0.05	OK	
	LC57 at 100.00%	0.05	OK	
	LC58 at 100.00%	0.05	OK	
	LC59 at 100.00%	0.05	OK	
	LC6 at 100.00%	0.10	OK	
	LC60 at 100.00%	0.05	OK	
	LC61 at 100.00%	0.05	OK	
	LC62 at 100.00%	0.04	OK	
	LC63 at 100.00%	0.04	OK	
	LC64 at 100.00%	0.04	OK	

	LC65 at 100.00%	0.06	OK	
	LC66 at 100.00%	0.06	OK	
	LC67 at 100.00%	0.06	OK	
	LC68 at 100.00%	0.06	OK	
	LC69 at 100.00%	0.06	OK	
	LC7 at 100.00%	0.09	OK	
	LC70 at 100.00%	0.06	OK	
	LC71 at 100.00%	0.06	OK	
	LC72 at 100.00%	0.07	OK	
	LC73 at 100.00%	0.07	OK	
	LC74 at 100.00%	0.07	OK	
	LC75 at 100.00%	0.07	OK	
	LC76 at 100.00%	0.07	OK	
	LC77 at 100.00%	0.09	OK	
	LC78 at 100.00%	0.09	OK	
	LC79 at 100.00%	0.09	OK	
	LC8 at 50.00%	0.10	OK	Eq. H1-1b
	LC80 at 100.00%	0.10	OK	
	LC81 at 100.00%	0.10	OK	
	LC82 at 100.00%	0.10	OK	
	LC83 at 100.00%	0.10	OK	
	LC84 at 100.00%	0.09	OK	
	LC85 at 100.00%	0.09	OK	
	LC86 at 100.00%	0.09	OK	
	LC87 at 100.00%	0.09	OK	
	LC88 at 100.00%	0.09	OK	
	LC9 at 50.00%	0.08	OK	
55	LC1 at 100.00%	0.06	OK	
	LC10 at 100.00%	0.08	OK	
	LC11 at 100.00%	0.03	OK	
	LC12 at 50.00%	0.03	OK	
	LC13 at 100.00%	0.06	OK	
	LC14 at 100.00%	0.07	OK	
	LC15 at 100.00%	0.06	OK	
	LC16 at 50.00%	0.05	OK	
	LC17 at 100.00%	0.03	OK	
	LC18 at 50.00%	0.04	OK	
	LC19 at 100.00%	0.10	OK	
	LC2 at 100.00%	0.07	OK	
	LC20 at 100.00%	0.12	OK	
	LC21 at 100.00%	0.10	OK	
	LC22 at 100.00%	0.07	OK	
	LC23 at 50.00%	0.03	OK	
	LC24 at 50.00%	0.03	OK	
	LC25 at 100.00%	0.10	OK	
	LC26 at 100.00%	0.09	OK	
	LC27 at 100.00%	0.10	OK	
	LC28 at 100.00%	0.10	OK	
	LC29 at 100.00%	0.11	OK	
	LC3 at 100.00%	0.06	OK	
	LC30 at 100.00%	0.11	OK	
	LC31 at 100.00%	0.12	OK	
	LC32 at 100.00%	0.13	OK	
	LC33 at 100.00%	0.12	OK	
	LC34 at 100.00%	0.12	OK	
	LC35 at 100.00%	0.11	OK	
	LC36 at 100.00%	0.11	OK	
	LC37 at 100.00%	0.03	OK	
	LC38 at 100.00%	0.04	OK	
	LC39 at 100.00%	0.04	OK	
	LC4 at 50.00%	0.05	OK	
	LC40 at 100.00%	0.04	OK	
	LC41 at 100.00%	0.07	OK	

	LC42 at 100.00%	0.07	OK	
	LC43 at 100.00%	0.07	OK	
	LC44 at 100.00%	0.07	OK	
	LC45 at 100.00%	0.08	OK	
	LC46 at 100.00%	0.08	OK	
	LC47 at 100.00%	0.08	OK	
	LC48 at 100.00%	0.08	OK	
	LC49 at 100.00%	0.08	OK	
	LC5 at 100.00%	0.04	OK	
	LC50 at 100.00%	0.08	OK	
	LC51 at 100.00%	0.08	OK	
	LC52 at 100.00%	0.08	OK	
	LC53 at 100.00%	0.03	OK	
	LC54 at 100.00%	0.03	OK	
	LC55 at 100.00%	0.03	OK	
	LC56 at 100.00%	0.03	OK	
	LC57 at 100.00%	0.04	OK	
	LC58 at 100.00%	0.04	OK	
	LC59 at 100.00%	0.04	OK	
	LC6 at 100.00%	0.04	OK	
	LC60 at 100.00%	0.04	OK	
	LC61 at 100.00%	0.04	OK	
	LC62 at 100.00%	0.04	OK	
	LC63 at 100.00%	0.04	OK	
	LC64 at 100.00%	0.04	OK	
	LC65 at 100.00%	0.03	OK	
	LC66 at 100.00%	0.03	OK	
	LC67 at 100.00%	0.03	OK	
	LC68 at 100.00%	0.03	OK	
	LC69 at 100.00%	0.04	OK	
	LC7 at 100.00%	0.11	OK	
	LC70 at 100.00%	0.04	OK	
	LC71 at 100.00%	0.04	OK	
	LC72 at 100.00%	0.04	OK	
	LC73 at 100.00%	0.04	OK	
	LC74 at 100.00%	0.04	OK	
	LC75 at 100.00%	0.04	OK	
	LC76 at 100.00%	0.04	OK	
	LC77 at 100.00%	0.04	OK	
	LC78 at 100.00%	0.04	OK	
	LC79 at 100.00%	0.04	OK	
	LC8 at 100.00%	**0.13**	**OK**	Eq. H1-1b
	LC80 at 100.00%	0.04	OK	
	LC81 at 100.00%	0.04	OK	
	LC82 at 100.00%	0.04	OK	
	LC83 at 100.00%	0.05	OK	
	LC84 at 100.00%	0.05	OK	
	LC85 at 100.00%	0.05	OK	
	LC86 at 100.00%	0.05	OK	
	LC87 at 100.00%	0.04	OK	
	LC88 at 100.00%	0.04	OK	
	LC9 at 100.00%	0.11	OK	
56	LC1 at 0.00%	0.03	OK	
	LC10 at 50.00%	0.03	OK	
	LC11 at 100.00%	0.03	OK	
	LC12 at 100.00%	0.03	OK	
	LC13 at 0.00%	0.03	OK	
	LC14 at 0.00%	0.05	OK	
	LC15 at 0.00%	0.03	OK	
	LC16 at 50.00%	0.03	OK	
	LC17 at 100.00%	0.02	OK	
	LC18 at 50.00%	0.02	OK	
	LC19 at 0.00%	0.03	OK	

LC2 at 0.00%	0.04	OK	
LC20 at 0.00%	0.05	OK	
LC21 at 0.00%	0.04	OK	
LC22 at 50.00%	0.03	OK	
LC23 at 100.00%	0.02	OK	
LC24 at 100.00%	0.03	OK	
LC25 at 100.00%	0.04	OK	
LC26 at 100.00%	0.04	OK	
LC27 at 100.00%	0.04	OK	
LC28 at 100.00%	0.04	OK	
LC29 at 100.00%	0.04	OK	
LC3 at 0.00%	0.04	OK	
LC30 at 100.00%	0.04	OK	
LC31 at 100.00%	0.04	OK	
LC32 at 100.00%	0.04	OK	
LC33 at 100.00%	0.04	OK	
LC34 at 100.00%	0.04	OK	Eq. H1-1b
LC35 at 100.00%	0.04	OK	
LC36 at 100.00%	0.04	OK	
LC37 at 100.00%	0.01	OK	
LC38 at 100.00%	0.01	OK	
LC39 at 100.00%	0.01	OK	
LC4 at 50.00%	0.03	OK	
LC40 at 100.00%	0.01	OK	
LC41 at 100.00%	0.03	OK	
LC42 at 100.00%	0.03	OK	
LC43 at 100.00%	0.03	OK	
LC44 at 100.00%	0.03	OK	
LC45 at 100.00%	0.03	OK	
LC46 at 100.00%	0.03	OK	
LC47 at 100.00%	0.03	OK	
LC48 at 100.00%	0.03	OK	
LC49 at 100.00%	0.03	OK	
LC5 at 100.00%	0.02	OK	
LC50 at 100.00%	0.03	OK	
LC51 at 100.00%	0.03	OK	
LC52 at 100.00%	0.03	OK	
LC53 at 100.00%	0.01	OK	
LC54 at 100.00%	0.01	OK	
LC55 at 100.00%	0.01	OK	
LC56 at 100.00%	0.01	OK	
LC57 at 100.00%	0.01	OK	
LC58 at 100.00%	0.01	OK	
LC59 at 100.00%	0.01	OK	
LC6 at 100.00%	0.02	OK	
LC60 at 100.00%	0.01	OK	
LC61 at 100.00%	0.01	OK	
LC62 at 100.00%	0.01	OK	
LC63 at 100.00%	0.01	OK	
LC64 at 100.00%	0.01	OK	
LC65 at 100.00%	0.01	OK	
LC66 at 100.00%	0.01	OK	
LC67 at 100.00%	0.01	OK	
LC68 at 100.00%	0.01	OK	
LC69 at 100.00%	0.01	OK	
LC7 at 0.00%	0.04	OK	
LC70 at 100.00%	0.01	OK	
LC71 at 100.00%	0.01	OK	
LC72 at 100.00%	0.01	OK	
LC73 at 100.00%	0.01	OK	
LC74 at 100.00%	0.01	OK	
LC75 at 100.00%	0.01	OK	
LC76 at 100.00%	0.01	OK	
LC77 at 100.00%	0.02	OK	

		LC78 at 100.00%	0.02	OK	
		LC79 at 100.00%	0.02	OK	
		LC8 at 0.00%	**0.05**	**OK**	Eq. H1-1b
		LC80 at 100.00%	0.02	OK	
		LC81 at 100.00%	0.02	OK	
		LC82 at 100.00%	0.02	OK	
		LC83 at 100.00%	0.02	OK	
		LC84 at 100.00%	0.02	OK	
		LC85 at 100.00%	0.02	OK	
		LC86 at 100.00%	0.02	OK	
		LC87 at 100.00%	0.02	OK	
		LC88 at 100.00%	0.02	OK	
		LC9 at 0.00%	0.04	OK	
RndBar 5_8	**49**	LC1 at 100.00%	0.01	With warnings	
		LC10 at 100.00%	0.14	With warnings	
		LC11 at 100.00%	0.07	With warnings	
		LC12 at 100.00%	0.06	With warnings	
		LC13 at 100.00%	0.03	With warnings	
		LC14 at 100.00%	0.03	With warnings	
		LC15 at 100.00%	0.01	With warnings	
		LC16 at 100.00%	0.05	With warnings	
		LC17 at 100.00%	0.12	With warnings	
		LC18 at 100.00%	0.13	With warnings	
		LC19 at 100.00%	0.20	With warnings	
		LC2 at 100.00%	0.01	With warnings	
		LC20 at 100.00%	0.19	With warnings	
		LC21 at 100.00%	0.17	With warnings	
		LC22 at 100.00%	0.11	With warnings	
		LC23 at 100.00%	0.04	With warnings	
		LC24 at 100.00%	0.03	With warnings	
		LC25 at 100.00%	0.29	With warnings	
		LC26 at 100.00%	0.30	With warnings	
		LC27 at 100.00%	0.30	With warnings	
		LC28 at 100.00%	0.31	With warnings	
		LC29 at 100.00%	0.32	With warnings	
		LC3 at 100.00%	0.02	With warnings	
		LC30 at 100.00%	0.32	With warnings	Eq. H1-1a
		LC31 at 100.00%	**0.34**	**With warnings**	Eq. H1-1a
		LC32 at 100.00%	0.33	With warnings	
		LC33 at 100.00%	0.33	With warnings	
		LC34 at 100.00%	0.32	With warnings	
		LC35 at 100.00%	0.31	With warnings	
		LC36 at 100.00%	0.31	With warnings	
		LC37 at 100.00%	0.08	With warnings	
		LC38 at 100.00%	0.11	With warnings	
		LC39 at 100.00%	0.11	With warnings	
		LC4 at 100.00%	0.08	With warnings	
		LC40 at 100.00%	0.11	With warnings	
		LC41 at 100.00%	0.09	With warnings	
		LC42 at 100.00%	0.09	With warnings	
		LC43 at 100.00%	0.09	With warnings	
		LC44 at 100.00%	0.10	With warnings	
		LC45 at 100.00%	0.10	With warnings	
		LC46 at 100.00%	0.10	With warnings	
		LC47 at 100.00%	0.10	With warnings	
		LC48 at 100.00%	0.10	With warnings	
		LC49 at 100.00%	0.10	With warnings	
		LC5 at 100.00%	0.15	With warnings	
		LC50 at 100.00%	0.10	With warnings	
		LC51 at 100.00%	0.09	With warnings	
		LC52 at 100.00%	0.09	With warnings	
		LC53 at 100.00%	0.10	With warnings	
		LC54 at 100.00%	0.10	With warnings	

	LC55 at 100.00%	0.10	With warnings
	LC56 at 100.00%	0.11	With warnings
	LC57 at 100.00%	0.11	With warnings
	LC58 at 100.00%	0.11	With warnings
	LC59 at 100.00%	0.11	With warnings
	LC6 at 100.00%	0.16	With warnings
	LC60 at 100.00%	0.11	With warnings
	LC61 at 100.00%	0.11	With warnings
	LC62 at 100.00%	0.11	With warnings
	LC63 at 100.00%	0.11	With warnings
	LC64 at 100.00%	0.11	With warnings
	LC65 at 100.00%	0.15	With warnings
	LC66 at 100.00%	0.15	With warnings
	LC67 at 100.00%	0.16	With warnings
	LC68 at 100.00%	0.16	With warnings
	LC69 at 100.00%	0.16	With warnings
	LC7 at 100.00%	0.23	With warnings
	LC70 at 100.00%	0.16	With warnings
	LC71 at 100.00%	0.17	With warnings
	LC72 at 100.00%	0.17	With warnings
	LC73 at 100.00%	0.16	With warnings
	LC74 at 100.00%	0.16	With warnings
	LC75 at 100.00%	0.16	With warnings
	LC76 at 100.00%	0.16	With warnings
	LC77 at 100.00%	0.17	With warnings
	LC78 at 100.00%	0.17	With warnings
	LC79 at 100.00%	0.18	With warnings
	LC8 at 100.00%	0.22	With warnings
	LC80 at 100.00%	0.18	With warnings
	LC81 at 100.00%	0.18	With warnings
	LC82 at 100.00%	0.18	With warnings
	LC83 at 100.00%	0.18	With warnings
	LC84 at 100.00%	0.18	With warnings
	LC85 at 100.00%	0.18	With warnings
	LC86 at 100.00%	0.18	With warnings
	LC87 at 100.00%	0.18	With warnings
	LC88 at 100.00%	0.18	With warnings
	LC9 at 100.00%	0.20	With warnings
50	LC1 at 100.00%	0.03	With warnings
	LC10 at 100.00%	0.11	With warnings
	LC11 at 100.00%	0.06	With warnings
	LC12 at 100.00%	0.07	With warnings
	LC13 at 100.00%	0.04	With warnings
	LC14 at 100.00%	0.03	With warnings
	LC15 at 100.00%	0.02	With warnings
	LC16 at 100.00%	0.03	With warnings
	LC17 at 100.00%	0.07	With warnings
	LC18 at 100.00%	0.07	With warnings
	LC19 at 100.00%	0.12	With warnings
	LC2 at 100.00%	0.02	With warnings
	LC20 at 100.00%	0.14	With warnings
	LC21 at 100.00%	0.12	With warnings
	LC22 at 100.00%	0.09	With warnings
	LC23 at 100.00%	0.05	With warnings
	LC24 at 100.00%	0.05	With warnings
	LC25 at 100.00%	0.19	With warnings
	LC26 at 100.00%	0.19	With warnings
	LC27 at 100.00%	0.19	With warnings
	LC28 at 100.00%	0.20	With warnings
	LC29 at 100.00%	0.20	With warnings
	LC3 at 100.00%	0.02	With warnings
	LC30 at 100.00%	0.20	With warnings
	LC31 at 100.00%	0.21	With warnings

LC32 at 100.00%	**0.22**	**With warnings**	Eq. H1-1a
LC33 at 100.00%	0.21	With warnings	
LC34 at 100.00%	0.21	With warnings	
LC35 at 100.00%	0.20	With warnings	
LC36 at 100.00%	0.20	With warnings	
LC37 at 100.00%	0.06	With warnings	
LC38 at 100.00%	0.08	With warnings	
LC39 at 100.00%	0.08	With warnings	
LC4 at 100.00%	0.04	With warnings	
LC40 at 100.00%	0.08	With warnings	
LC41 at 100.00%	0.12	With warnings	
LC42 at 100.00%	0.12	With warnings	
LC43 at 100.00%	0.12	With warnings	
LC44 at 100.00%	0.13	With warnings	
LC45 at 100.00%	0.13	With warnings	
LC46 at 100.00%	0.13	With warnings	
LC47 at 100.00%	0.13	With warnings	
LC48 at 100.00%	0.13	With warnings	
LC49 at 100.00%	0.13	With warnings	
LC5 at 100.00%	0.09	With warnings	
LC50 at 100.00%	0.13	With warnings	
LC51 at 100.00%	0.13	With warnings	
LC52 at 100.00%	0.13	With warnings	
LC53 at 100.00%	0.08	With warnings	
LC54 at 100.00%	0.07	With warnings	
LC55 at 100.00%	0.08	With warnings	
LC56 at 100.00%	0.08	With warnings	
LC57 at 100.00%	0.08	With warnings	
LC58 at 100.00%	0.08	With warnings	
LC59 at 100.00%	0.08	With warnings	
LC6 at 100.00%	0.09	With warnings	
LC60 at 100.00%	0.08	With warnings	
LC61 at 100.00%	0.08	With warnings	
LC62 at 100.00%	0.08	With warnings	
LC63 at 100.00%	0.08	With warnings	
LC64 at 100.00%	0.08	With warnings	
LC65 at 100.00%	0.08	With warnings	
LC66 at 100.00%	0.08	With warnings	
LC67 at 100.00%	0.08	With warnings	
LC68 at 100.00%	0.08	With warnings	
LC69 at 100.00%	0.09	With warnings	
LC7 at 100.00%	0.14	With warnings	
LC70 at 100.00%	0.09	With warnings	
LC71 at 100.00%	0.09	With warnings	
LC72 at 100.00%	0.09	With warnings	
LC73 at 100.00%	0.09	With warnings	
LC74 at 100.00%	0.09	With warnings	
LC75 at 100.00%	0.09	With warnings	
LC76 at 100.00%	0.09	With warnings	
LC77 at 100.00%	0.05	With warnings	
LC78 at 100.00%	0.05	With warnings	
LC79 at 100.00%	0.05	With warnings	
LC8 at 100.00%	0.16	With warnings	
LC80 at 100.00%	0.05	With warnings	
LC81 at 100.00%	0.05	With warnings	
LC82 at 100.00%	0.06	With warnings	
LC83 at 100.00%	0.06	With warnings	
LC84 at 100.00%	0.06	With warnings	
LC85 at 100.00%	0.06	With warnings	
LC86 at 100.00%	0.06	With warnings	
LC87 at 100.00%	0.05	With warnings	
LC88 at 100.00%	0.05	With warnings	
LC9 at 100.00%	0.14	With warnings	

51	LC1 at 0.00%	0.06	With warnings	
	LC10 at 100.00%	0.20	With warnings	
	LC11 at 100.00%	0.04	With warnings	
	LC12 at 100.00%	0.05	With warnings	
	LC13 at 0.00%	0.06	With warnings	
	LC14 at 0.00%	0.11	With warnings	
	LC15 at 0.00%	0.09	With warnings	
	LC16 at 0.00%	0.08	With warnings	
	LC17 at 100.00%	0.04	With warnings	
	LC18 at 100.00%	0.04	With warnings	
	LC19 at 100.00%	0.36	With warnings	
	LC2 at 0.00%	0.12	With warnings	Eq. H1-1b
	LC20 at 100.00%	**0.51**	**With warnings**	Eq. H1-1a
	LC21 at 100.00%	0.40	With warnings	
	LC22 at 100.00%	0.24	With warnings	
	LC23 at 100.00%	0.04	With warnings	
	LC24 at 100.00%	0.04	With warnings	
	LC25 at 100.00%	0.05	With warnings	
	LC26 at 100.00%	0.05	With warnings	
	LC27 at 100.00%	0.05	With warnings	
	LC28 at 100.00%	0.05	With warnings	
	LC29 at 100.00%	0.05	With warnings	
	LC3 at 0.00%	0.09	With warnings	
	LC30 at 100.00%	0.05	With warnings	
	LC31 at 100.00%	0.05	With warnings	
	LC32 at 100.00%	0.06	With warnings	
	LC33 at 100.00%	0.05	With warnings	
	LC34 at 100.00%	0.05	With warnings	
	LC35 at 100.00%	0.05	With warnings	
	LC36 at 100.00%	0.05	With warnings	
	LC37 at 100.00%	0.01	With warnings	
	LC38 at 100.00%	0.02	With warnings	
	LC39 at 100.00%	0.02	With warnings	
	LC4 at 0.00%	0.07	With warnings	
	LC40 at 100.00%	0.02	With warnings	
	LC41 at 100.00%	0.05	With warnings	
	LC42 at 100.00%	0.05	With warnings	
	LC43 at 100.00%	0.05	With warnings	
	LC44 at 100.00%	0.05	With warnings	
	LC45 at 100.00%	0.05	With warnings	
	LC46 at 100.00%	0.05	With warnings	
	LC47 at 100.00%	0.05	With warnings	
	LC48 at 100.00%	0.05	With warnings	
	LC49 at 100.00%	0.05	With warnings	
	LC5 at 100.00%	0.03	With warnings	
	LC50 at 100.00%	0.05	With warnings	
	LC51 at 100.00%	0.05	With warnings	
	LC52 at 100.00%	0.05	With warnings	
	LC53 at 100.00%	0.02	With warnings	
	LC54 at 100.00%	0.02	With warnings	
	LC55 at 100.00%	0.02	With warnings	
	LC56 at 100.00%	0.02	With warnings	
	LC57 at 100.00%	0.02	With warnings	
	LC58 at 100.00%	0.02	With warnings	
	LC59 at 100.00%	0.02	With warnings	
	LC6 at 100.00%	0.04	With warnings	
	LC60 at 100.00%	0.02	With warnings	
	LC61 at 100.00%	0.02	With warnings	
	LC62 at 100.00%	0.02	With warnings	
	LC63 at 100.00%	0.02	With warnings	
	LC64 at 100.00%	0.02	With warnings	
	LC65 at 100.00%	0.02	With warnings	
	LC66 at 100.00%	0.02	With warnings	
	LC67 at 100.00%	0.02	With warnings	

	LC68 at 100.00%	0.02	With warnings	
	LC69 at 100.00%	0.02	With warnings	
	LC7 at 100.00%	0.36	With warnings	
	LC70 at 100.00%	0.02	With warnings	
	LC71 at 100.00%	0.02	With warnings	
	LC72 at 100.00%	0.02	With warnings	
	LC73 at 100.00%	0.02	With warnings	
	LC74 at 100.00%	0.02	With warnings	
	LC75 at 100.00%	0.02	With warnings	
	LC76 at 100.00%	0.02	With warnings	
	LC77 at 100.00%	0.03	With warnings	
	LC78 at 100.00%	0.02	With warnings	
	LC79 at 100.00%	0.02	With warnings	
	LC8 at 100.00%	0.51	With warnings	
	LC80 at 100.00%	0.02	With warnings	
	LC81 at 100.00%	0.03	With warnings	
	LC82 at 100.00%	0.03	With warnings	
	LC83 at 100.00%	0.03	With warnings	
	LC84 at 100.00%	0.03	With warnings	
	LC85 at 100.00%	0.03	With warnings	
	LC86 at 100.00%	0.03	With warnings	
	LC87 at 100.00%	0.03	With warnings	
	LC88 at 100.00%	0.03	With warnings	
	LC9 at 100.00%	0.39	With warnings	
52	LC1 at 100.00%	0.03	With warnings	
	LC10 at 0.00%	0.08	With warnings	
	LC11 at 0.00%	0.06	With warnings	
	LC12 at 0.00%	0.07	With warnings	
	LC13 at 100.00%	0.02	With warnings	
	LC14 at 100.00%	0.08	With warnings	
	LC15 at 100.00%	0.07	With warnings	
	LC16 at 100.00%	0.07	With warnings	
	LC17 at 100.00%	0.17	With warnings	
	LC18 at 100.00%	0.18	With warnings	
	LC19 at 100.00%	0.18	With warnings	
	LC2 at 100.00%	0.09	With warnings	Eq. H1-1b
	LC20 at 100.00%	0.20	With warnings	
	LC21 at 100.00%	0.18	With warnings	
	LC22 at 0.00%	0.07	With warnings	
	LC23 at 0.00%	0.06	With warnings	
	LC24 at 0.00%	0.07	With warnings	
	LC25 at 100.00%	0.08	With warnings	
	LC26 at 100.00%	0.08	With warnings	
	LC27 at 100.00%	0.08	With warnings	
	LC28 at 100.00%	0.08	With warnings	
	LC29 at 100.00%	0.08	With warnings	
	LC3 at 100.00%	0.07	With warnings	
	LC30 at 100.00%	0.08	With warnings	
	LC31 at 100.00%	0.08	With warnings	
	LC32 at 100.00%	0.08	With warnings	
	LC33 at 100.00%	0.08	With warnings	
	LC34 at 100.00%	0.08	With warnings	
	LC35 at 100.00%	0.08	With warnings	
	LC36 at 100.00%	0.08	With warnings	
	LC37 at 100.00%	0.02	With warnings	
	LC38 at 100.00%	0.02	With warnings	
	LC39 at 100.00%	0.02	With warnings	
	LC4 at 100.00%	0.07	With warnings	
	LC40 at 100.00%	0.02	With warnings	
	LC41 at 100.00%	0.03	With warnings	
	LC42 at 100.00%	0.03	With warnings	
	LC43 at 100.00%	0.03	With warnings	
	LC44 at 100.00%	0.03	With warnings	

LC45 at 100.00%	0.04	With warnings	
LC46 at 100.00%	0.04	With warnings	
LC47 at 100.00%	0.03	With warnings	
LC48 at 100.00%	0.03	With warnings	
LC49 at 100.00%	0.03	With warnings	
LC5 at 100.00%	0.17	With warnings	
LC50 at 100.00%	0.03	With warnings	
LC51 at 100.00%	0.03	With warnings	
LC52 at 100.00%	0.03	With warnings	
LC53 at 100.00%	0.02	With warnings	
LC54 at 100.00%	0.02	With warnings	
LC55 at 100.00%	0.02	With warnings	
LC56 at 100.00%	0.02	With warnings	
LC57 at 100.00%	0.03	With warnings	
LC58 at 100.00%	0.03	With warnings	
LC59 at 100.00%	0.02	With warnings	
LC6 at 100.00%	0.19	With warnings	
LC60 at 100.00%	0.04	With warnings	
LC61 at 100.00%	0.03	With warnings	
LC62 at 100.00%	0.03	With warnings	
LC63 at 100.00%	0.02	With warnings	
LC64 at 100.00%	0.02	With warnings	
LC65 at 100.00%	0.05	With warnings	
LC66 at 100.00%	0.05	With warnings	
LC67 at 100.00%	0.05	With warnings	
LC68 at 100.00%	0.05	With warnings	
LC69 at 100.00%	0.05	With warnings	
LC7 at 100.00%	0.18	With warnings	
LC70 at 100.00%	0.05	With warnings	
LC71 at 100.00%	0.05	With warnings	
LC72 at 100.00%	0.05	With warnings	
LC73 at 100.00%	0.05	With warnings	
LC74 at 100.00%	0.05	With warnings	
LC75 at 100.00%	0.05	With warnings	
LC76 at 100.00%	0.05	With warnings	
LC77 at 100.00%	0.06	With warnings	
LC78 at 100.00%	0.06	With warnings	
LC79 at 100.00%	0.06	With warnings	
LC8 at 100.00%	**0.27**	**With warnings**	Eq. H1-1a
LC80 at 100.00%	0.06	With warnings	
LC81 at 100.00%	0.06	With warnings	
LC82 at 100.00%	0.06	With warnings	
LC83 at 100.00%	0.06	With warnings	
LC84 at 100.00%	0.06	With warnings	
LC85 at 100.00%	0.06	With warnings	
LC86 at 100.00%	0.06	With warnings	
LC87 at 100.00%	0.06	With warnings	
LC88 at 100.00%	0.06	With warnings	
LC9 at 100.00%	0.18	With warnings	

Bentley

Current Date: 8/23/2018 1:56 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT5178\CT5178 (2C-3C) (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
53	0.00	0.00	-2.60	0
54	-6.25	0.00	0.00	0
55	6.25	0.00	0.00	0
57	-6.25	-3.33	0.00	0
58	0.00	-3.33	-2.60	0
59	6.25	-3.33	0.00	0
60	-2.50	0.00	0.00	0
61	-2.50	-3.33	0.00	0
62	2.50	0.00	0.00	0
63	2.50	-3.33	0.00	0
69	-0.2778	0.00	-2.3111	0
70	-2.2222	0.00	-0.2889	0
71	-2.2222	-3.33	-0.2889	0
72	-0.2778	-3.33	-2.3111	0
73	2.2222	-3.33	-0.2889	0
74	2.2222	0.00	-0.2889	0
75	0.2778	-3.33	-2.3111	0
76	0.2778	0.00	-2.3111	0
96	-6.00	1.33	0.20	0
97	-6.00	-4.67	0.20	0
98	-2.00	1.33	0.20	0
99	-2.00	-4.67	0.20	0

100	2.00	1.33	0.20	0
101	2.00	-4.67	0.20	0
102	6.00	1.33	0.20	0
103	6.00	-4.67	0.20	0
105	3.00	0.00	-6.00	0
106	-0.1414	-3.33	-2.7414	0
107	-2.3636	0.00	-0.4303	0
108	0.1414	-3.33	-2.7414	0
109	2.6414	0.00	-0.1414	0
110	3.00	0.00	0.00	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
53	1	1	1	1	1	1
58	1	1	1	1	1	1
105	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
31	54	55		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
32	57	59		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
45	60	53		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
46	53	62		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
47	61	58		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
48	58	63		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
49	69	72		RndBar 5_8	A36	0.00	0.00	0.00
50	76	75		RndBar 5_8	A36	0.00	0.00	0.00
51	74	73		RndBar 5_8	A36	0.00	0.00	0.00
52	70	71		RndBar 5_8	A36	0.00	0.00	0.00
53	70	72		RndBar 3_4	A36	0.00	0.00	0.00
54	69	71		RndBar 3_4	A36	0.00	0.00	0.00
55	76	73		RndBar 3_4	A36	0.00	0.00	0.00
56	75	74		RndBar 3_4	A36	0.00	0.00	0.00
58	96	97		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
59	98	99		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
60	100	101		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
61	102	103		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
63	105	110		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
68	108	109		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
69	106	107		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
49	0.00	2	1.00	0.00	0.00
50	0.00	2	1.00	0.00	0.00
51	0.00	2	1.00	0.00	0.00
52	0.00	2	1.00	0.00	0.00
58	45.00	0	0.00	0.00	0.00
59	45.00	0	0.00	0.00	0.00
60	45.00	0	0.00	0.00	0.00
61	45.00	0	0.00	0.00	0.00

Hinges

	Node-J				Node-K						
Member	M33	M22	V3	V2	M33	M22	V3	V2	TOR	AXL	Axial rigidity
53	0	0	0	0	0	0	0	0	0	0	Tension only
54	0	0	0	0	0	0	0	0	0	0	Tension only
55	0	0	0	0	0	0	0	0	0	0	Tension only
56	0	0	0	0	0	0	0	0	0	0	Tension only

PROJECT INFORMATION

SCOPE OF WORK:	ITEMS TO BE MOUNTED ON THE EXISTING TOWER: • NEW AT&T ANTENNAS: (800-10965) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T RRUS: 4478 B5 (850) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T RRUS: 4415 B25 (PCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T SURGE ARRESTOR: DC6-48-60-18-8F (TOTAL OF 1) WITH (2) DC POWER, (1) FIBER, & (1) ALARM CABLE. • NEW SECTOR FRAME MODEL# VFA12-H10-2120 (TYP OF 1 PER SECTOR, TOTAL OF 3) TO REPLACE (3) EXISTING. ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION: • SWAP DUL TO 5216 • ADD (1) 6630 • ADD (1) XMU ITEMS TO REMAIN: • (6) ANTENNAS, (3) RRU'S, (6) COAX CABLES, (1) SURGE ARRESTOR, (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:	20 BARNABAS ROAD NEWTOWN, CT 06470
LATITUDE:	41.427791 N, 41° 25' 40.05" N
LONGITUDE:	73.343898 W, 73° 20' 38.03" W
TYPE OF SITE:	SST / INDOOR EQUIPMENT
STRUCTURE HEIGHT:	180'±
RAD CENTER:	132'±
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
RF-1	RF PLUMBING DIAGRAM	1
G-1	GROUNDING DETAILS	1

SITE NUMBER: CT5178

SITE NAME: HAWLEYVILLE

FA CODE: 10071074

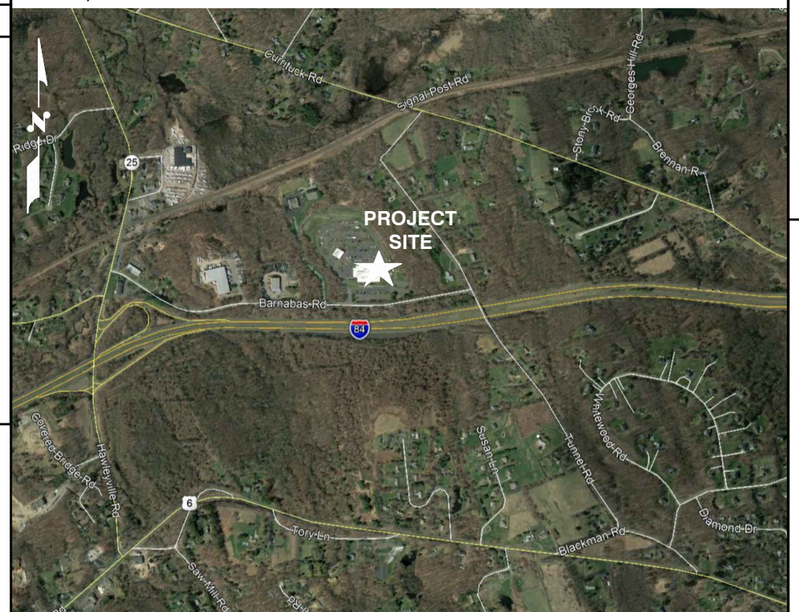
PACE ID: MRCTB030809, MRCTB031543

PROJECT: LTE 2C/3C 2019 UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:

FROM ROCKY HILL, CT: MERGE ONTO I-91 S VIA THE RAMP ON THE LEFT TOWARD NEW HAVEN. 11.5 MILES MERGE ONTO I-691 W VIA EXIT 18 TOWARD MERIDEN / WATERBURY. 7.9 MILES MERGE ONTO I-84 W VIA EXIT 1 ON THE LEFT TOWARD WATERBURY / DANBURY. 29.1 MILES TAKE THE CT-25 EXIT- EXIT 9- TOWARD BROOKFIELD. 0.2 MILES TURN RIGHT ONTO HAWLEYVILLE RD / CT-25. 0.1 MILES TURN RIGHT ONTO BARNABAS RD. 0.6 MILES END AT 20 BARNABAS RD, NEWTOWN, CT 06470-1228



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: CT5178
SITE NAME: HAWLEYVILLE

20 BARNABAS ROAD
NEWTOWN, CT 06470
FAIRFIELD COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
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A	10/10/18	ISSUED FOR REVIEW	GA	AT	DJC

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

STATE OF CONNECTICUT · STEVEN R. FRASER · No. 23951 · LICENSED PROFESSIONAL ENGINEER

AT&T

TITLE SHEET
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5178	T-1	1

GROUNDING NOTES

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

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

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

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

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

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

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

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

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

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

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

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

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

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

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

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

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

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

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

20. APPLICABLE BUILDING CODES:
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

    BUILDING CODE: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70-2017)

    SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

    AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

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

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

ABBREVIATIONS

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

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

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

SITE NUMBER: CT5178
SITE NAME: HAWLEYVILLE

20 BARNABAS ROAD
NEWTOWN, CT 06470
FAIRFIELD COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	11/27/18	ISSUED FOR CONSTRUCTION	GA	AT	DJC
A	10/10/18	ISSUED FOR REVIEW	GA	AT	DJC

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

STATE OF CONNECTICUT · DEREK J. CREASEY · No. 23935 · LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5178	GN-1	1

NOTE:

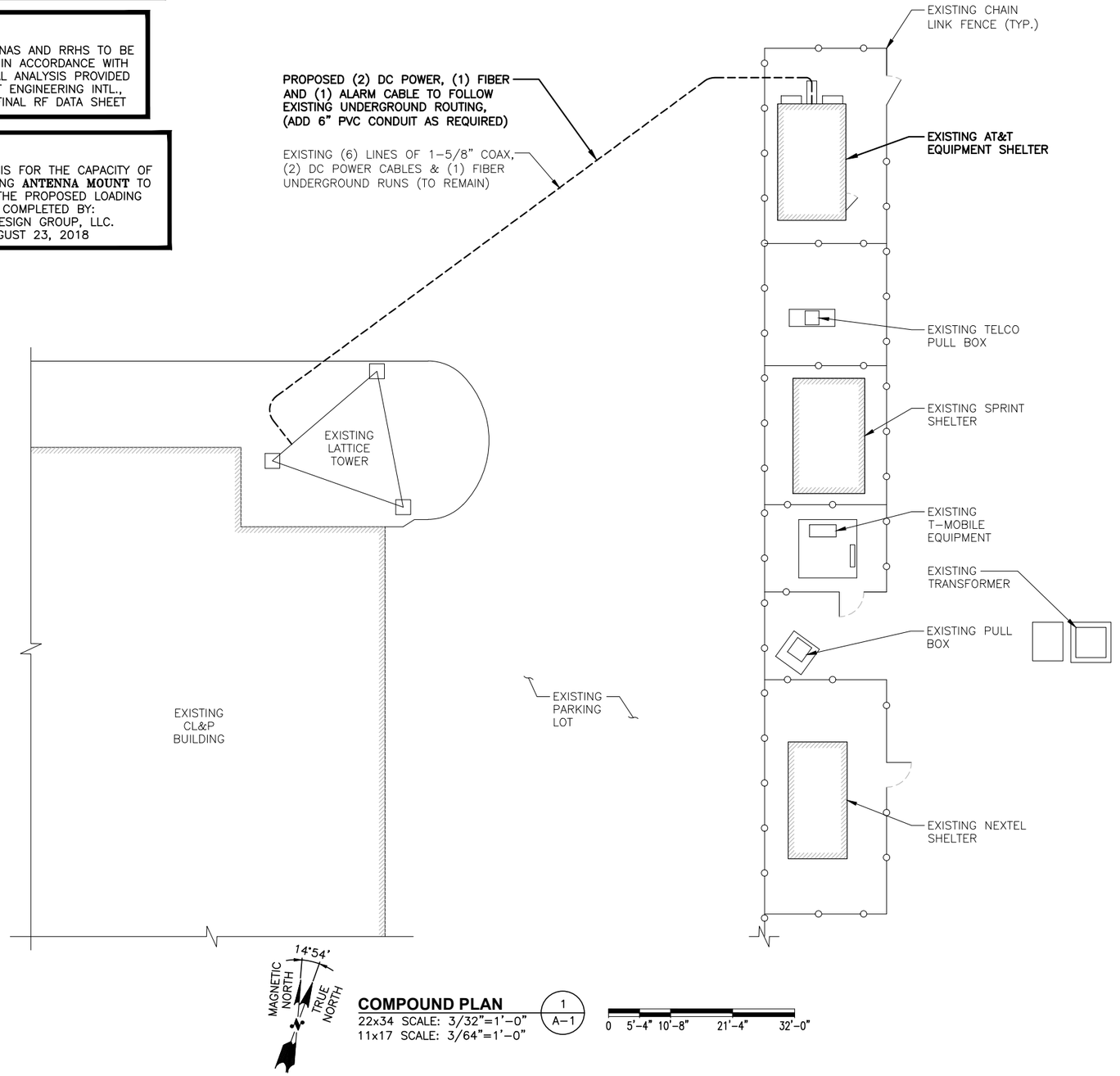
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

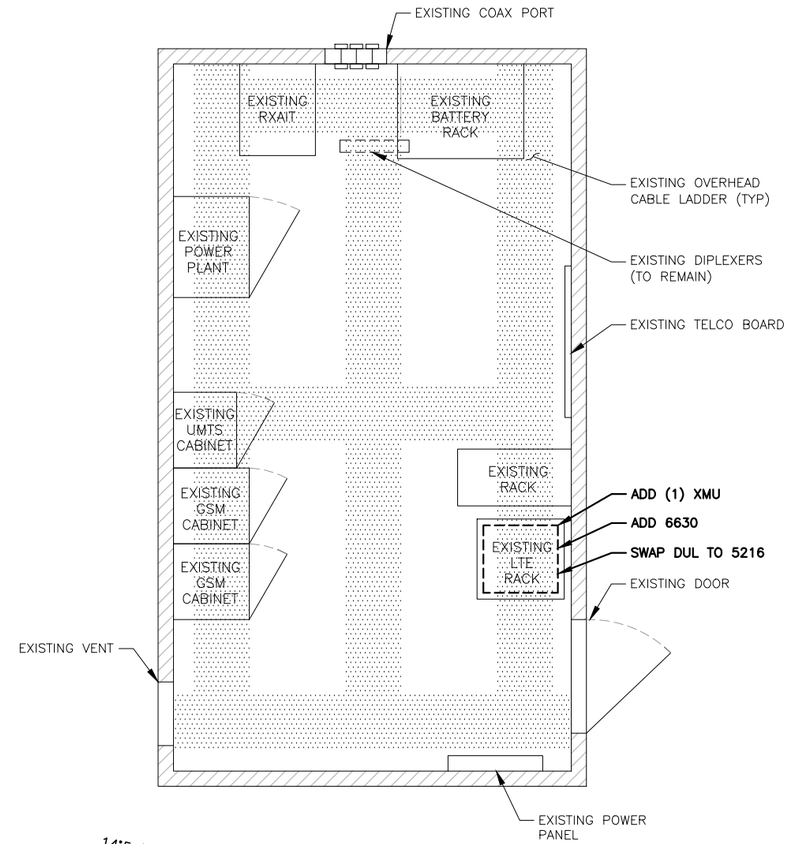
ALL ANTENNAS AND RRHS TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY MALOUF ENGINEERING INTL., INC. AND FINAL RF DATA SHEET

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 23, 2018



COMPOUND PLAN (1 / A-1)
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"
0 5'-4" 10'-8" 21'-4" 32'-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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STATE OF CONNECTICUT · DEREK J. CREASEY · 28358 · LICENSED PROFESSIONAL ENGINEER

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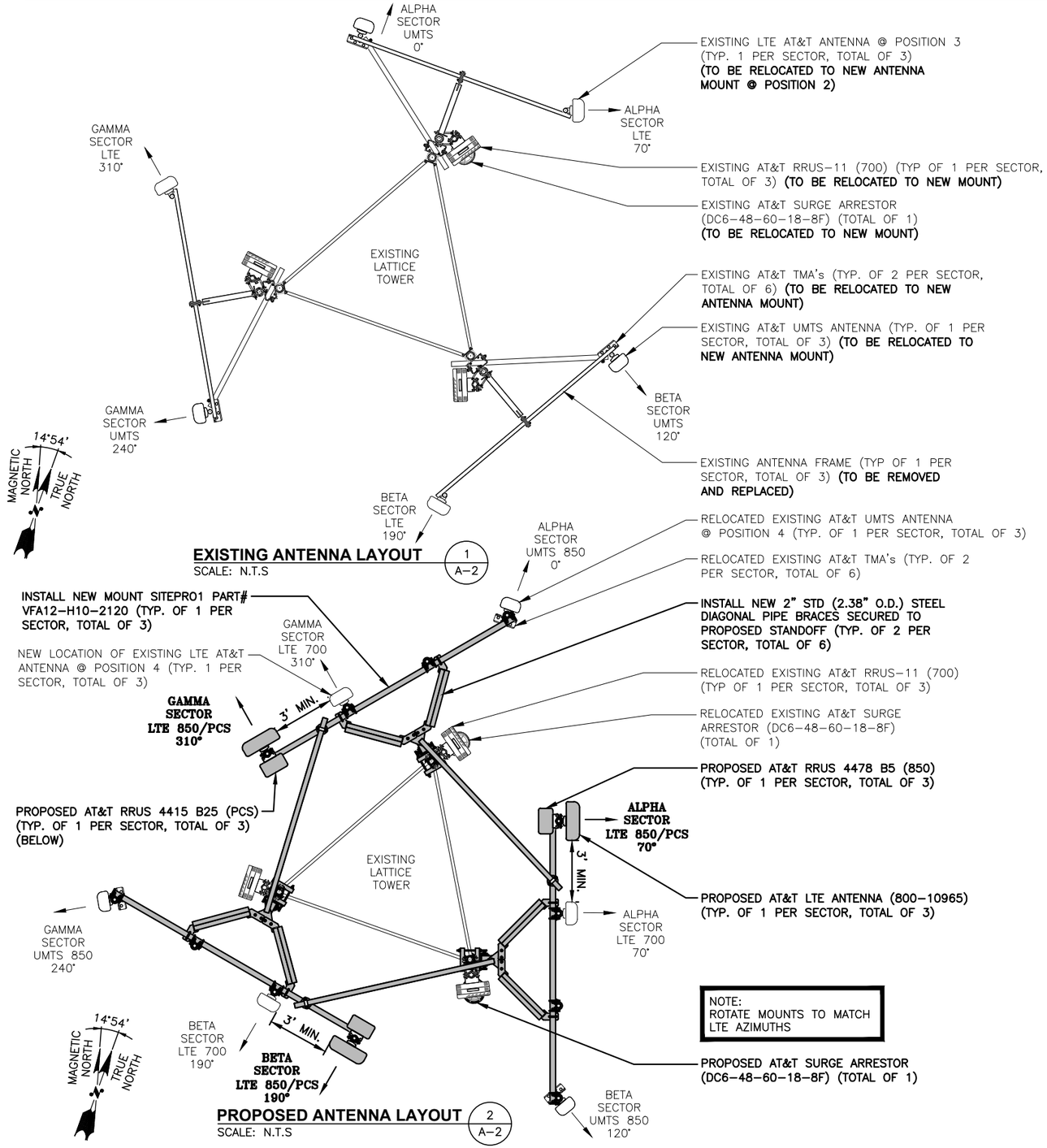
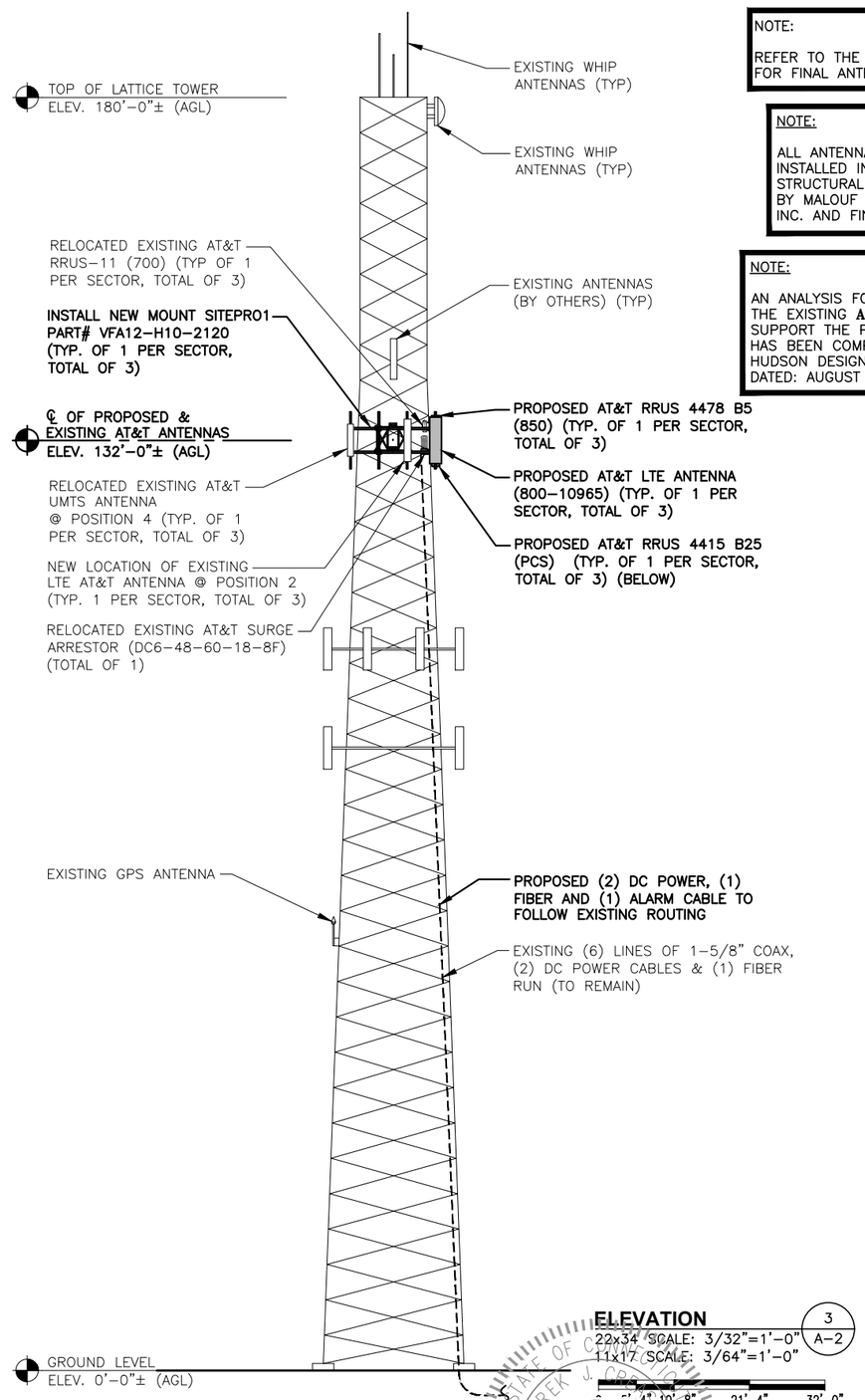
COMPOUND & EQUIPMENT PLAN (LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5178	A-1	1





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

NOTE:
ALL ANTENNAS AND RRHS TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY MALOUF ENGINEERING INTL., INC. AND FINAL 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 23, 2018

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: CT5178
SITE NAME: HAWLEYVILLE

20 BARNABAS ROAD
NEWTOWN, CT 06470
FAIRFIELD COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	11/27/18	ISSUED FOR CONSTRUCTION	GA	AT	DJC
A	10/10/18	ISSUED FOR REVIEW	GA	AT	DJC

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

STATE OF CONNECTICUT DEREK J. CHAMPAGNE No. 21854 LICENSED PROFESSIONAL ENGINEER

AT&T

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

SITE NUMBER	DRAWING NUMBER	REV
CT5178	A-2	1

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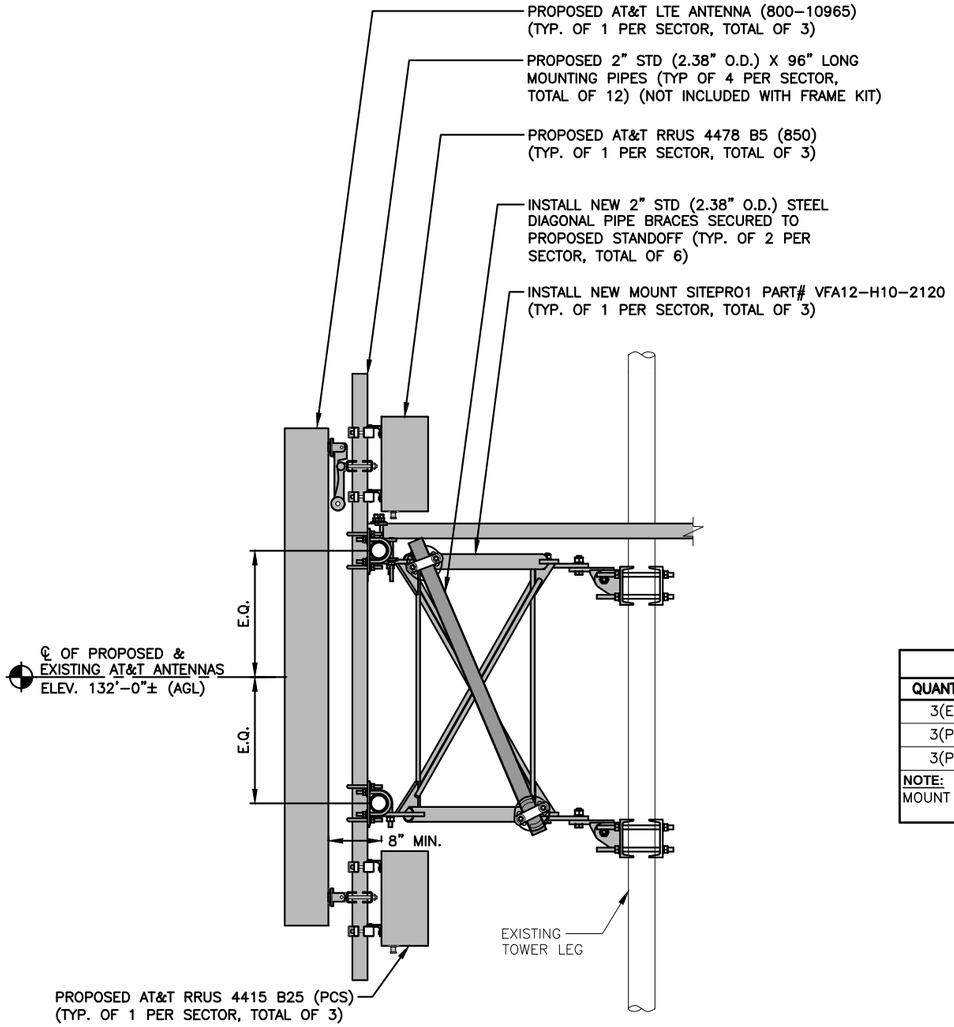


PROPOSED LTE ANTENNA & RRH MOUNTING DETAIL (1 / A-3)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

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	±132'	0°	(2) POWERWAVE LGP21401	--	--	(2) 1-5/8 COAX	--
A2		-	-	-	-	-	--	--	--	--	(E) (1) RAYCAP DC6-48-60-18-8C
A3	**PROPOSED**	**LTE 850/PCS**	**800-10965**	**78.7x20x6.9**	**±132'**	**70°**	--	**(P) (1) 4478 B5 (850) (P) (1) 4415 B25 (PCS)**	**15x13.2x7.4 15x13.2x5.4**	--	
A4	EXISTING	LTE 700	P65-16-XLH-RR	72X12X6	±132'	70°	--	(E) (1) RRUS-11	--	--	
B1	EXISTING	UMTS 850	80010121	54.5X10.3X5.9	±132'	120°	(2) POWERWAVE LGP21401	--	--	(2) 1-5/8 COAX	--
B2	-	-	-	-	-	-	--	--	-	--	**(P) (1) RAYCAP DC6-48-60-0-8C**
B3	**PROPOSED**	**LTE 850/PCS**	**800-10965**	**78.7x20x6.9**	**±132'**	**190°**	--	**(P) (1) 4478 B5 (850) (P) (1) 4415 B25 (PCS)**	**15x13.2x7.4 15x13.2x5.4**	--	
B4	EXISTING	LTE 700	P65-16-XLH-RR	72X12X6	±132'	190°	--	(E) (1) RRUS-11	--	--	
C1	EXISTING	UMTS 850	80010121	54.5X10.3X5.9	±132'	240°	(2) POWERWAVE LGP21401	--	--	(2) 1-5/8 COAX	--
C2	-	-	-	-	-	-	--	--	--	--	SHARED
C3	**PROPOSED**	**LTE 850/PCS**	**800-10965**	**78.7x20x6.9**	**±132'**	**310°**	--	**(P) (1) 4478 B5 (850) (P) (1) 4415 B25 (PCS)**	**15x13.2x7.4 15x13.2x5.4**	--	
C4	EXISTING	LTE 700	P65-16-XLH-RR	72X12X6	±132'	310°	--	(E) (1) RRUS-11	--	--	

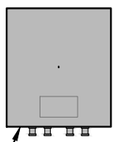
FINAL ANTENNA SCHEDULE (3 / A-3)
SCALE: N.T.S

RRU CHART				
QUANTITY	MODEL	L	W	D
3(E)	RRUS-11	19.7"	17.0"	7.2"
3(P)	4478 B5	15.0"	13.2"	7.4"
3(P)	4415 B25	15.0"	13.2"	5.4"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:

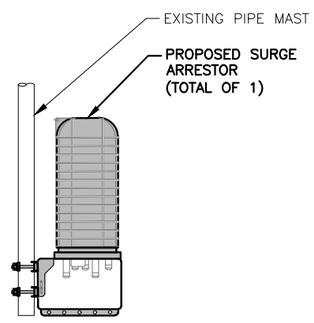
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



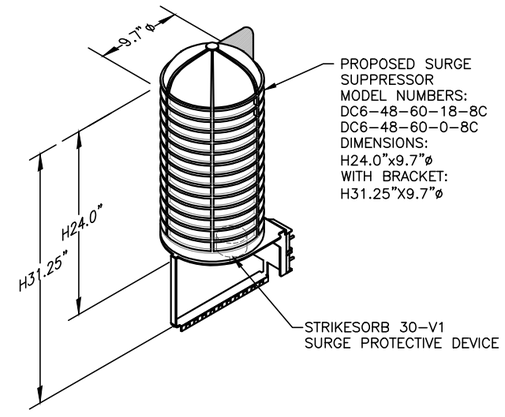
PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

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



PROPOSED SURGE ARRESTOR MOUNTING DETAIL (4 / A-3)
SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (5 / A-3)
SCALE: N.T.S

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

STATE OF CONNECTICUT · DEREK J. CRAM · No. 25... · LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5178	A-3	1

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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STATE OF CONNECTICUT
DEREK J. CREASEY
NO. 28355
LICENSED PROFESSIONAL ENGINEER

AT&T

STRUCTURAL NOTES
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
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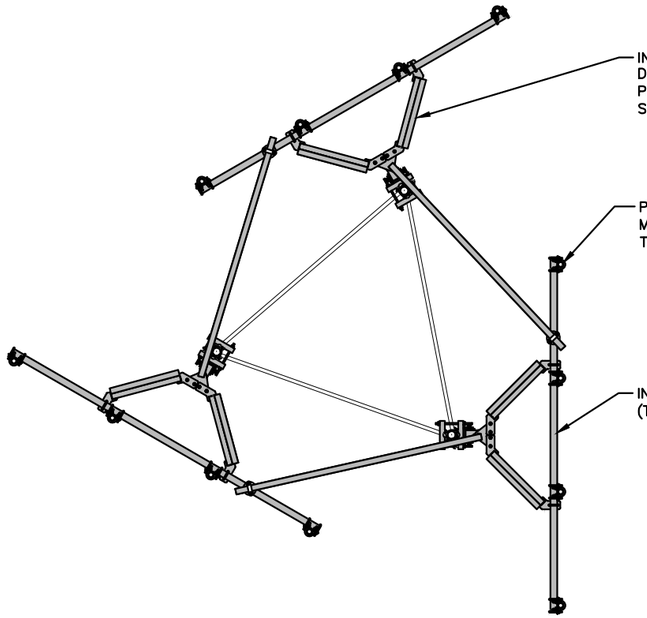
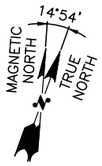
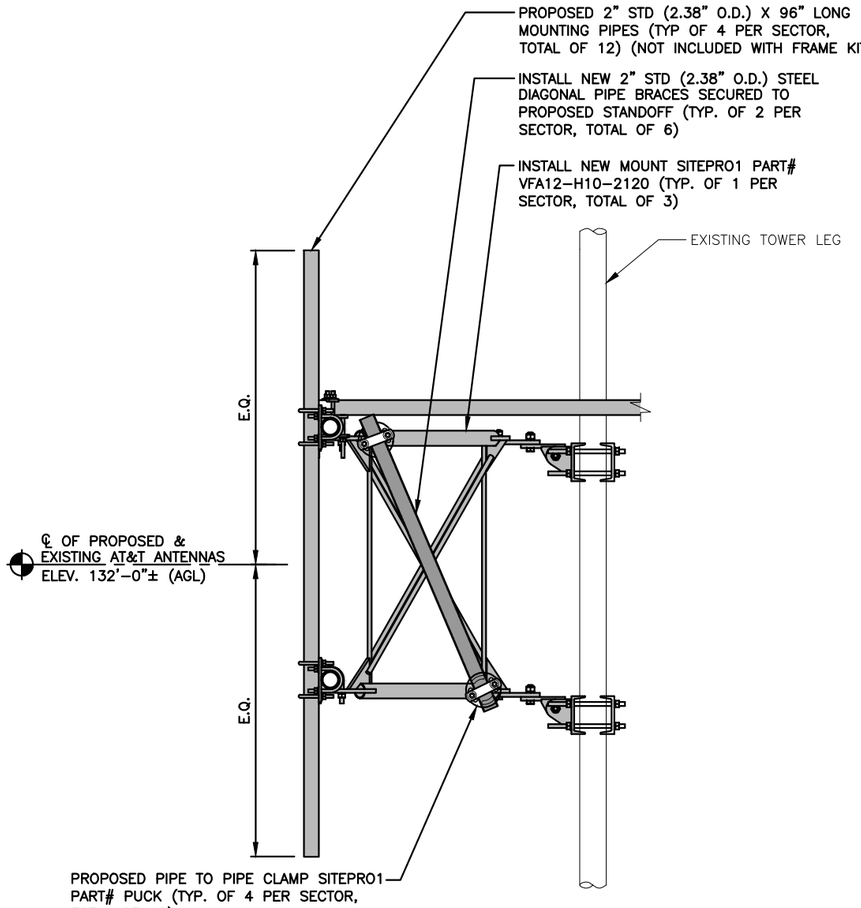




FRAME REINFORCEMENT PLAN (1 / S-1)
22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"
0 1'-4" 2'-8" 5'-4" 8'-0"



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

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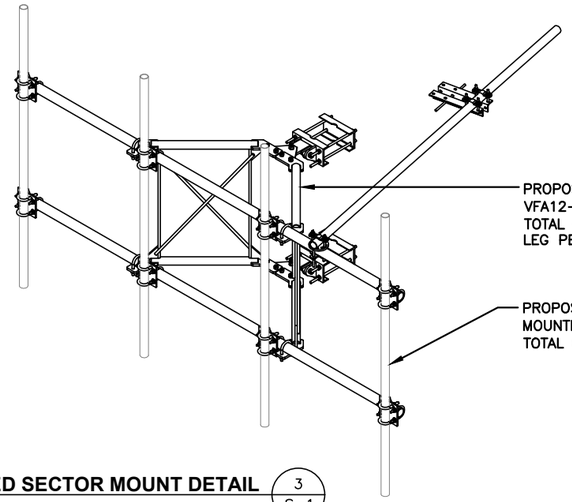

PROPOSED SECTOR MOUNT DETAIL (3 / S-1)
SCALE: N.T.S

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STATE OF CONNECTICUT · DEREK J. CREASEY · No. 23557 · LICENSED PROFESSIONAL ENGINEER

AT&T

STRUCTURAL DETAILS
(LTE 2C/3C)

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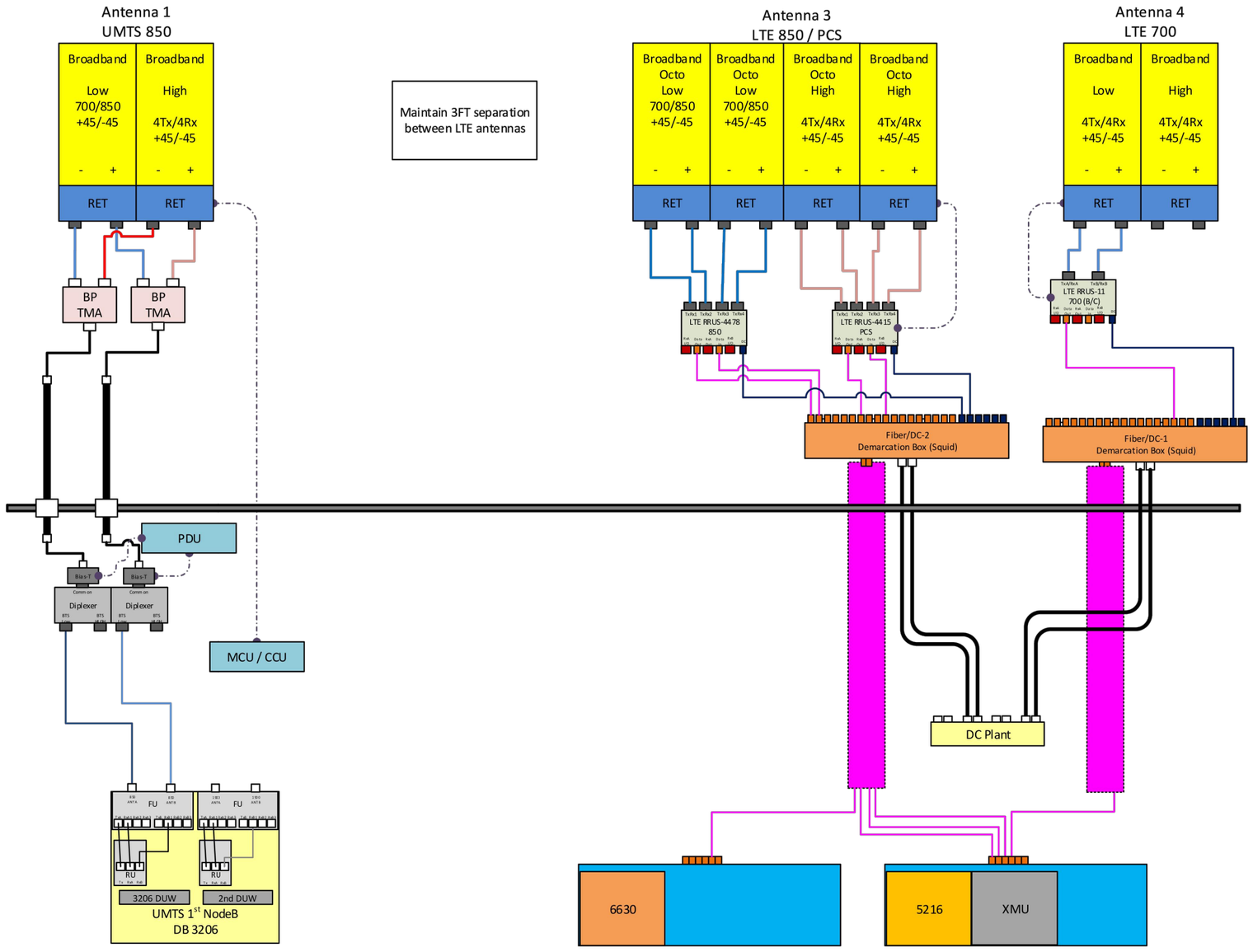

RF PLUMBING DIAGRAM (1 / RF–1)
SCALE: N.T.S

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

NOTE:

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SITE NAME: HAWLEYVILLE

20 BARNABAS ROAD
NEWTOWN, CT 06470
FAIRFIELD COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

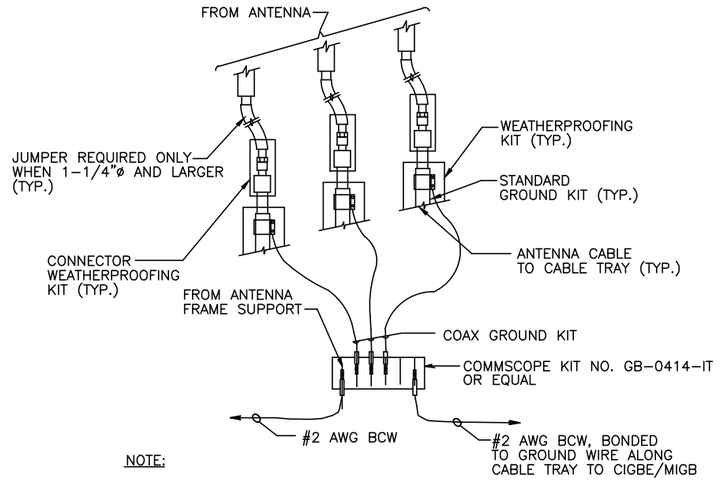
NO.	DATE	REVISIONS	BY	CHK	APP'D
1	11/27/18	ISSUED FOR CONSTRUCTION	GA	AT	DJC
A	10/10/18	ISSUED FOR REVIEW	GA	AT	DJC

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

AT&T

RF PLUMBING DIAGRAM
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5178	RF–1	1



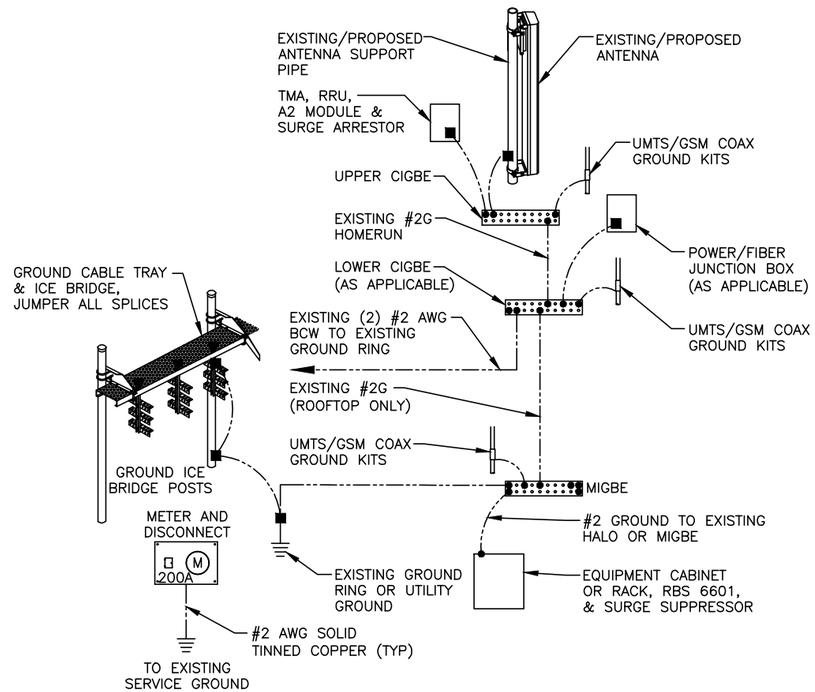
NOTE:

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

GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

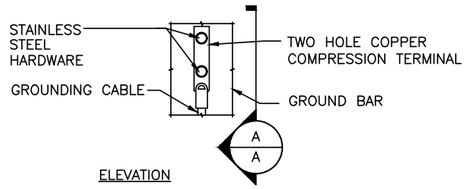
1 / G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1



NOTE:

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

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

3 / G-1

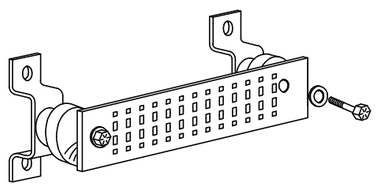
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

INTERIOR GROUND RING (#2)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
BUILDING STEEL (IF AVAILABLE) (#2)



GROUND BAR - DETAIL

SCALE: N.T.S

4 / G-1

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

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STATE OF CONNECTICUT · DEREK J. CREASEY · No. 25... · LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5178	G-1	1