QC Development
PO Box 916
Storrs, CT 06268
860-670-9068
Mark.Roberts@QCDevelopment.net

August 30, 2018

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

Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT5189
88 Main Street, Monroe, CT 06468
N 41.29972222
W 73.24944444

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 175-foot level of the existing 195-foot Monopole at 88 Main Street, Monroe, CT. The tower is owned by Crown Castle. The property is owned by the Stepney Volunteer Fire Co. AT&T now intends to install (3) new Ericsson 4426-B66 and (3) 4478-B5 Remote Radio Units (RRU). The new RRUs will also be installed at the 175-foot level of the tower.

This facility was approved by the Monroe Planning & Zoning Commission on January 11, 2001. The approval included a tower height limitation of 195 feet, but no others that would relate to the scope of this modification. Since no changes are proposed to the overall tower height, this modification complies with the aforementioned approval.

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 Ken Kellogg, First Selectman of the Town of Monroe, and the Monroe Planning & Zoning Office, as well as the property owner and the tower owner.

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

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.

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).

Please feel free to call me at (860) 670-9068 with any questions regarding this matter. Thank you for your consideration.

Sincerely,

Mark Roberts
QC Development
Consultant for AT&T

Attachments

cc: Ken Kellogg - as Elected Official
William Agresta, AICP – Planning & Zoning Administrator
Stepney Volunteer Fire Co - as Property Owner
Crown Castle - Tower Owner (via e-mail)

Power Density

Existing Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							2.58%
AT&T UMTS	1	248	175	0.0031	850	0.5667	0.06%
AT&T LTE	1	1476	175	0.0186	700	0.4667	0.40%
AT&T LTE	2	4842	175	0.1219	1900	1.0000	1.22%
AT&T LTE	1	1285	175	0.0162	2300	1.0000	0.16%
Site Total							4.41%

*Per CSC Records (available upon request, includes calculation formulas)

** If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

Proposed Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							2.58%
AT&T UMTS	1	248	175	0.0031	850	0.5667	0.06%
AT&T LTE	1	1476	175	0.0186	700	0.4667	0.40%
AT&T LTE / 5G	2	1000	175	0.0252	850	0.5667	0.44%
AT&T LTE	2	3664	175	0.0923	1900	1.0000	0.92%
AT&T LTE	1	3837	175	0.0483	2100	1.0000	0.48%
AT&T LTE	1	1285	175	0.0162	2300	1.0000	0.16%
Site Total							5.04%

*Per CSC Records (available upon request, includes calculation formulas)

** If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING TOWER:
- NEW AT&T RRUS: RRH 850 4478 B5 MOUNTED @ POSITION 1 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: RRH 2100 4426 B66 MOUNTED @ POSITION 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T SURGE ARRESTOR (TOTAL OF 1).
- NEW (2) DC POWER & (1) FIBER IN INNERDUCT.

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- ADDING (1) XMU & RBS 6630 IN EXISTING PURCELL.

ITEMS TO REMAIN:
- (9) ANTENNAS, (9) RRU'S, (6) COAX CABLES, (4) DC POWER, (2) SURGE ARRESTOR & (2) 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:	88 MAIN STREET MONROE, CT, 06468
LATITUDE:	41.301653 N, 41° 18' 5.95" N
LONGITUDE:	73.250780 W, 73° 15' 2.80" W
TYPE OF SITE:	MONOPOLE / OUTDOOR EQUIPMENT
STRUCTURE HEIGHT:	195'±
RAD CENTER:	175'±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

CCI SITE NAME:JEFFERSON DEVELOPMENT SPRINT B
CCI SITE #: 852814

SITE NUMBER: CT5189

SITE NAME: MONOE SOUTH

FA CODE:10071138

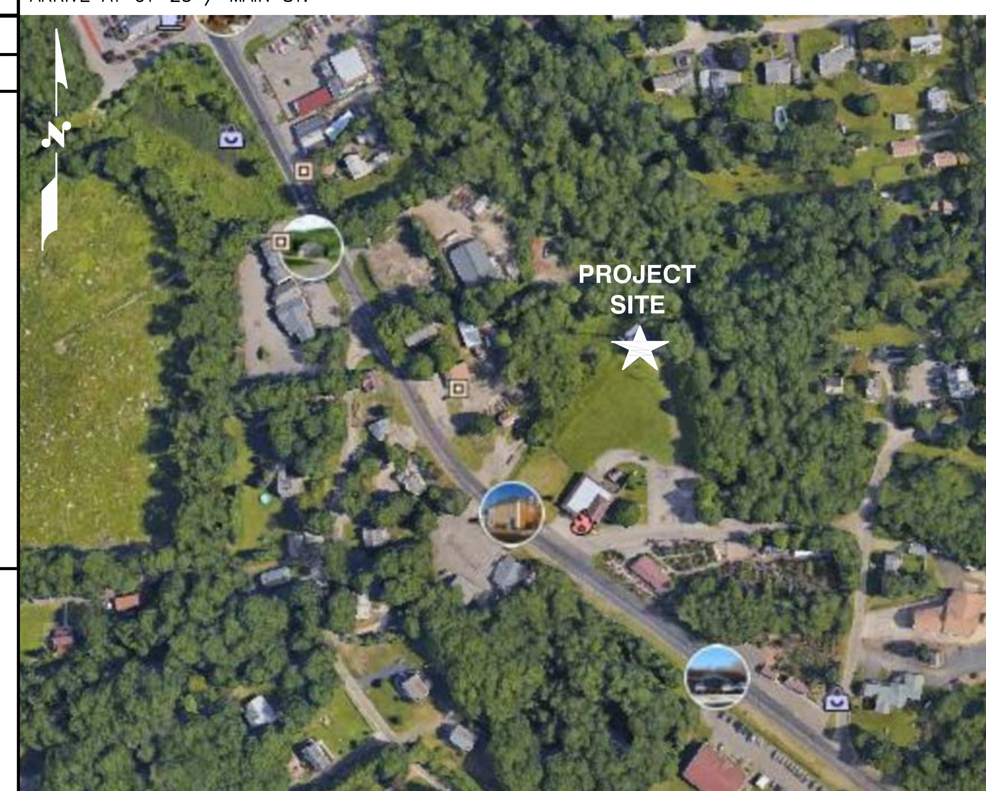
PACE ID: MRCTB031590, MRCTB031535

PROJECT: LTE 4C 2018 UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:

DEPART ENTERPRISE DR TOWARD CAPITOL BLVD. TURN LEFT ONTO CAPITOL BLVD. TURN LEFT ONTO WEST ST. TAKE RAMP LEFT FOR I-91 S. AT EXIT 17, TAKE RAMP RIGHT FOR CT-15 SOUTH TOWARD E. MAIN ST / W. CROSS PKWY. AT EXIT 49, TAKE RAMP RIGHT FOR CT-25 NORTH TOWARD DANBURY. ARRIVE AT CT-25 / MAIN ST.



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

STATE OF CONNECTICUT
DEREK J. CREASER
No. 28551
LICENSED
PROFESSIONAL ENGINEER

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SF

AT&T
TITLE SHEET
(LTE 4C/5C)

SITE NUMBER	DRAWING NUMBER	REV
CT5189	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 – SAI
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR–ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
20. APPLICABLE BUILDING CODES:
   SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

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

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

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

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

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

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

ABBREVIATIONS

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

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

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12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT5189
SITE NAME: MONOE SOUTH
CCI SITE #: 852814
88 MAIN STREET
MONROE, CT, 06468
FAIRFIELD COUNTY

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

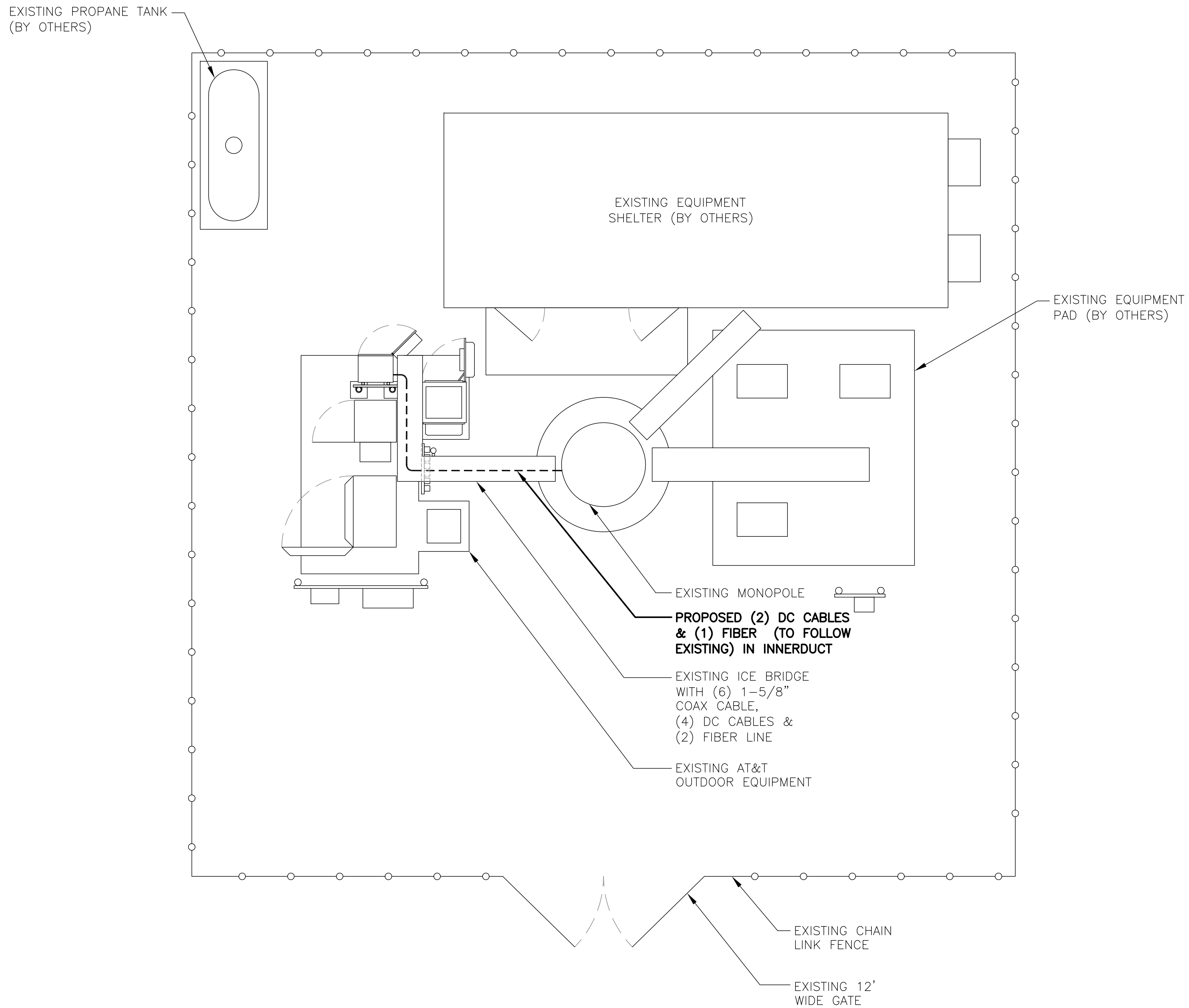
NO.	DATE	REVISIONS	BY	CHK	APP'D
1	07/30/18	ISSUED FOR CONCTRUCTION	SF	AT	DJC

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

STATE OF CONNECTICUT
DEREK J. CREASER
No. 28551
LICENSED PROFESSIONAL ENGINEER

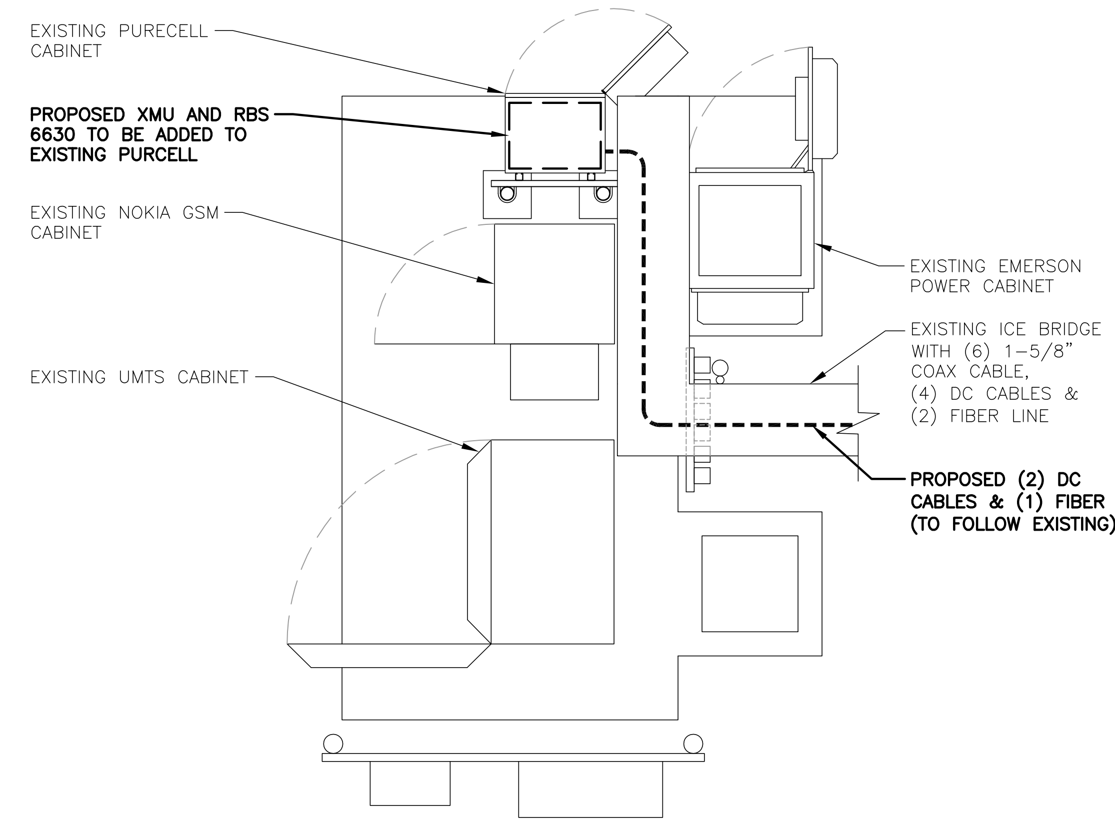
AT&T
GENERAL NOTES
(LTE 4C/5C)

SITE NUMBER	DRAWING NUMBER	REV
CT5189	GN–1	1



MAGNETIC NORTH 13°39' TRUE NORTH

COMPOUND PLAN (1 / A-1)
22x34 SCALE: 1/4"=1'-0"
11x17 SCALE: 1/8"=1'-0"
0 2'-0" 4'-0" 8'-0" 12'-0"



MAGNETIC NORTH 13°39' TRUE NORTH

EQUIPMENT PLAN (1 / A-2)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"
0 1'-0" 2'-0" 4'-0" 6'-0"

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: JUNE 11, 2018

SPECIAL CONSTRUCTION/PLANNING NOTE:
EQUIPMENT SHOWN AS "TO BE INSTALLED AS PART OF LTE 3C PROJECT" REFERS TO RECORD DRAWINGS AND NOT ACTUAL FIELD CONDITIONS. DEPLOYMENT OF EQUIPMENT "TO BE INSTALLED AS PART OF LTE 3C PROJECT" UNDER A SEPARATE BUILDING PERMIT PRIOR TO CONSTRUCTION START OF THIS PROJECT.

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

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

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

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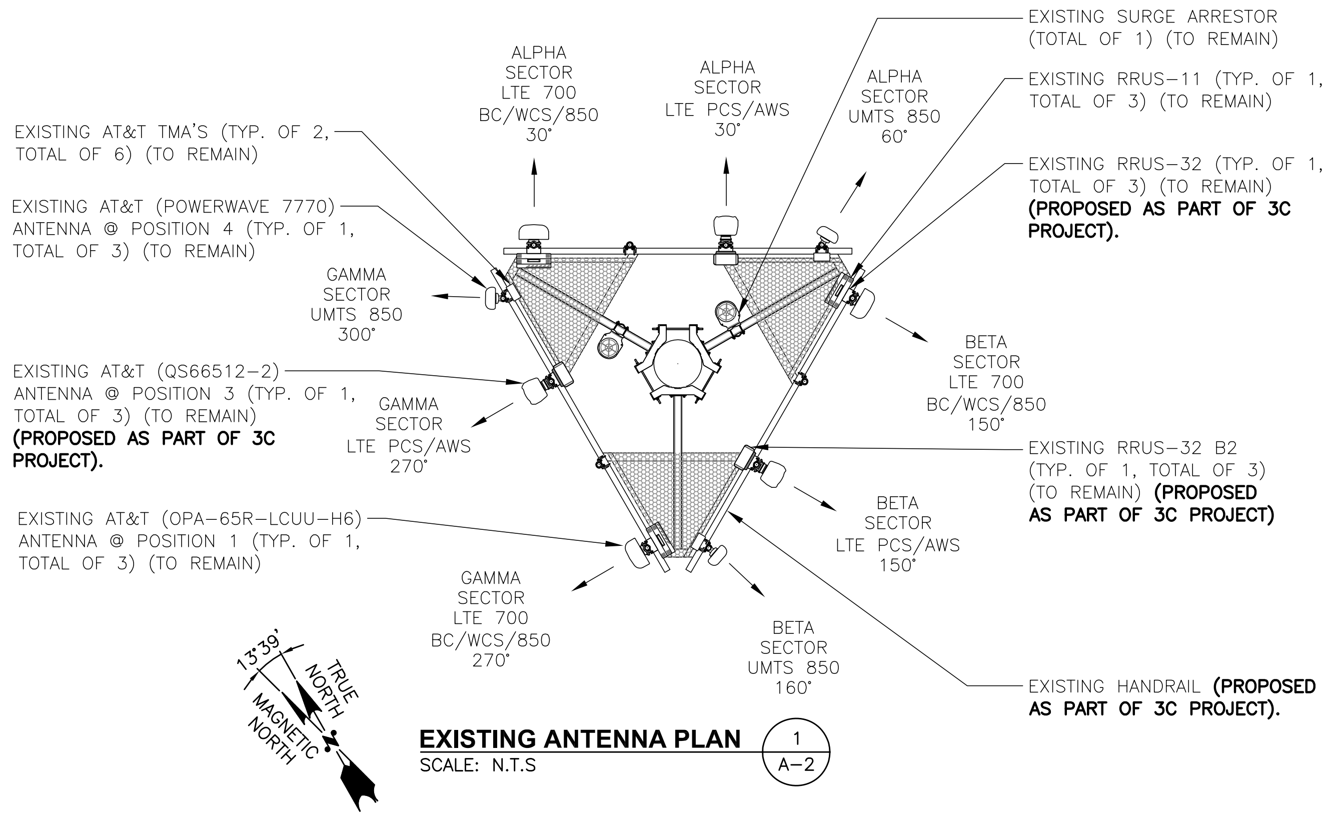
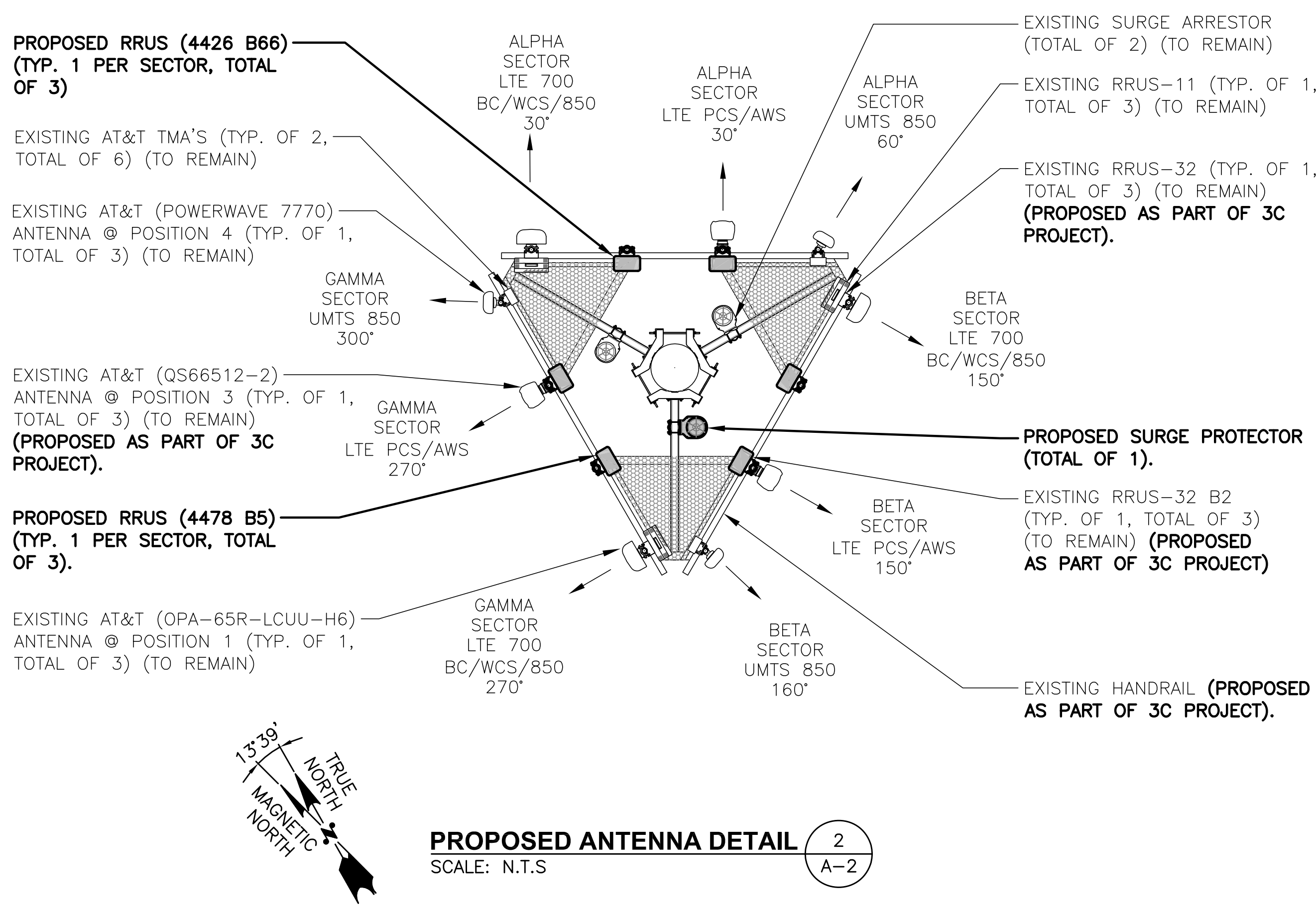
STATE OF CONNECTICUT – DEREK J. CREASER – LICENSED PROFESSIONAL ENGINEER

AT&T
COMPOUND & EQUIPMENT PLAN
(LTE 4C/5C)

SITE NUMBER	DRAWING NUMBER	REV
CT5189	A-1	1



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



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

NOTE:

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

NOTE:

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

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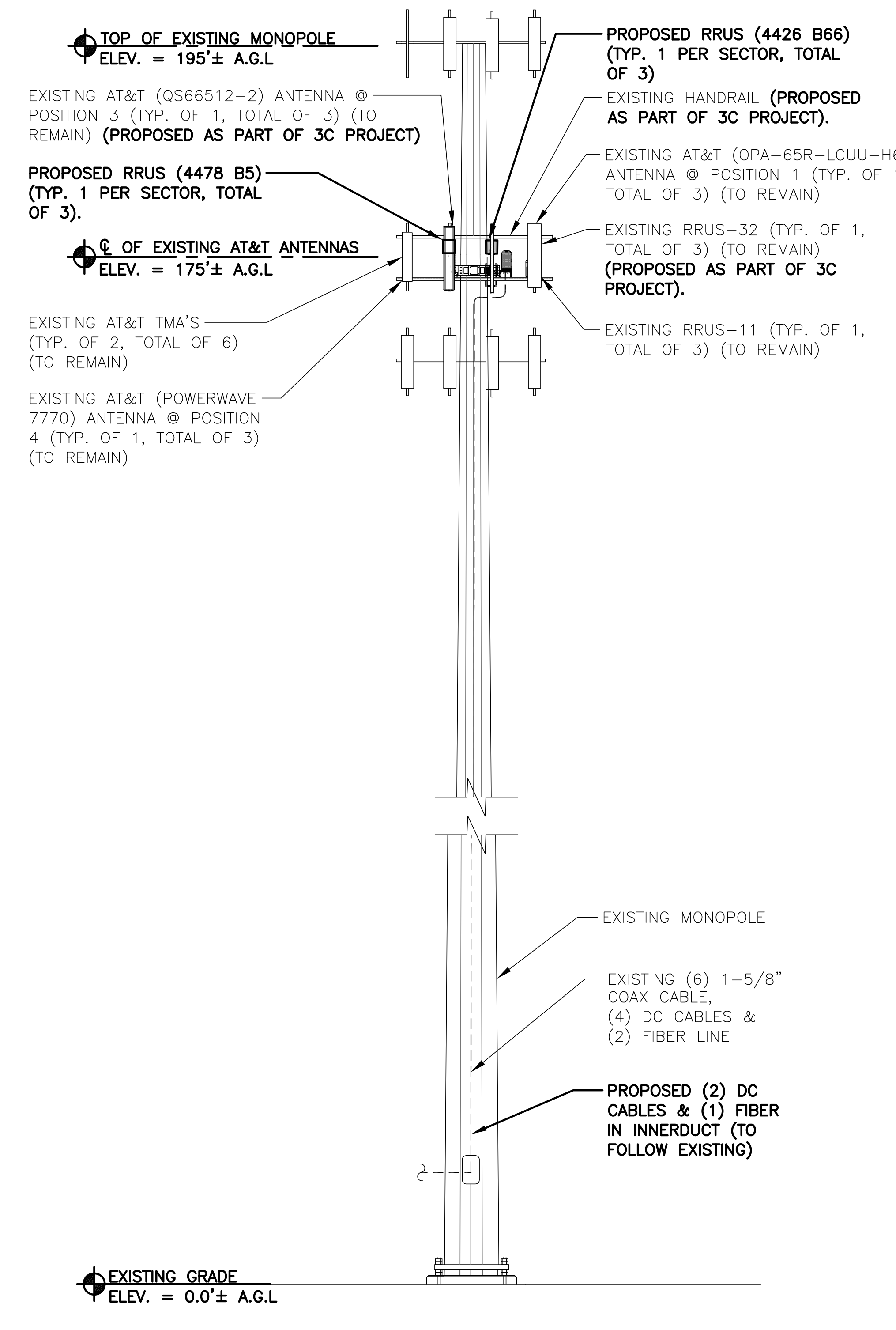

ELEVATION (3 / A-2)
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"
0 4'-0" 8'-0" 16'-0" 24'-0"

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

AT&T
ANTENNA LAYOUTS & ELEVATION (LTE 4C/5C)

SITE NUMBER	DRAWING NUMBER	REV
CT5189	A-2	1

SPECIAL CONSTRUCTION/PLANNING NOTE:

EQUIPMENT SHOWN AS "TO BE INSTALLED AS PART OF LTE 3C PROJECT" REFERS TO RECORD DRAWINGS AND NOT ACTUAL FIELD CONDITIONS. DEPLOYMENT OF EQUIPMENT "TO BE INSTALLED AS PART OF LTE 3C PROJECT" UNDER A SEPARATE BUILDING PERMIT PRIOR TO CONSTRUCTION START OF THIS PROJECT.

NOTE:

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

NOTE:

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

NOTE:

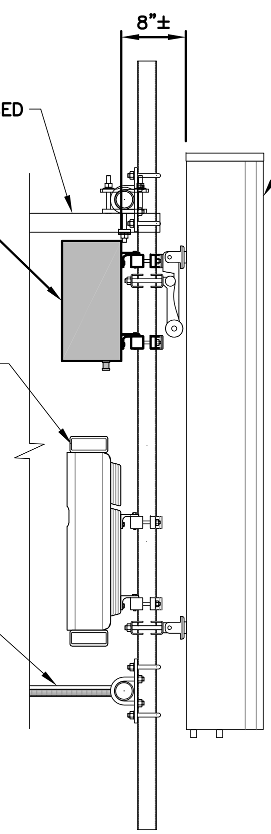
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: JUNE 11, 2018

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	LTE 700 BC/WCS/850	OPA-65R-LCUU-H6	72X14.8X7.4	175'-0"±	30°	–	(E) RRUS-11 (850) **(P) 4478-B5** (E) RRUS 32	– **15X13.2X7.4** –		(E) (1) RAYCAP DC6-48-60-18-8F
A2	–	–	–	–	–	–	–	–	–		
A3	EXISTING	LTE PCS/AWS	QS66512-2	72X12X9.6	175'-0"±	30°	–	(E)RRUS-32 B2 **(P)4426 B66**	– **14.9X13.1X5.8**	–	
A4	EXISTING	UMTS 850	7770	55X11X5	175'-0"±	60°	(E) LGP21401 (E)782-10250	–	–	(2) 1-5/8	
B1	EXISTING	LTE 700 BC/WCS/850	OPA-65R-LCUU-H6	72X14.8X7.4	175'-0"±	150°	–	(E) RRUS-11 (850) **(P) 4478-B5** (E) RRUS 32	– **15X13.2X7.4** –		(E) (1) RAYCAP DC6-48-60-18-8F(
B2	–	–	–	–	–	–	–	–	–		
B3	EXISTING	LTE PCS/AWS	QS66512-2	72X12X9.6	175'-0"±	150°	–	(E)RRUS-32 B2 **(P)4426 B66**	– **14.9X13.1X5.8**	–	
B4	EXISTING	UMTS 850	7770	55X11X5	175'-0"±	160°	(E) LGP21401 (E)782-10250	–	–	(2) 1-5/8	
C1	EXISTING	LTE 700 BC/WCS/850	OPA-65R-LCUU-H6	72X14.8X7.4	175'-0"±	270°	–	(E) RRUS-11 (850) **(P) 4478-B5** (E) RRUS 32	– **15X13.2X7.4** –		**P) (1) RAYCAP DC6-48-60-18-8F**
C2	–	–	–	–	–	–	–	–	–		
C3	EXISTING	LTE PCS/AWS	QS66512-2	72X12X9.6	175'-0"±	270°	–	(E)RRUS-32 B2 **(P)4426 B66**	– **14.9X13.1X5.8**	–	
C4	EXISTING	UMTS 850	7770	55X11X5	175'-0"±	300°	(E) LGP21401 (E)782-10250	–	–	(2) 1-5/8	

FINAL EQUIPMENT CONFIGURATION (5 / A-3)

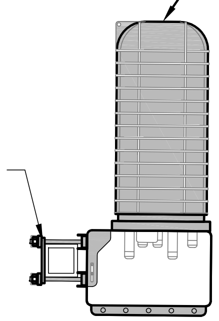
SCALE: N.T.S



PROPOSED RRU'S 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"



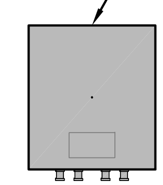
PROPOSED SURGE ARRESTOR MOUNTING DETAIL (2 / A-3)

SCALE: N.T.S

RRU CHART

QUANTITY	MODEL	L	W	D
3(P)	4478 B5	15.0"	13.2"	7.4"
3(P)	4426 B66	15.0"	13.2"	7.4"
3(E)	RRUS-11	19.7"	17.0"	7.2"
3(E)	RRUS-32	27.2"	12.1"	7.0"
3(E)	RRUS-32 B2	27.2"	12.1"	7.0"

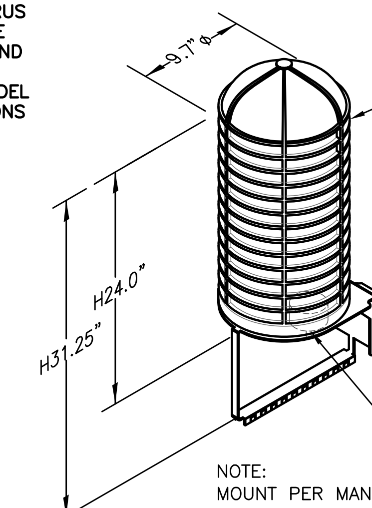
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

RRUS DETAIL (3 / A-3)

SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (4 / A-3)

SCALE: N.T.S

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

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT5189
SITE NAME: MONOE SOUTH
CCI SITE #: 852814
88 MAIN STREET
MONROE, CT, 06468
FAIRFIELD COUNTY

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

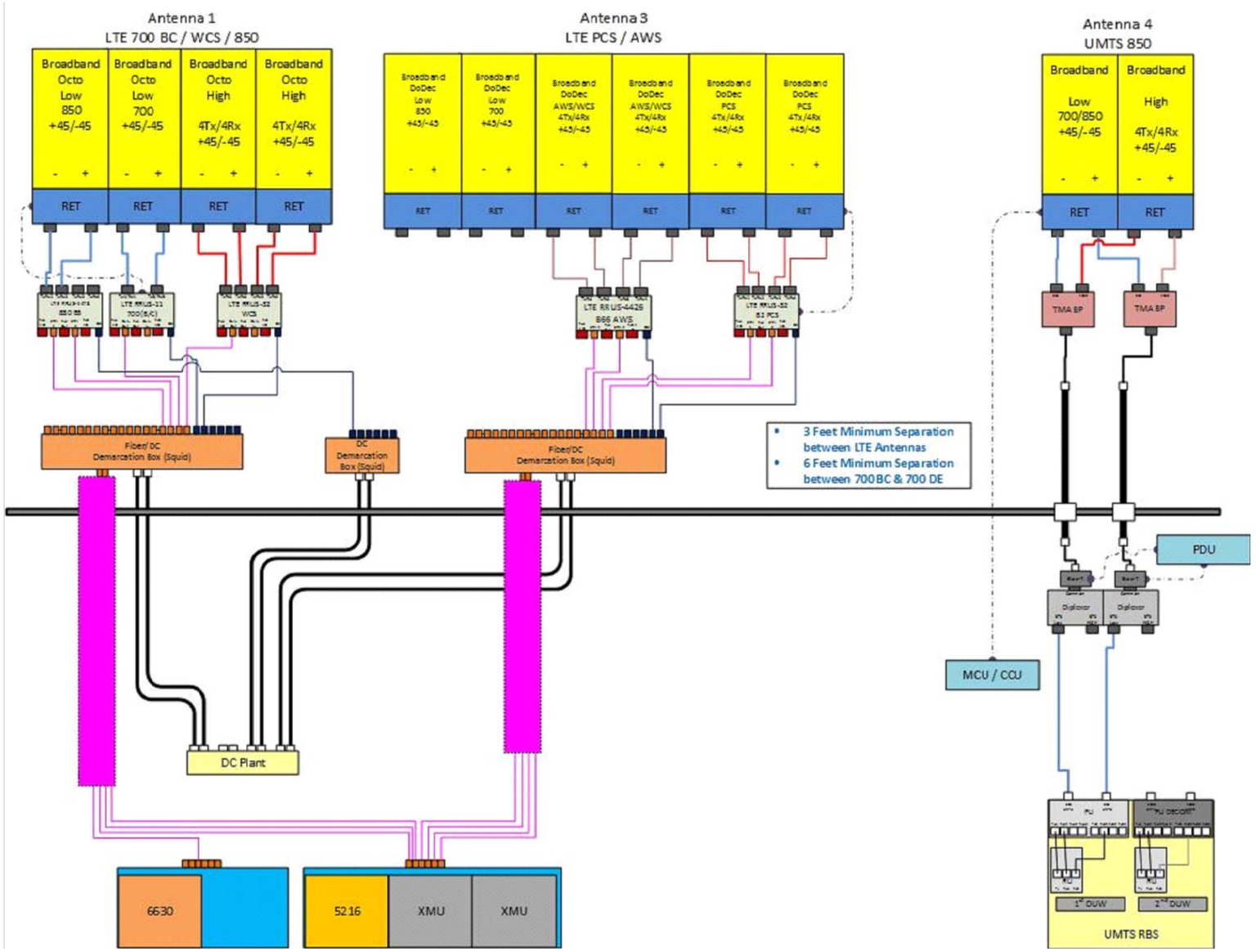
NO.	DATE	REVISIONS	BY	CHK	APP'D
1	07/30/18	ISSUED FOR CONCTRUCTION	SF	AT	DJC

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

STATE OF CONNECTICUT · DEREK J. CREASER · LICENSED PROFESSIONAL ENGINEER

AT&T
ANTENNA LAYOUTS & ELEVATION (LTE 4C/5C)

SITE NUMBER	DRAWING NUMBER	REV
CT5189	A-3	1



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

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SALEM, NH 03079

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NO.	DATE	REVISIONS	BY	CHK	APP'D
1	07/30/18	ISSUED FOR CONCTRUCTION	SF	AT	DJC

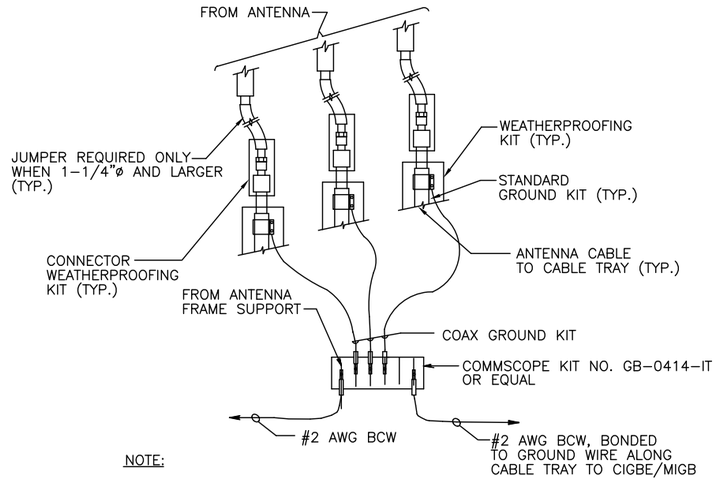
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SF

STATE OF CONNECTICUT
DEREK J. CREASER
16,235
LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
(LTE 4C/5C)

SITE NUMBER	DRAWING NUMBER	REV
CT5189	RF-1	1



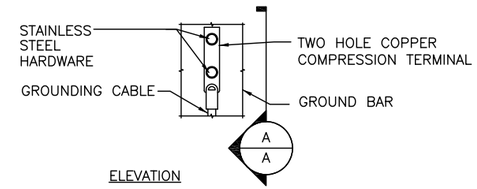
NOTE:

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



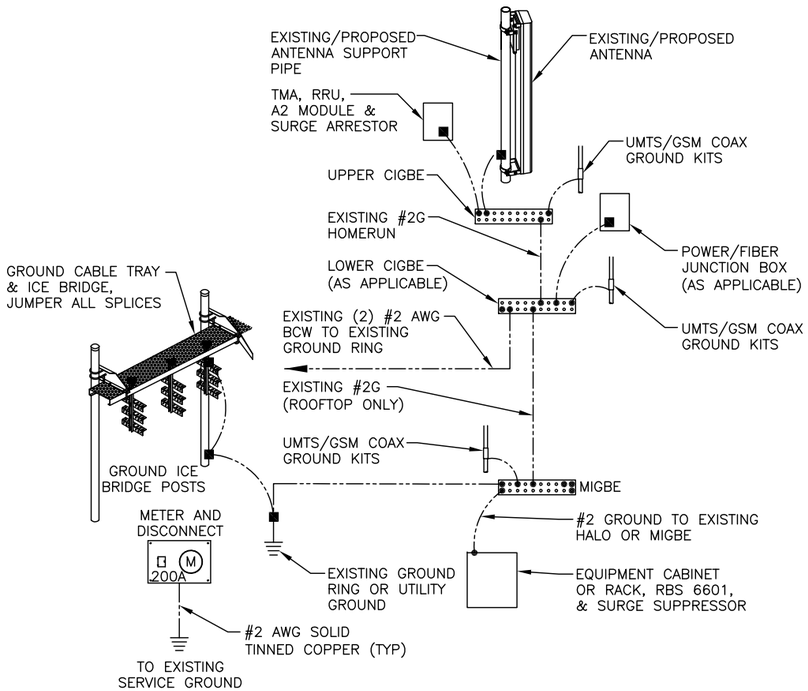
NOTE:

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



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1

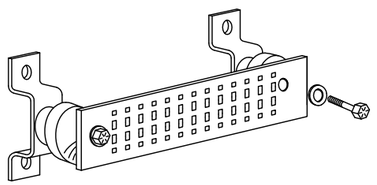
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

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
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NO.	DATE	REVISIONS	BY	CHK	APP'D
1	07/30/18	ISSUED FOR CONCTRUCTION	SF	AT	DJC

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

STATE OF CONNECTICUT · DEREK J. CREASER · 28,256 · LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS
(LTE 4C/5C)

SITE NUMBER	DRAWING NUMBER	REV
CT5189	G-1	1

Date: **July 03, 2018**

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

Crown Castle
2000 Corporate Drive
Canonsburg, PA
(724) 416-2000

Subject: **Structural Analysis Report**

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT5189
	Carrier Site Name:	Monroe South
Crown Castle Designation:	**Crown Castle BU Number:**	826053
	Crown Castle Site Name:	Monroe-1/Rt 25
	Crown Castle JDE Job Number:	517431
	Crown Castle Work Order Number:	1597874
	Crown Castle Order Number:	448935 Rev. 0
Engineering Firm Designation:	**Crown Castle Project Number:**	1597874
Site Data:	**88 Main Street, Monroe, Fairfield County, CT**	
	Latitude *41° 18' 6.06"*, Longitude *-73° 15' 2.92"*	
	195 Foot - Monopole Tower	

Dear Denice Nicholson,

Crown Castle is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1597874, in accordance with order 448935, revision 0.

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

LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 120 mph converted to a nominal 3-second gust wind speed of 93 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B and Risk Category II were used in this analysis.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *Crown Castle* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: Joseph Fischels / DH

Respectfully submitted by:

Terry P. Styran, P.E.
Senior Project Engineer

STATE OF CONNECTICUT
TERRY P. STYRAN
31522
LICENSED
PROFESSIONAL ENGINEER

7/5/2018

tnxTower Report - version 7.0.5.1

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 195 ft Monopole tower designed by Summit in May of 2001. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 93 mph with no ice, 50 mph with 0.75 inch ice thickness and 60 mph under service loads, exposure category B.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
175.0	175.0	3	ericsson	RRUS 32 B2	4 2	7/8 3/8	-
		3	ericsson	RRUS 32 B30			
		3	ericsson	RRUS 4426 B66			
		3	ericsson	RRUS 4478 B5			
		3	quintel technology	QS66512-2 w/ Mount Pipe			
		2	raycap	DC6-48-60-18-8C			
		1	commscope	MT-195-12			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
193.0	195.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	13	1-5/8	1
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
		3	ericsson	RRUS 11 B12			
	193.0	3	commscope	LNX-6515DS-VTM w/ Mount Pipe			
		1	tower mounts	Sector Mount [SM 901-3]			
175.0	175.0	3	ericsson	RRUS12/RRUS A2	2 1 1	7/8 5/8 Conduit	3
		6	powerwave technologies	7020.00	6 2 1	1-5/8 7/8 3/8	1
		6	powerwave technologies	LGP21401			
		3	cci antennas	OPA-65R-LCUU-H6 w/ Mount Pipe			
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		3	ericsson	RRUS-11			
		1	raycap	DC6-48-60-18-8F			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		1	tower mounts	Platform Mount [LP 303-1]			
165.0	165.0	6	andrew	SBNHH-1D65B w/ Mount Pipe	13 2	1-5/8 1-1/4	1
		6	antel	LPA-80080/6CF w/ Mount Pipe			
		3	alcatel lucent	RRH4X45-AWS4 B66			
		3	alcatel lucent	B13 RRH 4X30			
		3	alcatel lucent	B25 RRH4X30			
		2	raycap	RRFDC-3315-PF-48			
		1	tower mounts	Miscellaneous [NA 507-1]			
		1	tower mounts	Platform Mount [LP 403-1]			
155.0	155.0	6	alcatel lucent	800MHZ 2X50W RRH	3	1-5/8	2
		3	alcatel lucent	1900MHZ RRH (65MHZ)			
		3	commscope	NNVV-65B-R4 w/ Mount Pipe			
		3	nokia	AAHC w/ Mount Pipe			
		1	tower mounts	Miscellaneous [NA 507-1]			
		1	tower mounts	Platform Mount [LP 303-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment to be Removed; Not Considered in this Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
195	195	12	-	EMS RR90-17-00DP PCS	-	-
185	185	12	-	EMS RR90-17-00DP PCS	-	-
175	175	12	-	EMS RR90-17-00DP PCS	-	-
165	165	12	-	EMS RR90-17-00DP PCS	-	-
155	155	12	-	EMS RR90-17-00DP PCS	-	-
140	135	2	-	10' WHIP	-	-
120	115	2	-	10' WHIP	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Jaworski Geotech, Inc.	3488965	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Summit Manufacturing, Inc.	3950063	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Summit Manufacturing, Inc.	3488966	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	195 - 157.5	Pole	TP33.351x26x0.25	1	-13.09	1763.91	22.5	Pass
L2	157.5 - 116.75	Pole	TP40.839x32.0179x0.3125	2	-24.21	2718.44	50.9	Pass
L3	116.75 - 77	Pole	TP48.006x39.1849x0.375	3	-35.46	3862.64	57.6	Pass
L4	77 - 38	Pole	TP54.901x46.0798x0.375	4	-48.42	4209.09	70.1	Pass
L5	38 - 0	Pole	TP61.6x52.7788x0.4375	5	-67.68	5681.23	65.1	Pass
							Summary	
						Pole (L4)	70.1	Pass
						Rating =	70.1	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	63.7	Pass
1	Base Plate	0	55.0	Pass
1	Base Foundation (Structural)	0	60.2	Pass
1	Base Foundation (Soil Interaction)	0	41.5	Pass

Structure Rating (max from all components) =	70.1%

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

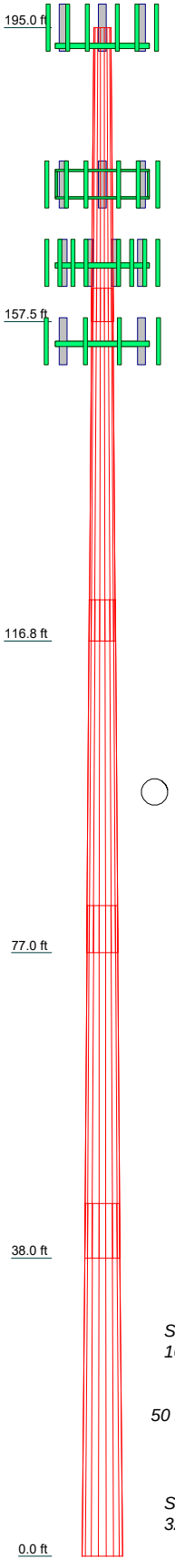
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4	5
Length (ft)	37.50	45.00	45.00	45.00	45.00
Number of Sides	18	18	18	18	18
Thickness (in)	0.2500	0.3125	0.3750	0.3750	0.4375
Socket Length (ft)	4.25	5.25	6.00	7.00	
Top Dia (in)	26.0000	32.0179	39.1849	46.0798	52.7788
Bot Dia (in)	33.3510	40.8390	48.0060	54.9010	61.6000
Grade			A607-65		
Weight (K)	3.0	5.5	7.9	9.1	12.1



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	193	QS66512-2 w/ Mount Pipe	175
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	193	RRUS 4478 B5	175
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	193	RRUS 4478 B5	175
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	193	RRUS 4478 B5	175
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	193	(2) RRUS 4426 B66	175
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	193	RRUS 4426 B66	175
LNX-6515DS-VTM w/ Mount Pipe	193	(3) RRUS 32 B2	175
LNX-6515DS-VTM w/ Mount Pipe	193	(3) RRUS 32 B30	175
LNX-6515DS-VTM w/ Mount Pipe	193	(2) SBNHH-1D65B w/ Mount Pipe	165
RRUS 11 B12	193	(2) SBNHH-1D65B w/ Mount Pipe	165
RRUS 11 B12	193	(2) SBNHH-1D65B w/ Mount Pipe	165
RRUS 11 B12	193	(2) LPA-80080/6CF w/ Mount Pipe	165
KRY 112 71	193	(2) LPA-80080/6CF w/ Mount Pipe	165
KRY 112 71	193	(2) LPA-80080/6CF w/ Mount Pipe	165
KRY 112 71	193	RRH4X45-AWS4 B66	165
6' x 2" Mount Pipe	193	(2) RRH4X45-AWS4 B66	165
6' x 2" Mount Pipe	193	B13 RRH 4X30	165
6' x 2" Mount Pipe	193	B13 RRH 4X30	165
Sector Mount [SM 901-3]	193	B13 RRH 4X30	165
OPA-65R-LCUU-H6 w/ Mount Pipe	175	B25 RRH4X30	165
OPA-65R-LCUU-H6 w/ Mount Pipe	175	B25 RRH4X30	165
OPA-65R-LCUU-H6 w/ Mount Pipe	175	B25 RRH4X30	165
7770.00 w/ Mount Pipe	175	RRFDC-3315-PF-48	165
7770.00 w/ Mount Pipe	175	RRFDC-3315-PF-48	165
7770.00 w/ Mount Pipe	175	(2) 6' x 2" Mount Pipe	165
(2) 7020.00	175	(2) 6' x 2" Mount Pipe	165
(2) 7020.00	175	(2) 6' x 2" Mount Pipe	165
(2) 7020.00	175	Miscellaneous [NA 507-1]	165
(2) LGP21401	175	Platform Mount [LP 403-1]	165
(2) LGP21401	175	NNVV-65B-R4 w/ Mount Pipe	155
(2) LGP21401	175	NNVV-65B-R4 w/ Mount Pipe	155
RRUS-11	175	NNVV-65B-R4 w/ Mount Pipe	155
RRUS-11	175	AAHC w/ Mount Pipe	155
RRUS-11	175	AAHC w/ Mount Pipe	155
DC6-48-60-18-8F	175	AAHC w/ Mount Pipe	155
Platform Mount [LP 303-1]	175	1900MHZ RRH (65MHZ)	155
Miscellaneous [NA 507-1]	175	1900MHZ RRH (65MHZ)	155
DC6-48-60-18-8C	175	1900MHZ RRH (65MHZ)	155
DC6-48-60-18-8C	175	(2) 800MHZ 2X50W RRH	155
QS66512-2 w/ Mount Pipe	175	(2) 800MHZ 2X50W RRH	155
QS66512-2 w/ Mount Pipe	175	(2) 800MHZ 2X50W RRH	155
		6' x 2" Mount Pipe	155
		6' x 2" Mount Pipe	155
		6' x 2" Mount Pipe	155
		Miscellaneous [NA 507-1]	155
		Platform Mount [LP 303-1]	155

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

ALL REACTIONS ARE FACTORED

AXIAL 107 K

SHEAR 10 K

MOMENT 1486 kip-ft

TORQUE 0 kip-ft

50 mph WIND - 0.7500 in ICE

AXIAL 69 K

SHEAR 32 K

MOMENT 4572 kip-ft

TORQUE 1 kip-ft

REACTIONS - 93 mph WIND

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 70.1%

CROWN CASTLE
The Foundation for a Wireless World

Crown Castle
2000 Corporate Drive
Canonsburg, PA
Phone: (724) 416-2000
FAX: (724) 416-4623

Job: *BU 826053*			
Project:			
Client: Crown Castle	Drawn by: Joseph Fischels		App'd:
Code: TIA-222-G	Date: 07/03/18		Scale: NTS
Path: R:\SA Models - Letters\Work Area\JFischels\WIP\826053 WO 1597874\826053.en			Dwg No. E-1

Tower Input Data

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

1. Tower is located in Fairfield County, Connecticut.
2. Basic wind speed of 93 mph.
3. Structure Class II.
4. Exposure Category B.
5. Topographic Category 1.
6. Crest Height 0.00 ft.
7. Nominal ice thickness of 0.7500 in.
8. Ice thickness is considered to increase with height.
9. Ice density of 56 pcf.
10. A wind speed of 50 mph is used in combination with ice.
11. Temperature drop of 50 °F.
12. Deflections calculated using a wind speed of 60 mph.
13. A non-linear (P-delta) analysis was used.
14. Pressures are calculated at each section.
15. Stress ratio used in pole design is 1.
16. Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	*Elevation*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	195.00-157.50	37.50	4.25	18	26.0000	33.3510	0.2500	1.0000	A607-65 (65 ksi)
L2	157.50-116.75	45.00	5.25	18	32.0179	40.8390	0.3125	1.2500	A607-65 (65 ksi)
L3	116.75-77.00	45.00	6.00	18	39.1849	48.0060	0.3750	1.5000	A607-65 (65 ksi)
L4	77.00-38.00	45.00	7.00	18	46.0798	54.9010	0.3750	1.5000	A607-65 (65 ksi)
L5	38.00-0.00	45.00		18	52.7788	61.6000	0.4375	1.7500	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	26.4011	20.4326	1711.6544	9.1412	13.2080	129.5922	3425.5610	10.2183	4.1360	16.544
	33.8655	26.2656	3635.8648	11.7509	16.9423	214.6027	7276.5137	13.1353	5.4298	21.719
L2	33.3578	31.4478	3993.8666	11.2554	16.2651	245.5484	7992.9885	15.7269	5.0851	16.272
	41.4690	40.1972	8340.8765	14.3869	20.7462	402.0433	16692.7281	20.1024	6.6377	21.241
L3	40.8344	46.1934	8790.2699	13.7775	19.9059	441.5909	17592.1062	23.1011	6.2365	16.631
	48.7466	56.6928	16249.6772	16.9090	24.3870	666.3241	32520.7362	28.3518	7.7891	20.771
L4	47.9850	54.4002	14356.9598	16.2252	23.4086	613.3208	28732.8109	27.2053	7.4501	19.867
	55.7479	64.8996	24377.3537	19.3567	27.8897	874.0627	48786.7837	32.4560	9.0026	24.007
L5	54.9864	72.6825	25156.8620	18.5812	26.8116	938.2813	50346.8261	36.3481	8.5191	19.472
	62.5503	84.9318	40140.0691	21.7127	31.2928	1282.7254	80332.9556	42.4740	10.0716	23.021

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 195.00-157.50				1	1	1			
L2 157.50-116.75				1	1	1			
L3 116.75-77.00				1	1	1			
L4 77.00-38.00				1	1	1			
L5 38.00-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
****										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
*** 195 ***								
LDF7-50A(1-5/8)	B	No	Inside Pole	193.00 - 0.00	12	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	B	No	Inside Pole	193.00 - 0.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
*** 175 ***								
9776(5/8)	C	No	Inside Pole	175.00 - 0.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
FB-L98B-034-XXX(3/8)	C	No	Inside Pole	175.00 - 0.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
WR-VG66ST-BRD(7/8)	C	No	Inside Pole	175.00 - 0.00	2	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
FB-L98B-034-XXX(3/8)	C	No	Inside Pole	175.00 - 0.00	3	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
WR-VG66ST-BRD(7/8)	C	No	Inside Pole	175.00 - 0.00	4	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	175.00 - 0.00	4	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
2" Rigid Conduit	C	No	Inside Pole	175.00 - 0.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
*** 165 ***								
LDF7-50A(1-5/8)	A	No	Inside Pole	165.00 - 0.00	13	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
RFF-24SM-1206-618-APE(1-1/4)	A	No	Inside Pole	165.00 - 0.00	2	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
*** 155 ***								
HB158-21U6S12-60M-01(1-5/8)	A	No	Inside Pole	155.00 - 0.00	3	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
****								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	195.00-157.50	A	0.000	0.000	0.000	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.39
		C	0.000	0.000	0.000	0.000	0.19
L2	157.50-116.75	A	0.000	0.000	0.000	0.000	0.77
		B	0.000	0.000	0.000	0.000	0.44
		C	0.000	0.000	0.000	0.000	0.45
L3	116.75-77.00	A	0.000	0.000	0.000	0.000	0.77
		B	0.000	0.000	0.000	0.000	0.43
		C	0.000	0.000	0.000	0.000	0.44
L4	77.00-38.00	A	0.000	0.000	0.000	0.000	0.75
		B	0.000	0.000	0.000	0.000	0.43
		C	0.000	0.000	0.000	0.000	0.43
L5	38.00-0.00	A	0.000	0.000	0.000	0.000	0.73
		B	0.000	0.000	0.000	0.000	0.41
		C	0.000	0.000	0.000	0.000	0.42

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	195.00-157.50	A	1.773	0.000	0.000	0.000	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.39
		C		0.000	0.000	0.000	0.000	0.19
L2	157.50-116.75	A	1.729	0.000	0.000	0.000	0.000	0.77
		B		0.000	0.000	0.000	0.000	0.44
		C		0.000	0.000	0.000	0.000	0.45

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L3	116.75-77.00	A	1.670	0.000	0.000	0.000	0.000	0.77
		B		0.000	0.000	0.000	0.000	0.43
		C		0.000	0.000	0.000	0.000	0.44
L4	77.00-38.00	A	1.586	0.000	0.000	0.000	0.000	0.75
		B		0.000	0.000	0.000	0.000	0.43
		C		0.000	0.000	0.000	0.000	0.43
L5	38.00-0.00	A	1.416	0.000	0.000	0.000	0.000	0.73
		B		0.000	0.000	0.000	0.000	0.41
		C		0.000	0.000	0.000	0.000	0.42

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	195.00-157.50	0.0000	0.0000	0.0000	0.0000
L2	157.50-116.75	0.0000	0.0000	0.0000	0.0000
L3	116.75-77.00	0.0000	0.0000	0.0000	0.0000
L4	77.00-38.00	0.0000	0.0000	0.0000	0.0000
L5	38.00-0.00	0.0000	0.0000	0.0000	0.0000

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
*** 193 I ***									
ERICSSON AIR 21 B2A	A	From Leg	4.00	0.0000	193.00	No Ice	6.33	5.64	0.11
B4P w/ Mount Pipe			0.00			1/2" Ice	6.78	6.43	0.17
			2.00			1" Ice	7.21	7.13	0.23
ERICSSON AIR 21 B2A	B	From Leg	4.00	0.0000	193.00	No Ice	6.33	5.64	0.11
B4P w/ Mount Pipe			0.00			1/2" Ice	6.78	6.43	0.17
			2.00			1" Ice	7.21	7.13	0.23
ERICSSON AIR 21 B2A	C	From Leg	4.00	0.0000	193.00	No Ice	6.33	5.64	0.11
B4P w/ Mount Pipe			0.00			1/2" Ice	6.78	6.43	0.17
			2.00			1" Ice	7.21	7.13	0.23
ERICSSON AIR 21 B4A	A	From Leg	4.00	0.0000	193.00	No Ice	6.33	5.64	0.11
B2P w/ Mount Pipe			0.00			1/2" Ice	6.78	6.43	0.17
			2.00			1" Ice	7.21	7.13	0.23
ERICSSON AIR 21 B4A	B	From Leg	4.00	0.0000	193.00	No Ice	6.33	5.64	0.11
B2P w/ Mount Pipe			0.00			1/2" Ice	6.78	6.43	0.17
			2.00			1" Ice	7.21	7.13	0.23

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	193.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	193.00	No Ice 1/2" Ice 1" Ice	11.68 12.40 13.14	9.84 11.37 12.91	0.08 0.17 0.27
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	193.00	No Ice 1/2" Ice 1" Ice	11.68 12.40 13.14	9.84 11.37 12.91	0.08 0.17 0.27
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	193.00	No Ice 1/2" Ice 1" Ice	11.68 12.40 13.14	9.84 11.37 12.91	0.08 0.17 0.27
RRUS 11 B12	A	From Leg	4.00 0.00 2.00	0.0000	193.00	No Ice 1/2" Ice 1" Ice	2.83 3.04 3.26	1.18 1.33 1.48	0.05 0.07 0.10
RRUS 11 B12	B	From Leg	4.00 0.00 2.00	0.0000	193.00	No Ice 1/2" Ice 1" Ice	2.83 3.04 3.26	1.18 1.33 1.48	0.05 0.07 0.10
RRUS 11 B12	C	From Leg	4.00 0.00 2.00	0.0000	193.00	No Ice 1/2" Ice 1" Ice	2.83 3.04 3.26	1.18 1.33 1.48	0.05 0.07 0.10
KRY 112 71	A	From Leg	4.00 0.00 2.00	0.0000	193.00	No Ice 1/2" Ice 1" Ice	0.58 0.69 0.80	0.40 0.49 0.59	0.01 0.02 0.03
KRY 112 71	B	From Leg	4.00 0.00 2.00	0.0000	193.00	No Ice 1/2" Ice 1" Ice	0.58 0.69 0.80	0.40 0.49 0.59	0.01 0.02 0.03
KRY 112 71	C	From Leg	4.00 0.00 2.00	0.0000	193.00	No Ice 1/2" Ice 1" Ice	0.58 0.69 0.80	0.40 0.49 0.59	0.01 0.02 0.03
6' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	193.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	193.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	193.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
Sector Mount [SM 901-3]	C	None		0.0000	193.00	No Ice 1/2" Ice 1" Ice	12.90 17.16 21.42	12.90 17.16 21.42	1.26 1.43 1.61
*** 175 P ***									
OPA-65R-LCUU-H6 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	9.90 10.47 11.01	7.18 8.36 9.26	0.10 0.18 0.26
OPA-65R-LCUU-H6 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	9.90 10.47 11.01	7.18 8.36 9.26	0.10 0.18 0.26

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
OPA-65R-LCUU-H6 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	9.90 10.47 11.01	7.18 8.36 9.26	0.10 0.18 0.26
7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
(2) 7020.00	A	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	0.10 0.15 0.20	0.17 0.24 0.31	0.00 0.01 0.01
(2) 7020.00	B	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	0.10 0.15 0.20	0.17 0.24 0.31	0.00 0.01 0.01
(2) 7020.00	C	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	0.10 0.15 0.20	0.17 0.24 0.31	0.00 0.01 0.01
(2) LGP21401	A	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	0.01 0.02 0.03
(2) LGP21401	B	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	0.01 0.02 0.03
(2) LGP21401	C	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	0.01 0.02 0.03
RRUS-11	A	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.09
RRUS-11	B	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.09
RRUS-11	C	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.09
DC6-48-60-18-8F	B	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	0.79 1.27 1.45	0.79 1.27 1.45	0.02 0.04 0.05
Platform Mount [LP 303-1]	C	None		0.0000	175.00	No Ice 1/2" Ice 1" Ice	14.66 18.87 23.08	14.66 18.87 23.08	1.25 1.48 1.71
Miscellaneous [NA 507-1]	C	None		0.0000	175.00	No Ice 1/2" Ice 1" Ice	4.80 6.70 8.60	4.80 6.70 8.60	0.25 0.29 0.34
DC6-48-60-18-8C	A	From Leg	4.00	0.0000	175.00	No Ice	2.74	2.74	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00 0.00			1/2" Ice 1" Ice	2.96 3.20	2.96 3.20	0.05 0.08
DC6-48-60-18-8C	C	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.20	2.74 2.96 3.20	0.03 0.05 0.08
QS66512-2 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	8.37 8.93 9.46	8.46 9.66 10.55	0.14 0.21 0.30
QS66512-2 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	8.37 8.93 9.46	8.46 9.66 10.55	0.14 0.21 0.30
QS66512-2 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	8.37 8.93 9.46	8.46 9.66 10.55	0.14 0.21 0.30
RRUS 4478 B5	A	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	0.06 0.08 0.09
RRUS 4478 B5	B	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	0.06 0.08 0.09
RRUS 4478 B5	C	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	0.06 0.08 0.09
(2) RRUS 4426 B66	A	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.73 0.84 0.97	0.05 0.06 0.08
RRUS 4426 B66	B	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.73 0.84 0.97	0.05 0.06 0.08
(3) RRUS 32 B2	B	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18	1.67 1.86 2.05	0.05 0.07 0.10
(3) RRUS 32 B30	C	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	2.69 2.91 3.14	1.57 1.76 1.95	0.06 0.08 0.10
*** 165 I ***									
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	8.39 8.95 9.48	7.08 8.28 9.19	0.08 0.15 0.22
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	8.39 8.95 9.48	7.08 8.28 9.19	0.08 0.15 0.22
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	8.39 8.95 9.48	7.08 8.28 9.19	0.08 0.15 0.22
(2) LPA-80080/6CF w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	4.56 5.11 5.61	10.26 11.43 12.31	0.05 0.11 0.19

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) LPA-80080/6CF w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	4.56 5.11 5.61	10.26 11.43 12.31	0.05 0.11 0.19
(2) LPA-80080/6CF w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	4.56 5.11 5.61	10.26 11.43 12.31	0.05 0.11 0.19
RRH4X45-AWS4 B66	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	2.66 2.88 3.10	1.59 1.77 1.96	0.06 0.08 0.11
(2) RRH4X45-AWS4 B66	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	2.66 2.88 3.10	1.59 1.77 1.96	0.06 0.08 0.11
B13 RRH 4X30	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.32 1.48 1.64	0.06 0.07 0.09
B13 RRH 4X30	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.32 1.48 1.64	0.06 0.07 0.09
B13 RRH 4X30	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.32 1.48 1.64	0.06 0.07 0.09
B25 RRH4X30	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	2.20 2.39 2.59	1.74 1.92 2.11	0.06 0.08 0.10
B25 RRH4X30	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	2.20 2.39 2.59	1.74 1.92 2.11	0.06 0.08 0.10
B25 RRH4X30	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	2.20 2.39 2.59	1.74 1.92 2.11	0.06 0.08 0.10
RRFDC-3315-PF-48	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	3.36 3.60 3.84	2.19 2.39 2.61	0.03 0.06 0.09
RRFDC-3315-PF-48	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	3.36 3.60 3.84	2.19 2.39 2.61	0.03 0.06 0.09
(2) 6' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
(2) 6' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
(2) 6' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
Miscellaneous [NA 507-1]	C	None		0.0000	165.00	No Ice 1/2" Ice 1" Ice	4.80 6.70 8.60	4.80 6.70 8.60	0.25 0.29 0.34
Platform Mount [LP 403-1]	C	None		0.0000	165.00	No Ice	18.85	18.85	1.50

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
							1/2" Ice	24.30	24.30	1.80
							1" Ice	29.75	29.75	2.09
155										
NNVV-65B-R4 w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	155.00	No Ice	12.51	7.41	0.10
			0.00				1/2" Ice	13.11	8.60	0.19
			0.00				1" Ice	13.67	9.50	0.29
NNVV-65B-R4 w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	155.00	No Ice	12.51	7.41	0.10
			0.00				1/2" Ice	13.11	8.60	0.19
			0.00				1" Ice	13.67	9.50	0.29
NNVV-65B-R4 w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	155.00	No Ice	12.51	7.41	0.10
			0.00				1/2" Ice	13.11	8.60	0.19
			0.00				1" Ice	13.67	9.50	0.29
AAHC w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	155.00	No Ice	4.41	2.69	0.12
			0.00				1/2" Ice	4.73	3.08	0.16
			0.00				1" Ice	5.06	3.49	0.20
AAHC w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	155.00	No Ice	4.41	2.69	0.12
			0.00				1/2" Ice	4.73	3.08	0.16
			0.00				1" Ice	5.06	3.49	0.20
AAHC w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	155.00	No Ice	4.41	2.69	0.12
			0.00				1/2" Ice	4.73	3.08	0.16
			0.00				1" Ice	5.06	3.49	0.20
1900MHZ RRH (65MHZ)	A	From Leg	4.00	0.00	0.0000	155.00	No Ice	2.31	2.38	0.06
			0.00				1/2" Ice	2.52	2.58	0.08
			0.00				1" Ice	2.73	2.79	0.11
1900MHZ RRH (65MHZ)	B	From Leg	4.00	0.00	0.0000	155.00	No Ice	2.31	2.38	0.06
			0.00				1/2" Ice	2.52	2.58	0.08
			0.00				1" Ice	2.73	2.79	0.11
1900MHZ RRH (65MHZ)	C	From Leg	4.00	0.00	0.0000	155.00	No Ice	2.31	2.38	0.06
			0.00				1/2" Ice	2.52	2.58	0.08
			0.00				1" Ice	2.73	2.79	0.11
(2) 800MHZ 2X50W RRH	A	From Leg	4.00	0.00	0.0000	155.00	No Ice	2.13	1.77	0.05
			0.00				1/2" Ice	2.32	1.95	0.07
			0.00				1" Ice	2.51	2.13	0.10
(2) 800MHZ 2X50W RRH	B	From Leg	4.00	0.00	0.0000	155.00	No Ice	2.13	1.77	0.05
			0.00				1/2" Ice	2.32	1.95	0.07
			0.00				1" Ice	2.51	2.13	0.10
(2) 800MHZ 2X50W RRH	C	From Leg	4.00	0.00	0.0000	155.00	No Ice	2.13	1.77	0.05
			0.00				1/2" Ice	2.32	1.95	0.07
			0.00				1" Ice	2.51	2.13	0.10
6' x 2" Mount Pipe	A	From Leg	4.00	0.00	0.0000	155.00	No Ice	1.43	1.43	0.02
			0.00				1/2" Ice	1.92	1.92	0.03
			0.00				1" Ice	2.29	2.29	0.05
6' x 2" Mount Pipe	B	From Leg	4.00	0.00	0.0000	155.00	No Ice	1.43	1.43	0.02
			0.00				1/2" Ice	1.92	1.92	0.03
			0.00				1" Ice	2.29	2.29	0.05
6' x 2" Mount Pipe	C	From Leg	4.00	0.00	0.0000	155.00	No Ice	1.43	1.43	0.02
			0.00				1/2" Ice	1.92	1.92	0.03
			0.00				1" Ice	2.29	2.29	0.05
Miscellaneous [NA 507-1]	C	None			0.0000	155.00	No Ice	4.80	4.80	0.25

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Platform Mount [LP 303-1]	C	None			0.0000	155.00	1/2" Ice	6.70	6.70	0.29
							1" Ice	8.60	8.60	0.34
							No Ice	14.66	14.66	1.25
							1/2" Ice	18.87	18.87	1.48
							1" Ice	23.08	23.08	1.71
****										

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
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service

Comb. No.	Description
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	195 - 157.5	Pole	Max Tension	21	0.00	-0.00	0.00
			Max. Compression	26	-31.80	-1.77	-2.34
			Max. Mx	8	-13.09	-254.26	-0.96
			Max. My	14	-13.11	-0.99	-253.19
			Max. Vy	8	16.96	-254.26	-0.96
			Max. Vx	14	16.85	-0.99	-253.19
			Max. Torque	19			0.94
L2	157.5 - 116.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.22	-1.92	-2.54
			Max. Mx	8	-24.21	-1103.34	-2.84
			Max. My	14	-24.23	-2.85	-1097.82
			Max. Vy	8	23.60	-1103.34	-2.84
			Max. Vx	14	23.49	-2.85	-1097.82
			Max. Torque	19			0.94
L3	116.75 - 77	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65.19	-1.92	-2.54
			Max. Mx	8	-35.46	-2090.65	-4.67
			Max. My	14	-35.47	-4.67	-2080.73
			Max. Vy	8	26.93	-2090.65	-4.67
			Max. Vx	14	26.82	-4.67	-2080.73
			Max. Torque	19			0.94
L4	77 - 38	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.06	-1.92	-2.54
			Max. Mx	8	-48.42	-3169.95	-6.41
			Max. My	14	-48.43	-6.41	-3155.79
			Max. Vy	8	29.69	-3169.95	-6.41
			Max. Vx	14	29.58	-6.41	-3155.79
			Max. Torque	19			0.94
L5	38 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-105.99	-1.92	-2.54
			Max. Mx	8	-67.68	-4566.83	-8.39
			Max. My	14	-67.68	-8.39	-4547.82
			Max. Vy	8	32.24	-4566.83	-8.39
			Max. Vx	14	32.13	-8.39	-4547.82
			Max. Torque	19			0.94

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	30	105.99	-10.23	-0.01
	Max. H_x	21	50.78	32.20	0.04
	Max. H_z	3	50.78	0.04	32.10
	Max. M_x	2	4546.21	0.04	32.10
	Max. M_z	8	4566.83	-32.20	-0.04
	Max. Torsion	19	0.93	27.87	-16.01
	Min. Vert	17	50.78	16.06	-27.77
	Min. H_x	8	67.70	-32.20	-0.04
	Min. H_z	15	50.78	-0.04	-32.10
	Min. M_x	14	-4547.82	-0.04	-32.10
	Min. M_z	20	-4565.24	32.20	0.04

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. Torsion	7	-0.93	-27.87	16.01

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	56.42	0.00	0.00	0.61	-0.60	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	67.70	-0.04	-32.10	-4546.21	6.80	0.36
0.9 Dead+1.6 Wind 0 deg - No Ice	50.78	-0.04	-32.10	-4476.88	6.89	0.36
1.2 Dead+1.6 Wind 30 deg - No Ice	67.70	16.06	-27.77	-3933.24	-2277.28	0.75
0.9 Dead+1.6 Wind 30 deg - No Ice	50.78	16.06	-27.77	-3873.31	-2242.25	0.74
1.2 Dead+1.6 Wind 60 deg - No Ice	67.70	27.87	-16.01	-2266.12	-3951.34	0.93
0.9 Dead+1.6 Wind 60 deg - No Ice	50.78	27.87	-16.01	-2231.68	-3890.70	0.93
1.2 Dead+1.6 Wind 90 deg - No Ice	67.70	32.20	0.04	8.39	-4566.83	0.87
0.9 Dead+1.6 Wind 90 deg - No Ice	50.78	32.20	0.04	8.05	-4496.78	0.87
1.2 Dead+1.6 Wind 120 deg - No Ice	67.70	27.91	16.08	2280.85	-3958.90	0.57
0.9 Dead+1.6 Wind 120 deg - No Ice	50.78	27.91	16.08	2245.76	-3898.14	0.58
1.2 Dead+1.6 Wind 150 deg - No Ice	67.70	16.14	27.82	3942.40	-2290.41	0.12
0.9 Dead+1.6 Wind 150 deg - No Ice	50.78	16.14	27.82	3881.91	-2255.16	0.13
1.2 Dead+1.6 Wind 180 deg - No Ice	67.70	0.04	32.10	4547.82	-8.39	-0.36
0.9 Dead+1.6 Wind 180 deg - No Ice	50.78	0.04	32.10	4478.05	-8.05	-0.36
1.2 Dead+1.6 Wind 210 deg - No Ice	67.70	-16.06	27.77	3934.85	2275.69	-0.74
0.9 Dead+1.6 Wind 210 deg - No Ice	50.78	-16.06	27.77	3874.48	2241.09	-0.74
1.2 Dead+1.6 Wind 240 deg - No Ice	67.70	-27.87	16.01	2267.72	3949.75	-0.93
0.9 Dead+1.6 Wind 240 deg - No Ice	50.78	-27.87	16.01	2232.85	3889.54	-0.93
1.2 Dead+1.6 Wind 270 deg - No Ice	67.70	-32.20	-0.04	-6.80	4565.24	-0.87
0.9 Dead+1.6 Wind 270 deg - No Ice	50.78	-32.20	-0.04	-6.89	4495.60	-0.87
1.2 Dead+1.6 Wind 300 deg - No Ice	67.70	-27.91	-16.08	-2279.25	3957.30	-0.57
0.9 Dead+1.6 Wind 300 deg - No Ice	50.78	-27.91	-16.08	-2244.60	3896.97	-0.58
1.2 Dead+1.6 Wind 330 deg - No Ice	67.70	-16.14	-27.82	-3940.80	2288.81	-0.12
0.9 Dead+1.6 Wind 330 deg - No Ice	50.78	-16.14	-27.82	-3880.74	2254.00	-0.13
1.2 Dead+1.0 Ice+1.0 Temp	105.99	0.00	0.00	2.54	-1.92	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	105.99	-0.01	-10.21	-1474.74	-0.47	0.13
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	105.99	5.11	-8.84	-1275.96	-741.47	0.22
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	105.99	8.86	-5.10	-734.53	-1284.36	0.25
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	105.99	10.23	0.01	4.46	-1483.68	0.22

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	105.99	8.86	5.11	743.02	-1286.01	0.13
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	105.99	5.12	8.85	1283.23	-744.34	-0.00
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	105.99	0.01	10.21	1480.36	-3.78	-0.13
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	105.99	-5.11	8.84	1281.58	737.21	-0.22
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	105.99	-8.86	5.10	740.15	1280.11	-0.25
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	105.99	-10.23	-0.01	1.16	1479.42	-0.22
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	105.99	-8.86	-5.11	-737.40	1281.76	-0.13
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	105.99	-5.12	-8.85	-1277.61	740.08	0.00
Dead+Wind 0 deg - Service	56.42	-0.01	-7.47	-1048.41	1.09	0.08
Dead+Wind 30 deg - Service	56.42	3.74	-6.46	-906.99	-525.88	0.18
Dead+Wind 60 deg - Service	56.42	6.49	-3.73	-522.36	-912.12	0.22
Dead+Wind 90 deg - Service	56.42	7.50	0.01	2.42	-1054.13	0.21
Dead+Wind 120 deg - Service	56.42	6.50	3.74	526.72	-913.88	0.14
Dead+Wind 150 deg - Service	56.42	3.76	6.47	910.06	-528.91	0.03
Dead+Wind 180 deg - Service	56.42	0.01	7.47	1049.74	-2.41	-0.08
Dead+Wind 210 deg - Service	56.42	-3.74	6.46	908.31	524.56	-0.18
Dead+Wind 240 deg - Service	56.42	-6.49	3.73	523.69	910.81	-0.22
Dead+Wind 270 deg - Service	56.42	-7.50	-0.01	-1.09	1052.82	-0.21
Dead+Wind 300 deg - Service	56.42	-6.50	-3.74	-525.39	912.55	-0.14
Dead+Wind 330 deg - Service	56.42	-3.76	-6.47	-908.73	527.60	-0.03

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-56.42	0.00	0.00	56.42	0.00	0.000%
2	-0.04	-67.70	-32.10	0.04	67.70	32.10	0.000%
3	-0.04	-50.78	-32.10	0.04	50.78	32.10	0.000%
4	16.06	-67.70	-27.77	-16.06	67.70	27.77	0.000%
5	16.06	-50.78	-27.77	-16.06	50.78	27.77	0.000%
6	27.87	-67.70	-16.01	-27.87	67.70	16.01	0.000%
7	27.87	-50.78	-16.01	-27.87	50.78	16.01	0.000%
8	32.20	-67.70	0.04	-32.20	67.70	-0.04	0.000%
9	32.20	-50.78	0.04	-32.20	50.78	-0.04	0.000%
10	27.91	-67.70	16.08	-27.91	67.70	-16.08	0.000%
11	27.91	-50.78	16.08	-27.91	50.78	-16.08	0.000%
12	16.14	-67.70	27.82	-16.14	67.70	-27.82	0.000%
13	16.14	-50.78	27.82	-16.14	50.78	-27.82	0.000%
14	0.04	-67.70	32.10	-0.04	67.70	-32.10	0.000%
15	0.04	-50.78	32.10	-0.04	50.78	-32.10	0.000%
16	-16.06	-67.70	27.77	16.06	67.70	-27.77	0.000%
17	-16.06	-50.78	27.77	16.06	50.78	-27.77	0.000%
18	-27.87	-67.70	16.01	27.87	67.70	-16.01	0.000%
19	-27.87	-50.78	16.01	27.87	50.78	-16.01	0.000%
20	-32.20	-67.70	-0.04	32.20	67.70	0.04	0.000%
21	-32.20	-50.78	-0.04	32.20	50.78	0.04	0.000%
22	-27.91	-67.70	-16.08	27.91	67.70	16.08	0.000%
23	-27.91	-50.78	-16.08	27.91	50.78	16.08	0.000%
24	-16.14	-67.70	-27.82	16.14	67.70	27.82	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
25	-16.14	-50.78	-27.82	16.14	50.78	27.82	0.000%
26	0.00	-105.99	0.00	-0.00	105.99	-0.00	0.000%
27	-0.01	-105.99	-10.21	0.01	105.99	10.21	0.000%
28	5.11	-105.99	-8.84	-5.11	105.99	8.84	0.000%
29	8.86	-105.99	-5.10	-8.86	105.99	5.10	0.000%
30	10.23	-105.99	0.01	-10.23	105.99	-0.01	0.000%
31	8.86	-105.99	5.11	-8.86	105.99	-5.11	0.000%
32	5.12	-105.99	8.85	-5.12	105.99	-8.85	0.000%
33	0.01	-105.99	10.21	-0.01	105.99	-10.21	0.000%
34	-5.11	-105.99	8.84	5.11	105.99	-8.84	0.000%
35	-8.86	-105.99	5.10	8.86	105.99	-5.10	0.000%
36	-10.23	-105.99	-0.01	10.23	105.99	0.01	0.000%
37	-8.86	-105.99	-5.11	8.86	105.99	5.11	0.000%
38	-5.12	-105.99	-8.85	5.12	105.99	8.85	0.000%
39	-0.01	-56.42	-7.47	0.01	56.42	7.47	0.000%
40	3.74	-56.42	-6.46	-3.74	56.42	6.46	0.000%
41	6.49	-56.42	-3.73	-6.49	56.42	3.73	0.000%
42	7.50	-56.42	0.01	-7.50	56.42	-0.01	0.000%
43	6.50	-56.42	3.74	-6.50	56.42	-3.74	0.000%
44	3.76	-56.42	6.47	-3.76	56.42	-6.47	0.000%
45	0.01	-56.42	7.47	-0.01	56.42	-7.47	0.000%
46	-3.74	-56.42	6.46	3.74	56.42	-6.46	0.000%
47	-6.49	-56.42	3.73	6.49	56.42	-3.73	0.000%
48	-7.50	-56.42	-0.01	7.50	56.42	0.01	0.000%
49	-6.50	-56.42	-3.74	6.50	56.42	3.74	0.000%
50	-3.76	-56.42	-6.47	3.76	56.42	6.47	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00004806
3	Yes	4	0.00000001	0.00058180
4	Yes	6	0.00000001	0.00031366
5	Yes	6	0.00000001	0.00010668
6	Yes	6	0.00000001	0.00030788
7	Yes	6	0.00000001	0.00010443
8	Yes	5	0.00000001	0.00011765
9	Yes	5	0.00000001	0.00005609
10	Yes	6	0.00000001	0.00031644
11	Yes	6	0.00000001	0.00010740
12	Yes	6	0.00000001	0.00031330
13	Yes	6	0.00000001	0.00010624
14	Yes	5	0.00000001	0.00007222
15	Yes	4	0.00000001	0.00076928
16	Yes	6	0.00000001	0.00030821
17	Yes	6	0.00000001	0.00010461
18	Yes	6	0.00000001	0.00031484
19	Yes	6	0.00000001	0.00010707
20	Yes	5	0.00000001	0.00008232
21	Yes	4	0.00000001	0.00087812
22	Yes	6	0.00000001	0.00031127
23	Yes	6	0.00000001	0.00010554
24	Yes	6	0.00000001	0.00031356
25	Yes	6	0.00000001	0.00010648
26	Yes	4	0.00000001	0.00003758
27	Yes	6	0.00000001	0.00020047
28	Yes	6	0.00000001	0.00029887
29	Yes	6	0.00000001	0.00029664
30	Yes	6	0.00000001	0.00020252
31	Yes	6	0.00000001	0.00030294
32	Yes	6	0.00000001	0.00030199
33	Yes	6	0.00000001	0.00020206
34	Yes	6	0.00000001	0.00029730
35	Yes	6	0.00000001	0.00030010
36	Yes	6	0.00000001	0.00020131
37	Yes	6	0.00000001	0.00029637
38	Yes	6	0.00000001	0.00029674
39	Yes	4	0.00000001	0.00014632
40	Yes	5	0.00000001	0.00006244
41	Yes	4	0.00000001	0.00094346
42	Yes	4	0.00000001	0.00016413
43	Yes	5	0.00000001	0.00006325
44	Yes	4	0.00000001	0.00098507
45	Yes	4	0.00000001	0.00014823
46	Yes	4	0.00000001	0.00094856
47	Yes	5	0.00000001	0.00006310
48	Yes	4	0.00000001	0.00016036
49	Yes	4	0.00000001	0.00095979
50	Yes	4	0.00000001	0.00098368

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	195 - 157.5	31.032	43	1.3320	0.0012
L2	161.75 - 116.75	21.913	43	1.2611	0.0010
L3	122 - 77	12.408	43	0.9801	0.0005
L4	83 - 38	5.630	43	0.6565	0.0003
L5	45 - 0	1.624	43	0.3276	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
193.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	43	30.473	1.3300	0.0012	84477
175.00	OPA-65R-LCUU-H6 w/ Mount Pipe	43	25.480	1.3039	0.0011	21119
165.00	(2) SBNHH-1D65B w/ Mount Pipe	43	22.775	1.2744	0.0011	14082
155.00	NNVV-65B-R4 w/ Mount Pipe	43	20.155	1.2268	0.0010	10952

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	195 - 157.5	134.382	8	5.7739	0.0052
L2	161.75 - 116.75	94.930	8	5.4679	0.0044
L3	122 - 77	53.782	10	4.2523	0.0021
L4	83 - 38	24.407	10	2.8481	0.0011
L5	45 - 0	7.040	10	1.4204	0.0004

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
193.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	8	131.965	5.7653	0.0051	19989
175.00	OPA-65R-LCUU-H6 w/ Mount Pipe	8	110.365	5.6530	0.0049	4994
165.00	(2) SBNHH-1D65B w/ Mount Pipe	8	98.661	5.5254	0.0046	3328
155.00	NNVV-65B-R4 w/ Mount Pipe	8	87.322	5.3199	0.0041	2580

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	195 - 157.5 (1)	TP33.351x26x0.25	37.50	0.00	0.0	25.6046	-13.09	1763.91	0.007
L2	157.5 - 116.75 (2)	TP40.839x32.0179x0.3125	45.00	0.00	0.0	39.1765	-24.21	2718.44	0.009
L3	116.75 - 77 (3)	TP48.006x39.1849x0.375	45.00	0.00	0.0	55.2929	-35.46	3862.64	0.009
L4	77 - 38 (4)	TP54.901x46.0798x0.375	45.00	0.00	0.0	63.2663	-48.42	4209.09	0.012
L5	38 - 0 (5)	TP61.6x52.7788x0.4375	45.00	0.00	0.0	84.9318	-67.68	5681.23	0.012

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	195 - 157.5 (1)	TP33.351x26x0.25	254.51	1170.54	0.217	0.00	1170.54	0.000
L2	157.5 - 116.75 (2)	TP40.839x32.0179x0.3125	1104.05	2207.79	0.500	0.00	2207.79	0.000
L3	116.75 - 77 (3)	TP48.006x39.1849x0.375	2091.82	3689.06	0.567	0.00	3689.06	0.000
L4	77 - 38 (4)	TP54.901x46.0798x0.375	3171.55	4604.28	0.689	0.00	4604.28	0.000
L5	38 - 0 (5)	TP61.6x52.7788x0.4375	4568.93	7150.31	0.639	0.00	7150.31	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	195 - 157.5 (1)	TP33.351x26x0.25	16.98	881.96	0.019	0.58	2343.95	0.000
L2	157.5 - 116.75 (2)	TP40.839x32.0179x0.3125	23.61	1359.22	0.017	0.58	4420.99	0.000
L3	116.75 - 77 (3)	TP48.006x39.1849x0.375	26.95	1931.32	0.014	0.57	7387.14	0.000
L4	77 - 38 (4)	TP54.901x46.0798x0.375	29.71	2104.54	0.014	0.57	9219.83	0.000
L5	38 - 0 (5)	TP61.6x52.7788x0.4375	32.25	2840.62	0.011	0.57	14318.08	0.000

Pole Interaction Design Data

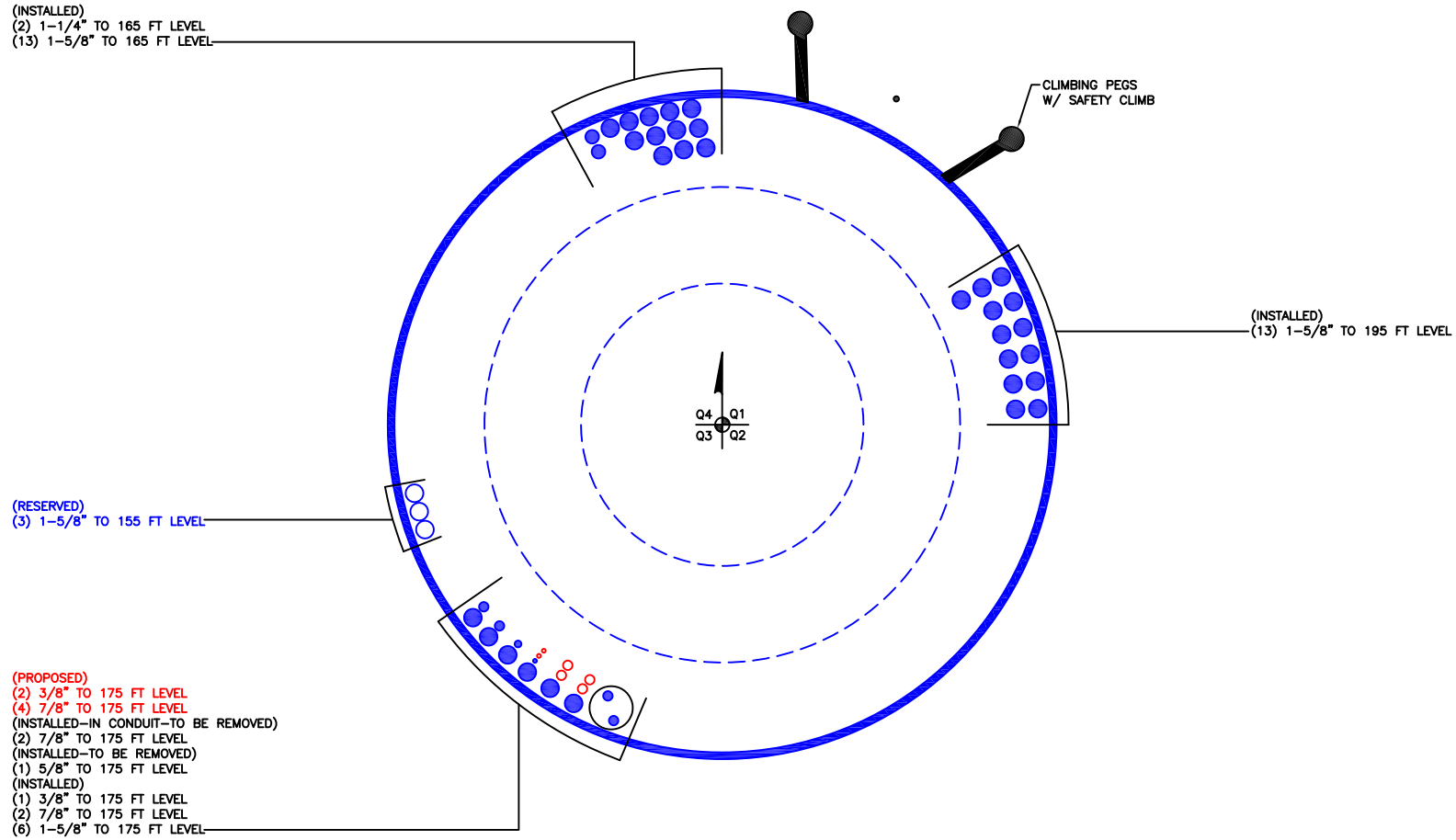
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	195 - 157.5 (1)	0.007	0.217	0.000	0.019	0.000	0.225	1.000	4.8.2
L2	157.5 - 116.75 (2)	0.009	0.500	0.000	0.017	0.000	0.509	1.000	4.8.2
L3	116.75 - 77 (3)	0.009	0.567	0.000	0.014	0.000	0.576	1.000	4.8.2
L4	77 - 38 (4)	0.012	0.689	0.000	0.014	0.000	0.701	1.000	4.8.2
L5	38 - 0 (5)	0.012	0.639	0.000	0.011	0.000	0.651	1.000	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	195 - 157.5	Pole	TP33.351x26x0.25	1	-13.09	1763.91	22.5	Pass
L2	157.5 - 116.75	Pole	TP40.839x32.0179x0.3125	2	-24.21	2718.44	50.9	Pass
L3	116.75 - 77	Pole	TP48.006x39.1849x0.375	3	-35.46	3862.64	57.6	Pass
L4	77 - 38	Pole	TP54.901x46.0798x0.375	4	-48.42	4209.09	70.1	Pass
L5	38 - 0	Pole	TP61.6x52.7788x0.4375	5	-67.68	5681.23	65.1	Pass
							Summary	
						Pole (L4)	70.1	Pass
						RATING =	**70.1**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 826053 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

Assumptions:
1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *826053*
Site Name: *Monroe-1/Rt 25*
App #: *448935 Rev. 0*

Anchor Rod Data		
Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	69	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	68	in
Thick:	3	in
Grade:	55	ksi
Clip Distance:	10.5	in

Stiffener Data (Welding at both sides)		
Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	61.6	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Base Reactions		
TIA Revision:	G	
Factored Moment, Mu:	4572	ft-kips
Factored Axial, Pu:	69	kips
Factored Shear, Vu:	32	kips

Anchor Rod Results

TIA G --> Max Rod (Cu+ Vu/η):	165.7	Kips
Axial Design Strength, Φ*Fu*Anet:	260.0	Kips
Anchor Rod Stress Ratio:	63.7%	**Pass**

Base Plate Results — Flexural Check

Base Plate Stress:	27.2	ksi
PL Design Bending Strength, Φ*Fy:	49.5	ksi
Base Plate Stress Ratio:	55.0%	**Pass**

PL Ref. Data
Yield Line (in):
34.57
Max PL Length:
34.57

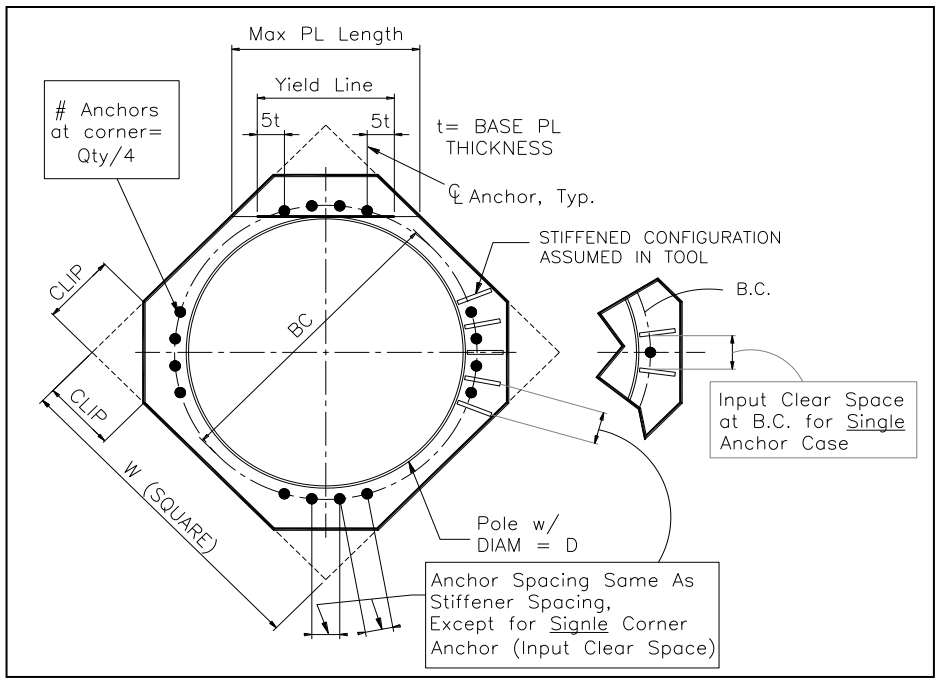
N/A - Unstiffened

Stiffener Results

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check:	N/A



** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Drilled Pier Foundation

BU # :	826053
Site Name:	Monroe-1/Rt 25
App. Number:	448935 Rev. 0

TIA-222 Revison:	G
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	4572	
Axial Force (kips)	69	
Shear Force (kips)	32	

Material Properties		
Concrete Strength, f'c:	4.5	ksi
Rebar Strength, Fy:	60	ksi

Pier Design Data		
Depth	37	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 37' below grade		
Pier Diameter	8	ft
Rebar Quantity	28	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	

Analysis Results		
Soil Lateral Capacity	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	14.85	-
Soil Safety Factor	3.20	-
Max Moment (kip-ft)	5034.82	-
Rating	*41.5%*	-
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	678.58	-
End Bearing (kips)	1130.97	-
Weight of Concrete (kips)	211.32	-
Total Capacity (kips)	1809.56	-
Axial (kips)	280.32	-
Rating	*15.5%*	-
Reinforced Concrete Capacity	*Compression*	*Uplift*
Critical Depth (ft from TOC)	14.89	-
Critical Moment (kip-ft)	5034.81	-
Critical Moment Capacity	8366.35	-
Rating	*60.2%*	-

Soil Interaction Rating	**41.5%**
Structural Foundation Rating	**60.2%**

Soil Profile

Groundwater Depth	3	ft	# of Layers	3

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3	3	115	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3	13	10	52.6	87.6	0	0	0.000	0.000	0.00	0.00			Cohesionless
3	13	37	24	52.6	87.6	0	34	0.000	0.000	1.50	1.50	30		Cohesionless

CCISeismic - Design Category

Per *2012/2015 IBC*

Site BU:	826053
Work Order:	1597874
Application:	448935 Rev. 0

	Degrees	Minutes	Seconds		
Site Latitude =	41	18	6.05	41.3017	degrees
Site Longitude =	-73	15	2.91	-73.2508	degrees
Ground Supported Structure =	Yes				
Structure Class =	II			*(Table 2-1)*	
Site Class =	D - Stiff Soil			*(Table 2-11)*	

Spectral response acceleration short periods, S_S =	0.205	USGS Seismic Tool
Spectral response acceleration 1 s period, S_1 =	0.065	

Importance Factor, I =	1.0	*(Table 2-3)*
Acceleration-based site coefficient, F_a =	1.6	*(Table 2-12)*
Velocity-based site coefficient, F_v =	2.4	*(Table 2-13)*

Design spectral response acceleration short period, S_{DS} =	0.219	*(2.7.6)*
Design spectral response acceleration 1 s period, S_{D1} =	0.104	*(2.7.6)*

Seismic Design Category - Short Period Response =	B	*ASCE 7-05 Table 11.6-1*
Seismic Design Category - 1s Period Response =	B	*ASCE 7-05 Table 11.6-2*

Worst Case Seismic Design Category =	B	*ASCE 7-05 Tables 11.6-1 and 6-2*

June 11, 2018

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:		
	Site Number:	CT5189 (LTE 4C/5C)
	FA Number:	10071138
	PACE Number:	MRCTB031590
	PT Number:	2051A0GGLH
	Site Name:	Monroe South
	Site Address:	88 Main Street Monroe, CT 06468

To Whom It May Concern:

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

- (3) OPA-65R-LCUU-H6 Antennas (72"x14.8"x7.4" – Wt. = 73 lbs. /each)
- (3) QS66512-2 Antennas (72"x12"x9.6" – Wt. = 111 lbs. /each)
- (3) Powerwave 7770 Antennas (55.0"x11.0"x5.0" – Wt. = 35 lbs. /each)
- (3) RRUS-11 RRH's (19.7"x17.0"x7.2" – Wt. = 51 lbs. /each)
- (3) RRUS-32 B2 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (3) RRUS-32 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (6) LGP21401 TMA's (14.4"x9.0"x2.7" – Wt. = 19 lbs. /each)
- (2) Squid Surge Arrestors (24.0"x9.7" Φ – Wt. = 33 lbs. /each)
- **(3) 4478 B5 RRH's (18.1"x13.4"x8.3"– Wt. = 60 lbs. /each)**
- **(3) 4426 B66 RRH's (15"x13.2"x7.4" – Wt. = 49 lbs. /each)**

**Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mounts. HDG used a previous structural analysis report prepared by Destek Engineering, LLC dated May 13, 2015 as reference and ground photos provided by AT&T dated November 27, 2017.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-G, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2012 with 2005 Connecticut Supplement with 2016 Amendments, and AT&T Mount Technical Directive – R7.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-G Annex B, the max basic wind speed for this site is equal to 110 mph with a max basic wind speed with ice of 50 mph. Per the AT&T Mount Technical Directive and Appendix N of the Connecticut State Building Code, an ultimate wind speed of 120 mph converted to a nominal wind speed of 93 mph was used for this analysis.

- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- 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 4.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.

Based on our evaluation, we have determined that the existing mount **IS CAPABLE** of supporting the proposed installation. HDG recommends the following modification:

- **Handrail kit installed as part of the LTE 3C configuration project.**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
4C/5C Configuration Mount Rating	17	LC9	69%	**PASS**

Reference Documents:

- Structural analysis report provided by Destek Engineering, LLC dated May 13, 2015.

This determination was based on the following limitations and assumptions:

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

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

Respectfully Submitted,
Hudson Design Group LLC

Michael Cabral
Structural Dept. Head

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:






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: 6/8/2018
Project Name: Monroe South
Project Number: CT5189
Designed By: AK **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

		z=	175 (ft)
		z_g=	1200 (ft)
K_z=	**1.160**	α=	7.0

$K_{zmin} \le K_z \le 2.01$

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}=	**#DIV/0!**	K_h=	#DIV/0!
		K_e=	0 (from Table 2-4)
(If Category 1 then K_{zt} =1.0)		K_t=	0 (from Table 2-5)
		f=	0 (from Table 2-5)
Category=	1	z=	175
		H=	0 (Ht. of the crest above surrounding terrain)
		K_{zt}=	1.00
		K_{iz} =	1.18 (from Sec. 2.6.8)

2.6.8 Design Ice Thickness

Max Ice Thickness = t_i = 1.00 in

$t_{iz} = 2.0*t_i*I*K_{iz}*(Kzt)^{0.35}$ t_{iz} = 2.36 in

Date: 6/8/2018
Project Name: Monroe South
Project Number: CT5189
Designed By: AK 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=	195	Gh=	0.85

2.6.7.2 Guyed Masts Gh= 0.85

2.6.7.3 Pole Structures Gh= 1.1

2.6.9 Appurtenances Gh= 1.0

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

Gh=	1.35	**Gh=**	**1.00**

2.6.9.2 Design Wind Force on Appurtenances

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

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

V_{asd} per the AT&T Mount Technical Directive and Connecticut State Building Code, Latest Edition.
Per TIA-222-G, V_{min} = 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=	1.160
		K_{zt}=	1.0
q_z=	**24.37**	K_d=	0.95
$q_{z\,(ice)}$=	**7.05**	V_{asd}=	93 mph
$q_{z\,(30)}$=	**2.54**	$V_{max\,(ice)}$=	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: 6/8/2018
Project Name: Monroe South
Project Number: CT5189
Designed By: AK 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 = **2.36** 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)
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	4.86	1.31	**235**	**96**	**25**
QS66512-2 Antenna	72.0	12.0	9.6	6.00	6.00	1.36	**198**	**85**	**21**
Powerwave 7770 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	**134**	**60**	**14**
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	2.25	1.20	**67**	**32**	**7**
RRUS-32 B2 RRH (Shielded)	27.2	1.1	7.0	0.21	24.73	1.99	**10**	**18**	**1**
RRUS-11 RRH	19.7	17.0	7.2	2.33	1.16	1.20	**68**	**31**	**7**
RRUS-11 RRH (Shielded)	19.7	6.0	7.2	0.82	3.28	1.23	**25**	**16**	**3**
4478 B5 RRH	18.1	13.4	8.3	1.68	1.35	1.20	**49**	**24**	**5**
4478 B5 RRH (Shielded)	18.1	2.4	8.3	0.30	7.54	1.42	**10**	**11**	**1**
4426 B66 RRH	15.0	13.2	7.4	1.38	1.14	1.20	**40**	**21**	**4**
4426 B66 RRH (Shielded)	15.0	2.2	7.4	0.23	6.82	1.39	**8**	**9**	**1**
2" Pipe	2.4	12.0		0.20	0.20	1.20	**6**	**7**	**1**
3" Pipe	3.5	12.0		0.29	0.29	2.00	**14**	**13**	**1**

Date: 6/8/2018
Project Name: Monroe South
Project Number: CT5189
Designed By: AK Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	2.36	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)
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	235	134	210
QS66512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	198	166	190
Powerwave 7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	134	71	118
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	67	41	60
RRUS-32 B2 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	36	41	37
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	68	29	58
RRUS-11 RRH (Shielded)	19.7	8.5	7.2	1.16	0.99	2.32	2.74	1.20	1.21	34	29	33
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.19	1.20	1.20	49	30	45
4478 B5 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.19	1.21	1.20	25	30	26
4426 B66 RRH	15.0	13.2	7.4	1.38	0.77	1.14	2.03	1.20	1.20	40	23	36
4426 B66 RRH (Shielded)	15.0	6.6	7.4	0.69	0.77	2.27	2.03	1.20	1.20	20	23	21

WIND LOADS WITH ICE:

OPA-65R-LCUU-H6 Antenna	76.7	19.5	12.1	10.40	6.46	3.93	6.33	1.26	1.37	93	62	85
QS66512-2 Antenna	76.7	16.7	14.3	8.91	7.63	4.59	5.36	1.29	1.33	81	71	79
Powerwave 7770 Antenna	59.7	15.7	9.7	6.52	4.03	3.80	6.14	1.26	1.36	58	39	53
RRUS-32 B2 RRH	31.9	16.8	11.7	3.73	2.60	1.90	2.72	1.20	1.21	32	22	29
RRUS-32 B2 RRH (Shielded)	31.9	8.4	11.7	1.87	2.60	3.79	2.72	1.26	1.21	17	22	18
RRUS-11 RRH	24.4	21.7	11.9	3.69	2.02	1.12	2.05	1.20	1.20	31	17	28
RRUS-11 RRH (Shielded)	24.4	10.9	11.9	1.84	2.02	2.25	2.05	1.20	1.20	16	17	16
4478 B5 RRH	22.8	18.1	13.0	2.87	2.06	1.26	1.76	1.20	1.20	24	17	23
4478 B5 RRH (Shielded)	22.8	9.1	13.0	1.44	2.06	2.52	1.76	1.20	1.20	12	17	13
4426 B66 RRH	19.7	17.9	12.1	2.46	1.66	1.10	1.63	1.20	1.20	21	14	19
4426 B66 RRH (Shielded)	19.7	9.0	12.1	1.23	1.66	2.20	1.63	1.20	1.20	10	14	11

WIND LOADS AT 30 MPH:

OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	25	14	22
QS66512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	21	17	20
Powerwave 7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	14	7	12
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	7	4	6
RRUS-32 B2 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	4	4	4
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	7	3	6
RRUS-11 RRH (Shielded)	19.7	8.5	7.2	1.16	0.99	2.32	2.74	1.20	1.21	4	3	3
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.19	1.20	1.20	5	3	5
4478 B5 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.19	1.21	1.20	3	3	3
4426 B66 RRH	15.0	13.2	7.4	1.38	0.77	1.14	2.03	1.20	1.20	4	2	4
4426 B66 RRH (Shielded)	15.0	6.6	7.4	0.69	0.77	2.27	2.03	1.20	1.20	2	2	2

Date: 6/8/2018
Project Name: Monroe South
Project Number: CT5189
Designed By: AK Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	2.36	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)
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	235	134	160
QS66512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	198	166	174
Powerwave 7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	134	71	87
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	67	41	47
RRUS-32 B2 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	51	41	43
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	68	29	39
RRUS-11 RRH (Shielded)	19.7	12.8	7.2	1.74	0.99	1.55	2.74	1.20	1.21	51	29	35
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.19	1.20	1.20	49	30	35
4478 B5 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.19	1.20	1.20	37	30	32
4426 B66 RRH	15.0	13.2	7.4	1.38	0.77	1.14	2.03	1.20	1.20	40	23	27
4426 B66 RRH (Shielded)	15.0	9.9	7.4	1.03	0.77	1.52	2.03	1.20	1.20	30	23	24

WIND LOADS WITH ICE:

OPA-65R-LCUU-H6 Antenna	76.7	19.5	12.1	10.40	6.46	3.93	6.33	1.26	1.37	93	62	70
QS66512-2 Antenna	76.7	16.7	14.3	8.91	7.63	4.59	5.36	1.29	1.33	81	71	74
Powerwave 7770 Antenna	59.7	15.7	9.7	6.52	4.03	3.80	6.14	1.26	1.36	58	39	44
RRUS-32 B2 RRH	31.9	16.8	11.7	3.73	2.60	1.90	2.72	1.20	1.21	32	22	25
RRUS-32 B2 RRH (Shielded)	31.9	12.6	11.7	2.80	2.60	2.53	2.72	1.20	1.21	24	22	23
RRUS-11 RRH	24.4	21.7	11.9	3.69	2.02	1.12	2.05	1.20	1.20	31	17	21
RRUS-11 RRH (Shielded)	24.4	16.3	11.9	2.76	2.02	1.50	2.05	1.20	1.20	23	17	19
4478 B5 RRH	22.8	18.1	13.0	2.87	2.06	1.26	1.76	1.20	1.20	24	17	19
4478 B5 RRH (Shielded)	22.8	13.6	13.0	2.15	2.06	1.68	1.76	1.20	1.20	18	17	18
4426 B66 RRH	19.7	17.9	12.1	2.46	1.66	1.10	1.63	1.20	1.20	21	14	16
4426 B66 RRH (Shielded)	19.7	13.4	12.1	1.84	1.66	1.47	1.63	1.20	1.20	16	14	14

WIND LOADS AT 30 MPH:

OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	25	14	17
QS66512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	21	17	18
Powerwave 7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	14	7	9
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	7	4	5
RRUS-32 B2 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	5	4	5
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	7	3	4
RRUS-11 RRH (Shielded)	19.7	12.8	7.2	1.74	0.99	1.55	2.74	1.20	1.21	5	3	4
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.19	1.20	1.20	5	3	4
4478 B5 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.19	1.20	1.20	4	3	3
4426 B66 RRH	15.0	13.2	7.4	1.38	0.77	1.14	2.03	1.20	1.20	4	2	3
4426 B66 RRH (Shielded)	15.0	9.9	7.4	1.03	0.77	1.52	2.03	1.20	1.20	3	2	3

Date: 6/8/2018
Project Name: Monroe South
Project Number: CT5189
Designed By: AK Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	2.36	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)
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	235	134	134
QS66512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	198	166	166
Powerwave 7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	134	71	71
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	67	41	41
RRUS-32 B2 RRH (Shielded)	27.2	1.1	7.0	0.21	1.32	24.73	3.89	1.99	1.26	10	41	41
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	68	29	29
RRUS-11 RRH (Shielded)	19.7	6.0	7.2	0.82	0.99	3.28	2.74	1.23	1.21	25	29	29
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.19	1.20	1.20	49	30	30
4478 B5 RRH (Shielded)	18.1	2.4	8.3	0.30	1.04	7.54	2.19	1.42	1.20	10	30	30
4426 B66 RRH	15.0	13.2	7.4	1.38	0.77	1.14	2.03	1.20	1.20	40	23	23
4426 B66 RRH (Shielded)	15.0	2.2	7.4	0.23	0.77	6.82	2.03	1.39	1.20	8	23	23

WIND LOADS WITH ICE:

OPA-65R-LCUU-H6 Antenna	76.7	19.5	12.1	10.40	6.46	3.93	6.33	1.26	1.37	93	62	62
QS66512-2 Antenna	76.7	16.7	14.3	8.91	7.63	4.59	5.36	1.29	1.33	81	71	71
Powerwave 7770 Antenna	59.7	15.7	9.7	6.52	4.03	3.80	6.14	1.26	1.36	58	39	39
RRUS-32 B2 RRH	31.9	16.8	11.7	3.73	2.60	1.90	2.72	1.20	1.21	32	22	22
RRUS-32 B2 RRH (Shielded)	31.9	5.8	11.7	1.29	2.60	5.48	2.72	1.33	1.21	12	22	22
RRUS-11 RRH	24.4	21.7	11.9	3.69	2.02	1.12	2.05	1.20	1.20	31	17	17
RRUS-11 RRH (Shielded)	24.4	10.7	11.9	1.82	2.02	2.28	2.05	1.20	1.20	15	17	17
4478 B5 RRH	22.8	18.1	13.0	2.87	2.06	1.26	1.76	1.20	1.20	24	17	17
4478 B5 RRH (Shielded)	22.8	7.1	13.0	1.13	2.06	3.20	1.76	1.23	1.20	10	17	17
4426 B66 RRH	19.7	17.9	12.1	2.46	1.66	1.10	1.63	1.20	1.20	21	14	14
4426 B66 RRH (Shielded)	19.7	6.9	12.1	0.95	1.66	2.85	1.63	1.22	1.20	8	14	14

WIND LOADS AT 30 MPH:

OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	25	14	14
QS66512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	21	17	17
Powerwave 7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	14	7	7
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	7	4	4
RRUS-32 B2 RRH (Shielded)	27.2	1.1	7.0	0.21	1.32	24.73	3.89	1.99	1.26	1	4	4
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	7	3	3
RRUS-11 RRH (Shielded)	19.7	6.0	7.2	0.82	0.99	3.28	2.74	1.23	1.21	3	3	3
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.19	1.20	1.20	5	3	3
4478 B5 RRH (Shielded)	18.1	2.4	8.3	0.30	1.04	7.54	2.19	1.42	1.20	1	3	3
4426 B66 RRH	15.0	13.2	7.4	1.38	0.77	1.14	2.03	1.20	1.20	4	2	2
4426 B66 RRH (Shielded)	15.0	2.2	7.4	0.23	0.77	6.82	2.03	1.39	1.20	1	2	2

Date: 6/8/2018
Project Name: Monroe South
Project Number: CT5189
Designed By: AK **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 0.75 in.
Density of ice: 56 pcf

OPA-65R-LCUU-H6 Antenna

Weight of ice based on total radial SF area:		
Height (in):	72.0	
Width (in):	14.8	
Depth (in):	7.4	
Total weight of ice on object:		90 lbs
Weight of object:	73 lbs	
Combined weight of ice and object:		163 lbs

QS66512-2 Antenna

Weight of ice based on total radial SF area:		
Height (in):	72.0	
Width (in):	12.0	
Depth (in):	9.6	
Total weight of ice on object:		88 lbs
Weight of object:	111 lbs	
Combined weight of ice and object:		199 lbs

Powerwave 7770 Antenna

Weight of ice based on total radial SF area:		
Height (in):	55.0	
Width (in):	11.0	
Depth (in):	5.0	
Total weight of ice on object:		51 lbs
Weight of object:	35 lbs	
Combined weight of ice and object:		86 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:		32 lbs
Weight of object:	51 lbs	
Combined weight of ice and object:		83 lbs

RRUS-32 RRH

Weight of ice based on total radial SF area:		
Height (in):	27.2	
Width (in):	12.1	
Depth (in):	7.0	
Total weight of ice on object:		33 lbs
Weight of object:	60 lbs	
Combined weight of ice and object:		93 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:		28 lbs
Weight of object:	60 lbs	
Combined weight of ice and object:		88 lbs

4426 B66 RRH

Weight of ice based on total radial SF area:		
Height (in):	15.0	
Width (in):	13.2	
Depth (in):	7.4	
Total weight of ice on object:		22 lbs
Weight of object:	49 lbs	
Combined weight of ice and object:		71 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:		11 lbs
Weight of object:	19 lbs	
Combined weight of ice and object:		30 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:		25 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		58 lbs

C 3x6

Weight of ice based on total radial SF area:		
Height (in):	3	
Width (in):	6	
Per foot weight of ice on object:		6 plf

2" pipe

Per foot weight of ice:		
diameter (in):	2.38	
Per foot weight of ice on object:		3 plf

L1-1/2x1-1/2x3/16 Angles

Weight of ice based on total radial SF area:		
Thickness (in):	0.188	
Height (in):	1.5	
Width (in):	1.5	
Per foot weight of ice on object:		3 plf

3" Pipe

Per foot weight of ice:		
diameter (in):	3.5	
Per foot weight of ice on object:		4 plf

PL 6x3/8

Weight of ice based on total radial SF area:		
Height (in):	6	
Width (in):	0.375	
Per foot weight of ice on object:		5 plf

HUDSON
Design Group LLC

Mount Calculations

Bentley

Current Date: 6/11/2018 10:00 AM
Units system: English
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Bentley

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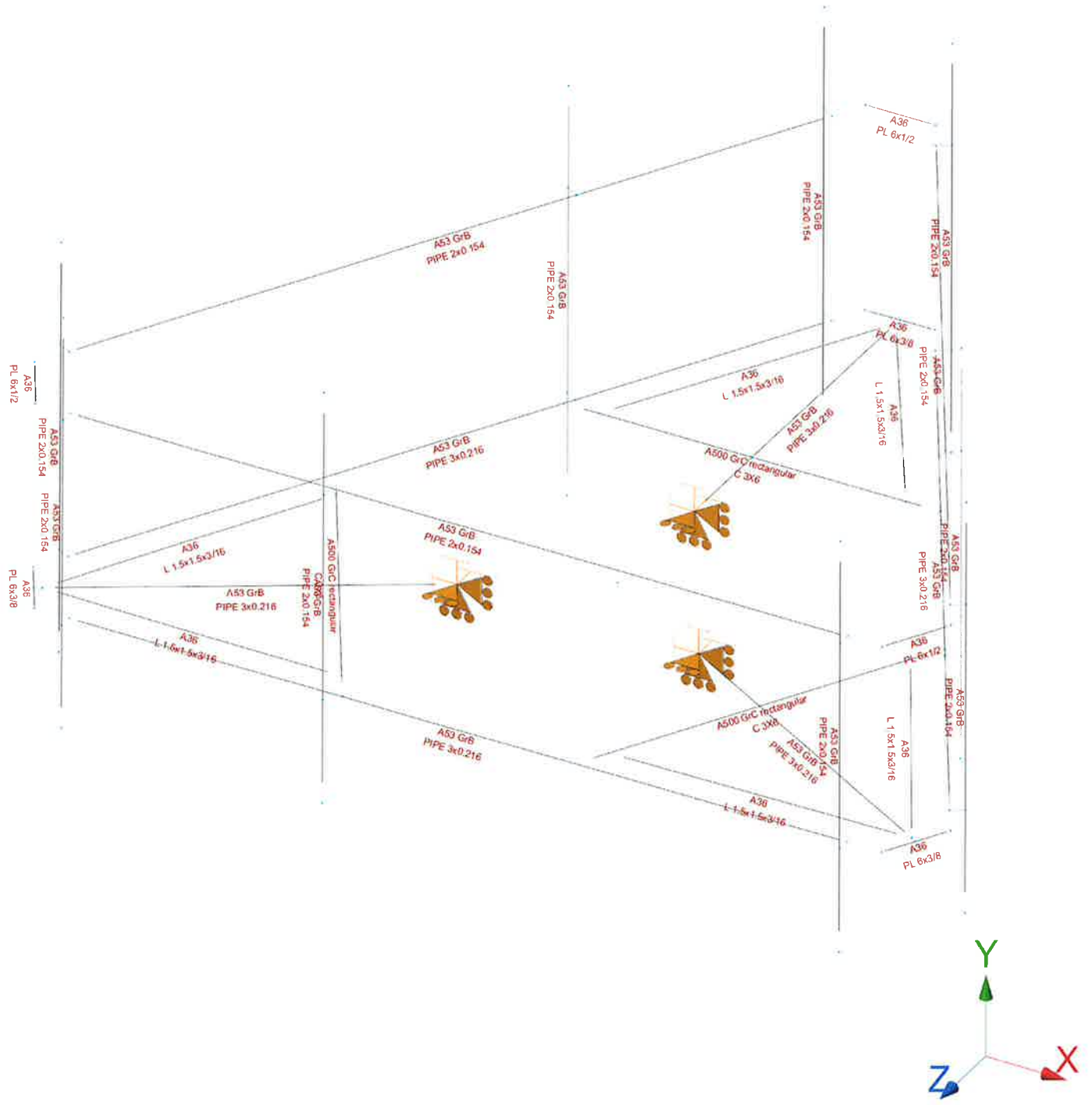

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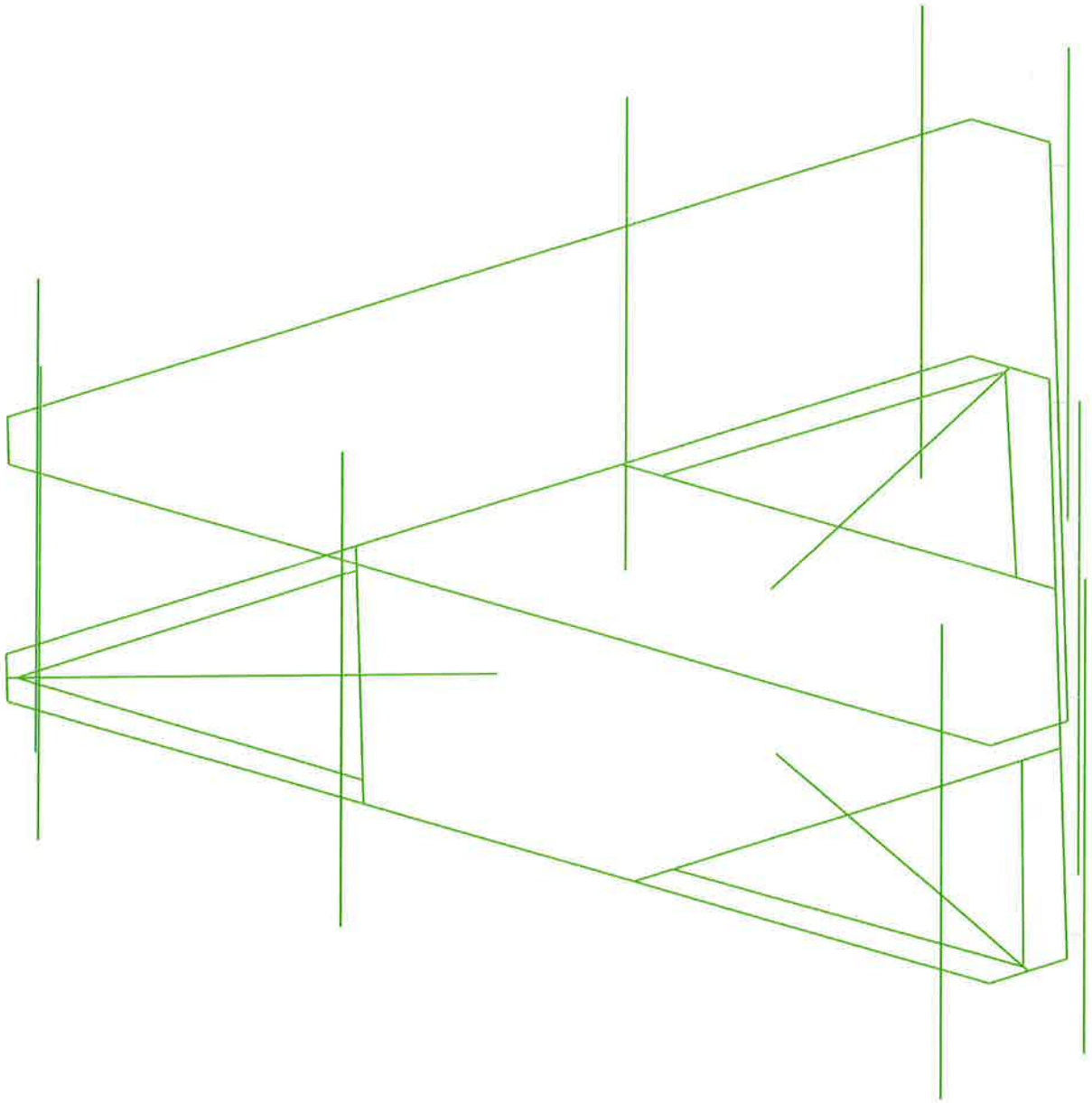
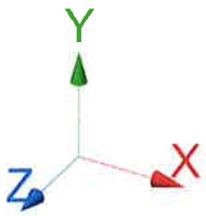
Design status

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





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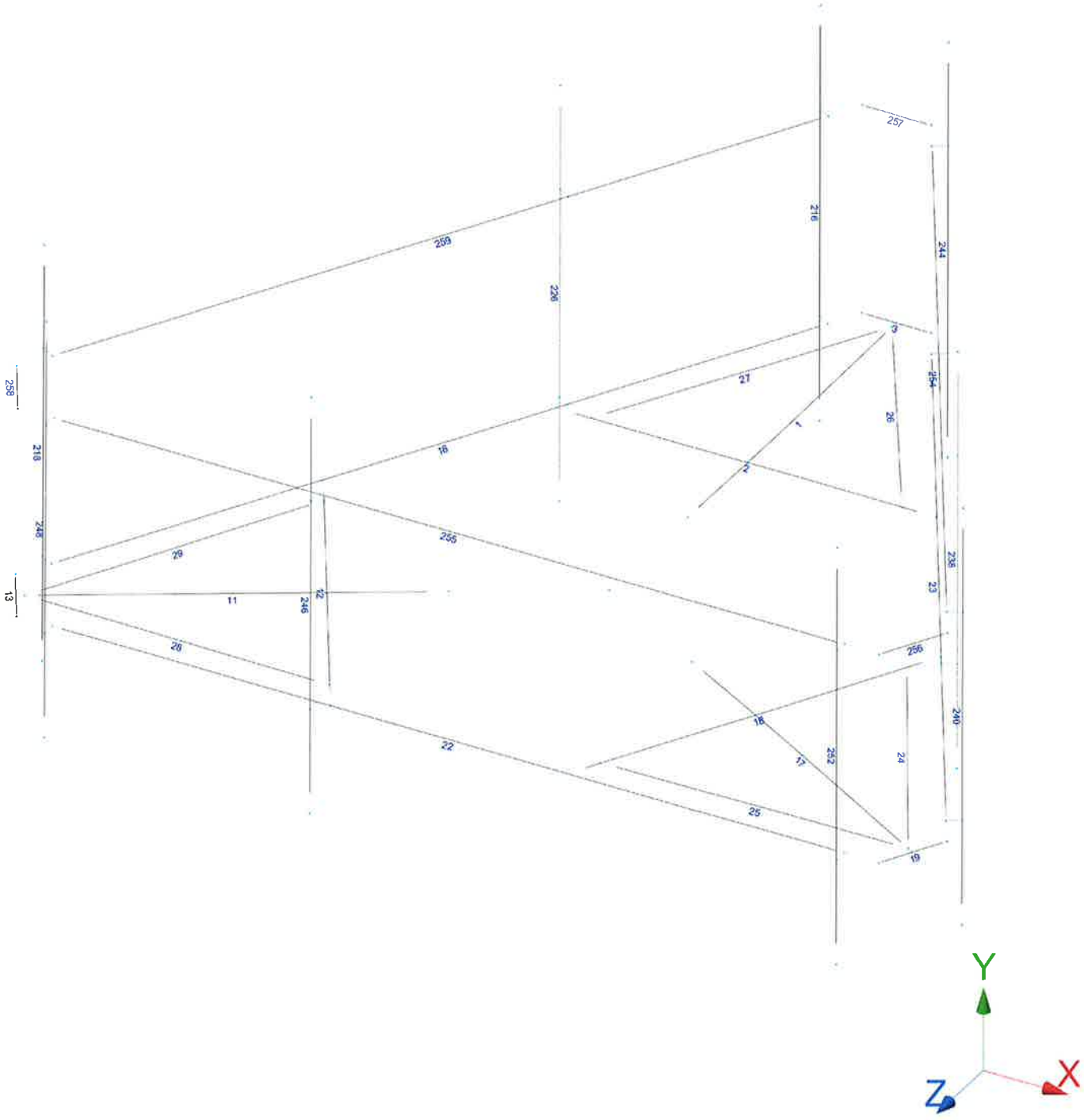

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Load data

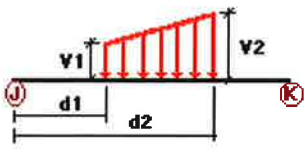
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

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

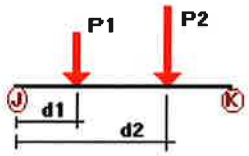
Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	1	y	-0.01	-0.01	1.50	No	100.00	Yes
	2	y	-0.01	0.00	0.00	No	0.00	No
	11	y	-0.01	-0.01	1.50	No	100.00	Yes
	12	y	-0.01	0.00	0.00	No	0.00	No
	17	y	-0.01	-0.01	1.50	No	100.00	Yes
	18	y	-0.01	0.00	0.00	No	0.00	No
	24	y	-0.01	0.00	0.00	No	0.00	No
	25	y	-0.01	0.00	0.00	No	0.00	No

	26	y	-0.01	0.00	0.00	No	0.00	No
	27	y	-0.01	0.00	0.00	No	0.00	No
	28	y	-0.01	0.00	0.00	No	0.00	No
	29	y	-0.01	0.00	0.00	No	0.00	No
W0	16	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
	22	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
	23	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
	254	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
	255	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
W30	16	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	23	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	246	X	-0.006	-0.006	0.00	Yes	100.00	Yes
	248	X	-0.006	-0.006	0.00	Yes	100.00	Yes
	252	X	-0.006	-0.006	0.00	Yes	100.00	Yes
	254	X	-0.014	-0.014	0.00	Yes	100.00	Yes
Di	1	Y	-0.004	-0.004	0.00	Yes	100.00	Yes
	2	Y	-0.006	-0.006	0.00	Yes	100.00	Yes
	3	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	11	Y	-0.004	-0.004	0.00	Yes	100.00	Yes
	12	Y	-0.006	-0.006	0.00	Yes	100.00	Yes
	13	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	16	Y	-0.004	-0.004	0.00	Yes	100.00	Yes
	17	Y	-0.004	-0.004	0.00	Yes	100.00	Yes
	18	Y	-0.006	-0.006	0.00	Yes	100.00	Yes
	19	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	22	Y	-0.004	-0.004	0.00	Yes	100.00	Yes
	23	Y	-0.004	-0.004	0.00	Yes	100.00	Yes
	24	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	25	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	26	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	27	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	28	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	29	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	216	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	218	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	226	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	238	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	240	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	244	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	246	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	248	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	252	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	254	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	255	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	256	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	257	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	258	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	259	Y	-0.003	-0.003	0.00	Yes	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	216	y	-0.018	4.54	No
		y	-0.018	1.46	No
		y	-0.038	3.00	No
	218	y	-0.037	5.25	No
		y	-0.037	0.75	No
		y	-0.06	3.00	No
		y	-0.051	1.00	No
		y	-0.06	5.00	No
	226	y	-0.056	5.25	No
		y	-0.056	0.75	No
		y	-0.06	3.00	No
		y	-0.049	5.00	No
	238	y	-0.056	5.25	No
		y	-0.056	0.75	No
		y	-0.06	3.00	No
		y	-0.049	5.00	No
	240	y	-0.018	4.54	No
		y	-0.018	1.46	No
		y	-0.038	3.00	No
	244	y	-0.037	5.25	No
		y	-0.037	0.75	No
		y	-0.06	3.00	No
		y	-0.051	1.00	No
		y	-0.06	5.00	No
	246	y	-0.056	5.25	No
		y	-0.056	0.75	No
		y	-0.06	3.00	No
		y	-0.049	5.00	No
		y	-0.033	3.00	No
	248	y	-0.018	4.54	No
		y	-0.018	1.46	No
		y	-0.038	3.00	No
	252	y	-0.037	5.25	No
		y	-0.037	0.75	No
		y	-0.06	3.00	No
		y	-0.051	1.00	No
		y	-0.06	5.00	No
		y	-0.033	3.00	No
W0	216	2	-0.044	4.54	No
		2	-0.044	1.46	No
	218	2	-0.08	5.25	No
		2	-0.08	0.75	No
		2	-0.043	3.00	No
		2	-0.035	1.00	No
		2	-0.032	5.00	No
	226	2	-0.087	5.25	No
		2	-0.087	0.75	No
		2	-0.043	3.00	No
		2	-0.024	5.00	No
	238	2	-0.087	5.25	No
		2	-0.087	0.75	No
		2	-0.043	3.00	No
		2	-0.024	5.00	No
	240	2	-0.044	4.54	No
		2	-0.044	1.46	No
	244	2	-0.08	5.25	No
		2	-0.08	0.75	No
		2	-0.043	3.00	No
		2	-0.035	1.00	No
		2	-0.032	5.00	No

	246	z	-0.10	5.25	No
		z	-0.10	0.75	No
		z	-0.01	3.00	No
		z	-0.008	5.00	No
	248	z	-0.068	4.54	No
		z	-0.068	1.46	No
	252	z	-0.118	5.25	No
		z	-0.118	0.75	No
		z	-0.01	3.00	No
		z	-0.025	1.00	No
		z	-0.01	5.00	No
W30	216	2	-0.06	4.54	No
		2	-0.06	1.46	No
	218	2	-0.106	5.25	No
		2	-0.106	0.75	No
		2	-0.037	3.00	No
		2	-0.033	1.00	No
		2	-0.026	5.00	No
	226	2	-0.096	5.25	No
		2	-0.096	0.75	No
		2	-0.037	3.00	No
		2	-0.021	5.00	No
	238	2	-0.096	5.25	No
		2	-0.096	0.75	No
		2	-0.037	3.00	No
		2	-0.021	5.00	No
	240	2	-0.06	4.54	No
		2	-0.06	1.46	No
	244	2	-0.106	5.25	No
		2	-0.106	0.75	No
		2	-0.037	3.00	No
		2	-0.033	1.00	No
		2	-0.026	5.00	No
	246	x	-0.083	5.25	No
		x	-0.083	0.75	No
		x	-0.041	3.00	No
		x	-0.023	3.00	No
	248	x	-0.036	4.54	No
		x	-0.036	1.46	No
	252	x	-0.068	5.25	No
		x	-0.068	0.75	No
		x	-0.041	3.00	No
		x	-0.029	3.00	No
		x	-0.03	3.00	No
Di	216	y	-0.026	4.54	No
		y	-0.026	1.46	No
		y	-0.022	3.00	No
	218	y	-0.045	5.25	No
		y	-0.045	0.75	No
		y	-0.033	3.00	No
		y	-0.032	1.00	No
		y	-0.028	5.00	No
	226	y	-0.044	5.25	No
		y	-0.044	0.75	No
		y	-0.033	3.00	No
		y	-0.022	5.00	No
	238	y	-0.044	5.25	No
		y	-0.044	0.75	No
		y	-0.033	3.00	No
		y	-0.022	5.00	No

	240	y	-0.026	4.54	No
		y	-0.026	1.46	No
		y	-0.022	3.00	No
	244	y	-0.045	5.25	No
		y	-0.045	0.75	No
		y	-0.033	3.00	No
		y	-0.032	1.00	No
		y	-0.028	5.00	No
	246	y	-0.044	5.25	No
		y	-0.044	0.75	No
		y	-0.033	3.00	No
		y	-0.022	5.00	No
		y	-0.025	3.00	No
	248	y	-0.026	4.54	No
		y	-0.026	1.46	No
		y	-0.022	3.00	No
	252	y	-0.045	5.25	No
		y	-0.045	0.75	No
		y	-0.033	3.00	No
		y	-0.032	1.00	No
		y	-0.028	5.00	No
		y	-0.025	3.00	No
Wi0	216	2	-0.022	4.54	No
		2	-0.022	1.46	No
	218	2	-0.035	5.25	No
		2	-0.035	0.75	No
		2	-0.023	3.00	No
		2	-0.019	1.00	No
		2	-0.018	1.00	No
	226	2	-0.037	5.25	No
		2	-0.037	0.75	No
		2	-0.023	3.00	No
		2	0.00	0.00	No
	238	2	-0.037	5.25	No
		2	-0.037	0.75	No
		2	-0.023	3.00	No
		2	-0.014	5.00	No
	240	2	-0.022	4.54	No
		2	-0.022	1.46	No
	244	2	-0.035	5.25	No
		2	-0.035	0.75	No
		2	-0.023	3.00	No
		2	-0.019	1.00	No
		2	-0.018	1.00	No
	246	z	-0.043	5.25	No
		z	-0.043	0.75	No
		z	-0.018	3.00	No
		z	-0.009	5.00	No
	248	z	-0.031	4.54	No
		z	-0.031	1.46	No
	252	z	-0.048	5.25	No
		z	-0.048	0.75	No
		z	-0.018	3.00	No
		z	-0.016	1.00	No
		z	-0.011	5.00	No
Wi30	216	2	-0.027	4.54	No
		2	-0.027	1.46	No
	218	2	-0.043	5.25	No
		2	-0.043	0.75	No
		2	-0.018	3.00	No

		2	-0.016	1.00	No
		2	-0.013	1.00	No
	226	2	-0.04	5.25	No
		2	-0.04	0.75	No
		2	-0.018	3.00	No
		2	-0.011	5.00	No
	238	2	-0.04	5.25	No
		2	-0.04	0.75	No
		2	-0.018	3.00	No
		2	-0.011	5.00	No
	240	2	-0.027	4.54	No
		2	-0.027	1.46	No
	244	2	-0.043	5.25	No
		2	-0.043	0.75	No
		2	-0.018	3.00	No
		2	-0.016	1.00	No
		2	-0.013	1.00	No
	246	x	-0.036	5.25	No
		x	-0.036	0.75	No
		x	-0.022	2.00	No
		x	-0.014	2.00	No
	248	x	-0.02	4.54	No
		x	-0.02	1.46	No
	252	x	-0.032	5.25	No
		x	-0.032	0.75	No
		x	-0.022	2.00	No
		x	-0.017	2.00	No
		x	-0.017	2.00	No
WL0	216	2	-0.005	4.54	No
		2	-0.005	1.46	No
	218	2	-0.009	5.25	No
		2	-0.009	0.75	No
		2	-0.005	3.00	No
		2	-0.004	1.00	No
		2	-0.004	1.00	No
	226	2	-0.01	5.25	No
		2	-0.01	0.75	No
		2	-0.005	3.00	No
		2	-0.003	5.00	No
	238	2	-0.01	5.25	No
		2	-0.01	0.75	No
		2	-0.005	3.00	No
		2	-0.003	5.00	No
	240	2	-0.005	4.54	No
		2	-0.005	1.46	No
	244	2	-0.009	5.25	No
		2	-0.009	0.75	No
		2	-0.005	3.00	No
		2	-0.004	1.00	No
		2	-0.004	1.00	No
	246	z	-0.011	5.25	No
		z	-0.011	0.75	No
		z	-0.002	3.00	No
		z	-0.001	5.00	No
	248	z	-0.007	4.54	No
		z	-0.007	1.46	No
	252	z	-0.013	5.25	No
		z	-0.013	0.75	No
		z	-0.002	3.00	No
		z	-0.003	1.00	No

		z	-0.002	5.00	No
WL30	216	2	-0.007	4.54	No
		2	-0.007	1.46	No
	218	2	-0.011	5.25	No
		2	-0.011	0.75	No
		2	-0.004	3.00	No
		2	-0.004	1.00	No
		2	-0.003	1.00	No
	226	2	-0.01	5.25	No
		2	-0.01	0.75	No
		2	-0.004	3.00	No
		2	-0.003	5.00	No
	238	2	-0.01	5.25	No
		2	-0.01	0.75	No
		2	-0.004	3.00	No
		2	-0.003	5.00	No
	240	2	-0.007	4.54	No
		2	-0.007	1.46	No
	244	2	-0.011	5.25	No
		2	-0.011	0.75	No
		2	-0.004	3.00	No
		2	-0.004	1.00	No
		2	-0.003	1.00	No
	246	x	-0.009	5.25	No
		x	-0.009	0.75	No
		x	-0.005	2.00	No
		x	-0.003	2.00	No
	248	x	-0.004	4.54	No
		x	-0.004	1.46	No
	252	x	-0.008	5.25	No
		x	-0.008	0.75	No
		x	-0.005	2.00	No
		x	-0.004	2.00	No
		x	-0.004	2.00	No
LL1	16	y	-0.25	6.00	No
	22	y	-0.25	6.00	No
	23	y	-0.25	6.00	No
	254	y	-0.25	6.00	No
	255	y	-0.25	6.00	No
LL2	16	y	-0.25	12.00	No
	22	y	-0.25	0.00	No
	23	y	-0.25	0.00	No
	254	y	-0.25	0.00	No
	255	y	-0.25	0.00	No
LLa1	218	y	-0.50	3.00	No
	244	y	-0.50	3.00	No
	252	y	-0.50	3.00	No
LLa3	226	y	-0.50	3.00	No
	238	y	-0.50	3.00	No
	246	y	-0.50	3.00	No
LLa4	216	y	-0.50	3.00	No
	240	y	-0.50	3.00	No
	248	y	-0.50	3.00	No

Self weight multipliers for load conditions

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

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	0.00	0.00	0.00
Di	0.00	0.00	0.00
Wi0	0.00	0.00	0.00
Wi30	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00
W180	0.00	0.00	0.00
W210	0.00	0.00	0.00
Wi180	0.00	0.00	0.00
Wi210	0.00	0.00	0.00
WL180	0.00	0.00	0.00
WL210	0.00	0.00	0.00

Bentley

Current Date: 6/11/2018 10:05 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT5189\LTE 4C\CT5189 (LTE 4C) (mod).etz\

Steel Code Check

Report: Summary - For all selected load conditions

Load conditions to be included in design :

W180=-W0
W210=-W30
Wi180=-Wi0
Wi210=-Wi30
WL180=-WL0
WL210=-WL30
LC1=1.2DL+1.6W0
LC2=1.2DL+1.6W30
LC3=1.2DL-1.6W0
LC4=1.2DL-1.6W30
LC5=0.9DL+1.6W0
LC6=0.9DL+1.6W30
LC7=0.9DL-1.6W0
LC8=0.9DL-1.6W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.2DL
LC14=0.9DL
LC15=1.2DL+1.6LL1
LC16=1.2DL+1.6LL2
LC17=1.2DL+WL0+LLa1
LC18=1.2DL+WL30+LLa1
LC19=1.2DL-WL0+LLa1
LC20=1.2DL-WL30+LLa1
LC21=1.2DL+WL0+LLa2
LC22=1.2DL+WL30+LLa2
LC23=1.2DL-WL0+LLa2
LC24=1.2DL-WL30+LLa2
LC25=1.2DL+WL0+LLa3
LC26=1.2DL+WL30+LLa3
LC27=1.2DL-WL0+LLa3
LC28=1.2DL-WL30+LLa3
LC29=1.2DL+WL0+LLa4
LC30=1.2DL+WL30+LLa4
LC31=1.2DL-WL0+LLa4
LC32=1.2DL-WL30+LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	C 3X6	**2**	LC1 at 50.00%	0.21	OK	
			LC10 at 50.00%	0.22	OK	
			LC11 at 50.00%	0.21	OK	
			LC12 at 50.00%	0.21	OK	
			LC13 at 50.00%	0.12	OK	
			LC14 at 50.00%	0.09	OK	
			LC15 at 48.44%	0.21	OK	Eq. H1-1b
			LC16 at 50.00%	0.17	OK	
			LC17 at 50.00%	0.20	OK	
			LC18 at 50.00%	0.20	OK	

	LC19 at 50.00%	0.19	OK	
	LC2 at 50.00%	0.17	OK	
	LC20 at 50.00%	0.19	OK	
	LC21 at 50.00%	0.13	OK	
	LC22 at 50.00%	0.13	OK	
	LC23 at 50.00%	0.12	OK	
	LC24 at 50.00%	0.12	OK	
	LC25 at 50.00%	0.22	OK	
	LC26 at 50.00%	0.22	OK	
	LC27 at 50.00%	0.22	OK	
	LC28 at 50.00%	0.22	OK	
	LC29 at 50.00%	0.20	OK	
	LC3 at 100.00%	0.17	OK	Eq. H1-1b
	LC30 at 50.00%	0.20	OK	
	LC31 at 50.00%	0.20	OK	
	LC32 at 50.00%	0.20	OK	
	LC4 at 48.44%	0.14	OK	
	LC5 at 50.00%	0.18	OK	
	LC6 at 50.00%	0.14	OK	
	LC7 at 100.00%	0.17	OK	
	LC8 at 100.00%	0.12	OK	
	LC9 at 50.00%	**0.23**	**OK**	Eq. H1-1b
	W180 at 100.00%	0.09	OK	
	W210 at 100.00%	0.06	OK	
	Wi180 at 100.00%	0.04	OK	
	Wi210 at 100.00%	0.03	OK	
	WL180 at 100.00%	0.01	OK	
	WL210 at 100.00%	0.01	OK	
12	LC1 at 100.00%	**0.30**	**OK**	Eq. H1-1b
	LC10 at 50.00%	0.24	OK	
	LC11 at 50.00%	0.24	OK	
	LC12 at 50.00%	0.23	OK	
	LC13 at 50.00%	0.14	OK	
	LC14 at 50.00%	0.10	OK	
	LC15 at 50.00%	0.26	OK	
	LC16 at 50.00%	0.26	OK	Eq. H1-1b
	LC17 at 50.00%	0.21	OK	
	LC18 at 50.00%	0.21	OK	
	LC19 at 50.00%	0.21	OK	
	LC2 at 48.44%	0.20	OK	
	LC20 at 50.00%	0.21	OK	
	LC21 at 50.00%	0.14	OK	
	LC22 at 50.00%	0.14	OK	
	LC23 at 50.00%	0.14	OK	
	LC24 at 50.00%	0.13	OK	
	LC25 at 50.00%	0.23	OK	
	LC26 at 50.00%	0.23	OK	
	LC27 at 50.00%	0.23	OK	
	LC28 at 50.00%	0.23	OK	
	LC29 at 50.00%	0.21	OK	
	LC3 at 0.00%	0.23	OK	Eq. H1-1b
	LC30 at 50.00%	0.21	OK	
	LC31 at 50.00%	0.21	OK	
	LC32 at 50.00%	0.21	OK	
	LC4 at 0.00%	0.12	OK	
	LC5 at 100.00%	0.29	OK	
	LC6 at 48.44%	0.17	OK	
	LC7 at 100.00%	0.23	OK	
	LC8 at 0.00%	0.12	OK	
	LC9 at 50.00%	0.24	OK	
	W180 at 100.00%	0.16	OK	
	W210 at 100.00%	0.07	OK	
	Wi180 at 100.00%	0.06	OK	

		Wi210 at 0.00%	0.02	OK	
		WL180 at 100.00%	0.01	OK	
		WL210 at 0.00%	0.01	OK	
	18	LC1 at 50.00%	0.14	OK	
		LC10 at 50.00%	0.22	OK	
		LC11 at 50.00%	0.25	OK	
		LC12 at 50.00%	0.25	OK	
		LC13 at 50.00%	0.14	OK	
		LC14 at 50.00%	0.10	OK	
		LC15 at 50.00%	**0.30**	**OK**	Eq. H1-1b
		LC16 at 50.00%	0.25	OK	
		LC17 at 50.00%	0.20	OK	
		LC18 at 50.00%	0.20	OK	
		LC19 at 50.00%	0.21	OK	
		LC2 at 100.00%	0.18	OK	Eq. H1-1b
		LC20 at 50.00%	0.21	OK	
		LC21 at 50.00%	0.13	OK	
		LC22 at 50.00%	0.13	OK	
		LC23 at 50.00%	0.14	OK	
		LC24 at 50.00%	0.14	OK	
		LC25 at 50.00%	0.23	OK	
		LC26 at 50.00%	0.23	OK	
		LC27 at 50.00%	0.24	OK	
		LC28 at 50.00%	0.24	OK	
		LC29 at 50.00%	0.20	OK	
		LC3 at 48.44%	0.22	OK	
		LC30 at 50.00%	0.20	OK	
		LC31 at 50.00%	0.21	OK	
		LC32 at 50.00%	0.21	OK	
		LC4 at 50.00%	0.21	OK	
		LC5 at 0.00%	0.12	OK	
		LC6 at 100.00%	0.17	OK	
		LC7 at 48.44%	0.19	OK	
		LC8 at 50.00%	0.18	OK	
		LC9 at 50.00%	0.23	OK	
		W180 at 100.00%	0.09	OK	
		W210 at 100.00%	0.09	OK	
		Wi180 at 100.00%	0.03	OK	
		Wi210 at 100.00%	0.02	OK	
		WL180 at 100.00%	0.01	OK	
		WL210 at 100.00%	0.01	OK	
L 1.5x1.5x3/16	**24**	LC1 at 100.00%	0.11	OK	
		LC10 at 100.00%	0.16	OK	
		LC11 at 100.00%	0.18	OK	
		LC12 at 100.00%	0.18	OK	
		LC13 at 100.00%	0.11	OK	
		LC14 at 100.00%	0.08	OK	
		LC15 at 100.00%	0.15	OK	
		LC16 at 100.00%	0.14	OK	
		LC17 at 100.00%	0.15	OK	
		LC18 at 100.00%	0.15	OK	
		LC19 at 100.00%	0.15	OK	
		LC2 at 100.00%	0.11	OK	
		LC20 at 100.00%	0.15	OK	
		LC21 at 100.00%	0.11	OK	
		LC22 at 100.00%	0.11	OK	
		LC23 at 100.00%	0.12	OK	
		LC24 at 100.00%	0.12	OK	
		LC25 at 100.00%	0.14	OK	
		LC26 at 100.00%	0.14	OK	
		LC27 at 100.00%	0.14	OK	
		LC28 at 100.00%	0.14	OK	

	LC29 at 100.00%	0.13	OK	
	LC3 at 100.00%	0.17	OK	
	LC30 at 100.00%	0.13	OK	
	LC31 at 100.00%	0.13	OK	
	LC32 at 100.00%	0.13	OK	
	LC4 at 100.00%	**0.22**	**OK**	Eq. H2-1
	LC5 at 100.00%	0.08	OK	
	LC6 at 100.00%	0.08	OK	
	LC7 at 100.00%	0.14	OK	
	LC8 at 100.00%	0.19	OK	
	LC9 at 100.00%	0.16	OK	
	W180 at 0.00%	0.04	OK	
	W210 at 100.00%	0.07	OK	
	Wi180 at 0.00%	0.02	OK	
	Wi210 at 100.00%	0.02	OK	
	WL180 at 0.00%	0.00	OK	
	WL210 at 100.00%	0.01	OK	
25	LC1 at 100.00%	0.11	OK	
	LC10 at 100.00%	0.13	OK	
	LC11 at 100.00%	0.13	OK	
	LC12 at 100.00%	0.13	OK	
	LC13 at 100.00%	0.10	OK	
	LC14 at 100.00%	0.07	OK	
	LC15 at 100.00%	0.12	OK	
	LC16 at 100.00%	**0.15**	**OK**	Eq. H2-1
	LC17 at 100.00%	0.10	OK	
	LC18 at 100.00%	0.10	OK	
	LC19 at 100.00%	0.10	OK	
	LC2 at 100.00%	0.12	OK	
	LC20 at 100.00%	0.10	OK	
	LC21 at 100.00%	0.10	OK	
	LC22 at 100.00%	0.10	OK	
	LC23 at 100.00%	0.09	OK	
	LC24 at 100.00%	0.10	OK	
	LC25 at 100.00%	0.12	OK	
	LC26 at 100.00%	0.12	OK	
	LC27 at 100.00%	0.11	OK	
	LC28 at 100.00%	0.11	OK	
	LC29 at 100.00%	0.13	OK	
	LC3 at 100.00%	0.12	OK	
	LC30 at 100.00%	0.13	OK	
	LC31 at 100.00%	0.13	OK	
	LC32 at 100.00%	0.13	OK	
	LC4 at 100.00%	0.13	OK	
	LC5 at 100.00%	0.08	OK	
	LC6 at 100.00%	0.09	OK	
	LC7 at 100.00%	0.09	OK	
	LC8 at 100.00%	0.11	OK	
	LC9 at 100.00%	0.14	OK	
	W180 at 100.00%	0.02	OK	
	W210 at 100.00%	0.03	OK	
	Wi180 at 100.00%	0.01	OK	
	Wi210 at 100.00%	0.01	OK	
	WL180 at 100.00%	0.00	OK	
	WL210 at 100.00%	0.00	OK	
26	LC1 at 100.00%	**0.21**	**OK**	Eq. H2-1
	LC10 at 100.00%	0.14	OK	
	LC11 at 100.00%	0.12	OK	
	LC12 at 100.00%	0.13	OK	
	LC13 at 100.00%	0.09	OK	
	LC14 at 100.00%	0.07	OK	
	LC15 at 100.00%	0.11	OK	

	LC16 at 100.00%	0.11	OK	
	LC17 at 100.00%	0.10	OK	
	LC18 at 100.00%	0.10	OK	
	LC19 at 100.00%	0.10	OK	
	LC2 at 100.00%	0.13	OK	
	LC20 at 100.00%	0.10	OK	
	LC21 at 100.00%	0.10	OK	
	LC22 at 100.00%	0.10	OK	
	LC23 at 100.00%	0.09	OK	
	LC24 at 100.00%	0.09	OK	
	LC25 at 100.00%	0.12	OK	
	LC26 at 100.00%	0.12	OK	
	LC27 at 100.00%	0.11	OK	
	LC28 at 100.00%	0.11	OK	
	LC29 at 100.00%	0.13	OK	
	LC3 at 100.00%	0.09	OK	
	LC30 at 100.00%	0.13	OK	
	LC31 at 100.00%	0.12	OK	
	LC32 at 100.00%	0.12	OK	
	LC4 at 100.00%	0.10	OK	
	LC5 at 100.00%	0.19	OK	
	LC6 at 100.00%	0.10	OK	
	LC7 at 100.00%	0.07	OK	
	LC8 at 100.00%	0.08	OK	
	LC9 at 100.00%	0.16	OK	
	W180 at 100.00%	0.03	OK	
	W210 at 0.00%	0.02	OK	
	Wi180 at 0.00%	0.01	OK	
	Wi210 at 0.00%	0.01	OK	
	WL180 at 0.00%	0.00	OK	
	WL210 at 0.00%	0.00	OK	
27	LC1 at 100.00%	0.15	OK	
	LC10 at 100.00%	0.16	OK	
	LC11 at 100.00%	**0.17**	**OK**	Eq. H2-1
	LC12 at 100.00%	0.16	OK	
	LC13 at 100.00%	0.11	OK	
	LC14 at 100.00%	0.08	OK	
	LC15 at 100.00%	0.13	OK	
	LC16 at 100.00%	0.11	OK	
	LC17 at 100.00%	0.15	OK	
	LC18 at 100.00%	0.14	OK	
	LC19 at 100.00%	0.15	OK	
	LC2 at 100.00%	0.12	OK	
	LC20 at 100.00%	0.14	OK	
	LC21 at 100.00%	0.11	OK	
	LC22 at 100.00%	0.11	OK	
	LC23 at 100.00%	0.11	OK	
	LC24 at 100.00%	0.11	OK	
	LC25 at 100.00%	0.13	OK	
	LC26 at 100.00%	0.13	OK	
	LC27 at 100.00%	0.13	OK	
	LC28 at 100.00%	0.13	OK	
	LC29 at 100.00%	0.12	OK	
	LC3 at 100.00%	0.16	OK	
	LC30 at 100.00%	0.12	OK	
	LC31 at 100.00%	0.12	OK	
	LC32 at 100.00%	0.12	OK	
	LC4 at 100.00%	0.13	OK	
	LC5 at 100.00%	0.12	OK	
	LC6 at 100.00%	0.09	OK	
	LC7 at 100.00%	0.14	OK	
	LC8 at 100.00%	0.11	OK	
	LC9 at 100.00%	0.16	OK	Eq. H2-1

	W180 at 100.00%	0.06	OK	
	W210 at 0.00%	0.03	OK	
	Wi180 at 0.00%	0.02	OK	
	Wi210 at 0.00%	0.01	OK	
	WL180 at 0.00%	0.01	OK	
	WL210 at 0.00%	0.00	OK	
28	LC1 at 100.00%	0.13	OK	
	LC10 at 100.00%	0.17	OK	
	LC11 at 100.00%	0.19	OK	
	LC12 at 100.00%	0.16	OK	
	LC13 at 100.00%	0.11	OK	
	LC14 at 100.00%	0.08	OK	
	LC15 at 100.00%	0.14	OK	
	LC16 at 100.00%	0.14	OK	
	LC17 at 100.00%	0.15	OK	
	LC18 at 100.00%	0.15	OK	
	LC19 at 100.00%	0.15	OK	
	LC2 at 100.00%	0.14	OK	
	LC20 at 100.00%	0.15	OK	
	LC21 at 100.00%	0.11	OK	
	LC22 at 100.00%	0.11	OK	
	LC23 at 100.00%	0.12	OK	
	LC24 at 100.00%	0.11	OK	
	LC25 at 100.00%	0.14	OK	
	LC26 at 100.00%	0.14	OK	
	LC27 at 100.00%	0.14	OK	
	LC28 at 100.00%	0.13	OK	
	LC29 at 100.00%	0.13	OK	
	LC3 at 100.00%	**0.26**	**OK**	Eq. H2-1
	LC30 at 100.00%	0.13	OK	
	LC31 at 100.00%	0.12	OK	
	LC32 at 100.00%	0.12	OK	
	LC4 at 100.00%	0.15	OK	
	LC5 at 100.00%	0.10	OK	
	LC6 at 100.00%	0.11	OK	
	LC7 at 100.00%	0.23	OK	
	LC8 at 100.00%	0.12	OK	
	LC9 at 100.00%	0.17	OK	Eq. H2-1
	W180 at 100.00%	0.09	OK	
	W210 at 0.00%	0.04	OK	
	Wi180 at 0.00%	0.03	OK	
	Wi210 at 0.00%	0.01	OK	
	WL180 at 0.00%	0.01	OK	
	WL210 at 0.00%	0.00	OK	
29	LC1 at 0.00%	**0.22**	**OK**	Eq. H2-1
	LC10 at 0.00%	0.16	OK	
	LC11 at 0.00%	0.13	OK	
	LC12 at 0.00%	0.12	OK	
	LC13 at 0.00%	0.10	OK	
	LC14 at 0.00%	0.07	OK	
	LC15 at 0.00%	0.11	OK	
	LC16 at 0.00%	0.14	OK	
	LC17 at 0.00%	0.11	OK	
	LC18 at 0.00%	0.11	OK	
	LC19 at 0.00%	0.10	OK	
	LC2 at 0.00%	0.21	OK	
	LC20 at 0.00%	0.10	OK	
	LC21 at 0.00%	0.10	OK	
	LC22 at 0.00%	0.10	OK	
	LC23 at 0.00%	0.09	OK	
	LC24 at 0.00%	0.09	OK	
	LC25 at 0.00%	0.12	OK	

		LC26 at 0.00%	0.12	OK	
		LC27 at 0.00%	0.11	OK	
		LC28 at 0.00%	0.11	OK	
		LC29 at 0.00%	0.14	OK	
		LC3 at 0.00%	0.13	OK	
		LC30 at 0.00%	0.13	OK	
		LC31 at 0.00%	0.12	OK	
		LC32 at 0.00%	0.12	OK	
		LC4 at 0.00%	0.08	OK	
		LC5 at 0.00%	0.20	OK	
		LC6 at 0.00%	0.19	OK	
		LC7 at 0.00%	0.11	OK	
		LC8 at 0.00%	0.06	OK	
		LC9 at 0.00%	0.16	OK	
		W180 at 100.00%	0.03	OK	
		W210 at 0.00%	0.03	OK	
		Wi180 at 0.00%	0.01	OK	
		Wi210 at 0.00%	0.01	OK	
		WL180 at 0.00%	0.00	OK	
		WL210 at 0.00%	0.00	OK	
PIPE 2x0.154	**216**	LC1 at 72.92%	0.15	OK	
		LC10 at 72.92%	0.30	OK	
		LC11 at 72.92%	0.27	OK	
		LC12 at 72.92%	0.26	OK	
		LC13 at 72.92%	0.16	OK	
		LC14 at 72.92%	0.12	OK	
		LC15 at 72.92%	0.21	OK	
		LC16 at 72.92%	0.32	OK	
		LC17 at 72.92%	0.30	OK	
		LC18 at 72.92%	0.30	OK	
		LC19 at 72.92%	0.29	OK	
		LC2 at 25.00%	0.24	OK	Eq. H1-1b
		LC20 at 72.92%	0.29	OK	
		LC21 at 72.92%	0.16	OK	
		LC22 at 72.92%	0.16	OK	
		LC23 at 72.92%	0.16	OK	
		LC24 at 72.92%	0.15	OK	
		LC25 at 72.92%	0.20	OK	
		LC26 at 72.92%	0.20	OK	
		LC27 at 72.92%	0.19	OK	
		LC28 at 72.92%	0.19	OK	
		LC29 at 72.92%	0.33	OK	
		LC3 at 72.92%	0.16	OK	
		LC30 at 72.92%	**0.33**	**OK**	Eq. H1-1b
		LC31 at 72.92%	0.32	OK	
		LC32 at 72.92%	0.32	OK	
		LC4 at 25.00%	0.20	OK	
		LC5 at 25.00%	0.14	OK	
		LC6 at 25.00%	0.24	OK	
		LC7 at 72.92%	0.12	OK	
		LC8 at 25.00%	0.21	OK	
		LC9 at 72.92%	0.29	OK	
		W180 at 25.00%	0.08	OK	
		W210 at 25.00%	0.14	OK	
		Wi180 at 25.00%	0.04	OK	
		Wi210 at 25.00%	0.06	OK	
		WL180 at 25.00%	0.01	OK	
		WL210 at 25.00%	0.01	OK	
	218	LC1 at 72.92%	0.13	OK	
		LC10 at 72.92%	0.33	OK	
		LC11 at 72.92%	0.38	OK	
		LC12 at 72.92%	0.39	OK	

	LC13 at 72.92%	0.20	OK	
	LC14 at 72.92%	0.15	OK	
	LC15 at 72.92%	0.27	OK	
	LC16 at 72.92%	**0.43**	**OK**	Eq. H1-1b
	LC17 at 72.92%	0.40	OK	
	LC18 at 72.92%	0.40	OK	
	LC19 at 72.92%	0.41	OK	
	LC2 at 72.92%	0.09	OK	
	LC20 at 72.92%	0.41	OK	
	LC21 at 72.92%	0.20	OK	
	LC22 at 72.92%	0.20	OK	
	LC23 at 72.92%	0.21	OK	
	LC24 at 72.92%	0.21	OK	
	LC25 at 72.92%	0.25	OK	
	LC26 at 72.92%	0.25	OK	
	LC27 at 72.92%	0.27	OK	
	LC28 at 72.92%	0.27	OK	
	LC29 at 72.92%	0.35	OK	
	LC3 at 72.92%	0.28	OK	
	LC30 at 72.92%	0.35	OK	
	LC31 at 72.92%	0.36	OK	
	LC32 at 72.92%	0.36	OK	
	LC4 at 72.92%	0.32	OK	
	LC5 at 25.00%	0.08	OK	
	LC6 at 72.92%	0.08	OK	
	LC7 at 72.92%	0.22	OK	
	LC8 at 72.92%	0.27	OK	
	LC9 at 72.92%	0.33	OK	
	W180 at 72.92%	0.05	OK	
	W210 at 72.92%	0.07	OK	
	Wi180 at 72.92%	0.03	OK	
	Wi210 at 72.92%	0.03	OK	
	WL180 at 72.92%	0.01	OK	
	WL210 at 72.92%	0.01	OK	
226	LC1 at 72.92%	0.10	OK	
	LC10 at 72.92%	0.25	OK	
	LC11 at 72.92%	0.18	OK	
	LC12 at 72.92%	0.15	OK	
	LC13 at 72.92%	0.11	OK	
	LC14 at 72.92%	0.08	OK	
	LC15 at 72.92%	0.14	OK	
	LC16 at 72.92%	0.24	OK	
	LC17 at 72.92%	0.17	OK	
	LC18 at 72.92%	0.17	OK	
	LC19 at 72.92%	0.16	OK	
	LC2 at 72.92%	**0.27**	**OK**	Eq. H1-1b
	LC20 at 72.92%	0.15	OK	
	LC21 at 72.92%	0.12	OK	
	LC22 at 72.92%	0.12	OK	
	LC23 at 72.92%	0.11	OK	
	LC24 at 72.92%	0.10	OK	
	LC25 at 72.92%	0.20	OK	
	LC26 at 72.92%	0.21	OK	
	LC27 at 72.92%	0.19	OK	
	LC28 at 72.92%	0.19	OK	
	LC29 at 72.92%	0.23	OK	
	LC3 at 72.92%	0.12	OK	
	LC30 at 72.92%	0.23	OK	
	LC31 at 72.92%	0.22	OK	
	LC32 at 72.92%	0.21	OK	
	LC4 at 72.92%	0.26	OK	Eq. H1-1b
	LC5 at 72.92%	0.07	OK	
	LC6 at 72.92%	0.24	OK	

	LC7 at 72.92%	0.09	OK	
	LC8 at 72.92%	0.25	OK	
	LC9 at 72.92%	0.22	OK	
	W180 at 75.00%	0.04	OK	
	W210 at 72.92%	0.15	OK	
	Wi180 at 72.92%	0.04	OK	
	Wi210 at 72.92%	0.06	OK	
	WL180 at 72.92%	0.01	OK	
	WL210 at 72.92%	0.01	OK	
238	LC1 at 72.92%	0.41	OK	
	LC10 at 72.92%	0.24	OK	
	LC11 at 72.92%	0.14	OK	
	LC12 at 72.92%	0.15	OK	
	LC13 at 72.92%	0.11	OK	
	LC14 at 72.92%	0.08	OK	
	LC15 at 25.00%	0.15	OK	
	LC16 at 72.92%	0.21	OK	
	LC17 at 72.92%	0.17	OK	
	LC18 at 72.92%	0.17	OK	
	LC19 at 72.92%	0.15	OK	
	LC2 at 72.92%	0.40	OK	
	LC20 at 72.92%	0.15	OK	
	LC21 at 72.92%	0.12	OK	
	LC22 at 72.92%	0.12	OK	
	LC23 at 72.92%	0.10	OK	
	LC24 at 72.92%	0.10	OK	
	LC25 at 72.92%	0.21	OK	
	LC26 at 72.92%	0.21	OK	
	LC27 at 72.92%	0.18	OK	
	LC28 at 72.92%	0.18	OK	
	LC29 at 72.92%	0.23	OK	
	LC3 at 72.92%	**0.46**	**OK**	Eq. H1-1b
	LC30 at 72.92%	0.23	OK	
	LC31 at 72.92%	0.21	OK	
	LC32 at 72.92%	0.21	OK	
	LC4 at 72.92%	0.19	OK	
	LC5 at 72.92%	0.42	OK	
	LC6 at 72.92%	0.37	OK	
	LC7 at 72.92%	0.45	OK	
	LC8 at 72.92%	0.22	OK	
	LC9 at 72.92%	0.24	OK	
	W180 at 72.92%	0.27	OK	
	W210 at 72.92%	0.18	OK	
	Wi180 at 72.92%	0.08	OK	
	Wi210 at 72.92%	0.05	OK	
	WL180 at 72.92%	0.02	OK	
	WL210 at 72.92%	0.01	OK	
240	LC1 at 72.92%	0.26	OK	
	LC10 at 72.92%	0.31	OK	
	LC11 at 72.92%	0.27	OK	
	LC12 at 72.92%	0.26	OK	
	LC13 at 72.92%	0.16	OK	
	LC14 at 72.92%	0.12	OK	
	LC15 at 72.92%	0.21	OK	
	LC16 at 72.92%	**0.40**	**OK**	Eq. H1-1b
	LC17 at 72.92%	0.30	OK	
	LC18 at 72.92%	0.31	OK	
	LC19 at 72.92%	0.29	OK	
	LC2 at 72.92%	0.27	OK	
	LC20 at 72.92%	0.29	OK	
	LC21 at 72.92%	0.17	OK	
	LC22 at 72.92%	0.17	OK	

	LC23 at 72.92%	0.16	OK	
	LC24 at 72.92%	0.16	OK	
	LC25 at 72.92%	0.21	OK	
	LC26 at 72.92%	0.21	OK	
	LC27 at 72.92%	0.20	OK	
	LC28 at 72.92%	0.20	OK	
	LC29 at 72.92%	0.34	OK	
	LC3 at 72.92%	0.19	OK	
	LC30 at 72.92%	0.34	OK	
	LC31 at 72.92%	0.33	OK	
	LC32 at 72.92%	0.33	OK	
	LC4 at 72.92%	0.10	OK	
	LC5 at 72.92%	0.21	OK	
	LC6 at 72.92%	0.23	OK	
	LC7 at 72.92%	0.19	OK	
	LC8 at 72.92%	0.10	OK	
	LC9 at 72.92%	0.31	OK	
	W180 at 72.92%	0.12	OK	
	W210 at 72.92%	0.07	OK	
	Wi180 at 72.92%	0.04	OK	
	Wi210 at 72.92%	0.03	OK	
	WL180 at 72.92%	0.01	OK	
	WL210 at 72.92%	0.01	OK	
244	LC1 at 72.92%	0.27	OK	
	LC10 at 72.92%	0.32	OK	
	LC11 at 72.92%	0.40	OK	
	LC12 at 72.92%	0.40	OK	
	LC13 at 72.92%	0.21	OK	
	LC14 at 72.92%	0.15	OK	
	LC15 at 72.92%	0.24	OK	
	LC16 at 72.92%	0.37	OK	
	LC17 at 72.92%	0.40	OK	
	LC18 at 72.92%	0.40	OK	
	LC19 at 72.92%	**0.42**	**OK**	Eq. H1-1b
	LC2 at 72.92%	0.23	OK	
	LC20 at 72.92%	0.42	OK	
	LC21 at 72.92%	0.20	OK	
	LC22 at 72.92%	0.20	OK	
	LC23 at 72.92%	0.22	OK	
	LC24 at 72.92%	0.22	OK	
	LC25 at 72.92%	0.25	OK	
	LC26 at 72.92%	0.25	OK	
	LC27 at 72.92%	0.27	OK	
	LC28 at 72.92%	0.27	OK	
	LC29 at 72.92%	0.35	OK	
	LC3 at 72.92%	0.41	OK	Eq. H1-1b
	LC30 at 72.92%	0.35	OK	
	LC31 at 72.92%	0.37	OK	
	LC32 at 72.92%	0.37	OK	
	LC4 at 72.92%	0.34	OK	
	LC5 at 72.92%	0.28	OK	
	LC6 at 72.92%	0.23	OK	
	LC7 at 72.92%	0.36	OK	
	LC8 at 72.92%	0.29	OK	
	LC9 at 72.92%	0.32	OK	
	W180 at 72.92%	0.19	OK	
	W210 at 72.92%	0.16	OK	
	Wi180 at 72.92%	0.07	OK	
	Wi210 at 72.92%	0.06	OK	
	WL180 at 72.92%	0.02	OK	
	WL210 at 72.92%	0.02	OK	
246	LC1 at 72.92%	**0.41**	**OK**	Eq. H1-1b

	LC10 at 72.92%	0.14	OK	
	LC11 at 72.92%	0.15	OK	
	LC12 at 72.92%	0.26	OK	
	LC13 at 72.92%	0.11	OK	
	LC14 at 72.92%	0.09	OK	
	LC15 at 72.92%	0.18	OK	
	LC16 at 72.92%	0.27	OK	
	LC17 at 72.92%	0.17	OK	
	LC18 at 72.92%	0.15	OK	
	LC19 at 72.92%	0.15	OK	
	LC2 at 72.92%	0.25	OK	
	LC20 at 72.92%	0.18	OK	
	LC21 at 72.92%	0.12	OK	
	LC22 at 72.92%	0.10	OK	
	LC23 at 72.92%	0.10	OK	
	LC24 at 72.92%	0.13	OK	
	LC25 at 72.92%	0.21	OK	
	LC26 at 72.92%	0.19	OK	
	LC27 at 72.92%	0.19	OK	
	LC28 at 72.92%	0.22	OK	
	LC29 at 72.92%	0.23	OK	
	LC3 at 72.92%	0.34	OK	
	LC30 at 72.92%	0.21	OK	
	LC31 at 72.92%	0.21	OK	
	LC32 at 72.92%	0.24	OK	
	LC4 at 72.92%	0.35	OK	
	LC5 at 72.92%	0.38	OK	
	LC6 at 72.92%	0.24	OK	
	LC7 at 72.92%	0.34	OK	
	LC8 at 72.92%	0.33	OK	
	LC9 at 72.92%	0.25	OK	
	W180 at 72.92%	0.22	OK	
	W210 at 72.92%	0.15	OK	
	Wi180 at 72.92%	0.07	OK	
	Wi210 at 72.92%	0.06	OK	
	WL180 at 72.92%	0.02	OK	
	WL210 at 72.92%	0.01	OK	
248	LC1 at 72.92%	0.15	OK	
	LC10 at 72.92%	0.25	OK	
	LC11 at 72.92%	0.28	OK	
	LC12 at 72.92%	0.31	OK	
	LC13 at 72.92%	0.16	OK	
	LC14 at 72.92%	0.12	OK	
	LC15 at 72.92%	0.21	OK	
	LC16 at 72.92%	**0.42**	**OK**	Eq. H1-1b
	LC17 at 72.92%	0.29	OK	
	LC18 at 72.92%	0.29	OK	
	LC19 at 72.92%	0.30	OK	
	LC2 at 72.92%	0.13	OK	
	LC20 at 72.92%	0.30	OK	
	LC21 at 72.92%	0.16	OK	
	LC22 at 72.92%	0.15	OK	
	LC23 at 72.92%	0.16	OK	
	LC24 at 72.92%	0.17	OK	
	LC25 at 72.92%	0.20	OK	
	LC26 at 72.92%	0.19	OK	
	LC27 at 72.92%	0.20	OK	
	LC28 at 72.92%	0.20	OK	
	LC29 at 72.92%	0.33	OK	
	LC3 at 72.92%	0.16	OK	
	LC30 at 72.92%	0.32	OK	
	LC31 at 72.92%	0.33	OK	
	LC32 at 72.92%	0.33	OK	

	LC4 at 72.92%	0.29	OK	
	LC5 at 72.92%	0.11	OK	
	LC6 at 72.92%	0.13	OK	
	LC7 at 72.92%	0.12	OK	
	LC8 at 72.92%	0.25	OK	
	LC9 at 72.92%	0.28	OK	
	W180 at 25.00%	0.06	OK	
	W210 at 72.92%	0.08	OK	
	Wi180 at 25.00%	0.02	OK	
	Wi210 at 72.92%	0.03	OK	
	WL180 at 25.00%	0.00	OK	
	WL210 at 72.92%	0.01	OK	
252	LC1 at 72.92%	0.34	OK	
	LC10 at 72.92%	0.42	OK	
	LC11 at 72.92%	0.34	OK	
	LC12 at 72.92%	0.33	OK	
	LC13 at 72.92%	0.21	OK	
	LC14 at 72.92%	0.16	OK	
	LC15 at 72.92%	0.26	OK	
	LC16 at 72.92%	**0.49**	**OK**	Eq. H1-1b
	LC17 at 72.92%	0.42	OK	
	LC18 at 72.92%	0.42	OK	
	LC19 at 72.92%	0.41	OK	
	LC2 at 72.92%	0.37	OK	
	LC20 at 72.92%	0.40	OK	
	LC21 at 72.92%	0.22	OK	
	LC22 at 72.92%	0.22	OK	
	LC23 at 72.92%	0.20	OK	
	LC24 at 72.92%	0.20	OK	
	LC25 at 72.92%	0.27	OK	
	LC26 at 72.92%	0.28	OK	
	LC27 at 72.92%	0.26	OK	
	LC28 at 72.92%	0.26	OK	
	LC29 at 72.92%	0.37	OK	
	LC3 at 72.92%	0.15	OK	
	LC30 at 72.92%	0.37	OK	
	LC31 at 72.92%	0.36	OK	
	LC32 at 72.92%	0.35	OK	
	LC4 at 72.92%	0.14	OK	
	LC5 at 72.92%	0.29	OK	
	LC6 at 72.92%	0.31	OK	
	LC7 at 72.92%	0.14	OK	
	LC8 at 72.92%	0.15	OK	
	LC9 at 72.92%	0.40	OK	
	W180 at 72.92%	0.09	OK	
	W210 at 72.92%	0.10	OK	
	Wi180 at 72.92%	0.03	OK	
	Wi210 at 72.92%	0.05	OK	
	WL180 at 72.92%	0.01	OK	
	WL210 at 72.92%	0.01	OK	
254	LC1 at 4.69%	0.23	OK	Eq. H1-1b
	LC10 at 34.38%	0.23	OK	
	LC11 at 35.94%	0.20	OK	
	LC12 at 34.38%	0.20	OK	
	LC13 at 34.38%	0.12	OK	
	LC14 at 34.38%	0.09	OK	
	LC15 at 35.94%	0.25	OK	
	LC16 at 34.38%	**0.27**	**OK**	Eq. H1-1b
	LC17 at 34.38%	0.22	OK	
	LC18 at 34.38%	0.22	OK	
	LC19 at 34.38%	0.21	OK	
	LC2 at 34.38%	0.18	OK	

	LC20 at 34.38%	0.21	OK	
	LC21 at 34.38%	0.12	OK	
	LC22 at 34.38%	0.12	OK	
	LC23 at 34.38%	0.11	OK	
	LC24 at 34.38%	0.11	OK	
	LC25 at 34.38%	0.15	OK	
	LC26 at 34.38%	0.15	OK	
	LC27 at 34.38%	0.14	OK	
	LC28 at 34.38%	0.14	OK	
	LC29 at 34.38%	0.24	OK	
	LC3 at 35.94%	0.25	OK	Eq. H1-1b
	LC30 at 34.38%	0.24	OK	
	LC31 at 34.38%	0.23	OK	
	LC32 at 34.38%	0.23	OK	
	LC4 at 95.31%	0.23	OK	
	LC5 at 4.69%	0.22	OK	
	LC6 at 4.69%	0.15	OK	
	LC7 at 95.31%	0.23	OK	
	LC8 at 95.31%	0.21	OK	
	LC9 at 34.38%	0.23	OK	
	W180 at 95.31%	0.12	OK	
	W210 at 95.31%	0.11	OK	
	Wi180 at 95.31%	0.05	OK	
	Wi210 at 95.31%	0.04	OK	
	WL180 at 95.31%	0.01	OK	
	WL210 at 95.31%	0.01	OK	
255	LC1 at 96.88%	0.15	OK	Eq. H3-1
	LC10 at 35.94%	0.19	OK	
	LC11 at 34.38%	0.24	OK	
	LC12 at 34.38%	0.24	OK	
	LC13 at 34.38%	0.12	OK	
	LC14 at 34.38%	0.09	OK	
	LC15 at 35.94%	0.23	OK	Eq. H1-1b
	LC16 at 34.38%	**0.30**	**OK**	Eq. H1-1b
	LC17 at 34.38%	0.21	OK	
	LC18 at 34.38%	0.21	OK	
	LC19 at 34.38%	0.22	OK	
	LC2 at 35.94%	0.18	OK	
	LC20 at 34.38%	0.22	OK	
	LC21 at 34.38%	0.11	OK	
	LC22 at 34.38%	0.11	OK	
	LC23 at 34.38%	0.12	OK	
	LC24 at 34.38%	0.12	OK	
	LC25 at 34.38%	0.13	OK	
	LC26 at 34.38%	0.13	OK	
	LC27 at 34.38%	0.15	OK	
	LC28 at 34.38%	0.15	OK	
	LC29 at 34.38%	0.23	OK	
	LC3 at 34.38%	0.21	OK	
	LC30 at 34.38%	0.23	OK	
	LC31 at 34.38%	0.24	OK	
	LC32 at 34.38%	0.24	OK	
	LC4 at 34.38%	0.22	OK	
	LC5 at 96.88%	0.14	OK	
	LC6 at 35.94%	0.16	OK	
	LC7 at 34.38%	0.18	OK	
	LC8 at 34.38%	0.19	OK	
	LC9 at 34.38%	0.18	OK	
	W180 at 96.88%	0.09	OK	
	W210 at 95.31%	0.07	OK	
	Wi180 at 96.88%	0.03	OK	
	Wi210 at 95.31%	0.04	OK	
	WL180 at 96.88%	0.01	OK	

		WL210 at 95.31%	0.01	OK	
	259	LC1 at 95.31%	0.11	OK	
		LC10 at 34.38%	0.23	OK	
		LC11 at 34.38%	0.20	OK	
		LC12 at 34.38%	0.19	OK	
		LC13 at 34.38%	0.11	OK	
		LC14 at 34.38%	0.09	OK	
		LC15 at 34.38%	0.14	OK	
		LC16 at 34.38%	**0.24**	**OK**	Eq. H1-1b
		LC17 at 34.38%	0.22	OK	
		LC18 at 34.38%	0.22	OK	
		LC19 at 34.38%	0.21	OK	
		LC2 at 34.38%	0.18	OK	
		LC20 at 34.38%	0.21	OK	
		LC21 at 34.38%	0.12	OK	
		LC22 at 34.38%	0.12	OK	
		LC23 at 34.38%	0.11	OK	
		LC24 at 34.38%	0.11	OK	
		LC25 at 34.38%	0.14	OK	
		LC26 at 34.38%	0.14	OK	
		LC27 at 34.38%	0.14	OK	
		LC28 at 34.38%	0.14	OK	
		LC29 at 34.38%	0.24	OK	
		LC3 at 3.13%	0.16	OK	Eq. H1-1b
		LC30 at 34.38%	0.24	OK	
		LC31 at 34.38%	0.23	OK	
		LC32 at 34.38%	0.23	OK	
		LC4 at 35.94%	0.19	OK	Eq. H1-1b
		LC5 at 100.00%	0.12	OK	
		LC6 at 34.38%	0.17	OK	
		LC7 at 3.13%	0.16	OK	
		LC8 at 35.94%	0.17	OK	
		LC9 at 34.38%	0.21	OK	
		W180 at 3.13%	0.09	OK	
		W210 at 34.38%	0.08	OK	
		Wi180 at 3.13%	0.03	OK	
		Wi210 at 34.38%	0.03	OK	
		WL180 at 95.31%	0.01	OK	
		WL210 at 34.38%	0.01	OK	
PIPE 3x0.216	**1**	LC1 at 0.00%	**0.66**	**OK**	Eq. H1-1b
		LC10 at 0.00%	0.48	OK	
		LC11 at 0.00%	0.50	OK	
		LC12 at 0.00%	0.49	OK	
		LC13 at 0.00%	0.26	OK	
		LC14 at 0.00%	0.20	OK	
		LC15 at 0.00%	0.38	OK	
		LC16 at 0.00%	0.34	OK	
		LC17 at 0.00%	0.46	OK	
		LC18 at 0.00%	0.45	OK	
		LC19 at 0.00%	0.45	OK	
		LC2 at 0.00%	0.44	OK	
		LC20 at 0.00%	0.45	OK	
		LC21 at 0.00%	0.28	OK	
		LC22 at 0.00%	0.27	OK	
		LC23 at 0.00%	0.27	OK	
		LC24 at 0.00%	0.27	OK	
		LC25 at 0.00%	0.41	OK	
		LC26 at 0.00%	0.39	OK	
		LC27 at 0.00%	0.40	OK	
		LC28 at 0.00%	0.39	OK	
		LC29 at 0.00%	0.46	OK	
		LC3 at 0.00%	0.37	OK	

	LC30 at 0.00%	0.45	OK	
	LC31 at 0.00%	0.45	OK	
	LC32 at 0.00%	0.45	OK	
	LC4 at 0.00%	0.48	OK	
	LC5 at 0.00%	0.59	OK	
	LC6 at 0.00%	0.38	OK	
	LC7 at 0.00%	0.31	OK	
	LC8 at 0.00%	0.41	OK	
	LC9 at 0.00%	0.54	OK	
	W180 at 0.00%	0.25	OK	
	W210 at 0.00%	0.14	OK	
	Wi180 at 0.00%	0.09	OK	
	Wi210 at 0.00%	0.04	OK	
	WL180 at 0.00%	0.02	OK	
	WL210 at 0.00%	0.01	OK	
11	LC1 at 0.00%	0.40	OK	
	LC10 at 0.00%	0.56	OK	
	LC11 at 0.00%	0.51	OK	
	LC12 at 0.00%	0.46	OK	
	LC13 at 0.00%	0.28	OK	
	LC14 at 0.00%	0.21	OK	
	LC15 at 0.00%	0.41	OK	
	LC16 at 0.00%	0.60	OK	Eq. H1-1b
	LC17 at 0.00%	0.47	OK	
	LC18 at 0.00%	0.48	OK	
	LC19 at 0.00%	0.47	OK	
	LC2 at 0.00%	**0.61**	**OK**	Eq. H1-1b
	LC20 at 0.00%	0.46	OK	
	LC21 at 0.00%	0.29	OK	
	LC22 at 0.00%	0.30	OK	
	LC23 at 0.00%	0.28	OK	
	LC24 at 0.00%	0.27	OK	
	LC25 at 0.00%	0.42	OK	
	LC26 at 0.00%	0.42	OK	
	LC27 at 0.00%	0.41	OK	
	LC28 at 0.00%	0.40	OK	
	LC29 at 0.00%	0.47	OK	
	LC3 at 0.00%	0.43	OK	
	LC30 at 0.00%	0.47	OK	
	LC31 at 0.00%	0.46	OK	
	LC32 at 0.00%	0.45	OK	
	LC4 at 0.00%	0.24	OK	
	LC5 at 0.00%	0.33	OK	
	LC6 at 0.00%	0.54	OK	
	LC7 at 0.00%	0.36	OK	
	LC8 at 0.00%	0.17	OK	
	LC9 at 0.00%	0.53	OK	
	W180 at 0.00%	0.10	OK	
	W210 at 0.00%	0.21	OK	
	Wi180 at 0.00%	0.06	OK	
	Wi210 at 0.00%	0.08	OK	
	WL180 at 0.00%	0.01	OK	
	WL210 at 0.00%	0.02	OK	
16	LC1 at 36.46%	0.20	OK	
	LC10 at 35.42%	0.17	OK	
	LC11 at 35.42%	0.16	OK	
	LC12 at 35.42%	0.14	OK	
	LC13 at 35.42%	0.09	OK	
	LC14 at 35.42%	0.06	OK	
	LC15 at 35.42%	0.11	OK	
	LC16 at 35.42%	**0.20**	**OK**	Eq. H1-1b
	LC17 at 35.42%	0.16	OK	

	LC18 at 35.42%	0.16	OK	
	LC19 at 35.42%	0.15	OK	
	LC2 at 36.46%	0.20	OK	Eq. H1-1b
	LC20 at 35.42%	0.15	OK	
	LC21 at 35.42%	0.09	OK	
	LC22 at 35.42%	0.09	OK	
	LC23 at 35.42%	0.09	OK	
	LC24 at 35.42%	0.08	OK	
	LC25 at 36.46%	0.13	OK	
	LC26 at 35.42%	0.13	OK	
	LC27 at 35.42%	0.12	OK	
	LC28 at 35.42%	0.12	OK	
	LC29 at 35.42%	0.16	OK	
	LC3 at 36.46%	0.20	OK	Eq. H1-1b
	LC30 at 35.42%	0.16	OK	
	LC31 at 35.42%	0.15	OK	
	LC32 at 35.42%	0.15	OK	
	LC4 at 64.58%	0.16	OK	Eq. H1-1b
	LC5 at 63.54%	0.18	OK	
	LC6 at 36.46%	0.18	OK	
	LC7 at 36.46%	0.18	OK	
	LC8 at 64.58%	0.15	OK	
	LC9 at 36.46%	0.17	OK	
	W180 at 63.54%	0.10	OK	
	W210 at 64.58%	0.08	OK	
	Wi180 at 36.46%	0.03	OK	
	Wi210 at 64.58%	0.03	OK	
	WL180 at 36.46%	0.01	OK	
	WL210 at 64.58%	0.01	OK	
17	LC1 at 0.00%	0.45	OK	
	LC10 at 0.00%	0.49	OK	
	LC11 at 0.00%	0.61	OK	
	LC12 at 0.00%	0.58	OK	
	LC13 at 0.00%	0.29	OK	
	LC14 at 0.00%	0.22	OK	
	LC15 at 0.00%	0.52	OK	
	LC16 at 0.00%	0.63	OK	Eq. H1-1b
	LC17 at 0.00%	0.48	OK	
	LC18 at 0.00%	0.47	OK	
	LC19 at 0.00%	0.50	OK	
	LC2 at 0.00%	0.24	OK	
	LC20 at 0.00%	0.49	OK	
	LC21 at 0.00%	0.30	OK	
	LC22 at 0.00%	0.29	OK	
	LC23 at 0.00%	0.32	OK	
	LC24 at 0.00%	0.31	OK	
	LC25 at 0.00%	0.43	OK	
	LC26 at 0.00%	0.42	OK	
	LC27 at 0.00%	0.44	OK	
	LC28 at 0.00%	0.44	OK	
	LC29 at 0.00%	0.48	OK	
	LC3 at 0.00%	**0.77**	**OK**	Eq. H1-1b
	LC30 at 0.00%	0.47	OK	
	LC31 at 0.00%	0.49	OK	
	LC32 at 0.00%	0.49	OK	
	LC4 at 0.00%	0.61	OK	
	LC5 at 0.00%	0.38	OK	
	LC6 at 0.00%	0.16	OK	
	LC7 at 0.00%	0.70	OK	
	LC8 at 0.00%	0.54	OK	
	LC9 at 0.00%	0.54	OK	
	W180 at 0.00%	0.30	OK	
	W210 at 0.00%	0.20	OK	

	Wi180 at 0.00%	0.11	OK	
	Wi210 at 0.00%	0.08	OK	
	WL180 at 0.00%	0.03	OK	
	WL210 at 0.00%	0.02	OK	
22	LC1 at 64.58%	0.17	OK	
	LC10 at 64.58%	0.15	OK	
	LC11 at 64.58%	0.18	OK	
	LC12 at 64.58%	0.17	OK	
	LC13 at 64.58%	0.09	OK	
	LC14 at 64.58%	0.07	OK	
	LC15 at 64.58%	0.14	OK	
	LC16 at 64.58%	0.21	OK	Eq. H1-1b
	LC17 at 64.58%	0.16	OK	
	LC18 at 64.58%	0.15	OK	
	LC19 at 64.58%	0.16	OK	
	LC2 at 35.42%	0.17	OK	Eq. H1-1b
	LC20 at 64.58%	0.16	OK	
	LC21 at 64.58%	0.09	OK	
	LC22 at 64.58%	0.09	OK	
	LC23 at 64.58%	0.09	OK	
	LC24 at 64.58%	0.09	OK	
	LC25 at 64.58%	0.13	OK	
	LC26 at 64.58%	0.13	OK	
	LC27 at 64.58%	0.13	OK	
	LC28 at 64.58%	0.13	OK	
	LC29 at 64.58%	0.16	OK	
	LC3 at 63.54%	**0.23**	**OK**	Eq. H1-1b
	LC30 at 64.58%	0.15	OK	
	LC31 at 64.58%	0.16	OK	
	LC32 at 64.58%	0.16	OK	
	LC4 at 64.58%	0.20	OK	
	LC5 at 64.58%	0.15	OK	
	LC6 at 35.42%	0.16	OK	
	LC7 at 63.54%	0.21	OK	
	LC8 at 64.58%	0.18	OK	
	LC9 at 64.58%	0.17	OK	
	W180 at 63.54%	0.09	OK	
	W210 at 36.46%	0.09	OK	
	Wi180 at 63.54%	0.04	OK	
	Wi210 at 35.42%	0.03	OK	
	WL180 at 63.54%	0.01	OK	
	WL210 at 35.42%	0.01	OK	
23	LC1 at 63.54%	0.21	OK	Eq. H1-1b
	LC10 at 64.58%	0.15	OK	
	LC11 at 63.54%	0.15	OK	
	LC12 at 63.54%	0.15	OK	
	LC13 at 64.58%	0.08	OK	
	LC14 at 64.58%	0.06	OK	
	LC15 at 64.58%	0.10	OK	
	LC16 at 34.38%	0.16	OK	Eq. H1-1b
	LC17 at 64.58%	0.15	OK	
	LC18 at 64.58%	0.15	OK	
	LC19 at 64.58%	0.15	OK	
	LC2 at 64.58%	0.15	OK	
	LC20 at 64.58%	0.15	OK	
	LC21 at 64.58%	0.09	OK	
	LC22 at 64.58%	0.08	OK	
	LC23 at 64.58%	0.08	OK	
	LC24 at 64.58%	0.08	OK	
	LC25 at 63.54%	0.13	OK	
	LC26 at 63.54%	0.12	OK	
	LC27 at 64.58%	0.12	OK	

		LC28 at 64.58%	0.12	OK	
		LC29 at 64.58%	0.15	OK	
		LC3 at 35.42%	**0.26**	**OK**	Eq. H1-1b
		LC30 at 64.58%	0.15	OK	
		LC31 at 64.58%	0.15	OK	
		LC32 at 64.58%	0.15	OK	
		LC4 at 36.46%	0.19	OK	
		LC5 at 35.42%	0.20	OK	
		LC6 at 64.58%	0.13	OK	
		LC7 at 35.42%	0.25	OK	
		LC8 at 36.46%	0.18	OK	
		LC9 at 63.54%	0.17	OK	
		W180 at 35.42%	0.14	OK	
		W210 at 36.46%	0.09	OK	
		Wi180 at 36.46%	0.05	OK	
		Wi210 at 36.46%	0.04	OK	
		WL180 at 36.46%	0.01	OK	
		WL210 at 36.46%	0.01	OK	
PL 6x1/2	**256**	LC1 at 0.00%	0.11	OK	Eq. H3-1
		LC10 at 100.00%	0.07	OK	
		LC11 at 0.00%	0.07	OK	
		LC12 at 100.00%	0.06	OK	
		LC13 at 100.00%	0.04	OK	
		LC14 at 100.00%	0.03	OK	
		LC15 at 100.00%	0.05	OK	
		LC16 at 100.00%	0.11	OK	Eq. H1-1b
		LC17 at 100.00%	0.06	OK	
		LC18 at 100.00%	0.06	OK	
		LC19 at 0.00%	0.06	OK	
		LC2 at 0.00%	0.04	OK	
		LC20 at 100.00%	0.06	OK	
		LC21 at 100.00%	0.04	OK	
		LC22 at 100.00%	0.04	OK	
		LC23 at 0.00%	0.03	OK	
		LC24 at 100.00%	0.04	OK	
		LC25 at 100.00%	0.06	OK	
		LC26 at 100.00%	0.06	OK	
		LC27 at 100.00%	0.06	OK	
		LC28 at 100.00%	0.06	OK	
		LC29 at 100.00%	0.08	OK	
		LC3 at 0.00%	**0.16**	**OK**	Eq. H1-1b
		LC30 at 100.00%	0.08	OK	
		LC31 at 100.00%	0.07	OK	
		LC32 at 100.00%	0.08	OK	
		LC4 at 100.00%	0.07	OK	
		LC5 at 0.00%	0.11	OK	
		LC6 at 0.00%	0.03	OK	
		LC7 at 0.00%	0.15	OK	
		LC8 at 100.00%	0.06	OK	
		LC9 at 100.00%	0.08	OK	
		W180 at 0.00%	0.08	OK	
		W210 at 100.00%	0.02	OK	
		Wi180 at 0.00%	0.03	OK	
		Wi210 at 100.00%	0.00	OK	
		WL180 at 0.00%	0.01	OK	
		WL210 at 100.00%	0.00	OK	
	257	LC1 at 0.00%	**0.12**	**OK**	Eq. H1-1b
		LC10 at 0.00%	0.06	OK	
		LC11 at 100.00%	0.08	OK	
		LC12 at 100.00%	0.08	OK	
		LC13 at 100.00%	0.04	OK	
		LC14 at 100.00%	0.03	OK	

	LC15 at 0.00%	0.05	OK	
	LC16 at 100.00%	0.07	OK	
	LC17 at 100.00%	0.06	OK	
	LC18 at 100.00%	0.05	OK	
	LC19 at 100.00%	0.06	OK	
	LC2 at 100.00%	0.06	OK	
	LC20 at 100.00%	0.06	OK	
	LC21 at 100.00%	0.03	OK	
	LC22 at 100.00%	0.03	OK	
	LC23 at 100.00%	0.04	OK	
	LC24 at 100.00%	0.04	OK	
	LC25 at 100.00%	0.06	OK	
	LC26 at 100.00%	0.06	OK	
	LC27 at 100.00%	0.06	OK	
	LC28 at 100.00%	0.06	OK	
	LC29 at 100.00%	0.07	OK	
	LC3 at 100.00%	0.10	OK	
	LC30 at 100.00%	0.07	OK	
	LC31 at 100.00%	0.08	OK	
	LC32 at 100.00%	0.08	OK	
	LC4 at 100.00%	0.12	OK	Eq. H1-1b
	LC5 at 0.00%	0.12	OK	
	LC6 at 100.00%	0.06	OK	
	LC7 at 100.00%	0.10	OK	
	LC8 at 100.00%	0.12	OK	
	LC9 at 0.00%	0.06	OK	
	W180 at 0.00%	0.07	OK	
	W210 at 100.00%	0.06	OK	
	Wi180 at 0.00%	0.02	OK	
	Wi210 at 0.00%	0.02	OK	
	WL180 at 0.00%	0.01	OK	
	WL210 at 0.00%	0.01	OK	
258	LC1 at 100.00%	0.11	OK	
	LC10 at 100.00%	0.07	OK	
	LC11 at 100.00%	0.10	OK	
	LC12 at 100.00%	0.07	OK	
	LC13 at 100.00%	0.04	OK	
	LC14 at 100.00%	0.03	OK	
	LC15 at 100.00%	0.06	OK	
	LC16 at 100.00%	0.08	OK	
	LC17 at 100.00%	0.05	OK	
	LC18 at 100.00%	0.06	OK	
	LC19 at 100.00%	0.07	OK	
	LC2 at 100.00%	0.04	OK	
	LC20 at 100.00%	0.06	OK	
	LC21 at 100.00%	0.03	OK	
	LC22 at 100.00%	0.04	OK	
	LC23 at 100.00%	0.05	OK	
	LC24 at 100.00%	0.04	OK	
	LC25 at 100.00%	0.05	OK	
	LC26 at 100.00%	0.06	OK	
	LC27 at 100.00%	0.07	OK	
	LC28 at 100.00%	0.06	OK	
	LC29 at 100.00%	0.07	OK	
	LC3 at 100.00%	**0.18**	**OK**	Eq. H1-1b
	LC30 at 100.00%	0.08	OK	
	LC31 at 100.00%	0.09	OK	
	LC32 at 100.00%	0.08	OK	
	LC4 at 100.00%	0.04	OK	
	LC5 at 100.00%	0.12	OK	
	LC6 at 100.00%	0.03	OK	
	LC7 at 100.00%	0.17	OK	
	LC8 at 0.00%	0.03	OK	

		LC9 at 0.00%	0.05	OK	
		W180 at 100.00%	0.09	OK	
		W210 at 0.00%	0.01	OK	
		Wi180 at 100.00%	0.03	OK	
		Wi210 at 0.00%	0.00	OK	
		WL180 at 100.00%	0.01	OK	
		WL210 at 0.00%	0.00	OK	
PL 6x3/8	**3**	LC1 at 0.00%	0.07	OK	
		LC10 at 0.00%	0.08	OK	
		LC11 at 50.00%	0.12	OK	
		LC12 at 50.00%	0.12	OK	
		LC13 at 50.00%	0.05	OK	
		LC14 at 50.00%	0.04	OK	
		LC15 at 50.00%	0.08	OK	
		LC16 at 0.00%	0.06	OK	
		LC17 at 50.00%	0.16	OK	
		LC18 at 50.00%	0.16	OK	
		LC19 at 50.00%	0.17	OK	
		LC2 at 0.00%	0.07	OK	
		LC20 at 50.00%	**0.17**	**OK**	Eq. H1-1b
		LC21 at 0.00%	0.05	OK	
		LC22 at 0.00%	0.05	OK	
		LC23 at 50.00%	0.06	OK	
		LC24 at 50.00%	0.06	OK	
		LC25 at 0.00%	0.06	OK	
		LC26 at 0.00%	0.06	OK	
		LC27 at 50.00%	0.06	OK	
		LC28 at 50.00%	0.06	OK	
		LC29 at 0.00%	0.06	OK	
		LC3 at 46.88%	0.12	OK	Eq. H1-1b
		LC30 at 0.00%	0.06	OK	
		LC31 at 0.00%	0.06	OK	
		LC32 at 0.00%	0.06	OK	
		LC4 at 50.00%	0.15	OK	
		LC5 at 46.88%	0.08	OK	
		LC6 at 46.88%	0.07	OK	
		LC7 at 46.88%	0.12	OK	
		LC8 at 50.00%	0.14	OK	
		LC9 at 0.00%	0.08	OK	
		W180 at 46.88%	0.06	OK	
		W210 at 50.00%	0.06	OK	
		Wi180 at 46.88%	0.02	OK	
		Wi210 at 50.00%	0.02	OK	
		WL180 at 46.88%	0.00	OK	
		WL210 at 50.00%	0.01	OK	
	13	LC1 at 46.88%	0.12	OK	Eq. H1-1b
		LC10 at 50.00%	0.10	OK	
		LC11 at 50.00%	0.09	OK	
		LC12 at 50.00%	0.10	OK	
		LC13 at 50.00%	0.05	OK	
		LC14 at 50.00%	0.04	OK	
		LC15 at 0.00%	0.08	OK	
		LC16 at 46.88%	0.09	OK	
		LC17 at 50.00%	**0.16**	**OK**	Eq. H1-1b
		LC18 at 50.00%	0.16	OK	
		LC19 at 50.00%	0.16	OK	
		LC2 at 50.00%	0.12	OK	
		LC20 at 50.00%	0.16	OK	
		LC21 at 50.00%	0.05	OK	
		LC22 at 50.00%	0.05	OK	
		LC23 at 50.00%	0.05	OK	
		LC24 at 50.00%	0.05	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%	0.08	OK	
	LC30 at 0.00%	0.06	OK	
	LC31 at 0.00%	0.06	OK	
	LC32 at 0.00%	0.06	OK	
	LC4 at 0.00%	0.10	OK	
	LC5 at 46.88%	0.11	OK	
	LC6 at 50.00%	0.11	OK	
	LC7 at 46.88%	0.07	OK	
	LC8 at 0.00%	0.09	OK	
	LC9 at 50.00%	0.10	OK	
	W180 at 46.88%	0.06	OK	
	W210 at 50.00%	0.05	OK	
	Wi180 at 50.00%	0.01	OK	
	Wi210 at 50.00%	0.02	OK	
	WL180 at 50.00%	0.00	OK	
	WL210 at 50.00%	0.00	OK	
19	LC1 at 50.00%	0.11	OK	
	LC10 at 50.00%	0.12	OK	
	LC11 at 50.00%	0.13	OK	
	LC12 at 50.00%	0.11	OK	
	LC13 at 50.00%	0.06	OK	
	LC14 at 50.00%	0.05	OK	
	LC15 at 0.00%	0.10	OK	
	LC16 at 0.00%	0.08	OK	Eq. H3-1
	LC17 at 50.00%	0.17	OK	
	LC18 at 50.00%	0.17	OK	
	LC19 at 50.00%	0.18	OK	
	LC2 at 46.88%	0.15	OK	Eq. H1-1b
	LC20 at 50.00%	0.17	OK	
	LC21 at 50.00%	0.06	OK	
	LC22 at 50.00%	0.06	OK	
	LC23 at 50.00%	0.07	OK	
	LC24 at 50.00%	0.06	OK	
	LC25 at 50.00%	0.06	OK	
	LC26 at 50.00%	0.07	OK	
	LC27 at 50.00%	0.07	OK	
	LC28 at 50.00%	0.07	OK	
	LC29 at 0.00%	0.06	OK	
	LC3 at 50.00%	**0.22**	**OK**	Eq. H1-1b
	LC30 at 0.00%	0.06	OK	
	LC31 at 0.00%	0.06	OK	
	LC32 at 0.00%	0.06	OK	
	LC4 at 46.88%	0.09	OK	
	LC5 at 50.00%	0.12	OK	
	LC6 at 46.88%	0.14	OK	
	LC7 at 50.00%	0.20	OK	
	LC8 at 46.88%	0.10	OK	
	LC9 at 50.00%	0.10	OK	
	W180 at 50.00%	0.10	OK	
	W210 at 46.88%	0.07	OK	
	Wi180 at 50.00%	0.03	OK	
	Wi210 at 46.88%	0.02	OK	
	WL180 at 50.00%	0.01	OK	
	WL210 at 46.88%	0.01	OK	

Bentley

Current Date: 6/11/2018 10:05 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT5189\LTE 4C\CT5189 (LTE 4C) (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
3	0.00	0.00	-0.75	0
5	0.00	0.00	-6.08	0
6	-2.709	0.00	-2.25	0
7	2.709	0.00	-2.25	0
8	-0.50	0.00	-6.08	0
9	0.50	0.00	-6.08	0
10	2.212	0.00	-2.25	0
11	-2.212	0.00	-2.25	0
15	0.00	0.00	1.25	0
28	-1.7321	0.00	2.25	0
29	-3.0311	0.00	3.00	0
30	-6.348	0.00	4.915	0
31	-1.6766	0.00	5.3461	0
32	-4.3856	0.00	0.6539	0
33	-6.098	0.00	5.348	0
34	-6.598	0.00	4.482	0
35	-4.1371	0.00	1.0844	0
36	-1.9251	0.00	4.9156	0
39	1.7321	0.00	2.25	0
40	3.0311	0.00	3.00	0
41	6.348	0.00	4.915	0

42	4.3856	0.00	0.6539	0
43	1.6766	0.00	5.3461	0
44	6.598	0.00	4.482	0
45	6.098	0.00	5.348	0
46	1.9251	0.00	4.9156	0
47	4.1371	0.00	1.0844	0
375	6.2566	0.00	4.8622	0
377	0.00	0.00	-5.9745	0
379	-6.2566	0.00	4.8622	0
791	-0.7483	0.00	-5.646	0
792	-0.9215	0.00	-5.746	0
793	-0.9215	-1.50	-5.746	0
794	-0.9215	4.50	-5.746	0
795	-6.3463	0.00	4.05	0
796	-6.5195	0.00	3.95	0
797	-6.5195	-1.50	3.95	0
798	-6.5195	4.50	3.95	0
811	-2.6233	0.00	-2.3984	0
812	-2.7965	0.00	-2.4984	0
813	-2.7965	-1.50	-2.4984	0
814	-2.7965	4.50	-2.4984	0
835	4.4713	0.00	0.8024	0
836	4.6445	0.00	0.7024	0
838	4.6445	4.50	0.7024	0
839	6.3463	0.00	4.05	0
840	6.5195	0.00	3.95	0
841	6.5195	-1.50	3.95	0
837	4.6445	-1.50	0.7024	0
842	6.5195	4.50	3.95	0
847	0.7483	0.00	-5.646	0
848	0.9215	0.00	-5.746	0
849	0.9215	-1.50	-5.746	0
850	0.9215	4.50	-5.746	0
851	-1.848	0.00	5.3461	0
852	-1.848	0.00	5.5461	0
853	-1.848	-1.50	5.5461	0
854	-1.848	4.50	5.5461	0
855	-5.598	0.00	5.3461	0
856	-5.598	0.00	5.5461	0
857	-5.598	-1.50	5.5461	0
858	-5.598	4.50	5.5461	0
863	5.598	0.00	5.3461	0
864	5.598	0.00	5.5461	0
865	5.598	-1.50	5.5461	0
866	5.598	4.50	5.5461	0
867	-6.598	3.00	4.482	0
868	-0.50	3.00	-6.08	0
869	6.598	3.00	4.482	0
870	0.50	3.00	-6.08	0
871	-6.098	3.00	5.348	0
872	6.098	3.00	5.348	0
873	-0.7483	3.00	-5.646	0
874	-0.9215	3.00	-5.746	0
875	0.7483	3.00	-5.646	0
876	0.9215	3.00	-5.746	0
877	-2.6233	3.00	-2.3984	0
878	-2.7965	3.00	-2.4984	0
879	-6.3463	3.00	4.05	0
880	-6.5195	3.00	3.95	0
881	-5.598	3.00	5.3461	0

882	-5.598	3.00	5.5461	0
883	-1.848	3.00	5.3461	0
884	-1.848	3.00	5.5461	0
885	5.598	3.00	5.3461	0
886	5.598	3.00	5.5461	0
887	6.3463	3.00	4.05	0
888	6.5195	3.00	3.95	0
889	4.4713	3.00	0.8024	0
890	4.6445	3.00	0.7024	0
894	-4.6438	0.00	3.9311	0
895	0.00	0.00	-2.25	0
896	0.00	0.00	-4.1122	0
897	3.9943	0.00	3.5561	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
3	1	1	1	1	1	1
28	1	1	1	1	1	1
39	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	3	5		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
2	7	6		C 3X6	A500 GrC rectangular	0.00	0.00	0.00
3	8	9		PL 6x3/8	A36	0.00	0.00	0.00
11	28	30		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
12	32	31		C 3X6	A500 GrC rectangular	0.00	0.00	0.00
13	33	34		PL 6x3/8	A36	0.00	0.00	0.00
16	34	8		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
17	39	41		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
18	43	42		C 3X6	A500 GrC rectangular	0.00	0.00	0.00
19	44	45		PL 6x3/8	A36	0.00	0.00	0.00
22	33	45		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
23	44	9		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
24	47	375		L 1.5x1.5x3/16	A36	0.00	0.00	0.00
25	46	375		L 1.5x1.5x3/16	A36	0.00	0.00	0.00
26	10	377		L 1.5x1.5x3/16	A36	0.00	0.00	0.00
27	11	377		L 1.5x1.5x3/16	A36	0.00	0.00	0.00
28	36	379		L 1.5x1.5x3/16	A36	0.00	0.00	0.00
29	379	35		L 1.5x1.5x3/16	A36	0.00	0.00	0.00
216	794	793		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
218	798	797		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
226	814	813		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
238	838	837		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
240	842	841		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
244	850	849		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
246	854	853		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
248	858	857		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

252	866	865	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
254	869	870	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
255	871	872	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
256	869	872	PL 6x1/2	A36	0.00	0.00	0.00
257	868	870	PL 6x1/2	A36	0.00	0.00	0.00
258	871	867	PL 6x1/2	A36	0.00	0.00	0.00
259	868	867	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
3	90.00	0	0.00	0.00	0.00
13	90.00	0	0.00	0.00	0.00
19	90.00	0	0.00	0.00	0.00
24	180.00	0	0.00	0.00	0.00
25	90.00	0	0.00	0.00	0.00
26	90.00	0	0.00	0.00	0.00
27	180.00	0	0.00	0.00	0.00
28	180.00	0	0.00	0.00	0.00
29	180.00	0	0.00	0.00	0.00
216	0.00	2	0.50	0.00	-0.866
218	0.00	2	0.50	0.00	-0.866
226	0.00	2	0.50	0.00	-0.866
238	0.00	2	0.50	0.00	0.866
240	0.00	2	0.50	0.00	0.866
244	0.00	2	0.50	0.00	0.866
246	0.00	2	-1.00	0.00	0.00
248	0.00	2	-1.00	0.00	0.00
252	0.00	2	-1.00	0.00	0.00

88 MAIN ST

Location	88 MAIN ST	**Map/Lot**	012/ 019/ 0Z/ /
Acct#	0120190Z	**Owner**	STEPNEY VOLUNTEER FIRE CO
Assessment	$267,700	**Appraisal**	$382,400
PID	16246	**Building Count**	1
Survey		**Affordable**	

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2014	$163,900	$218,500	$382,400
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2014	$114,700	$153,000	$267,700

Owner of Record

Owner	STEPNEY VOLUNTEER FIRE CO	**Sale Price**	$0
Co-Owner	DEBORAH HEIM, TREASURER	**Certificate**	1
Address	88 MAIN ST MONROE, CT 06468-1637	**Book & Page**	
		Sale Date	

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
STEPNEY VOLUNTEER FIRE CO	$0	1		

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0

Building Attributes	
Field	**Description**
Style	Vacant Land
Model	
Stories:	

Building Photo

Occupancy	
Exterior Wall 1	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Rooms:	
Fireplaces	
Basement Gar.	
Basement	
In Law Apt	

(http://images.vgsi.com/photos/MonroeCTPhotos//\00\00\64/04.JPG)

Building Layout

(http://images.vgsi.com/photos/MonroeCTPhotos//Sketches/162

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

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	431
Description	TEL REL TW
Zone	I1
Neighborhood	
Alt Land Approved	No
Category	

Land Line Valuation

Size (Acres)	0.23
Appraised Value	$218,500

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
RS1	Frame Utility Shed			360 S.F.	$3,600	1
TT4	TOWER MONOPOLE			1 UNITS	$125,000	1
FN1	FENCE CHAIN			2520 L.F.	$35,300	1

Valuation History

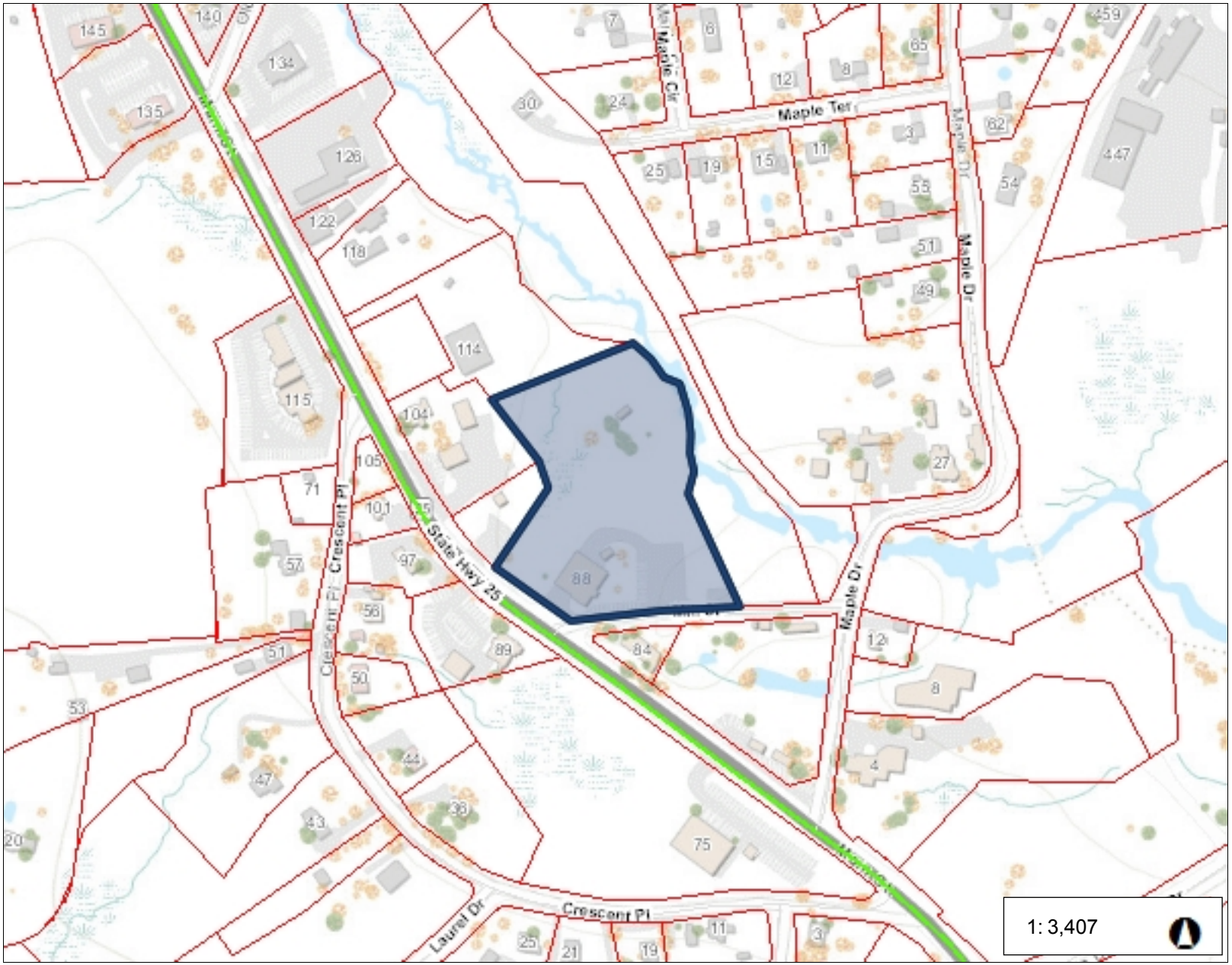
Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$163,900	$218,500	$382,400

2009		$220,000	$390,650

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$114,700	$153,000	$267,700
2009		$154,000	$273,455

Town of Monroe

88 MAIN STREET
MONROE, CT



Legend

- Parcels
- Streetname
- Roadways
  - Local
  - Collector
  - Minor Collector
  - Minor Arterial
  - Major Collector
  - PA Other
  - PA Other Expwy
  - PA Interstate

567.8 0 283.90 567.8 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Created by Greater Bridgeport Regional Council

METROCOG
Connecticut Metropolitan Council of Governments

KNOW ALL MEN BY THESE PRESENTS, THAT THE TOWN PLANNING AND ZONING COMMISSION OF MONROE, CONNECTICUT, by its own vote on January 11, 2001, granted a **Special Exception Permit** to –

VoiceStream Wireless, Inc., for property at -

88 Main Street (DI-1 zone) - for construction of new wireless communication facility and associated site improvements as provided in Article XXV of the Zoning Regulations.

FURTHER, the approval is given subject to the following specific conditions:

1. The following plans presented at the hearing concluded November 16, 2000, including revisions and additions herein specified by the Commission, shall be the approved plans of record and basis of approval:

   "Site Plan (site address) Stepney Vol. Fire Dept., 88 Main Street, Monroe, CT, SITE #CT 11-215A," by ARCNET Architects, Inc. and Diversified Technology Consultants, Last Revised 10-24-00; Sheet Nos. S-1 (Record Exhibit A), and Z-1 (dated 6-19-00).

2. The final installation tower height be erected at the height proposed in the formal application/presentation (195') above finished grade to accommodate co-location and applicant needs.

3. Adequate area and location shall be reserved on the tower to accommodate the needs of municipal emergency services.

4. The exterior of the westerly and southerly facing sides of the fence enclosure shall be screened with dense evergreen ornamentals approximating the height of the enclosure of a type and nature to be approved by the Commission.

5. Provide copies of relevant final approvals or authorizations of state or federal authorities to the Planning and Zoning Department as a matter of information.

6. Before initiation of the work, final revised plans, based upon the plans of record, shall be filed in the Planning and Zoning Department.

7. The plans shall be revised to incorporate and address all comments in the reviewing reports submitted as part of the application and not previously incorporated into the plans.

8. Final plans shall bear an endorsement block stating:

These plans are the final construction plans and have been reviewed by the Director of Public Works and Town Planner.

_____
Town Planner

_____
Director of Public Works

Said block must appear in the lower right corner of each plan page near the title block.

9. No signs of any nature, other than normal temporary construction signs, are approved by this application. The installation of signs shall be approved only through the normal permit procedure of the Commission.

10. Submittal of all bonds and insurances as required by local and state laws and by the Commission at such times as may be required during the term of construction of the overall project until such time as the improvements or work covered by the applicable bond or insurances is deemed to be acceptably complete by the Commission.

11. A pre-construction conference is to be held with the developer and/or general contractor, engineer and architect, and Town staff, including Town Planner, Director of Public Works, Sanitarian, Building Inspector, Fire Marshal, and police representative prior to any work on the premises.

12. As-built construction plans shall be provided promptly in accordance with Chapter 44 of the Code of the Town of Monroe.

13. Provision of copies of plans, details and/or specifications, as may be required by Town and State agencies from time to time.

14. Should this action be the subject of appeal to the courts, no time limit specified herein shall begin to run until such litigation is fully concluded (date of final court action).

15. The effective date of the special exception permit shall be the date of recording in the Monroe Land Records. It shall be the responsibility of the applicant to record the special exception permit document (prepared by the Planning and Zoning Department) in the Monroe Land Records. Failure to record said document within ninety (90) days of the date of approval shall render the approval null and void.

Re: Special Exception Permit
VoiceStream Wireless, Inc.
88 Main Street - Monroe, CT

16. Failure to meet any specified condition of this approval or maintain compliance with applicable local, state or federal ordinance, regulation or laws may result in the ordered suspension of construction authorizations until such time as such failure or noncompliance has been satisfactorily resolved.

17. Should any changes in site plan be contemplated, they shall be submitted to the Commission for review. Should any changes be considered as major or substantial changes, they shall be applied for under a special exception permit application to modify the approved site plan. Minor changes are considered by the Commission as those which do not change the substance, impact or general locations involved in the proposal and may be authorized by the Commission after appropriate review.

18. It is the responsibility of the owner/developer to notify the Planning and Zoning Department of any change in the status of ownership and/or contractor(s) and/or professional design or inspection consultant involved in the proposal. Additionally, it is the responsibility of the owner/developer to notify any new owner and/or contractor(s) and/or consultants of all construction requirements including all job meeting notes and inspection notes produced up to the date of any such change in project related personnel.

19. This permit and all conditions specified herein shall be binding in perpetuity upon the applicant and property owner and his (their) heirs, assigns and successors unless otherwise amended by a subsequent act of the Commission.

20. This permit and all conditions specified herein shall be binding in perpetuity upon this parcel and premises unless otherwise amended or invalidated under the terms of this approval or a subsequent act of the Commission.

Dated at Monroe, Connecticut, this 16th day of January, 2001.

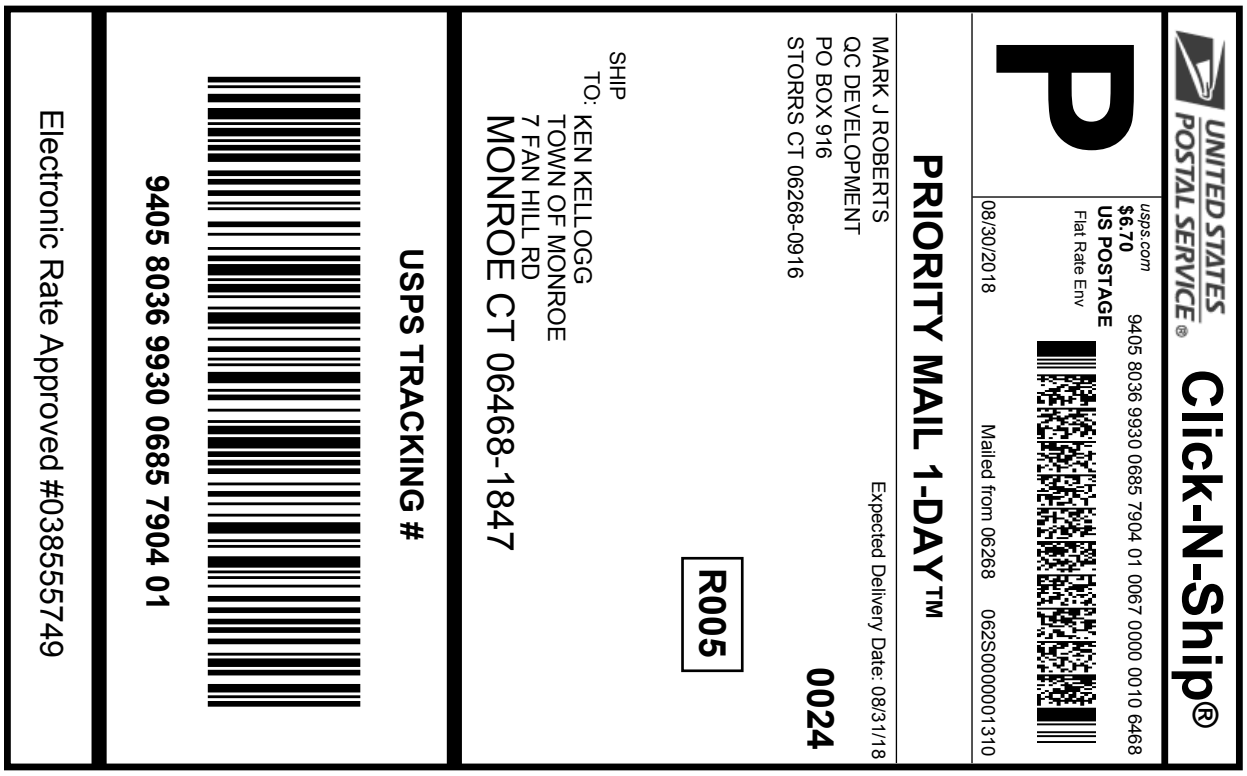
TOWN PLANNING & ZONING COMMISSION

Witness:

Mary E. Mennilli

Daniel A. Tuba
Clerk of Commission

REC'D. FOR RECORD Oct 4 2001
AT 1:28 P M. ATTEST Theresa A. DiGiovanni
Asst. MONROE TOWN CLERK



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # / Insurance Number:
9405 8036 9930 0685 7904 01

Trans. #:	442881627
Print Date:	08/29/2018
Ship Date:	08/30/2018
Expected Delivery Date:	08/31/2018
Insured Value:	$50.00

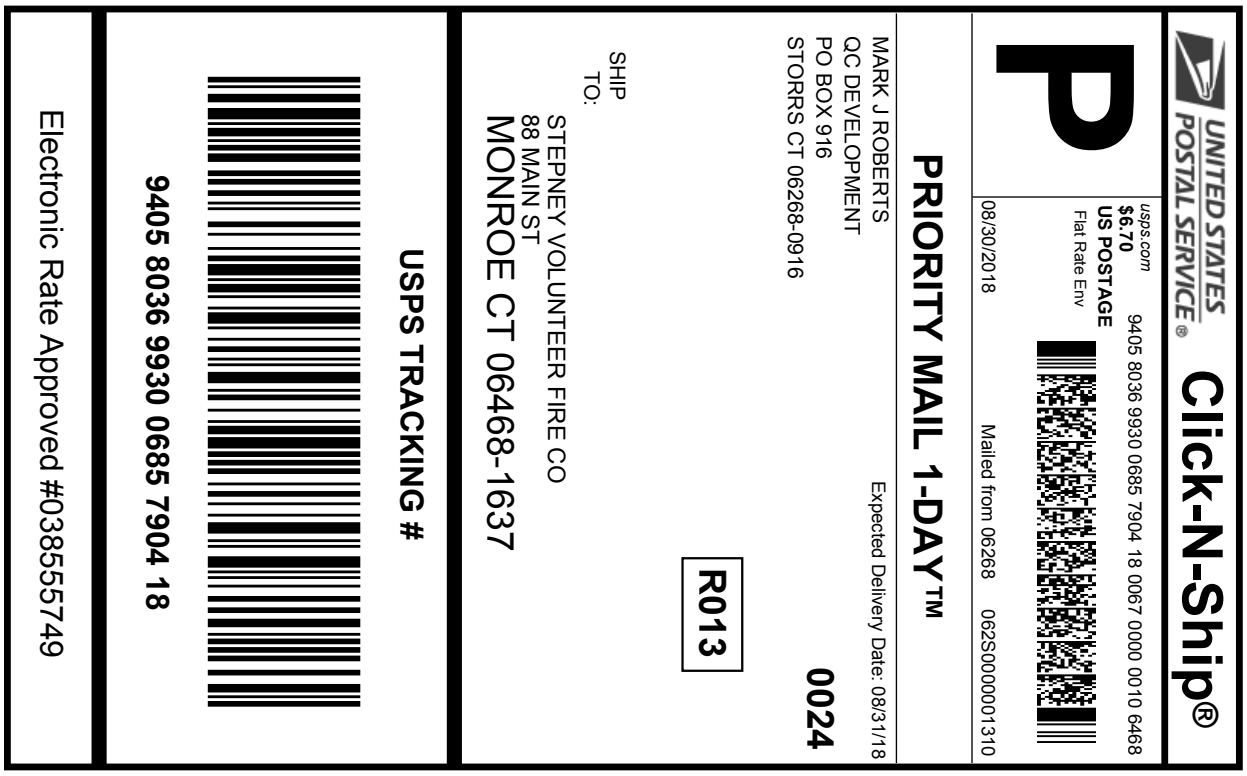
Priority Mail® Postage:	**$6.70**
Insurance Fee	**$0.00**
Total	**$6.70**

From: MARK J ROBERTS
QC DEVELOPMENT
PO BOX 916
STORRS CT 06268-0916

To: KEN KELLOGG
TOWN OF MONROE
7 FAN HILL RD
MONROE CT 06468-1847

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

Instructions

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5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # / Insurance Number:
9405 8036 9930 0685 7904 18

Trans. #:	442881627
Print Date:	08/29/2018
Ship Date:	08/30/2018
Expected Delivery Date:	08/31/2018
Insured Value:	$50.00

Priority Mail® Postage:	**$6.70**
Insurance Fee	**$0.00**
Total	**$6.70**

From: MARK J ROBERTS
QC DEVELOPMENT
PO BOX 916
STORRS CT 06268-0916

To: STEPNEY VOLUNTEER FIRE CO
88 MAIN ST
MONROE CT 06468-1637

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

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Check the status of your shipment on the USPS Tracking® page at usps.com