Jennifer Iliades

From: UPS Quantum View <pkginfo@ups.com>
Sent: Friday, September 21, 2018 11:23 AM
To: Jennifer Iliades
Subject: UPS Delivery Notification, Tracking Number 1Z9Y45031311256789

Your package has been delivered.

Delivery Date: Friday, 09/21/2018
Delivery Time: 11:15 AM

At the request of Centerline Communications, LLC this notice alerts you that the status of the shipment listed below has changed.

Shipment Detail

Tracking Number:	1Z9Y45031311256789
Ship To:	Daniel V. Jerram, First Selectman Town of New Hartford 530 MAIN ST NEW HARTFORD, CT 06057 US
UPS Service:	UPS NEXT DAY AIR SAVER
Number of Packages:	1
Shipment Type:	Letter
Delivery Location:	OFFICE HAYWARD
Reference Number 1:	CT1121 - CSC to First Selectman

Jennifer Iliades

From: UPS Quantum View <pkginfo@ups.com>
Sent: Friday, September 21, 2018 11:23 AM
To: Jennifer Iliades
Subject: UPS Delivery Notification, Tracking Number 1Z9Y45031311299779

Your package has been delivered.

Delivery Date: Friday, 09/21/2018
Delivery Time: 11:15 AM

At the request of Centerline Communications, LLC this notice alerts you that the status of the shipment listed below has changed.

Shipment Detail

Tracking Number:	1Z9Y45031311299779
Ship To:	Ruth Mulcahy, ZEO Town of New Hartford 530 MAIN ST NEW HARTFORD, CT 06057 US
UPS Service:	UPS NEXT DAY AIR SAVER
Number of Packages:	1
Shipment Type:	Letter
Delivery Location:	OFFICE HAYWARD
Reference Number 1:	CT1121 - CSC to ZEO

Jennifer Iliades

From: UPS Quantum View <pkginfo@ups.com>
Sent: Monday, September 24, 2018 10:12 AM
To: Jennifer Iliades
Subject: UPS Delivery Notification, Tracking Number 1Z9Y45031302344763

Your package has been delivered.

Delivery Date: Monday, 09/24/2018
Delivery Time: 10:09 AM

At the request of Centerline Communications, LLC this notice alerts you that the status of the shipment listed below has changed.

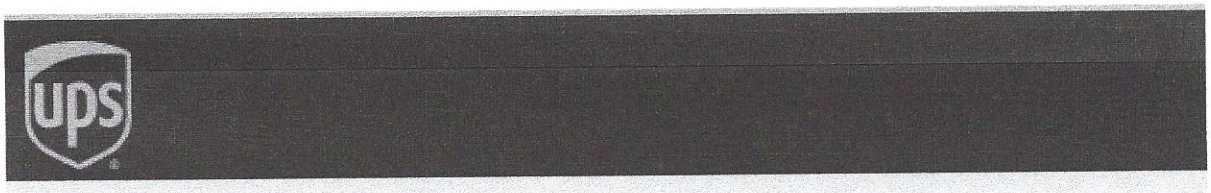
Shipment Detail

Tracking Number:	1Z9Y45031302344763
Ship To:	Paul Pedicone Crown Castle 3 CORPORATE DR CLIFTON PARK, NY 12065 US
UPS Service:	UPS NEXT DAY AIR SAVER
Number of Packages:	1
Shipment Type:	Letter
Delivery Location:	MET CUSTOMER WOMAN RHOADES
Reference Number 1:	CT1121 - CSC to Crown

Download the UPS mobile app

Jennifer Iliades

From: UPS Quantum View <pkginfo@ups.com>
Sent: Friday, September 21, 2018 12:13 PM
To: Jennifer Iliades
Subject: UPS Delivery Notification, Tracking Number 1Z9Y45031331171323



Your package has been delivered.

Delivery Date: Friday, 09/21/2018
Delivery Time: 12:08 PM

At the request of Centerline Communications, LLC this notice alerts you that the status of the shipment listed below has changed.

Shipment Detail

Tracking Number:	1Z9Y45031331171323
Ship To:	Framingham Commons LLC 705 N MOUNTAIN RD NEWINGTON, CT 06111 US
UPS Service:	UPS NEXT DAY AIR SAVER
Number of Packages:	1
Shipment Type:	Letter
Delivery Location:	RECEIVER LORI
Reference Number 1:	CT1121 - Ground LL

September 20, 2018

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

Regarding: Notice of Exempt Modification – AT&T Site CT1121
Address: 115 Industrial Park Road, New Hartford, CT 06057 (a/k/a 115 Industrial Park Access Road, 115 Greenwoods Industrial Park)

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains a wireless telecommunications facility on an existing 168-foot monopole tower at the above-referenced address, latitude 41.8862400, longitude -72.9661400. Said monopole is operated by Crown Castle.

AT&T desires to modify its existing telecommunications facility by swapping (3) antennas and adding (3) remote-radio heads. The centerline height of the existing antennas is and will remain at 119 feet.

Please accept this letter as notification pursuant to R.C.S.A §16-50j-73 for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Daniel V. Jerram, First Selectman of the Town of New Britain, Ruth Mulcahy, Zoning Enforcement Officer of the Town of New Britain, Crown Castle as tower owner and Framingham Commons, LLC, as property 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). Specifically:

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

2. The proposed modifications will not require an 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 modified facility will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety

standard. *Please see the RF emissions calculation for AT&T's modified facility enclosed herewith.*

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

6. The existing structure and its foundation can support the proposed loading. *Please see the structural analysis dated August 29, 2018 by Hudson Design Group LLC enclosed herewith.*

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

Sincerely,

Jennifer Iliades
Site Acquisition Consultant
Centerline Communications, LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02379
jiliades@clinellc.com

Enclosures: Exhibit 1 – Field Card and GIS Map
Exhibit 2 – Construction Drawings
Exhibit 3 – Structural Analysis
Exhibit 4 – RF Emissions Analysis Report Evaluation
Exhibit 5 – Mount Analysis

cc: Daniel V. Jerram, First Selectman, Town of New Britain
Ruth Mulcahy, Zoning Enforcement Officer, Town of New Britain
Crown Castle. Tower Operator
Framingham Commons, LLC, Property Owner

EXHIBIT 1

Town of New Hartford, CT
Property Listing Report

Map Block Lot 038-134-15C-1

Account 00284401

Property Information

Property Location	115 INDUSTRIAL PARK ROAD
Owner	FRAMINGHAM COMMONS LLC
Co-Owner	C/O GLOBAL SIGNAL ACQUISITION PMB 331
Mailing Address	4017 WASHINGTON ROAD MCMURRAY PA 15317
Land Use	4400 IND VACANT
Land Class	I

Fire District	1
Census Tract	
Neighborhood	C
Zoning Code	IP
Acreage	0.23
Utilities	Well, Septic
Lot Setting/Desc	Rural Level

Photo

Sketch

Primary Construction Details

Year Built	
Stories	
Building Style	
Building Use	
Building Condition	
Floors	
Total Rooms	

Bedrooms	0
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	
Roof Cover	

Exterior Walls	
Interior Walls	
Heating Type	
Heating Fuel	
AC Type	
Gross Bldg Area	
Total Living Area	0

Report Created On 9/14/2018

Town of New Hartford, CT
Property Listing Report

Map Block Lot 038-134-15C-1

Account 00284401

Valuation Summary (Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	0	0
Outbuildings	98700	69090
Improvements	98700	69090
Extras	0	0
Land	660000	462000
Total	758700	531090

Outbuilding and Extra Items

Type	Description
Fence-8' Chain	400.00 L.F.
Pre Cast Cell	300.00 S.F.
Pre Cast Cell	240.00 S.F.

Sub Areas

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

Sales History

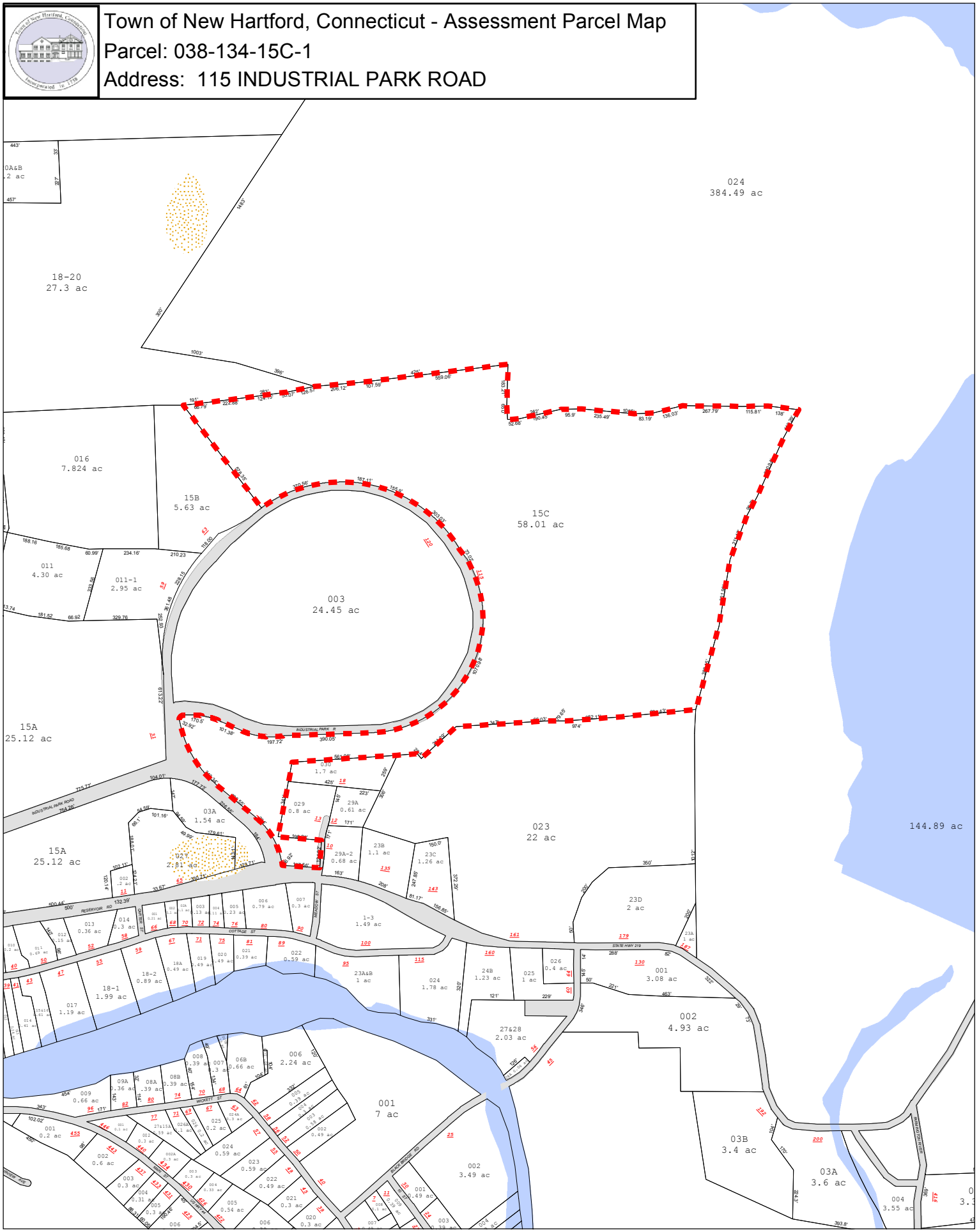
Owner of Record	Book/ Page	Sale Date	Sale Price
FRAMINGHAM COMMONS LLC	234/ 515	5/10/2005	

Report Created On 9/14/2018

Town of New Hartford, Connecticut - Assessment Parcel Map

Parcel: 038-134-15C-1

Address: 115 INDUSTRIAL PARK ROAD



N

W E

S

Approximate Scale: 1 inch = 550 feet

0 250 500 750 1,000 Feet

Disclaimer: This map is for informational purposes only. All information is subject to verification by any user. The Town of New Hartford and its mapping contractors assume no legal responsibility for the information contained herein.

Map Produced September 2014

EXHIBIT 2

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING MONOPOLE:
- NEW AT&T ANTENNA (HPA-65R-BUU-H6) (TOTAL OF 1 FOR ALPHA SECTOR).
- NEW AT&T ANTENNAS (SBNHH-1D65A) (TYP. OF 1 FOR BETA & GAMMA SECTOR, TOTAL OF 2).
- NEW AT&T RRUS 4415 B25 (PCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- SWAP BBU WITH (1) 5216 AND ADD (1) XMU.
- NEW AT&T RRUS 4478 B5 (850) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS B14 4478 (850) (TOTAL OF 2).
- NEW DIPLEXERS (LPG21401) (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- NEW SURGE ARRESTOR (TSXDC-43/OFM) (TOTAL OF 20).

ITEMS TO REMAIN
- (6) ANTENNAS, (3) RRU'S, (6) TMA'S, (1) SURGE ARRESTOR
(12) COAX CABLES, (2) DC POWER & (1) FIBER.

SITE ADDRESS:	INDUSTRIAL ROAD NEW HARTFORD, CT 06057
LATITUDE:	41.886240° N 41° 53' 10.46" N
LONGITUDE:	72.966140° W 72° 57' 58.10" W
TYPE OF SITE:	MONOPOLE/INDOOR EQUIPMENT
TOWER HEIGHT:	166'-0"±
RAD CENTER:	119'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

SITE NUMBER: CT1121

SITE NAME: NEW HARTFORD-INDUSTRIAL PARK

FA CODE: 10071155

PACE ID: MRCTB032151, MRCTB032154, MRCTB032158

PROJECT: LTE 2C/3C/4C 2018 UPGRADE

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	1
GN-1	GENERAL NOTES	1
A-1	COMPOUND PLAN AND EQUIPMENT PLAN	1
A-2	ANTENNA LAYOUTS & ELEVATION	1
A-3	DETAILS	1
A-4	SCHEMATIC AND NOTES	1
G-1	GROUNDING DETAILS	1
RF-1	RF PLUMBING DIAGRAM	1

CCI SITE NAME: NEW HARTFORD INDUSTRIAL PARK RD.
CCI SITE #: 876392

VICINITY MAP

DIRECTIONS TO SITE:
HEAD EAST TOWARD MA-106 E. TURN RIGHT ONTO MA-106 E. MARGE ONTO MA-24 S VIA THE RAMP TO FALL RIVER. MERGE ONTO MA-24 S. TAKE EXIT 14B TO MERGE ONTO I-495 TOWARD WORCESTER TAKE EXIT 22 FOR I-90 TOWARD MASS/PIKE/BOSTON/ALBANY NY. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR I-90 W/SPRINGFIELD/ALBANY AND MERGE ONTO I-90 W. TAKE 9 FOR I-84 TOWARD US-20/HARTFORD/NEW YORK CITY. CONTINUE ONTO I-84. KEEP RIGHT STAY ON I-84. KEEP LEFT TO STAY I-84. TAKE EXIT 39 TOWARD FARMINGTON/CT-4 CONTINUE ONTO STATE HWY 508. STATE HWY 508 TURNS SLIGHTLY RIGHT AND BECOMES CT-4 W. CONTINUE STRAIGHT TO STAY ON CT-4 W. SLIGHT RIGHT TO STAY ON CT-4 W. CONTINUE ONTO CT-179 N. TURN RIGHT ONTO BRIDGE ST. TURN LEFT ONTO CT-179 N/RIVER RD. TURN LEFT ONTO US-44 W. TURN RIGHT ONTO RESERVOIR RD. TURN LEFT ONTO GREENWOOD INDUSTRIAL PARK.

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 OR RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

72 HOURS

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

UNDERGROUND SERVICE ALERT

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

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

SITE NUMBER: CT1121
SITE NAME: NEW HARTFORD-INDUSTRIAL PARK
CCI STE #: 876392

INDUSTRIAL RD
NEW HARTFORD, CT 06057
LITCHFIELD COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	08/29/18	ISSUED FOR CONSTRUCTION	ET	AT	DJC
A	08/27/18	ISSUED FOR REVIEW	MR	AT	DJC

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

STATE OF CONNECTICUT · DEREK J. CREASEY · No. 28354 · LICENSED PROFESSIONAL ENGINEER

AT&T

TITLE SHEET
(LTE 2C/3C/4C)

SITE NUMBER	DRAWING NUMBER	REV
CT1121	T-1	1

GROUNDING NOTES

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

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

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

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

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

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

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

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

20. APPLICABLE BUILDING CODES:
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
    BUILDING CODE: IBC 2012 WITH 2016 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
    LIGHTENING 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

    EQUIPMENT AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

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

ABBREVIATIONS

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

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

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

SITE NUMBER: CT1121
SITE NAME: NEW HARTFORD-INDUSTRIAL PARK
CCI STE #: 876392

INDUSTRIAL RD
NEW HARTFORD, CT 06057
LITCHFIELD COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	08/29/18	ISSUED FOR CONSTRUCTION	ET	AT	DJC
A	08/27/18	ISSUED FOR REVIEW	MR	AT	DJC

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

STATE OF CONNECTICUT · DEREK J. CREASEY · No. 28557 · LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
(LTE 2C/3C/4C)

SITE NUMBER	DRAWING NUMBER	REV
CT1121	GN-1	1

NOTE:

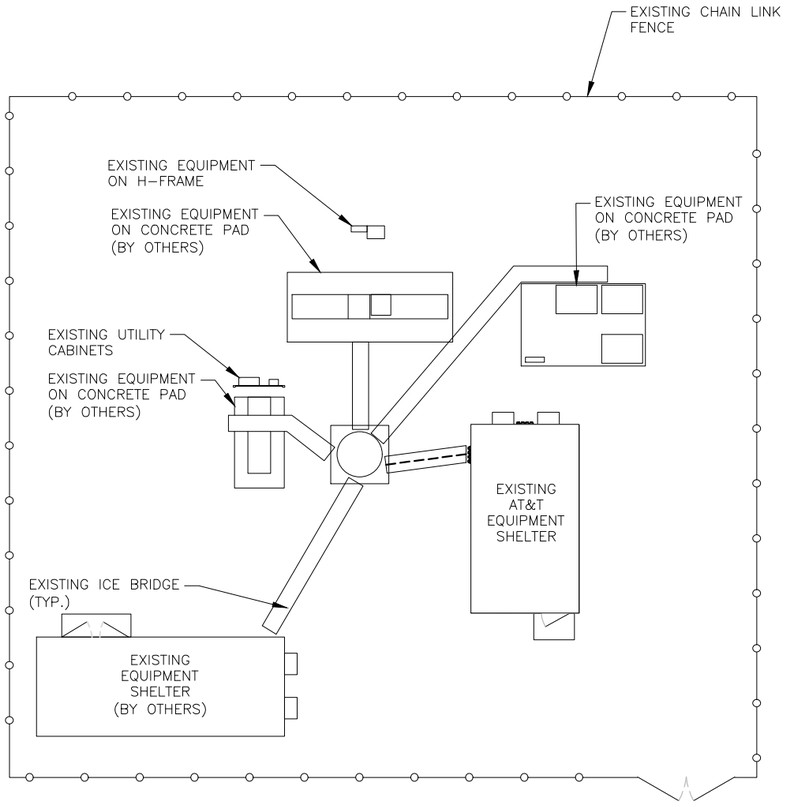
REFER TO STRUCTURAL ANALYSIS BY: PAUL J. FORD & COMPANY, DATED: AUGUST 14, 2018, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

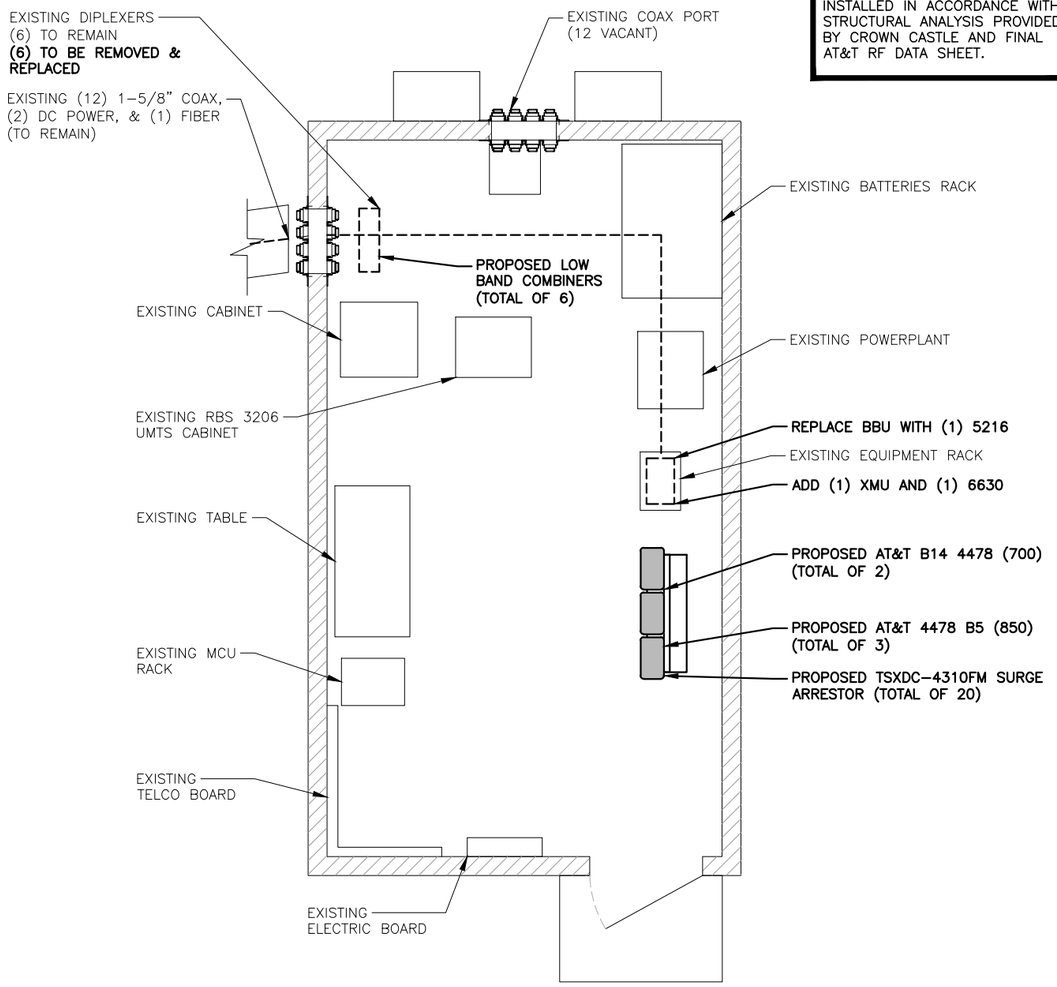
NOTE:

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.





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

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

HUDSON Design Group LLC
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CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET, SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT1121
SITE NAME: NEW HARTFORD-INDUSTRIAL PARK
CCI STE #: 876392

INDUSTRIAL RD
NEW HARTFORD, CT 06057
LITCHFIELD COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
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A	08/27/18	ISSUED FOR REVIEW	MR	AT	DJC

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

STATE OF CONNECTICUT · DEREK J. CREASER · No. 28351 · LICENSED PROFESSIONAL ENGINEER

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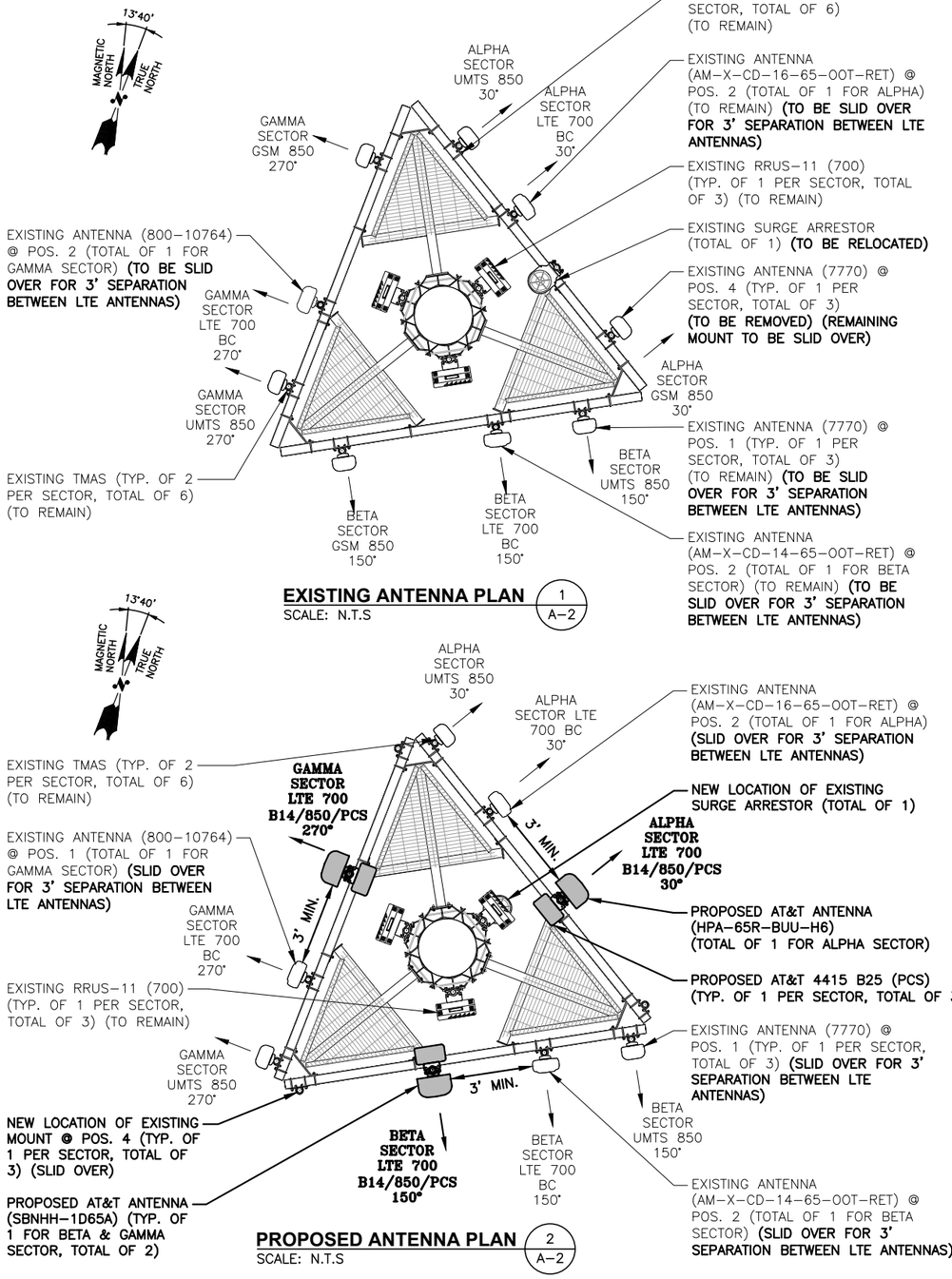
COMPOUND & EQUIPMENT PLAN (LTE 2C/3C/4C)

SITE NUMBER	DRAWING NUMBER	REV
CT1121	A-1	1



EXISTING ANTENNA PLAN

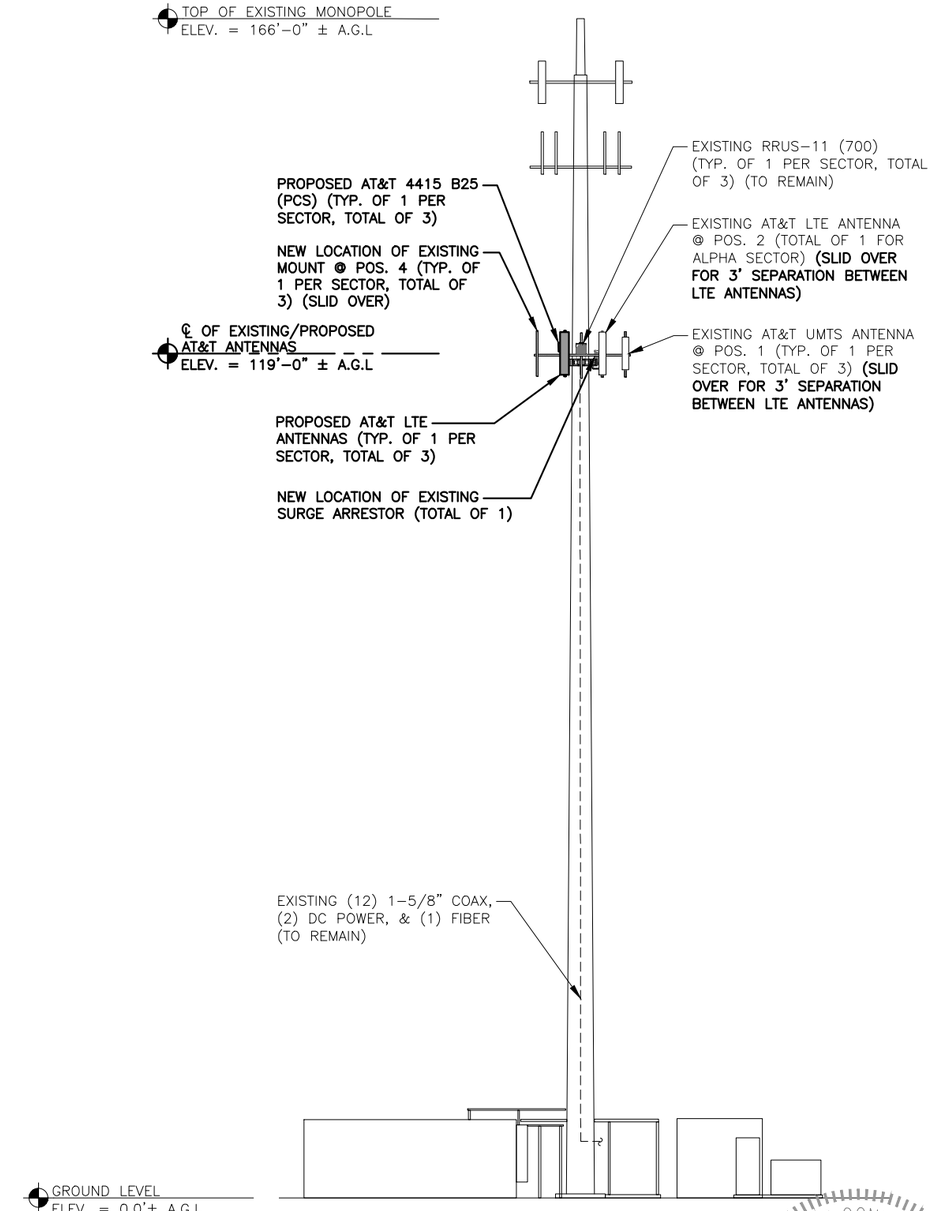
SCALE: N.T.S

1 / A-2

PROPOSED ANTENNA PLAN

SCALE: N.T.S

2 / A-2



ELEVATION

22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"

3 / A-2

0 5'-4" 10'-8" 21'-4" 32'-0"

NOTE:

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

NOTE:

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

NOTE:

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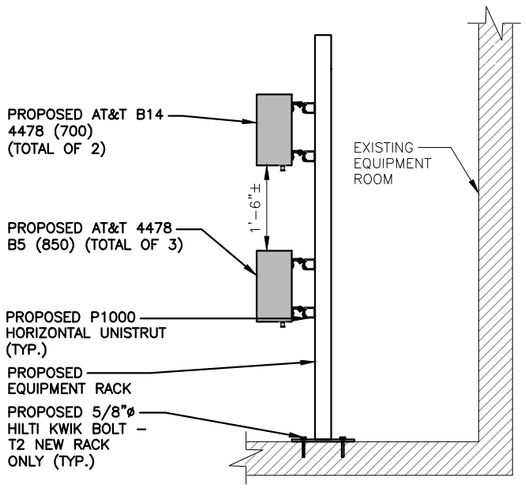
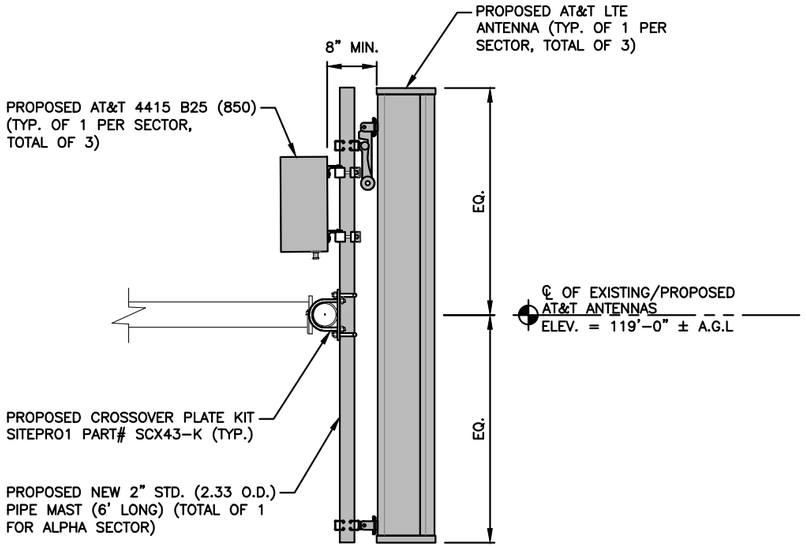
ANTENNA LAYOUTS & ELEVATION (LTE 2C/3C/4C)

SITE NUMBER	DRAWING NUMBER	REV
CT1121	A-2	1



PROPOSED RRUS MOUNTING DETAIL ON NEW RACK (4 / A-3)

SCALE: N.T.S



PROPOSED ANTENNA & 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"

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	UMTS 850	7770	55X11X5	±119'	30°	(2) POWERWAVE LGP21401 **(P)(2) LGP13519**	–	–	(2) 1-5/8 COAX (±150' LENGTH)	--
A2	EXISTING	LTE 700 BC	AM-X-CD-16-65-00T-RET	72x11.8x5.9	±119'	30°	–	(E) RRUS-11 (700)	–	–	(E) (1) RAYCAP DC6-48-60-18-8C
A3	**PROPOSED**	**LTE 700 B14/850/PCS**	**HPA-65R-BUU-H6**	**72x14.8x9**	**±119'**	**30°**	–	**(P)(G) B14 4478 (700) (P)(G) 4478 B5 (850) (P) 4415 B25 (PCS)**	**15x13.2x7.4 15x13.2x7.4 15x13.2x7.4**	(2) 1-5/8 COAX (±150' LENGTH)	
A4	–	–	–	–	–	–	(E) DC0061FIV51-2	–	–	–	
B1	EXISTING	UMTS 850	7770	55X11X5	±119'	150°	(2) POWERWAVE LGP21401 **(P)(2) LGP13519**	–	–	(2) 1-5/8 COAX (±150' LENGTH)	
B2	EXISTING	LTE 700 BC	AM-X-CD-14-65-00T-RET	48x11.8x5.9	±119'	150°	–	(E) RRUS-11 (700)	–	–	I
B3	**PROPOSED**	**LTE 700 B14/850/PCS**	**SBNHH-1D65A**	**55x11.9x7.1**	**±119'**	**150°**	–	**(P)(G) B14 4478 (700) (P)(G) 4478 B5 (850) (P) 4415 B25 (PCS)**	**15x13.2x7.4 15x13.2x7.4 15x13.2x7.4**	(2) 1-5/8 COAX (±150' LENGTH)	
B4	–	–	–	–	–	–	(E) DC0061FIV51-2	–	–	–	
C1	EXISTING	UMTS 850	7770	55X11X5	±119'	270°	(2) POWERWAVE LGP21401 **(P)(2) LGP13519**	–	–	(2) 1-5/8 COAX (±150' LENGTH)	
C2	EXISTING	LTE 700 BC	800-10764	55.2x11.8x6	±119'	270°	–	(E) RRUS-11 (700)	–	–	I
C3	**PROPOSED**	**LTE 700 B14/850/PCS**	**SBNHH-1D65A**	**55x11.9x7.1**	**±119'**	**270°**	–	**(P)(G) 4478 B5 (850) (P) 4415 B25 (PCS)**	**15x13.2x7.4 15x13.2x7.4**	(2) 1-5/8 COAX (±150' LENGTH)	
C4	–	–	–	–	–	–	(E) DC0061FIV51-2	–	–	–	

FINAL ANTENNA CONFIGURATION TABLE (3 / A-3)

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

NOTE:
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NOTE:
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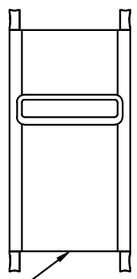
RRU CHART				
QTY	MODEL	L	W	D
3(E)	RRUS-11	19.7"	17.0"	7.2"
5(P)(G)	RRUS 4478	15.0"	13.2"	7.4"
3(P)	RRUS 4415	15.0"	13.2"	5.4"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS



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

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

NOTE:
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

RRU DETAIL (2 / A-3)

SCALE: N.T.S

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

STATE OF CONNECTICUT
DEREK J. CREASEY
No. 25557
LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
(LTE 2C/3C/4C)

SITE NUMBER	DRAWING NUMBER	REV
CT1121	A-3	1

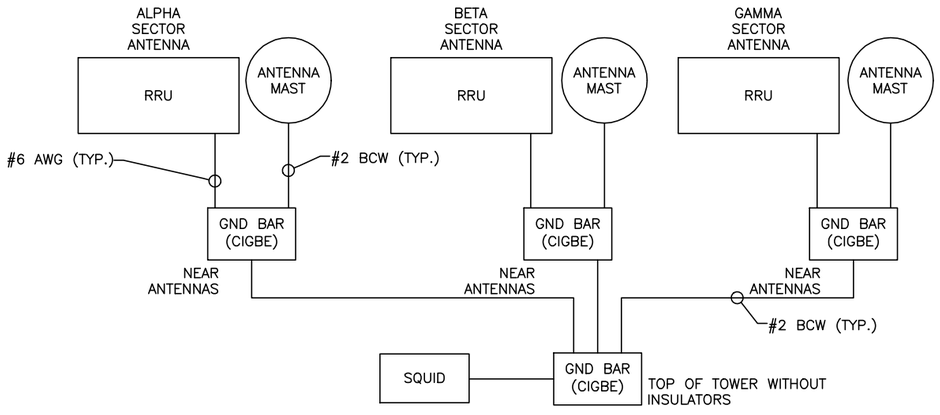
COAX COLOR CODING AND IDENTIFICATION NOTES

1. SECTOR ORIENTATION/AZIMUTH WILL VARY FROM REGION TO REGION AND IS SITE SPECIFIC. REFER TO RF REPORT FOR EACH SITE TO DETERMINE THE ANTENNA LOCATION AND FUNCTION OF EACH TOWER SECTOR FACE.
2. THE ANTENNA SYSTEM COAX SHALL BE LABELED WITH VINYL TAPE EXCEPT IN LOCATIONS WHERE ENVIRONMENTAL CONDITIONS CAUSE PHYSICAL DAMAGE, THE PHYSICAL TAGS ARE PREFERRED.
3. THE STANDARD IS BASED ON 8 COLORED TAPES–RED, BLUE, GREEN, YELLOW, ORANGE, BROWN, WHITE, AND VIOLET. THESE TAPES MUST BE 3/4" WIDE & UV RESISTANT SUCH AS SCOTCH 35 VINYL ELECTIRCAL COLOR CODING TAPE AND SHOULD BE READILY AVALIBLE TO THE ELECTRICIAN OR SUBCONTRACTOR ON SITE.
4. USING COLOR BANDS ON THE CABLES, MARK ALL RF CABLE BY SECTOR AND CABLE NUMBER AS SHOWN ON "CABLE MARKING COLOR CONVENTION TABLE".
5. WHEN AN EXISTING COAXIAL LINE THAT IS INTENDED TO BE A SHARED LINE BETWEEN GSM/3G AND IS–136/TDMA IS ENCOUNTERED, THE SUBCONTRACTOR SHALL REMOVE THE EXISTING COLOR CODING SCHEME AND REPLACE IT WITH THE COLOR CODING AND TAGGING STANDARD THAT IS OUTLINED IN THE CURRENT VERSION OF ND–00027. IN THE ABSENCE OF AN EXISTING COLOR CODING AND TAGGING SCHEME, OR WHEN INSTALLING PROPOSED COAXIAL CABLES, THE GUIDELINE SHALL BE IMPLEMENTED AT THE SITE REGARDLESS OF TECHNOLOGY.
6. ALL COLOR CODE TAPE SHALL BE 3M–35 AND SHALL BE INSTALLED USING A MINIMUM OF 3 WRAPS OF TAPE AND SHALL BE NEATLY TRIMMED AND SMOOTHED OUT SI AS TO AVOID UNRAVELING.
7. ALL COLOR BANDS INSTALLED AT THE TOP OF THE TOWER SHALL BE A MINIMUM OF 3" WIDE, AND SHALL HAVE A MINIMUM OF 3/4" OF SPACE BETWEEN EACH COLOR.
8. ALL COLOR CODES SHALL BE INSTALLED SO AS TO ALIGN NEATLY WITH ONE ANOTHER FROM SIDE TO SIDE.
9. IF EXISTING CABLES AT THE SITE ALREADY HAVE A COLOR CODING SCHEME AND THEY ARE NOT INTENDED TO BE REUSED OR SHARED WITH THE GSM TECHNOLOGY, THE EXISTING COLOR CODING SCHEME SHALL REMAIN UNTOUCHED.

CABLE MARKING TAGS

WHEN USING THE ALTERNATIVE LABELING METHOD, EACH RF CABLE SHALL BE IDENTIFIED WITH A METAL ID TAG MADE OF STAINLESS STEEL OR BRASS, THE TAG SHALL BE 1 1/2" IN DIAMETER WITH 1/4" STAMPED LETTERS AND NUMBERS INDICATING THE SECTOR, ANTENNA POSITION, AND CABLE NUMBER. THE ID MARKING LOCATIONS SHOULD BE AS PER CABLING MARKING LOCATIONS TABLE. THE TAG SHOULD BE ATTACHED WITH CORROSION PROOF WIRE AROUND THE CABLE AT THE SAME LOCATION AS DEFINED ABOVE. THE TAG SHOULD BE LABELED AS SHOWN ON THE GSM AND UMTS LINE TAG DETAIL.

CABLE MARKING LOCATIONS TABLE	
NO.	LOCATIONS
①	EACH TOP JUMPER SHALL BE COLOR CODED WITH 1 SET OF 3" WIDE BANDS
②	EACH MAIN COAX SHALL BE COLORED RED WITH 1 SET OF 3" WIDE BANDS NEAR THE TOP JUMPER CONNECTION AND WITH 1 SET OF 3/4" WIDE COLOR BANDS. JUST PRIOR TO ENTERING THE BTS FOR THE TRANSMITTER BUILDING.
③	CABLE ENTRY PORT ON THE INTERIOR OF THE SHELTER.
④	ALL BOTTOM JUMPERS SHALL BE COLORED WITH 1 SET OF 3/4" WIDE BANDS ON EACH END OF THE BOTTOM JUMPERS.
⑤	ALL BOTTOM JUMPERS SHALL BE COLORED WITH 1 SET OF 3/4" WIDE BANDS ON EACH END OF THE BOTTOM JUMPERS.



SCHEMATIC DIAGRAM GROUNDING SYSTEM

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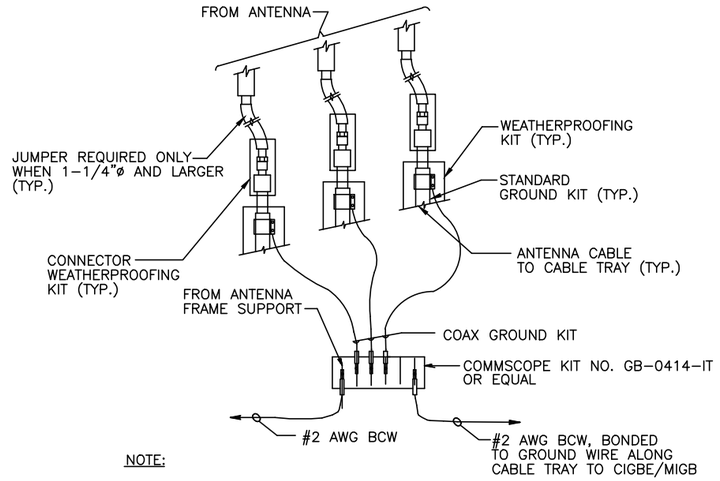
STATE OF CONNECTICUT · DEREK J. CREASEY · No. 21057 · LICENSED PROFESSIONAL ENGINEER

AT&T

SCHEMATIC AND NOTES (LTE 2C/3C/4C)

SITE NUMBER	DRAWING NUMBER	REV
CT1121	A–4	1



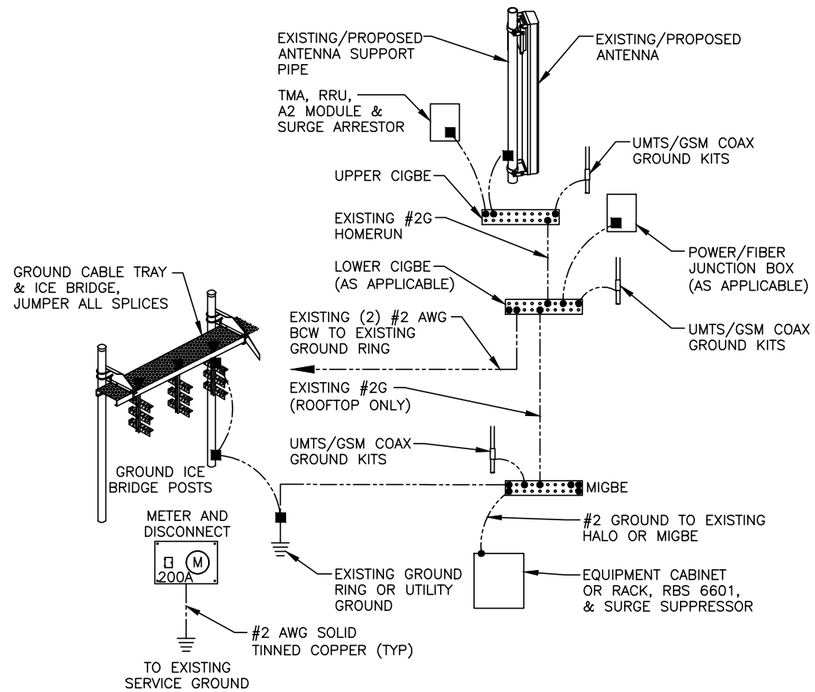
NOTE:

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

GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

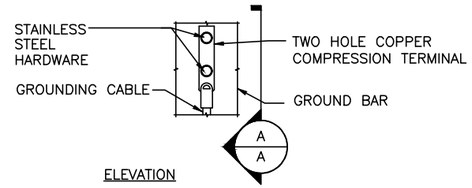
1 / G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1



NOTE:

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

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

3 / G-1

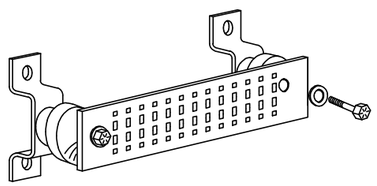
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



GROUND BAR - DETAIL

SCALE: N.T.S

4 / G-1

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AT&T

GROUNDING DETAILS (LTE 2C/3C/4C)

SITE NUMBER	DRAWING NUMBER	REV
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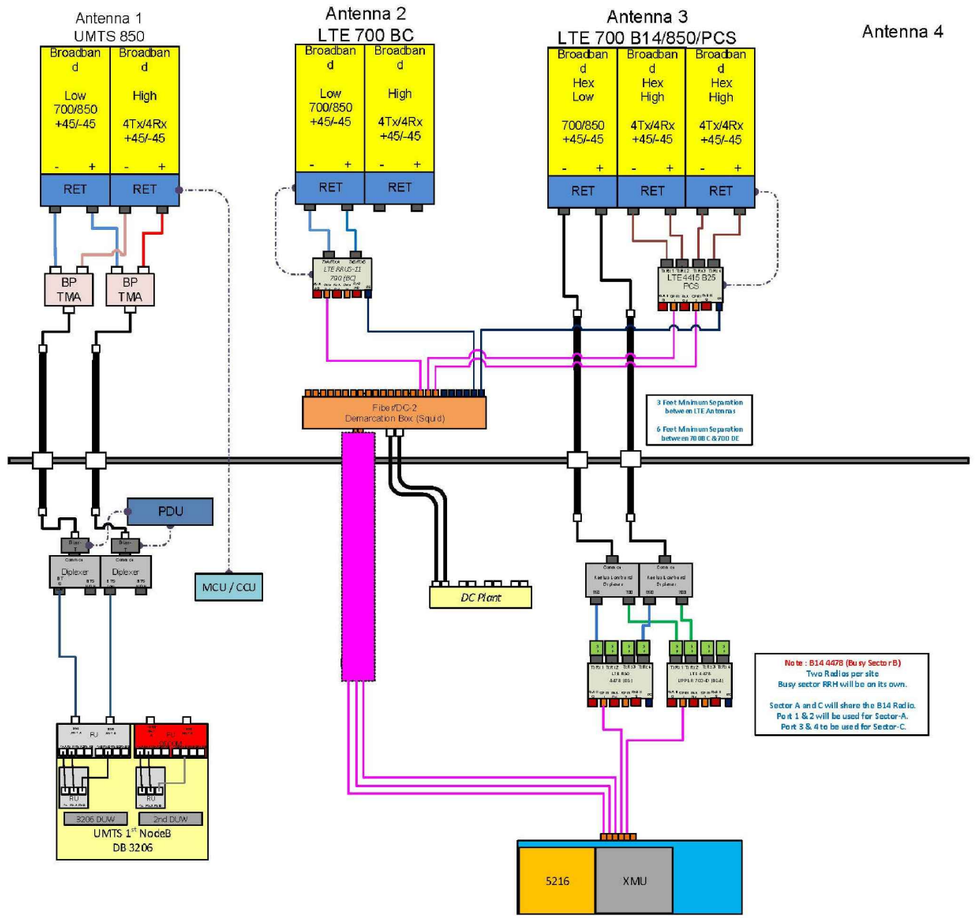

RF PLUMBING DIAGRAM (1 / RF–1)
SCALE: N.T.S

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

NOTE:
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AT&T

RF PLUMBING DIAGRAM
(LTE 2C/3C/4C)

SITE NUMBER	DRAWING NUMBER	REV
CT1121	RF–1	1

EXHIBIT 3

PAUL J. FORD & COMPANY

Date: **August 14, 2018**

Winnie Japardi
Crown Castle
2055 S. Stearman Drive
Chandler, AZ 85286

Paul J. Ford and Company
250 East Broad st., Suite 600
Columbus, OH 43215
(614) 221-6679

Subject: **Structural Analysis Report**

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT1121
	Carrier Site Name:	NEW HARTFORD INDUSTRIAL PARK ROAD
Crown Castle Designation:	**Crown Castle BU Number:**	876392
	Crown Castle Site Name:	NEW HARTFORD / EXECUTIVE GREET
	Crown Castle JDE Job Number:	523211
	Crown Castle Work Order Number:	1613794
	Crown Castle Order Number:	453742 Rev. 1
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37518-1341.004.7805
Site Data:	**115 Industrial Park RD, New Hartford, Litchfield County, CT**	
	Latitude *41° 53' 10.48"*, Longitude *-72° 57' 58.1"*	
	168 Foot - Monopole Tower	

Dear Winnie Japardi,

Paul J. Ford and Company 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 1233936, in accordance with order 453742, revision 1.

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 ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 with a maximum Topographic Factor, Kzt, of 1.0 were used in this analysis.

We at *Paul J. Ford and Company* 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.

Respectfully submitted by:

JAC

Jaime Acuna
Structural Designer
jacuna@pauljford.com

M.C.L./C.J.P.

STATE OF CONNECTICUT
JUSTIN T. KLINE
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PROFESSIONAL ENGINEER

8.15.18

tnxTower Report - version 8.0.2.1

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1) INTRODUCTION

This tower is a 168 ft Monopole tower designed by SUMMIT in September of 2000. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

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 ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 with a maximum Topographic Factor, Kzt, of 1.0 were used in this analysis.

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
118.0	119.0	2	andrew	SBNHH-1D65A w/ Mount Pipe	-	-	-
		1	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe			
		3	ericsson	RRUS 4415 B25			
		6	powerwave technologies	7020.00			

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
166.0	168.0	3	communication components inc.	DTMA-1819-DD-12	12	1-5/8	1
		3	rfs celwave	APX16PV-16PVL-E			
	166.0	1	tower mounts	Pipe Mount [PM 601-3]			
157.0	157.0	3	alcatel lucent	RRH2X50-800	1	5/8	2
		3	alcatel lucent	TD-RRH8X20-25			
		3	commscope	DT465B-2XR w/ Mount Pipe			
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
		9	rfs celwave	ACU-A20-N	3	1-1/4	1
		1	tower mounts	Platform Mount [LP 712-1]			
155.0	156.0	3	alcatel lucent	800 EXTERNAL NOTCH FILTER	-	-	1
		3	alcatel lucent	800MHZ RRH			
	155.0	1	tower mounts	Side Arm Mount [SO 102-3]			
	154.0	3	alcatel lucent	1900MHz RRH (65MHz) w/ Mount Pipe			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
145.0	147.0	3	antel	BXA-171085-12BF-2 w/ Mount Pipe	-	-	2
		3	antel	BXA-70063-6CF-2 w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
		6	antel	LPA-80080/6CF w/ Mount Pipe	12	1-5/8	1
	145.0	1	tower mounts	Platform Mount [LP 403-1]			
120.0	120.0	1	tower mounts	Side Arm Mount [SO 102-3]	-	-	1
	119.0	3	ericsson	RRUS 11			
118.0	119.0	3	powerwave technologies	7770.00 w/ Mount Pipe	-	-	3
		1	kathrein	800 10764 w/ Mount Pipe	12 1 2	1-5/8 3/8 7/16	1
		1	kmw communications	AM-X-CD-14-65-00T-RET w/ Mount Pipe			
		1	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		3	powerwave technologies	7770.00 w/ Mount Pipe			
	118.0	12	powerwave technologies	LGP2140X			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	Platform Mount [LP 303-1]			
102.0	102.0	3	rfs celwave	APXV18-206517S-C w/ Mount Pipe	6	1-5/8	1
		1	tower mounts	Pipe Mount [PM 601-3]			
74.0	75.0	1	lucent	KS24019-L112A	1	1/2	1
	74.0	1	tower mounts	Side Arm Mount [SO 702-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed

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)
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3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Criscuolo Shepard Associates, 2000.910, 03/10/2000	1532994	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Summit, 11428, 09/19/2000	1616556	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Summit, 11428, 09/19/2000	1441325	CCISITES
4-POST-MODIFICATION INSPECTION	GPD, 2010177.92, 01/04/2011	2808249	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 131001.876392, 04/10/2013	3839078	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.2.1), 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.
4) Monopole was modified in conformance with the referenced modification drawings.
5) The existing monopole shaft has been reinforced using a Crown-approved system in accordance with the above referenced documents. However, in this analysis we found that due to the change from the EIA/TIA-222-F Standard (the Standard used in the original reinforcing design) to the TIA-222-G-2 Standard (the most current Standard) the shaft reinforcing was found to be ineffective and, therefore, not considered in this analysis.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford and Company 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	168 - 158.5	Pole	TP14x14x0.25	1	-0.76	340.18	9.0	Pass
L2	158.5 - 158	Pole	TP22x14x0.25	2	-0.76	340.18	9.0	Pass
L3	158 - 116.5	Pole	TP29.139x22x0.1875	3	-8.18	1091.80	71.9	Pass
L4	116.5 - 80.25	Pole	TP35x28.1189x0.25	4	-16.72	1822.96	96.0	Pass
L5	80.25 - 39.75	Pole	TP41.467x33.7259x0.3125	5	-26.21	2752.39	99.9	Pass
L6	39.75 - 0	Pole	TP47.68x39.9389x0.375	6	-40.33	3909.54	96.4	Pass
							Summary	
						Pole (L5)	99.9	Pass
						Rating =	99.9	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	79.9	Pass
1	Base Plate	0	83.6	Pass
1	Base Foundation Structural Steel	0	66.0	Pass
1	Base Foundation Soil Interaction	0	61.4	Pass
1	Flange Connection	68	9.9	Pass

Structure Rating (max from all components) =	99.9%

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

4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

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

1) Tower is located in Litchfield County, Connecticut.
2) ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
3) Basic wind speed of 93.00 mph.
4) Structure Class II.
5) Exposure Category C.
6) Topographic Category 1.
7) Crest Height 0.0000 ft.
8) Nominal ice thickness of 1.0000 in.
9) Ice thickness is considered to increase with height.
10) Ice density of 56.00 pcf.
11) A wind speed of 40.00 mph is used in combination with ice.
12) Temperature drop of 50.00 °F.
13) Deflections calculated using a wind speed of 60.00 mph.
14) A non-linear (P-delta) analysis was used.
15) Pressures are calculated at each section.
16) Stress ratio used in pole design is 1.
17) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

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	168.0000-158.5000	9.5000	0.00	Round	14.0000	14.0000	0.2500		A53-B-35 (35 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L2	158.5000-158.0000	0.5000	0.00	Round	14.0000	22.0000	0.2500		A53-B-35 (35 ksi)
L3	158.0000-116.5000	41.5000	3.75	18	22.0000	29.1390	0.1875	0.7500	A607-65 (65 ksi)
L4	116.5000-80.2500	40.0000	4.50	18	28.1189	35.0000	0.2500	1.0000	A607-65 (65 ksi)
L5	80.2500-39.7500	45.0000	5.25	18	33.7259	41.4670	0.3125	1.2500	A607-65 (65 ksi)
L6	39.7500-0.0000	45.0000		18	39.9389	47.6800	0.3750	1.5000	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	14.0000	10.7992	255.3004	4.8622	7.0000	36.4715	510.6008	5.3964	0.0000	0
	14.0000	10.7992	255.3004	4.8622	7.0000	36.4715	510.6008	5.3964	0.0000	0
L2	14.0000	10.7992	255.3004	4.8622	7.0000	36.4715	510.6008	5.3964	0.0000	0
	22.0000	17.0824	1010.2644	7.6903	11.0000	91.8422	2020.5288	8.5361	0.0000	0
L3	22.3105	12.9812	780.3007	7.7434	11.1760	69.8193	1561.6281	6.4918	3.5420	18.891
	29.5596	17.2298	1824.5630	10.2778	14.8026	123.2595	3651.5267	8.6165	4.7985	25.592
L4	29.1692	22.1140	2169.9230	9.8935	14.2844	151.9085	4342.7013	11.0591	4.5089	18.036
	35.5014	27.5741	4206.7704	12.3363	17.7800	236.6013	8419.0762	13.7897	5.7200	22.88
L5	34.9840	33.1419	4674.7190	11.8617	17.1327	272.8529	9355.5890	16.5741	5.3858	17.234
	42.0585	40.8201	8734.6676	14.6098	21.0652	414.6485	17480.8285	20.4139	6.7482	21.594
L6	41.4142	47.0909	9312.6205	14.0452	20.2889	458.9997	18637.4948	23.5499	6.3692	16.985
	48.3577	56.3048	15918.3035	16.7933	24.2214	657.1989	31857.5527	28.1577	7.7317	20.618

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 168.0000-158.5000				1	1	1			
L2 158.5000-158.0000				1	1	1			
L3 158.0000-116.5000				1	1	1			
L4 116.5000-80.2500				1	1	1			
L5 80.2500-39.7500				1	1	1			
L6 39.7500-0.0000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
561(1-5/8")	C	No	CaAa (Out Of Face)	166.0000 - 0.0000	10	No Ice	0.0000	1.35
						1/2" Ice	0.0000	2.65
						1" Ice	0.0000	4.56
561(1-5/8")	C	No	CaAa (Out Of Face)	102.0000 - 0.0000	2	No Ice	0.0000	1.35
						1/2" Ice	0.0000	2.65
						1" Ice	0.0000	4.56

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
561(1-5/8")	C	No	CaAa (Out Of Face)	166.0000 - 102.0000	2	No Ice	0.1625	1.35
						1/2" Ice	0.2625	2.65
						1" Ice	0.3625	4.56
**********								
HB114-1-0813U4-M5J(1 1/4")	C	No	CaAa (Out Of Face)	157.0000 - 0.0000	3	No Ice	0.0000	1.20
						1/2" Ice	0.0000	2.45
						1" Ice	0.0000	4.30
HB058-M12-XXXF(5/8")	C	No	CaAa (Out Of Face)	157.0000 - 0.0000	1	No Ice	0.0000	0.24
						1/2" Ice	0.0000	1.06
						1" Ice	0.0000	2.49
**********								
LDF7-50A(1-5/8")	C	No	Inside Pole	145.0000 - 0.0000	12	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
**********								
LDF7-50A(1-5/8")	C	No	Inside Pole	118.0000 - 0.0000	12	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
FB-L98B-002-75000(3/8)	C	No	Inside Pole	118.0000 - 0.0000	1	No Ice	0.0000	0.06
						1/2" Ice	0.0000	0.06
						1" Ice	0.0000	0.06
WR-VG122ST-BRDA(7/16)	C	No	Inside Pole	118.0000 - 0.0000	2	No Ice	0.0000	0.14
						1/2" Ice	0.0000	0.14
						1" Ice	0.0000	0.14
2" (Nominal) Conduit	C	No	CaAa (Out Of Face)	102.0000 - 0.0000	1	No Ice	0.2375	0.72
						1/2" Ice	0.3375	2.48
						1" Ice	0.4375	4.84
2" (Nominal) Conduit	C	No	CaAa (Out Of Face)	118.0000 - 102.0000	1	No Ice	0.0000	0.72
						1/2" Ice	0.0000	2.48
						1" Ice	0.0000	4.84
**********								
LCF158-50JL(1-5/8")	C	No	CaAa (Out Of Face)	102.0000 - 0.0000	5	No Ice	0.0000	0.52
						1/2" Ice	0.0000	2.03
						1" Ice	0.0000	4.16
LCF158-50JL(1-5/8")	C	No	CaAa (Out Of Face)	102.0000 - 0.0000	1	No Ice	0.1980	0.52
						1/2" Ice	0.2980	2.03
						1" Ice	0.3980	4.16
**********								
LDF4-50A(1/2")	C	No	Inside Pole	74.0000 - 0.0000	1	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
**********								
1 1/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	30.5000 - 0.0000	1	No Ice	0.2083	0.00
						1/2" Ice	0.3194	0.00
						1" Ice	0.4306	0.00
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	71.7500 - 30.5000	1	No Ice	0.1667	0.00
						1/2" Ice	0.2778	0.00
						1" Ice	0.3889	0.00
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	93.0000 - 83.0000	1	No Ice	0.1667	0.00
						1/2" Ice	0.2778	0.00
						1" Ice	0.3889	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	168.0000-158.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.438	0.12
L2	158.5000-158.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.163	0.01
L3	158.0000-116.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	13.488	1.12

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
L4	116.5000-80.2500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	15.852	1.55
L5	80.2500-39.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	22.971	1.78
L6	39.7500-0.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	25.207	1.75

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	168.0000-158.5000	A	2.347	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	9.478	1.21
L2	158.5000-158.0000	A	2.339	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.630	0.08
L3	158.0000-116.5000	A	2.305	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	51.751	8.75
L4	116.5000-80.2500	A	2.230	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	54.396	10.38
L5	80.2500-39.7500	A	2.122	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	74.952	12.23
L6	39.7500-0.0000	A	1.903	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	77.699	11.08

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	168.0000-158.5000	-1.3747	0.7937	-2.1095	1.2179
L2	158.5000-158.0000	-1.7561	1.0139	-2.7848	1.6078
L3	158.0000-116.5000	-1.9594	1.1313	-3.2097	1.8531
L4	116.5000-80.2500	-2.5730	1.4855	-4.0224	2.3223
L5	80.2500-39.7500	-3.1770	1.8342	-4.9773	2.8736
L6	39.7500-0.0000	-3.6134	2.0862	-5.4565	3.1503

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

Shielding Factor Ka

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

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod 5/8x4'	C	None		0.0000	170.0000	No Ice	0.2500	0.2500	0.03
						1/2" Ice	0.6635	0.6635	0.03
						1" Ice	0.9732	0.9732	0.04
**********									
APX16PV-16PVL-E	A	From Leg	1.0000 0.00 2.00	0.0000	166.0000	No Ice	6.0770	2.0028	0.04
						1/2" Ice	6.4350	2.3262	0.07
						1" Ice	6.8001	2.6569	0.11
APX16PV-16PVL-E	B	From Leg	1.0000 0.00 2.00	0.0000	166.0000	No Ice	6.0770	2.0028	0.04
						1/2" Ice	6.4350	2.3262	0.07
						1" Ice	6.8001	2.6569	0.11
APX16PV-16PVL-E	C	From Leg	1.0000 0.00 2.00	0.0000	166.0000	No Ice	6.0770	2.0028	0.04
						1/2" Ice	6.4350	2.3262	0.07
						1" Ice	6.8001	2.6569	0.11
DTMA-1819-DD-12	A	From Leg	1.0000 0.00 2.00	0.0000	166.0000	No Ice	0.6050	0.3732	0.01
						1/2" Ice	0.7126	0.4648	0.02
						1" Ice	0.8276	0.5634	0.03
DTMA-1819-DD-12	B	From Leg	1.0000 0.00 2.00	0.0000	166.0000	No Ice	0.6050	0.3732	0.01
						1/2" Ice	0.7126	0.4648	0.02
						1" Ice	0.8276	0.5634	0.03
DTMA-1819-DD-12	C	From Leg	1.0000 0.00 2.00	0.0000	166.0000	No Ice	0.6050	0.3732	0.01
						1/2" Ice	0.7126	0.4648	0.02
						1" Ice	0.8276	0.5634	0.03
Pipe Mount [PM 601-3]	C	None		0.0000	166.0000	No Ice	4.3900	4.3900	0.20
						1/2" Ice	5.4800	5.4800	0.24
						1" Ice	6.5700	6.5700	0.28
**********									
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	157.0000	No Ice	6.5799	4.9591	0.08
						1/2" Ice	7.0306	5.7544	0.13
						1" Ice	7.4733	6.4723	0.19
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	157.0000	No Ice	6.5799	4.9591	0.08
						1/2" Ice	7.0306	5.7544	0.13
						1" Ice	7.4733	6.4723	0.19
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	157.0000	No Ice	6.5799	4.9591	0.08
						1/2" Ice	7.0306	5.7544	0.13
						1" Ice	7.4733	6.4723	0.19
DT465B-2XR w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	157.0000	No Ice	9.3360	7.6339	0.08
						1/2" Ice	9.9051	8.8197	0.16
						1" Ice	10.4391	9.7184	0.24
DT465B-2XR w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	157.0000	No Ice	9.3360	7.6339	0.08
						1/2" Ice	9.9051	8.8197	0.16
						1" Ice	10.4391	9.7184	0.24
DT465B-2XR w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	157.0000	No Ice	9.3360	7.6339	0.08
						1/2" Ice	9.9051	8.8197	0.16
						1" Ice	10.4391	9.7184	0.24

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
(3) ACU-A20-N	A	From Leg	4.0000 0.00 0.00	0.0000	157.0000	No Ice 1/2" Ice 1" Ice	0.0667 0.1037 0.1481	0.1167 0.1620 0.2148	0.00 0.00 0.00
(3) ACU-A20-N	B	From Leg	4.0000 0.00 0.00	0.0000	157.0000	No Ice 1/2" Ice 1" Ice	0.0667 0.1037 0.1481	0.1167 0.1620 0.2148	0.00 0.00 0.00
(3) ACU-A20-N	C	From Leg	4.0000 0.00 0.00	0.0000	157.0000	No Ice 1/2" Ice 1" Ice	0.0667 0.1037 0.1481	0.1167 0.1620 0.2148	0.00 0.00 0.00
TD-RRH8X20-25	C	From Leg	4.0000 0.00 0.00	0.0000	157.0000	No Ice 1/2" Ice 1" Ice	4.0455 4.2975 4.5570	1.5345 1.7142 1.9008	0.07 0.10 0.13
(2) TD-RRH8X20-25	C	From Leg	4.0000 0.00 0.00	0.0000	157.0000	No Ice 1/2" Ice 1" Ice	4.0455 4.2975 4.5570	1.5345 1.7142 1.9008	0.07 0.10 0.13
(2) RRH2X50-800	B	From Leg	4.0000 0.00 0.00	0.0000	157.0000	No Ice 1/2" Ice 1" Ice	1.7008 1.8640 2.0345	1.2822 1.4275 1.5803	0.05 0.07 0.09
RRH2X50-800	C	From Leg	4.0000 0.00 0.00	0.0000	157.0000	No Ice 1/2" Ice 1" Ice	1.7008 1.8640 2.0345	1.2822 1.4275 1.5803	0.05 0.07 0.09
Platform Mount [LP 712-1]	C	None		0.0000	157.0000	No Ice 1/2" Ice 1" Ice	24.5300 29.9400 35.3500	24.5300 29.9400 35.3500	1.34 1.65 1.96
2.375" OD x 4' Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	157.0000	No Ice 1/2" Ice 1" Ice	0.8657 1.1106 1.3648	0.8657 1.1106 1.3648	0.02 0.03 0.04
2.375" OD x 4' Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	157.0000	No Ice 1/2" Ice 1" Ice	0.8657 1.1106 1.3648	0.8657 1.1106 1.3648	0.02 0.03 0.04
2.375" OD x 4' Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	157.0000	No Ice 1/2" Ice 1" Ice	0.8657 1.1106 1.3648	0.8657 1.1106 1.3648	0.02 0.03 0.04
**********									
800 EXTERNAL NOTCH FILTER	A	From Leg	2.0000 0.00 1.00	0.0000	155.0000	No Ice 1/2" Ice 1" Ice	0.6601 0.7627 0.8727	0.3211 0.3983 0.4830	0.01 0.02 0.02
800 EXTERNAL NOTCH FILTER	B	From Leg	2.0000 0.00 1.00	0.0000	155.0000	No Ice 1/2" Ice 1" Ice	0.6601 0.7627 0.8727	0.3211 0.3983 0.4830	0.01 0.02 0.02
800 EXTERNAL NOTCH FILTER	C	From Leg	2.0000 0.00 1.00	0.0000	155.0000	No Ice 1/2" Ice 1" Ice	0.6601 0.7627 0.8727	0.3211 0.3983 0.4830	0.01 0.02 0.02
1900MHz RRH (65MHz) w/ Mount Pipe	A	From Leg	2.0000 0.00 -1.00	0.0000	155.0000	No Ice 1/2" Ice 1" Ice	2.7273 3.0489 3.3824	3.2407 3.6916 4.1590	0.07 0.11 0.15
1900MHz RRH (65MHz) w/ Mount Pipe	B	From Leg	2.0000 0.00 -1.00	0.0000	155.0000	No Ice 1/2" Ice 1" Ice	2.7273 3.0489 3.3824	3.2407 3.6916 4.1590	0.07 0.11 0.15

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
1900MHz RRH (65MHz) w/ Mount Pipe	C	From Leg	2.0000 0.00 -1.00	0.0000	155.0000	No Ice 1/2" Ice 1" Ice	2.7273 3.0489 3.3824	3.2407 3.6916 4.1590	0.07 0.11 0.15
800MHZ RRH	A	From Leg	2.0000 0.00 1.00	0.0000	155.0000	No Ice 1/2" Ice 1" Ice	2.1342 2.3195 2.5123	1.7730 1.9461 2.1267	0.05 0.07 0.10
800MHZ RRH	B	From Leg	2.0000 0.00 1.00	0.0000	155.0000	No Ice 1/2" Ice 1" Ice	2.1342 2.3195 2.5123	1.7730 1.9461 2.1267	0.05 0.07 0.10
800MHZ RRH	C	From Leg	2.0000 0.00 1.00	0.0000	155.0000	No Ice 1/2" Ice 1" Ice	2.1342 2.3195 2.5123	1.7730 1.9461 2.1267	0.05 0.07 0.10
Side Arm Mount [SO 102-3]	C	None		0.0000	155.0000	No Ice 1/2" Ice 1" Ice	3.0000 3.4800 3.9600	3.0000 3.4800 3.9600	0.08 0.11 0.14
**********									
(2) LPA-80080/6CF w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.0000	145.0000	No Ice 1/2" Ice 1" Ice	4.5639 5.1051 5.6116	10.2588 11.4274 12.3118	0.05 0.11 0.19
(2) LPA-80080/6CF w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.0000	145.0000	No Ice 1/2" Ice 1" Ice	4.5639 5.1051 5.6116	10.2588 11.4274 12.3118	0.05 0.11 0.19
(2) LPA-80080/6CF w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.0000	145.0000	No Ice 1/2" Ice 1" Ice	4.5639 5.1051 5.6116	10.2588 11.4274 12.3118	0.05 0.11 0.19
BXA-70063-6CF-2 w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.0000	145.0000	No Ice 1/2" Ice 1" Ice	7.8065 8.3569 8.8720	5.8008 6.9529 7.8191	0.04 0.10 0.17
BXA-70063-6CF-2 w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.0000	145.0000	No Ice 1/2" Ice 1" Ice	7.8065 8.3569 8.8720	5.8008 6.9529 7.8191	0.04 0.10 0.17
BXA-70063-6CF-2 w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.0000	145.0000	No Ice 1/2" Ice 1" Ice	7.8065 8.3569 8.8720	5.8008 6.9529 7.8191	0.04 0.10 0.17
BXA-171085-12BF-2 w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.0000	145.0000	No Ice 1/2" Ice 1" Ice	4.9710 5.5211 6.0361	5.2283 6.3892 7.2610	0.04 0.09 0.14
BXA-171085-12BF-2 w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.0000	145.0000	No Ice 1/2" Ice 1" Ice	4.9710 5.5211 6.0361	5.2283 6.3892 7.2610	0.04 0.09 0.14
BXA-171085-12BF-2 w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.0000	145.0000	No Ice 1/2" Ice 1" Ice	4.9710 5.5211 6.0361	5.2283 6.3892 7.2610	0.04 0.09 0.14
(2) FD9R6004/2C-3L	A	From Leg	4.0000 0.00 2.00	0.0000	145.0000	No Ice 1/2" Ice 1" Ice	0.3142 0.3862 0.4656	0.0762 0.1189 0.1685	0.00 0.01 0.01
(2) FD9R6004/2C-3L	B	From Leg	4.0000 0.00 2.00	0.0000	145.0000	No Ice 1/2" Ice 1" Ice	0.3142 0.3862 0.4656	0.0762 0.1189 0.1685	0.00 0.01 0.01

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) FD9R6004/2C-3L	C	From Leg	4.0000 0.00 2.00	0.0000	145.0000	No Ice 1/2" Ice 1" Ice	0.3142 0.3862 0.4656	0.0762 0.1189 0.1685	0.00 0.01 0.01
Platform Mount [LP 403-1]	C	None		0.0000	145.0000	No Ice 1/2" Ice 1" Ice	18.8500 24.3000 29.7500	18.8500 24.3000 29.7500	1.50 1.80 2.09
**********									
RRUS 11	A	From Leg	2.0000 0.00 -1.00	0.0000	120.0000	No Ice 1/2" Ice 1" Ice	2.7908 2.9984 3.2134	1.1923 1.3395 1.4957	0.05 0.07 0.10
RRUS 11	B	From Leg	2.0000 0.00 -1.00	0.0000	120.0000	No Ice 1/2" Ice 1" Ice	2.7908 2.9984 3.2134	1.1923 1.3395 1.4957	0.05 0.07 0.10
RRUS 11	C	From Leg	2.0000 0.00 -1.00	0.0000	120.0000	No Ice 1/2" Ice 1" Ice	2.7908 2.9984 3.2134	1.1923 1.3395 1.4957	0.05 0.07 0.10
Side Arm Mount [SO 102-3]	C	None		0.0000	120.0000	No Ice 1/2" Ice 1" Ice	3.0000 3.4800 3.9600	3.0000 3.4800 3.9600	0.08 0.11 0.14
**********									
7770.00 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice	5.7460 6.1791 6.6067	4.2543 5.0137 5.7109	0.06 0.10 0.16
7770.00 w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice	5.7460 6.1791 6.6067	4.2543 5.0137 5.7109	0.06 0.10 0.16
7770.00 w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice	5.7460 6.1791 6.6067	4.2543 5.0137 5.7109	0.06 0.10 0.16
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice	8.2619 8.8215 9.3462	6.3042 7.4790 8.3676	0.07 0.14 0.21
AM-X-CD-14-65-00T-RET w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice	5.2316 5.6179 6.0119	4.0153 4.6330 5.2567	0.05 0.10 0.15
800 10764 w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice	5.7119 6.1273 6.5428	4.2940 4.9925 5.6620	0.06 0.11 0.17
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice	9.8953 10.4700 11.0098	8.1125 9.3041 10.2095	0.08 0.16 0.25
SBNHH-1D65A w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice	5.8154 6.2024 6.5968	5.0515 5.7157 6.3790	0.06 0.11 0.17
SBNHH-1D65A w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice	5.8154 6.2024 6.5968	5.0515 5.7157 6.3790	0.06 0.11 0.17
(4) LGP2140X	A	From Leg	4.0000 0.00 0.00	0.0000	118.0000	No Ice 1/2" Ice	1.0800 1.2137 1.3548	0.3580 0.4536 0.5563	0.01 0.02 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
						1" Ice			
(4) LGP2140X	B	From Leg	4.0000 0.00 0.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice	1.0800 1.2137 1.3548	0.3580 0.4536 0.5563	0.01 0.02 0.03
(4) LGP2140X	C	From Leg	4.0000 0.00 0.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice	1.0800 1.2137 1.3548	0.3580 0.4536 0.5563	0.01 0.02 0.03
DC6-48-60-18-8F	B	From Leg	4.0000 0.00 0.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice	0.9167 1.4583 1.6431	0.9167 1.4583 1.6431	0.02 0.04 0.06
(2) 7020.00	A	From Leg	4.0000 0.00 1.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice	0.1021 0.1469 0.1991	0.1750 0.2393 0.3109	0.00 0.01 0.01
(2) 7020.00	B	From Leg	4.0000 0.00 1.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice	0.1021 0.1469 0.1991	0.1750 0.2393 0.3109	0.00 0.01 0.01
(2) 7020.00	C	From Leg	4.0000 0.00 1.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice	0.1021 0.1469 0.1991	0.1750 0.2393 0.3109	0.00 0.01 0.01
RRUS 4415 B25	A	From Leg	4.0000 0.00 1.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice	1.6444 1.8044 1.9719	0.6788 0.7911 0.9129	0.04 0.06 0.07
RRUS 4415 B25	B	From Leg	4.0000 0.00 1.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice	1.6444 1.8044 1.9719	0.6788 0.7911 0.9129	0.04 0.06 0.07
RRUS 4415 B25	C	From Leg	4.0000 0.00 1.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice	1.6444 1.8044 1.9719	0.6788 0.7911 0.9129	0.04 0.06 0.07
Platform Mount [LP 303-1]	C	None		0.0000	118.0000	No Ice 1/2" Ice 1" Ice	14.6600 18.8700 23.0800	14.6600 18.8700 23.0800	1.25 1.48 1.71
**********									
APXV18-206517S-C w/ Mount Pipe	A	From Leg	1.0000 0.00 0.00	0.0000	102.0000	No Ice 1/2" Ice 1" Ice	5.4042 5.9597 6.4808	4.7000 5.8600 6.7338	0.05 0.10 0.15
APXV18-206517S-C w/ Mount Pipe	B	From Leg	1.0000 0.00 0.00	0.0000	102.0000	No Ice 1/2" Ice 1" Ice	5.4042 5.9597 6.4808	4.7000 5.8600 6.7338	0.05 0.10 0.15
APXV18-206517S-C w/ Mount Pipe	C	From Leg	1.0000 0.00 0.00	0.0000	102.0000	No Ice 1/2" Ice 1" Ice	5.4042 5.9597 6.4808	4.7000 5.8600 6.7338	0.05 0.10 0.15
Pipe Mount [PM 601-3]	C	None		0.0000	102.0000	No Ice 1/2" Ice 1" Ice	4.3900 5.4800 6.5700	4.3900 5.4800 6.5700	0.20 0.24 0.28
**********									
KS24019-L112A	C	From Leg	3.0000 0.00 1.00	0.0000	74.0000	No Ice 1/2" Ice 1" Ice	0.1407 0.1979 0.2621	0.1407 0.1979 0.2621	0.01 0.01 0.01
Side Arm Mount [SO 702-1]	C	None		0.0000	74.0000	No Ice	1.0000 1.0000	1.4300 2.0500	0.03 0.04

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
						1/2" Ice	1.0000	2.6700	0.05
						1" Ice			

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg % 	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 168.0000-158.5000	163.2500	1.403	29.52	11.083	A	0.000	11.083	11.083	100.00	0.000	0.000
					B	0.000	11.083		100.00	0.000	0.000
					C	0.000	11.083		100.00	0.000	2.438
L2 158.5000-158.0000	158.2315	1.394	29.32	0.750	A	0.000	0.750	0.750	100.00	0.000	0.000
					B	0.000	0.750		100.00	0.000	0.000
					C	0.000	0.750		100.00	0.000	0.163
L3 158.0000-116.5000	136.4479	1.351	28.40	89.692	A	0.000	89.692	89.692	100.00	0.000	0.000
					B	0.000	89.692		100.00	0.000	0.000
					C	0.000	89.692		100.00	0.000	13.488
L4 116.5000-80.2500	97.9594	1.26	26.48	97.679	A	0.000	97.679	97.679	100.00	0.000	0.000
					B	0.000	97.679		100.00	0.000	0.000
					C	0.000	97.679		100.00	0.000	15.852
L5 80.2500-39.7500	59.7435	1.136	23.80	130.009	A	0.000	130.009	130.009	100.00	0.000	0.000
					B	0.000	130.009		100.00	0.000	0.000
					C	0.000	130.009		100.00	0.000	22.971
L6 39.7500-0.0000	20.0692	0.903	19.19	148.685	A	0.000	148.685	148.685	100.00	0.000	0.000
					B	0.000	148.685		100.00	0.000	0.000
					C	0.000	148.685		100.00	0.000	25.207

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg % 	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 168.0000-158.5000	163.2500	1.403	5.46	2.3467	14.799	A	0.000	14.799	14.799	100.00	0.000	0.000
						B	0.000	14.799		100.00	0.000	0.000
						C	0.000	14.799		100.00	0.000	9.478
L2 158.5000-158.0000	158.2315	1.394	5.42	2.3394	0.945	A	0.000	0.945	0.945	100.00	0.000	0.000
						B	0.000	0.945		100.00	0.000	0.000
						C	0.000	0.945		100.00	0.000	0.630
L3 158.0000-116.5000	136.4479	1.351	5.25	2.3050	105.635	A	0.000	105.635	105.635	100.00	0.000	0.000
						B	0.000	105.635		100.00	0.000	0.000
						C	0.000	105.635		100.00	0.000	51.751
L4 116.5000-80.2500	97.9594	1.26	4.90	2.2299	111.606	A	0.000	111.606	111.606	100.00	0.000	0.000
						B	0.000	111.606		100.00	0.000	0.000
						C	0.000	111.606		100.00	0.000	54.396
L5 80.2500-39.7500	59.7435	1.136	4.40	2.1223	145.061	A	0.000	145.061	145.061	100.00	0.000	0.000
						B	0.000	145.061		100.00	0.000	0.000
						C	0.000	145.061		100.00	0.000	74.952

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L6 39.7500-0.0000	20.0692	0.903	3.55	1.9030	162.745	A	0.000	162.745	162.745	100.00	0.000	0.000
						B	0.000	162.745		100.00	0.000	0.000
						C	0.000	162.745		100.00	0.000	77.699

Tower Pressure - Service

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 168.0000-158.5000	163.2500	1.403	10.99	11.083	A	0.000	11.083	11.083	100.00	0.000	0.000
					B	0.000	11.083		100.00	0.000	0.000
					C	0.000	11.083		100.00	0.000	2.438
L2 158.5000-158.0000	158.2315	1.394	10.92	0.750	A	0.000	0.750	0.750	100.00	0.000	0.000
					B	0.000	0.750		100.00	0.000	0.000
					C	0.000	0.750		100.00	0.000	0.163
L3 158.0000-116.5000	136.4479	1.351	10.58	89.692	A	0.000	89.692	89.692	100.00	0.000	0.000
					B	0.000	89.692		100.00	0.000	0.000
					C	0.000	89.692		100.00	0.000	13.488
L4 116.5000-80.2500	97.9594	1.26	9.86	97.679	A	0.000	97.679	97.679	100.00	0.000	0.000
					B	0.000	97.679		100.00	0.000	0.000
					C	0.000	97.679		100.00	0.000	15.852
L5 80.2500-39.7500	59.7435	1.136	8.86	130.009	A	0.000	130.009	130.009	100.00	0.000	0.000
					B	0.000	130.009		100.00	0.000	0.000
					C	0.000	130.009		100.00	0.000	22.971
L6 39.7500-0.0000	20.0692	0.903	7.15	148.685	A	0.000	148.685	148.685	100.00	0.000	0.000
					B	0.000	148.685		100.00	0.000	0.000
					C	0.000	148.685		100.00	0.000	25.207

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

Comb. No.	Description
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
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	168 - 158.5	Pole	Max Tension	8	0.00	0.00	0.00
			Max. Compression	26	-3.52	0.72	-0.42
			Max. Mx	20	-0.76	10.90	-0.05
			Max. My	14	-0.77	0.08	-10.86
			Max. Vy	20	-1.52	10.90	-0.05
			Max. Vx	14	1.52	0.08	-10.86
			Max. Torque	13			-0.07
L2	158.5 - 158	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-3.66	0.78	-0.46
			Max. Mx	20	-0.80	11.68	-0.06
			Max. My	14	-0.80	0.10	-11.64
			Max. Vy	20	-1.57	11.68	-0.06
			Max. Vx	14	1.56	0.10	-11.64
			Max. Torque	13			-0.08
L3	158 - 116.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.00	14.24	-10.12
			Max. Mx	20	-8.20	448.96	-6.54
			Max. My	14	-8.24	6.78	-441.88
			Max. Vy	20	-15.06	448.96	-6.54
			Max. Vx	14	14.87	6.78	-441.88
			Max. Torque	23			1.56
L4	116.5 - 80.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.42	29.71	-18.26
			Max. Mx	20	-16.74	1203.78	-12.34
			Max. My	14	-16.77	13.09	-1191.46
			Max. Vy	20	-23.77	1203.78	-12.34
			Max. Vx	14	23.64	13.09	-1191.46
			Max. Torque	25			1.90
L5	80.25 - 39.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.83	49.83	-29.99
			Max. Mx	20	-26.22	2242.24	-18.95
			Max. My	14	-26.24	20.40	-2224.14
			Max. Vy	20	-28.26	2242.24	-18.95
			Max. Vx	14	28.13	20.40	-2224.14
			Max. Torque	25			3.36

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L6	39.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-114.69	70.87	-42.18
			Max. Mx	20	-40.33	3610.08	-26.24
			Max. My	14	-40.33	28.56	-3585.63
			Max. Vy	20	-32.12	3610.08	-26.24
			Max. Vx	14	32.01	28.56	-3585.63
			Max. Torque	25			5.12

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	114.69	-0.00	0.00
	Max. H_x	20	40.37	32.08	-0.13
	Max. H_z	2	40.37	-0.13	31.96
	Max. M_x	2	3576.71	-0.13	31.96
	Max. M_z	8	3595.92	-32.07	0.13
	Max. Torsion	25	5.12	15.93	27.61
	Min. Vert	9	30.28	-32.07	0.13
	Min. H_x	9	30.28	-32.07	0.13
	Min. H_z	15	30.28	0.13	-31.96
	Min. M_x	14	-3585.63	0.13	-31.96
	Min. M_z	20	-3610.08	32.08	-0.13
	Min. Torsion	13	-5.12	-15.93	-27.61

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	33.64	0.00	-0.00	3.58	5.48	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	40.37	0.13	-31.96	-3576.71	-15.11	-4.58
0.9 Dead+1.6 Wind 0 deg - No Ice	30.28	0.13	-31.96	-3519.65	-16.46	-4.60
1.2 Dead+1.6 Wind 30 deg - No Ice	40.37	16.15	-27.74	-3107.92	-1813.99	-2.85
0.9 Dead+1.6 Wind 30 deg - No Ice	30.28	16.15	-27.74	-3058.46	-1786.06	-2.85
1.2 Dead+1.6 Wind 60 deg - No Ice	40.37	27.84	-16.09	-1805.03	-3124.88	-0.35
0.9 Dead+1.6 Wind 60 deg - No Ice	30.28	27.84	-16.09	-1776.73	-3075.64	-0.34
1.2 Dead+1.6 Wind 90 deg - No Ice	40.37	32.07	-0.13	-17.42	-3595.92	2.23
0.9 Dead+1.6 Wind 90 deg - No Ice	30.28	32.07	-0.13	-18.17	-3539.38	2.25
1.2 Dead+1.6 Wind 120 deg - No Ice	40.37	27.71	15.87	1776.23	-3103.39	4.22
0.9 Dead+1.6 Wind 120 deg - No Ice	30.28	27.71	15.87	1746.31	-3054.55	4.25
1.2 Dead+1.6 Wind 150 deg - No Ice	40.37	15.93	27.61	3095.23	-1776.36	5.09
0.9 Dead+1.6 Wind 150 deg - No Ice	30.28	15.93	27.61	3043.84	-1749.15	5.12
1.2 Dead+1.6 Wind 180 deg - No Ice	40.37	-0.13	31.96	3585.63	28.56	4.60
0.9 Dead+1.6 Wind 180 deg - No Ice	30.28	-0.13	31.96	3526.33	26.36	4.62

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.6 Wind 210 deg - No Ice	40.37	-16.15	27.74	3116.69	1827.40	2.86
0.9 Dead+1.6 Wind 210 deg - No Ice	30.28	-16.15	27.74	3064.91	1795.93	2.87
1.2 Dead+1.6 Wind 240 deg - No Ice	40.37	-27.84	16.09	1813.82	3138.29	0.36
0.9 Dead+1.6 Wind 240 deg - No Ice	30.28	-27.84	16.09	1783.20	3085.51	0.35
1.2 Dead+1.6 Wind 270 deg - No Ice	40.37	-32.08	0.13	26.24	3610.08	-2.24
0.9 Dead+1.6 Wind 270 deg - No Ice	30.28	-32.08	0.13	24.65	3549.64	-2.27
1.2 Dead+1.6 Wind 300 deg - No Ice	40.37	-27.71	-15.87	-1767.41	3116.84	-4.24
0.9 Dead+1.6 Wind 300 deg - No Ice	30.28	-27.71	-15.87	-1739.84	3064.45	-4.27
1.2 Dead+1.6 Wind 330 deg - No Ice	40.37	-15.93	-27.61	-3086.43	1789.82	-5.10
0.9 Dead+1.6 Wind 330 deg - No Ice	30.28	-15.93	-27.61	-3037.38	1759.06	-5.12
1.2 Dead+1.0 Ice+1.0 Temp	114.69	0.00	-0.00	42.18	70.87	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	114.69	0.02	-7.30	-913.48	67.39	-1.66
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	114.69	3.67	-6.33	-787.19	-412.39	-0.99
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	114.69	6.35	-3.66	-438.67	-762.69	-0.06
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	114.69	7.32	-0.02	38.70	-889.63	0.89
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	114.69	6.33	3.63	516.99	-759.20	1.61
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	114.69	3.65	6.31	868.04	-406.36	1.89
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	114.69	-0.02	7.30	997.77	74.33	1.67
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	114.69	-3.67	6.33	871.58	554.14	1.00
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	114.69	-6.35	3.66	522.97	904.33	0.06
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	114.69	-7.32	0.02	45.65	1031.27	-0.89
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	114.69	-6.33	-3.63	-432.62	900.89	-1.60
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	114.69	-3.65	-6.31	-783.69	548.09	-1.89
Dead+Wind 0 deg - Service	33.64	0.03	-7.44	-823.93	0.57	-1.09
Dead+Wind 30 deg - Service	33.64	3.76	-6.46	-715.63	-415.17	-0.68
Dead+Wind 60 deg - Service	33.64	6.48	-3.75	-414.53	-718.17	-0.08
Dead+Wind 90 deg - Service	33.64	7.46	-0.03	-1.36	-827.16	0.53
Dead+Wind 120 deg - Service	33.64	6.45	3.69	413.15	-713.13	1.01
Dead+Wind 150 deg - Service	33.64	3.71	6.43	717.88	-406.41	1.21
Dead+Wind 180 deg - Service	33.64	-0.03	7.44	831.28	10.66	1.09
Dead+Wind 210 deg - Service	33.64	-3.76	6.46	722.98	426.41	0.68
Dead+Wind 240 deg - Service	33.64	-6.48	3.75	421.88	729.40	0.08
Dead+Wind 270 deg - Service	33.64	-7.46	0.03	8.72	838.39	-0.53
Dead+Wind 300 deg - Service	33.64	-6.45	-3.69	-405.76	724.30	-1.01
Dead+Wind 330 deg - Service	33.64	-3.71	-6.43	-710.59	417.68	-1.21

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-33.64	0.00	-0.00	33.64	0.00	0.002%
2	0.13	-40.37	-31.96	-0.13	40.37	31.96	0.005%
3	0.13	-30.28	-31.96	-0.13	30.28	31.96	0.006%
4	16.15	-40.37	-27.74	-16.15	40.37	27.74	0.000%
5	16.15	-30.28	-27.74	-16.15	30.28	27.74	0.000%
6	27.84	-40.37	-16.09	-27.84	40.37	16.09	0.000%
7	27.84	-30.28	-16.09	-27.84	30.28	16.09	0.000%
8	32.08	-40.37	-0.13	-32.07	40.37	0.13	0.013%
9	32.08	-30.28	-0.13	-32.07	30.28	0.13	0.010%
10	27.71	-40.37	15.87	-27.71	40.37	-15.87	0.000%
11	27.71	-30.28	15.87	-27.71	30.28	-15.87	0.000%
12	15.93	-40.37	27.61	-15.93	40.37	-27.61	0.000%
13	15.93	-30.28	27.61	-15.93	30.28	-27.61	0.000%
14	-0.13	-40.37	31.96	0.13	40.37	-31.96	0.003%
15	-0.13	-30.28	31.96	0.13	30.28	-31.96	0.002%
16	-16.15	-40.37	27.74	16.15	40.37	-27.74	0.000%
17	-16.15	-30.28	27.74	16.15	30.28	-27.74	0.000%
18	-27.84	-40.37	16.09	27.84	40.37	-16.09	0.000%
19	-27.84	-30.28	16.09	27.84	30.28	-16.09	0.000%
20	-32.08	-40.37	0.13	32.08	40.37	-0.13	0.003%
21	-32.08	-30.28	0.13	32.08	30.28	-0.13	0.004%
22	-27.71	-40.37	-15.87	27.71	40.37	15.87	0.000%
23	-27.71	-30.28	-15.87	27.71	30.28	15.87	0.000%
24	-15.93	-40.37	-27.61	15.93	40.37	27.61	0.000%
25	-15.93	-30.28	-27.61	15.93	30.28	27.61	0.000%
26	0.00	-114.69	0.00	-0.00	114.69	0.00	0.000%
27	0.02	-114.69	-7.30	-0.02	114.69	7.30	0.001%
28	3.68	-114.69	-6.33	-3.67	114.69	6.33	0.001%
29	6.35	-114.69	-3.66	-6.35	114.69	3.66	0.001%
30	7.32	-114.69	-0.02	-7.32	114.69	0.02	0.001%
31	6.33	-114.69	3.64	-6.33	114.69	-3.63	0.001%
32	3.65	-114.69	6.31	-3.65	114.69	-6.31	0.002%
33	-0.02	-114.69	7.30	0.02	114.69	-7.30	0.002%
34	-3.68	-114.69	6.33	3.67	114.69	-6.33	0.001%
35	-6.35	-114.69	3.66	6.35	114.69	-3.66	0.002%
36	-7.32	-114.69	0.02	7.32	114.69	-0.02	0.002%
37	-6.33	-114.69	-3.64	6.33	114.69	3.63	0.002%
38	-3.65	-114.69	-6.31	3.65	114.69	6.31	0.002%
39	0.03	-33.64	-7.44	-0.03	33.64	7.44	0.004%
40	3.76	-33.64	-6.46	-3.76	33.64	6.46	0.002%
41	6.48	-33.64	-3.75	-6.48	33.64	3.75	0.002%
42	7.47	-33.64	-0.03	-7.46	33.64	0.03	0.004%
43	6.45	-33.64	3.69	-6.45	33.64	-3.69	0.002%
44	3.71	-33.64	6.43	-3.71	33.64	-6.43	0.004%
45	-0.03	-33.64	7.44	0.03	33.64	-7.44	0.004%
46	-3.76	-33.64	6.46	3.76	33.64	-6.46	0.002%
47	-6.48	-33.64	3.75	6.48	33.64	-3.75	0.002%
48	-7.47	-33.64	0.03	7.46	33.64	-0.03	0.004%
49	-6.45	-33.64	-3.69	6.45	33.64	3.69	0.004%
50	-3.71	-33.64	-6.43	3.71	33.64	6.43	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	11	0.00000001	0.00001461
2	Yes	22	0.00004343	0.00009905
3	Yes	21	0.00004545	0.00011853
4	Yes	29	0.00000001	0.00011810
5	Yes	28	0.00000001	0.00012589
6	Yes	29	0.00000001	0.00011978
7	Yes	28	0.00000001	0.00012769
8	Yes	20	0.00011419	0.00013952
9	Yes	20	0.00007445	0.00010818
10	Yes	29	0.00000001	0.00011932
11	Yes	28	0.00000001	0.00012741
12	Yes	29	0.00000001	0.00011328
13	Yes	28	0.00000001	0.00012057
14	Yes	23	0.00002654	0.00014143
15	Yes	23	0.00001660	0.00010022
16	Yes	29	0.00000001	0.00012288
17	Yes	28	0.00000001	0.00013061
18	Yes	29	0.00000001	0.00012205
19	Yes	28	0.00000001	0.00012962
20	Yes	23	0.00002645	0.00010885
21	Yes	22	0.00002741	0.00012606
22	Yes	29	0.00000001	0.00011420
23	Yes	28	0.00000001	0.00012145
24	Yes	29	0.00000001	0.00011941
25	Yes	28	0.00000001	0.00012749
26	Yes	24	0.00000001	0.00000625
27	Yes	26	0.00014590	0.00003979
28	Yes	26	0.00014562	0.00008289
29	Yes	26	0.00014561	0.00008728
30	Yes	26	0.00014597	0.00003201
31	Yes	26	0.00014539	0.00011190
32	Yes	26	0.00014543	0.00009457
33	Yes	26	0.00014565	0.00004746
34	Yes	27	0.00010036	0.00010709
35	Yes	26	0.00014493	0.00014902
36	Yes	26	0.00014556	0.00004002
37	Yes	26	0.00014527	0.00010898
38	Yes	26	0.00014523	0.00012581
39	Yes	20	0.00009901	0.00004323
40	Yes	21	0.00006091	0.00009790
41	Yes	21	0.00006091	0.00010270
42	Yes	20	0.00009902	0.00003778
43	Yes	21	0.00006091	0.00011195
44	Yes	20	0.00009871	0.00014490
45	Yes	20	0.00009901	0.00004767
46	Yes	21	0.00006089	0.00011626
47	Yes	21	0.00006089	0.00011231
48	Yes	20	0.00009901	0.00004140
49	Yes	20	0.00009871	0.00014831
50	Yes	21	0.00006091	0.00011330

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	168 - 158.5	46.372	47	2.3350	0.0071
L2	158.5 - 158	41.735	47	2.3234	0.0069
L3	158 - 116.5	41.492	47	2.3230	0.0069
L4	120.25 - 80.25	24.187	47	1.9453	0.0040
L5	84.75 - 39.75	11.754	47	1.3402	0.0026
L6	45 - 0	3.255	47	0.6631	0.0013

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
170.0000	Lightning Rod 5/8x4'	47	46.372	2.3350	0.0071	44262
166.0000	APX16PV-16PVL-E	47	45.394	2.3321	0.0070	44262
157.0000	APXVTM14-C-120 w/ Mount Pipe	47	41.006	2.3218	0.0069	20443
155.0000	800 EXTERNAL NOTCH FILTER	47	40.036	2.3175	0.0069	16634
145.0000	(2) LPA-80080/6CF w/ Mount Pipe	47	35.241	2.2608	0.0063	7989
120.0000	RRUS 11	47	24.084	1.9413	0.0040	3536
118.0000	7770.00 w/ Mount Pipe	47	23.269	1.9097	0.0038	3486
102.0000	APXV18-206517S-C w/ Mount Pipe	47	17.246	1.6428	0.0031	3445
74.0000	KS24019-L112A	47	8.863	1.1512	0.0023	3247

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	168 - 158.5	198.184	18	10.0007	0.0304
L2	158.5 - 158	178.488	18	9.9519	0.0300
L3	158 - 116.5	177.455	18	9.9503	0.0299
L4	120.25 - 80.25	103.748	18	8.3610	0.0169
L5	84.75 - 39.75	50.516	18	5.7675	0.0110
L6	45 - 0	14.005	18	2.8544	0.0054

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
170.0000	Lightning Rod 5/8x4'	18	198.184	10.0007	0.0304	11088
166.0000	APX16PV-16PVL-E	18	194.031	9.9885	0.0303	11088
157.0000	APXVTM14-C-120 w/ Mount Pipe	18	175.391	9.9453	0.0299	5515
155.0000	800 EXTERNAL NOTCH FILTER	18	171.268	9.9273	0.0297	4482
145.0000	(2) LPA-80080/6CF w/ Mount Pipe	18	150.874	9.6902	0.0272	2041
120.0000	RRUS 11	18	103.308	8.3443	0.0169	868
118.0000	7770.00 w/ Mount Pipe	18	99.825	8.2097	0.0162	855
102.0000	APXV18-206517S-C w/ Mount Pipe	18	74.062	7.0687	0.0129	833
74.0000	KS24019-L112A	18	38.107	4.9542	0.0097	768

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	168 - 158.5 (1)	TP14x14x0.25	9.5000	0.0000	0.0	10.7992	-0.76	340.18	0.002
L2	158.5 - 158 (2)	TP22x14x0.25	0.5000	0.0000	0.0	10.7992	-0.76	340.18	0.002
L3	158 - 116.5 (3)	TP29.139x22x0.1875	41.5000	0.0000	0.0	16.8459	-8.18	1091.80	0.007
L4	116.5 - 80.25 (4)	TP35x28.1189x0.25	40.0000	0.0000	0.0	26.9599	-16.72	1822.96	0.009
L5	80.25 - 39.75 (5)	TP41.467x33.7259x0.3125	45.0000	0.0000	0.0	39.9243	-26.21	2752.39	0.010
L6	39.75 - 0 (6)	TP47.68x39.9389x0.375	45.0000	0.0000	0.0	56.3048	-40.33	3909.54	0.010

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	168 - 158.5 (1)	TP14x14x0.25	10.92	124.09	0.088	0.00	124.09	0.000
L2	158.5 - 158 (2)	TP22x14x0.25	10.91	124.09	0.088	0.00	124.09	0.000
L3	158 - 116.5 (3)	TP29.139x22x0.1875	452.08	636.29	0.710	0.00	636.29	0.000
L4	116.5 - 80.25 (4)	TP35x28.1189x0.25	1210.25	1274.26	0.950	0.00	1274.26	0.000
L5	80.25 - 39.75 (5)	TP41.467x33.7259x0.3125	2252.61	2278.38	0.989	0.00	2278.38	0.000
L6	39.75 - 0 (6)	TP47.68x39.9389x0.375	3624.75	3802.74	0.953	0.00	3802.74	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	168 - 158.5 (1)	TP14x14x0.25	1.53	170.09	0.009	0.00	191.47	0.000
L2	158.5 - 158 (2)	TP22x14x0.25	1.61	269.05	0.006	0.00	191.47	0.000
L3	158 - 116.5 (3)	TP29.139x22x0.1875	15.14	545.90	0.028	0.40	1275.41	0.000
L4	116.5 - 80.25 (4)	TP35x28.1189x0.25	23.87	911.48	0.026	0.36	2554.47	0.000
L5	80.25 - 39.75 (5)	TP41.467x33.7259x0.3125	28.35	1376.20	0.021	0.36	4567.67	0.000
L6	39.75 - 0 (6)	TP47.68x39.9389x0.375	32.21	1954.77	0.016	0.36	7623.88	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	168 - 158.5 (1)	0.002	0.088	0.000	0.009	0.000	0.090	1.000	4.8.2

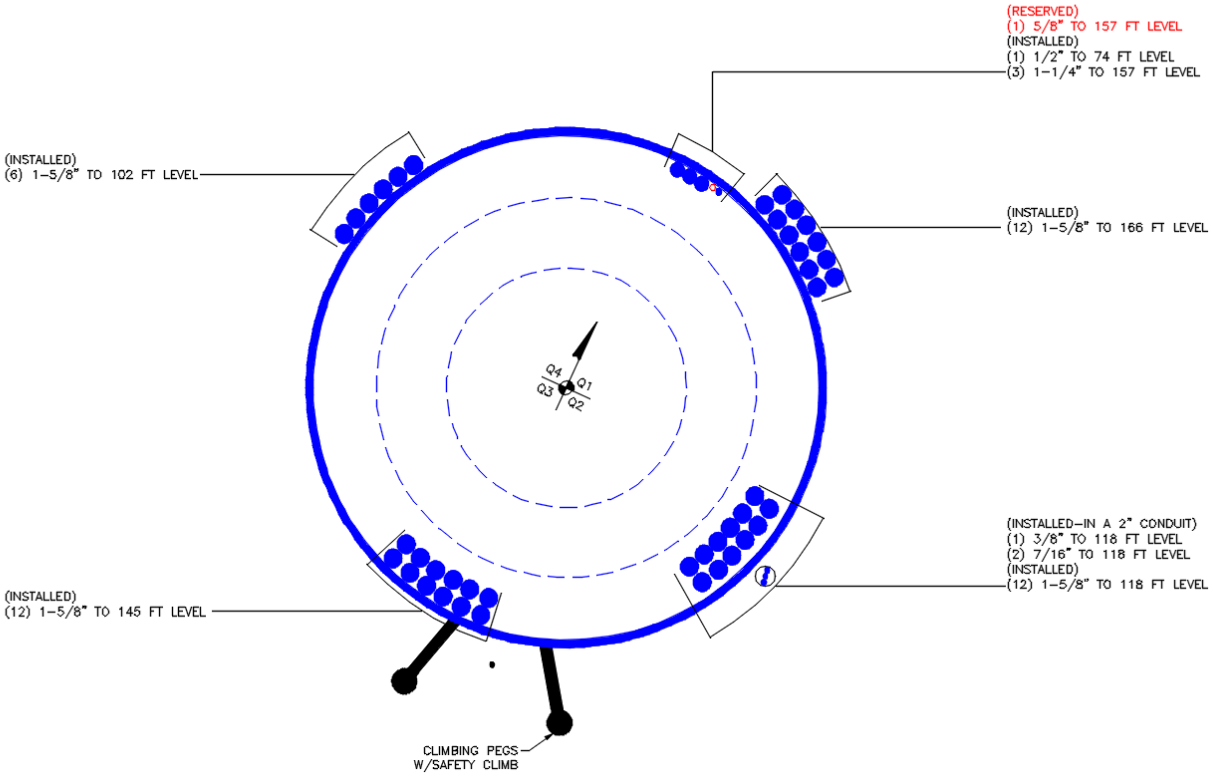
Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L2	158.5 - 158 (2)	0.002	0.088	0.000	0.006	0.000	0.090	1.000	4.8.2
L3	158 - 116.5 (3)	0.007	0.710	0.000	0.028	0.000	0.719	1.000	4.8.2
L4	116.5 - 80.25 (4)	0.009	0.950	0.000	0.026	0.000	0.960	1.000	4.8.2
L5	80.25 - 39.75 (5)	0.010	0.989	0.000	0.021	0.000	0.999	1.000	4.8.2
L6	39.75 - 0 (6)	0.010	0.953	0.000	0.016	0.000	0.964	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	168 - 158.5	Pole	TP14x14x0.25	1	-0.76	340.18	9.0	Pass
L2	158.5 - 158	Pole	TP22x14x0.25	2	-0.76	340.18	9.0	Pass
L3	158 - 116.5	Pole	TP29.139x22x0.1875	3	-8.18	1091.80	71.9	Pass
L4	116.5 - 80.25	Pole	TP35x28.1189x0.25	4	-16.72	1822.96	96.0	Pass
L5	80.25 - 39.75	Pole	TP41.467x33.7259x0.3125	5	-26.21	2752.39	99.9	Pass
L6	39.75 - 0	Pole	TP47.68x39.9389x0.375	6	-40.33	3909.54	96.4	Pass
							Summary	
						Pole (L5)	99.9	Pass
						RATING =	**99.9**	**Pass**

APPENDIX B

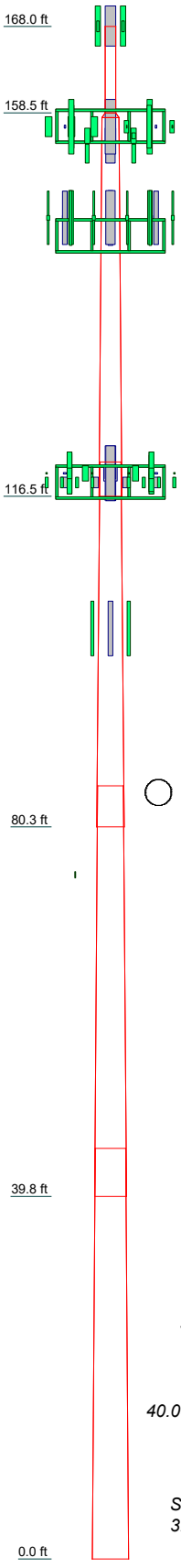
BASE LEVEL DRAWING


(RESERVED)
(1) 5/8" TO 157 FT LEVEL
(INSTALLED)
(1) 1/2" TO 74 FT LEVEL
(3) 1-1/4" TO 157 FT LEVEL
(INSTALLED)
(6) 1-5/8" TO 102 FT LEVEL
(INSTALLED)
(12) 1-5/8" TO 166 FT LEVEL
Q4
Q1
Q3
Q2
(INSTALLED-IN A 2" CONDUIT)
(1) 3/8" TO 118 FT LEVEL
(2) 7/16" TO 118 FT LEVEL
(INSTALLED)
(12) 1-5/8" TO 118 FT LEVEL
(INSTALLED)
(12) 1-5/8" TO 145 FT LEVEL
CLIMBING PEGS
W/SAFETY CLIMB

APPENDIX C

ADDITIONAL CALCULATIONS

Section	1	2	3	4	5	6
Length (ft)	9.5000	0.5000	41.5000	40.0000	45.0000	45.0000
Number of Sides	1	1	18	18	18	18
Thickness (in)	0.2500	0.2500	0.1875	0.2500	0.3125	0.3750
Socket Length (ft)			3.7500	4.5000	5.2500	
Top Dia (in)	14.0000	14.0000	22.0000	28.1189	33.7259	39.9389
Bot Dia (in)	14.0000	22.0000	29.1390	35.0000	41.4670	47.6800
Grade	A53-B-35			A607-65		
Weight (K)	0.3	0.0	2.1	3.4	5.7	7.9



ALL REACTIONS ARE FACTORED

AXIAL 115 K

SHEAR 7 K *MOMENT 1045 kip-ft*

TORQUE 2 kip-ft

40.00 mph WIND - 1.0000 in ICE

AXIAL 40 K

SHEAR 32 K *MOMENT 3625 kip-ft*

TORQUE 5 kip-ft

REACTIONS - 93.00 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 5/8x4'	170	BXA-70063-6CF-2 w/ Mount Pipe	145
APX16PV-16PVL-E	166	BXA-70063-6CF-2 w/ Mount Pipe	145
APX16PV-16PVL-E	166	BXA-171085-12BF-2 w/ Mount Pipe	145
APX16PV-16PVL-E	166	BXA-171085-12BF-2 w/ Mount Pipe	145
DTMA-1819-DD-12	166	BXA-171085-12BF-2 w/ Mount Pipe	145
DTMA-1819-DD-12	166	(2) FD9R6004/2C-3L	145
DTMA-1819-DD-12	166	(2) FD9R6004/2C-3L	145
Pipe Mount [PM 601-3]	166	(2) FD9R6004/2C-3L	145
APXVTM14-C-120 w/ Mount Pipe	157	Platform Mount [LP 403-1]	145
APXVTM14-C-120 w/ Mount Pipe	157	RRUS 11	120
APXVTM14-C-120 w/ Mount Pipe	157	RRUS 11	120
DT465B-2XR w/ Mount Pipe	157	RRUS 11	120
DT465B-2XR w/ Mount Pipe	157	Side Arm Mount [SO 102-3]	120
DT465B-2XR w/ Mount Pipe	157	7770.00 w/ Mount Pipe	118
(3) ACU-A20-N	157	7770.00 w/ Mount Pipe	118
(3) ACU-A20-N	157	7770.00 w/ Mount Pipe	118
(3) ACU-A20-N	157	AM-X-CD-16-65-00T-RET w/ Mount Pipe	118
TD-RRH8X20-25	157		
(2) TD-RRH8X20-25	157	AM-X-CD-14-65-00T-RET w/ Mount Pipe	118
(2) RRH2X50-800	157		
RRH2X50-800	157	800 10764 w/ Mount Pipe	118
Platform Mount [LP 712-1]	157	HPA-65R-BUU-H6 w/ Mount Pipe	118
2.375" OD x 4' Mount Pipe	157	SBNHH-1D65A w/ Mount Pipe	118
2.375" OD x 4' Mount Pipe	157	SBNHH-1D65A w/ Mount Pipe	118
2.375" OD x 4' Mount Pipe	157	(4) LGP2140X	118
800 EXTERNAL NOTCH FILTER	155	(4) LGP2140X	118
800 EXTERNAL NOTCH FILTER	155	(4) LGP2140X	118
800 EXTERNAL NOTCH FILTER	155	DC6-48-60-18-8F	118
1900MHz RRH (65MHz) w/ Mount Pipe	155	(2) 7020.00	118
		(2) 7020.00	118
1900MHz RRH (65MHz) w/ Mount Pipe	155	(2) 7020.00	118
		RRUS 4415 B25	118
1900MHz RRH (65MHz) w/ Mount Pipe	155	RRUS 4415 B25	118
		RRUS 4415 B25	118
800MHZ RRH	155	Platform Mount [LP 303-1]	118
800MHZ RRH	155	APXV18-206517S-C w/ Mount Pipe	102
800MHZ RRH	155	APXV18-206517S-C w/ Mount Pipe	102
Side Arm Mount [SO 102-3]	155	APXV18-206517S-C w/ Mount Pipe	102
(2) LPA-80080/6CF w/ Mount Pipe	145	Pipe Mount [PM 601-3]	102
(2) LPA-80080/6CF w/ Mount Pipe	145	KS24019-L112A	74
(2) LPA-80080/6CF w/ Mount Pipe	145	Side Arm Mount [SO 702-1]	74
BXA-70063-6CF-2 w/ Mount Pipe	145		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	60 ksi	A607-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 93.00 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 40.00 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.00 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TOWER RATING: 99.9%

Paul J. Ford and Company
250 East Broad st., Suite 600
Columbus, OH 43215
Phone: (614) 221-6679
FAX:

Job: 168 ft Monopole / New Hartford / Executive Greet			
Project: PJF# 37518-1341.004.7805 / BU# 876392			
Client: CCI	Drawn by: jacuna	App'd:	
Code: TIA-222-G	Date: 08/14/18	Scale: NTS	
Path: G:\TOWER\375_Crown_Castle\2018\37518-1341_876392_New Hartford - Executive\37518-1341.004.7805_SA_16137941\37518-1341.004.7805.eri		Dwg No. E-1	

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

v4.4 - Effective 7-12-13

Date: 8/14/2018
PJF Project: 37518-1341.004.7805
Client Ref. # BU 876392
Site Name: New Hartford / Executive Greet
Description: 158-ft Pole w/ 10-ft Ext
Owner: Crown Castle
Engineer: JAB

Asymmetric Bolt Analysis

Moment =	10.92	k-ft	TIA Ref.	G	Location =	Flange Plate		
Axial =	0.76	kips	ASIF =	N/A	η =	N/A	for BP, Rev. G Sect. 4.9.9	
Shear =	1.53	kips	Max Ratio =	100.0%	Threads =	N-Included	for FP, Rev. G	
Anchor Qty =	18							

**** For Flange Plates: Prying action is not considered in the bolt loads. ****

Item	Nominal Bolt Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Bolt Circle, in	Area Override, in^2	Area, in^2	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1					0.0	19.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
2					20.0	19.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
3	0.750	A325	92	120	40.0	19.00	0.00	0.44	3.15	2.98	2.98	0.00	30.06	9.9%
4	0.750	A325	92	120	60.0	19.00	0.00	0.44	3.15	2.98	2.98	0.00	30.06	9.9%
5	0.750	A325	92	120	80.0	19.00	0.00	0.44	3.15	2.98	2.98	0.00	30.06	9.9%
6					100.0	19.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
7					120.0	19.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
8					140.0	19.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
9	0.750	A325	92	120	160.0	19.00	0.00	0.44	3.15	2.98	2.98	0.00	30.06	9.9%
10	0.750	A325	92	120	180.0	19.00	0.00	0.44	3.15	2.98	2.98	0.00	30.06	9.9%
11	0.750	A325	92	120	200.0	19.00	0.00	0.44	3.15	2.98	2.98	0.00	30.06	9.9%
12					220.0	19.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
13					240.0	19.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
14					260.0	19.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
15	0.750	A325	92	120	280.0	19.00	0.00	0.44	3.15	2.98	2.98	0.00	30.06	9.9%
16	0.750	A325	92	120	300.0	19.00	0.00	0.44	3.15	2.98	2.98	0.00	30.06	9.9%
17	0.750	A325	92	120	320.0	19.00	0.00	0.44	3.15	2.98	2.98	0.00	30.06	9.9%
18					340.0	19.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
								3.98						

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *876392*
Site Name: *New Hartford / Executive*
App #:

Bolt quanitity adjust to account for extension mouse hole

Reactions		
Mu	21.52009	ft-kips
Axial, Pu:	0.8	kips
Shear, Vu:	1.5	kips
Elevation:	158	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
21.87

Pole Manufacturer:	Other

If No stiffeners, Criteria:	TIA G	<-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	18		
Diameter (in.):	0.75	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	
N/A:		<-- Disregard	
Circle (in.):	19		

Plate Data		
Diam:	24	in
Thick, t:	1.25	in
Grade (Fy):	65	ksi
Strength, Fu:	80	ksi
Single-Rod B-eff:	2.44	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	14	in
Thick:	0.25	in
Grade:	35	ksi
# of Sides:	0	"0" IF Round
Fu	58	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results

			Non-Rigid
Bolt Tension Capacity, φ*Tn, **B1**:	30.06	kips	φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	30.06	kips	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	2.98	Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	1.205	in	
Min PL "treq" for actual **T w/ Pry**:	0.293	in	
Min PL "t1" for actual **T w/o Pry**:	0.379	in	
T allowable w/o Prying:	30.06	kips	α'<0 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	2.98	kips	
Non-Prying Bolt Stress Ratio, Tu/B:	9.9%	**Pass**	

Exterior Flange Plate Results Flexural Check

			Non-Rigid
Compression Side Plate Stress:	4.1	ksi	TIA G
Allowable Plate Stress:	58.5	ksi	φ*Fy
Compression Plate Stress Ratio:	7.1%	**Pass**	Comp. Y.L. Length:
No Prying			12.85
Tension Side Stress Ratio, (treq/t)^2:	5.5%	**Pass**	

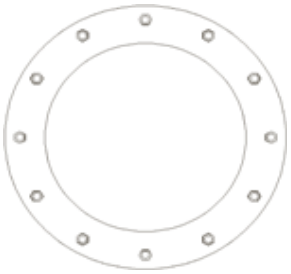
n/a

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



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

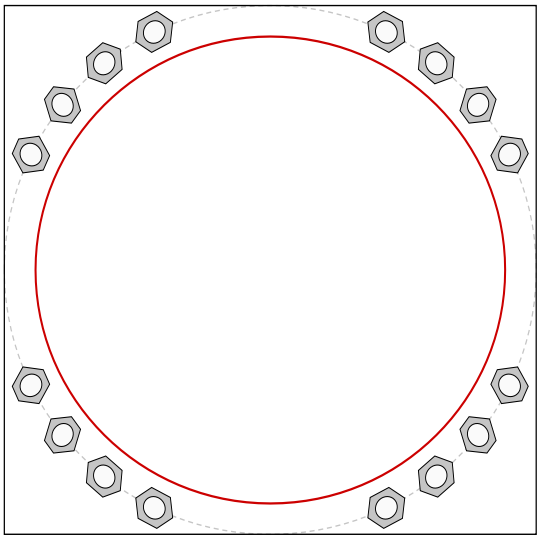
** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Monopole Base Plate Connection

Site Info	
BU #	876392
Site Name	Haftford / Executive G
Order #	

Analysis Considerations	
TIA-222 Revision	G
l_{ar} (in)	0
Eta Factor, η	0.5

Applied Loads	
Moment (kip-ft)	3624.75
Axial Force (kips)	40.33
Shear Force (kips)	32.21



Connection Properties

Anchor Rod Data

(16) 2-1/4" ø bolts (A615-75; Fy=75 ksi, Fu=100 ksi) on 54" BC

pos. (deg): 25.9, 38.6, 51.4, 64.1, 115.9, 128.6, 141.4, 154.1, 205.9, 2

Base Plate Data

54" OD x 2.5" Plate (A572-55; Fy=55 ksi, Fu=70 ksi)

Stiffener Data

N/A

Pole Data

47.68" x 0.375" 18-sided pole (A607-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary *(units of kips, kip-ft)*

Pu = 203.75	ϕPn = 260	**Stress Rating**
Vu = 2.01	ϕVn = n/a	**79.9%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	41.38	
Allowable Stress (ksi):	49.5	
Stress Ratio:	**83.6%**	**Pass**

Pier and Pad Foundation

BU # :	76392
Site Name:	New Hartford / Exe
App. Number:	

TIA-222 Revision:	G
Tower Type:	Monopole

Block Foundation?:	☐

Superstructure Analysis Reactions

Compression, **P_{comp}**:	40	kips
Base Shear, Vu_comp:	32	kips
Moment, **M_u**:	3625	ft-kips
Tower Height, **H**:	168	ft
BP Dist. Above Fdn, **bp_{dist}**:	6	in

Pier Properties

Pier Shape:	Square	
Pier Diameter, **dpier**:	7.0	ft
Ext. Above Grade, **E**:	0.50	ft
Pier Rebar Size, **Sc**:	11	
Pier Rebar Quantity, **mc**:	24	
Pier Tie/Spiral Size, **St**:	5	
Pier Tie/Spiral Quantity, **mt**:	21	
Pier Reinforcement Type:	Spiral	
Pier Clear Cover, **cc_{pier}**:	3	in

Pad Properties

Depth, **D**:	10.0	ft
Pad Width, **W**:	21.0	ft
Pad Thickness, **T**:	3.0	ft
Pad Rebar Size, **Sp**:	9	
Pad Rebar Quantity, **mp**:	25	
Pad Clear Cover, **cc_{pad}**:	3	in

Material Properties

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

Soil Properties

Total Soil Unit Weight, γ:	125	pcf
Ultimate Gross Bearing, Qult:	12.000	ksf
Cohesion, **Cu**:		ksf
Friction Angle, φ:	30	degrees
SPT Blow Count, **N_{blows}**:	21	
Base Friction, μ:		
Neglected Depth, **N**:	3.50	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	12	ft

<--Toggle between Gross and Net

Foundation Analysis Checks

	Capacity	Demand	Rating	Check
Lateral (Sliding) (kips)	341.54	32.00	**9.4%**	**Pass**
Bearing Pressure (ksf)	9.00	3.49	**38.8%**	**Pass**
*Overturning (kip*ft)*	6478.15	3977.00	**61.4%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	5854.22	3865.00	**66.0%**	**Pass**
Pier Compression (kip)	25189.92	106.15	**0.4%**	**Pass**
*Pad Flexure (kip*ft)*	3390.85	1450.53	**42.8%**	**Pass**
Pad Shear - 1-way (kips)	648.20	266.25	**41.1%**	**Pass**
Pad Shear - 2-way (ksi)	0.16	0.04	**23.8%**	**Pass**

Soil Rating:	**61.4%**
Structural Rating:	**66.0%**

EXHIBIT 4

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT1121

FA#: 10071155

New Hartford - Inductrial Pk
115 Industrial Park Rd
New Hartford, CT 06057

September 11, 2018

Centerline Communications Project Number: 950012-159

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**9.04 %**

September 11, 2018

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

Emissions Analysis for Site: **CT1121 – New Hartford - Inductrial Pk**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **115 Industrial Park Rd, New Hartford, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed AT&T Wireless antenna facility located at **115 Industrial Park Rd, New Hartford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
LTE	700 MHz	2	40
LTE	700 MHz (Band 14)	2	40
LTE	850 MHz	2	40
LTE	1900 MHz (PCS)	4	40

Table 1: Channel Data Table

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

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Powerwave 7770	119
A	2	KMW AM-X-CD-16-65-00T-RET	119
A	3	CCI HPA-65R-BUU-H6	119
B	1	Powerwave 7770	119
B	2	KMW AM-X-CD-14-65-00T-RET	119
B	3	CCI SBNHH-1D65A	119
C	1	Powerwave 7770	119
C	2	KMW 800-10764	119
C	3	CCI SBNHH-1D65A	119

Table 2: Antenna Data

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

RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.41
Antenna A2	KMW AM-X-CD-16-65-00T-RET	700 MHz	13.35	2	80	1,730.17	1.04
Antenna A3	CCI HPA-65R-BUU-H6	700 MHz (Band 14) / 850 MHz / 1900 MHz (PCS)	11.95 / 12.65 / 14.75	8	320	7,502.63	2.83
						Sector A Composite MPE%	**4.29**
Antenna B1	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.41
Antenna B2	KMW AM-X-CD-14-65-00T-RET	700 MHz	11.85	2	80	1,224.87	0.74
Antenna B3	Commscope SBNHH-1D65A	700 MHz (Band 14) / 850 MHz / 1900 MHz (PCS)	10.85 / 10.65 / 14.55	8	320	6,463.74	2.33
						Sector B Composite MPE%	**3.48**
Antenna C1	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.41
Antenna C2	Kathrein 800-10764	700 MHz	12.15	2	80	1,312.47	0.79
Antenna C3	Commscope SBNHH-1D65A	700 MHz (Band 14) / 850 MHz / 1900 MHz (PCS)	10.85 / 10.65 / 14.55	8	320	6,463.74	2.33
						Sector C Composite MPE%	**3.53**

Table 3: AT&T Emissions Levels

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

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Sector A	**4.29 %**
Sprint	2.33 %
T-Mobile	0.16 %
MetroPCS	0.61 %
Verizon Wireless	1.65 %
Site Total MPE %:	**9.04 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	4.29 %
AT&T Sector B Total:	3.48 %
AT&T Sector C Total:	3.53 %
Site Total:	9.04 %

Table 5: Site MPE Summary

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

AT&T _ Frequency Band / Technology Max Power Values (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS – Antenna 1	2	414.12	119	2.33	850 MHz	567	0.41%
AT&T 700 MHz LTE – Antenna 2	2	865.09	119	4.87	700 MHz	467	1.04%
AT&T 700 MHz LTE (Band 14) – Antenna 3	2	626.70	119	3.53	700 MHz	467	0.76%
AT&T 850 MHz LTE – Antenna 3	2	736.31	119	4.15	850 MHz	567	0.73%
AT&T 1900 MHz (PCS) LTE – Antenna 3	4	1,194.15	119	13.45	1900 MHz (PCS)	1000	1.34%
						Total:	**4.29%**

Table 6: AT&T Maximum Sector MPE Power Values

Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	4.29 %
Sector B:	3.48 %
Sector C:	3.53 %
AT&T Maximum Total (Sector A):	4.29 %
Site Total:	9.04 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **9.04 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767

EXHIBIT 5

August 30, 2018

CENTERLINE COMMUNICATIONS at&t

Centerline Communications
95 Ryan Drive
Raynham, MA 02767

RE:		
	Site Number:	CT1121 (LTE 2C/3C/4C)
	FA Number:	10071155
	PACE Number:	MRCTB032151
	PTN Number:	2051A0GQK6
	Site Name:	New Hartford-Industrial Park
	Site Address:	Industrial Road New Hartford, CT 06057

To Whom It May Concern:

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

- (3) 7770 Antennas (55.0"x11.0"x5.0" – Wt. = 35 lbs. /each)
- (1) AM-X-CD-16-65-00T-RET Antenna (72"x11.8"x5.9" – Wt. = 49 lbs. /each)
- (1) AM-X-CD-14-65-00T-RET Antenna (48.0"x11.8"x9.0" – Wt. = 36.4 lbs. /each)
- (1) 800-10764 Antenna (55.2"x11.8"x6" – Wt. = 41 lbs. /each)
- (3) RRUS-11 RRH's (19.7"x17.0"x7.2" – Wt. = 51 lbs. /each) (Tower Mount)
- (6) LGP21401 TMA's (14.4"x9.0"x2.7" – Wt. = 19 lbs. /each)
- (3) DBC0061F1V51-2 Diplexers (8.0"x6.2"x6.5" – Wt. = 19 lbs. /each)
- (1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each) (Tower Mount)
- **(1) HPA-65R-BUU-H6 Antenna (72.0"x14.8"x9.0" – Wt. = 51 lbs. /each)**
- **(2) SBNHH-1D65A Antennas (55"x11.9"x7.1" – Wt. = 34 lbs. /each)**
- **(3) 4415 B25 RRH's (14.96"x13.19"x5.39" – Wt. = 44 lbs. /each)**

**Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mounts. HDG's subconsultant, ProVertic LLC, conducted a survey climb and mapping of the existing AT&T antenna mounts on August 16, 2018.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-G, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2012 with 2016 Connecticut State Building Code, and AT&T Mount Technical Directive – R9.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-G Annex B, the max basic wind speed for this site is equal to 100 mph with a max basic wind speed with ice of 40 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 3; tower is located at the upper half of a hill.
- The mount has been analyzed with load combinations consisting of 250 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 2.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mount is secured to the existing monopole with a ring mount. The connection is considered OK by visual inspection.

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

- **Install new handrail kit, SitePro1 P/N HRK14 (or approved equal). Handrail kit is required per AT&T Technical Directive to stabilize existing cantilevered antennas.**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing 2C/3C/4C Mount Rating	57	LC2	74%	**PASS**
Modified 2C/3C/4C Mount Rating	5/12/58	LC12/9/2	61%	**PASS**

Reference Documents:

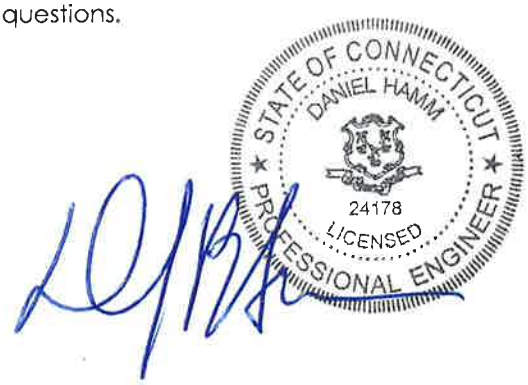
- Mount mapping report prepared by ProVertic LLC.

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
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

- HDG considers this site to be topographic category 3; tower is located at the upper half of a hill.
- The mount has been analyzed with load combinations consisting of 250 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 2.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mount is secured to the existing monopole with a ring mount. The connection is considered OK by visual inspection.

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

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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

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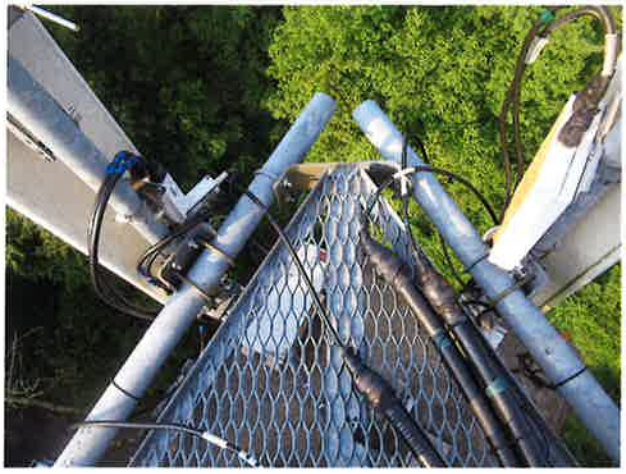
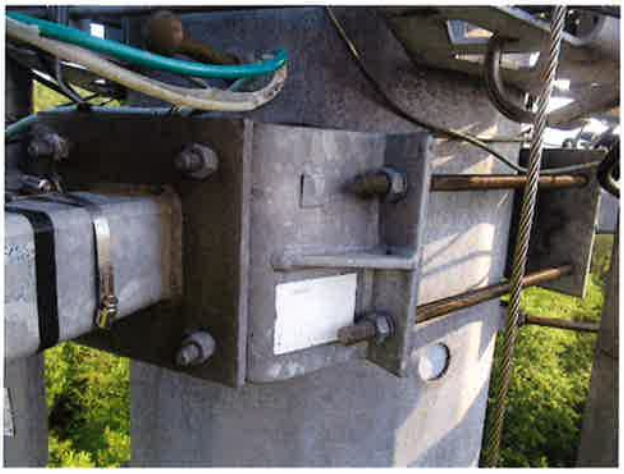
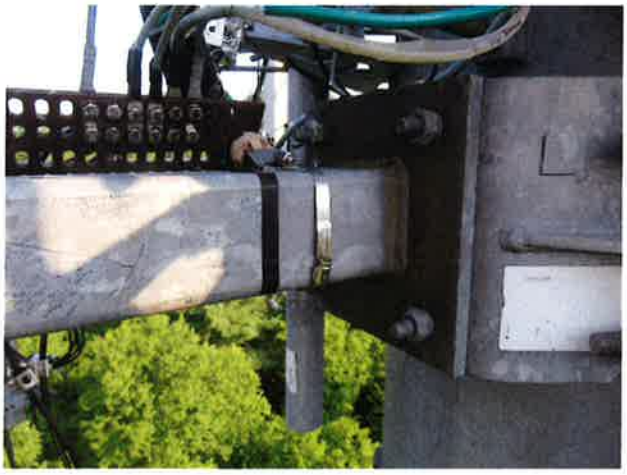
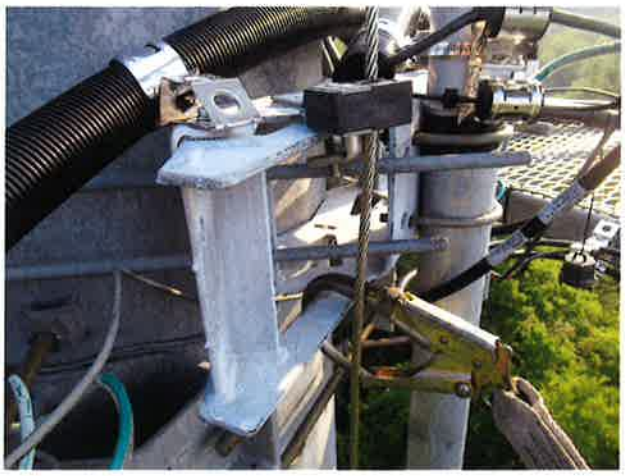
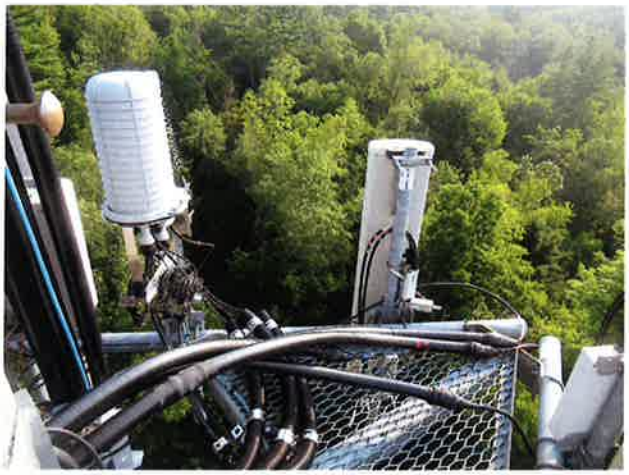
p: 413.588.8139 f: 413.517.0590 a: 116 Pleasant Street, Ste 302, Easthampton, MA 01027

FIELD PHOTOS: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p: 413.588.8139 f: 413.517.0590 a: 116 Pleasant Street, Ste 302, Easthampton, MA 01027

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 8/30/2018
Project Name: New Hartford-Industrial Park
Project Number: CT1121
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=	119	(ft)
z_g=	1200	(ft)
α=	7.0	

K_z= 1.039

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

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}= 1.282965901

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

Category= **3**

K_h=	3.60	
K_e=	0.9	(from Table 2-4)
K_t=	0.53	(from Table 2-5)
f=	2	(from Table 2-5)
z=	119	
H=	186	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.28	
K_{iz} =	1.14	(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} = 2.48 in

Date: 8/30/2018
Project Name: New Hartford-Industrial Park
Project Number: CT1121
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=	166	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} = 100 mph

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

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

		K_z=	1.039
		K_{zt}=	1.3
q_z=	**28.00**	K_d=	0.95
$q_{z\,(ice)}$=	**5.18**	V_{asd}=	93 mph
$q_{z\,(30)}$=	**2.92**	$V_{max\,(ice)}$=	40 mph
		V_{30}=	30 mph
		I=	1.0

Table 2-2

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

Date: 8/30/2018
Project Name: New Hartford-Industrial Park
Project Number: CT1121
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 = **2.48 in** **Angle = 0 (deg)** **Equivalent Angle = 180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
7770 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	154	45	16
AM-X-CD-16-65-00T-RET Antenr	72.0	11.8	5.9	5.90	6.10	1.36	225	63	23
AM-X-CD-14-65-00T-RET Antenr	48.0	11.8	9.0	3.93	4.07	1.27	140	41	15
800-10764 Antenna	55.2	11.8	6.0	4.52	4.68	1.30	164	47	17
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.86	1.31	270	71	28
SBNHH-1D65A Antenna	55.0	11.9	7.1	4.55	4.62	1.29	165	47	17
4415 B25 RRH	15.0	13.2	5.4	1.37	1.13	1.20	46	16	5
4415 B25 RRH (Shielded)	15.0	2.2	5.4	0.23	6.83	1.39	9	7	1
3" Pipe	3.5	12.0		0.29	0.29	1.20	10	6	1
2" Pipe	2.4	12.0		0.20	0.20	1.20	7	5	1

Date: 8/31/2018
Project Name: New Hartford-Industrial Park
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Designed By: AK Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	2.48	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	154	82	136
AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	2.95	6.10	12.20	1.36	1.57	225	130	201
AM-X-CD-14-65-00T-RET Antenna	48.0	11.8	9.0	3.93	3.00	4.07	5.33	1.27	1.33	140	111	133
800-10764 Antenna	55.2	11.8	6.0	4.52	2.30	4.68	9.20	1.30	1.47	164	95	147
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	270	181	248
SBNHH-1D65A Antenna	55.0	11.9	7.1	4.55	2.71	4.62	7.75	1.29	1.42	165	108	151
4415 B25 RRH	15.0	13.2	5.4	1.37	0.56	1.13	2.78	1.20	1.21	46	19	39
4415 B25 RRH (Shielded)	15.0	6.6	5.4	0.69	0.56	2.27	2.78	1.20	1.21	23	19	22

WIND LOADS WITH ICE:

7770 Antenna	60.0	16.0	10.0	6.65	4.15	3.76	6.02	1.26	1.36	43	29	40
AM-X-CD-16-65-00T-RET Antenna	77.0	16.8	10.9	8.96	5.81	4.59	7.09	1.29	1.40	60	42	56
AM-X-CD-14-65-00T-RET Antenna	53.0	16.8	14.0	6.16	5.14	3.16	3.79	1.23	1.26	39	33	38
800-10764 Antenna	60.2	16.8	11.0	7.00	4.58	3.59	5.49	1.25	1.33	45	32	42
HPA-65R-BUU-H6 Antenna	77.0	19.8	14.0	10.56	7.46	3.89	5.51	1.26	1.33	69	52	65
SBNHH-1D65A Antenna	60.0	16.9	12.1	7.02	5.02	3.56	4.97	1.25	1.31	45	34	43
4415 B25 RRH	19.9	18.2	10.4	2.51	1.43	1.10	1.92	1.20	1.20	16	9	14
4415 B25 RRH (Shielded)	19.9	9.1	10.4	1.26	1.43	2.20	1.92	1.20	1.20	8	9	8

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	16	9	14
AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	2.95	6.10	12.20	1.36	1.57	23	14	21
AM-X-CD-14-65-00T-RET Antenna	48.0	11.8	9.0	3.93	3.00	4.07	5.33	1.27	1.33	15	12	14
800-10764 Antenna	55.2	11.8	6.0	4.52	2.30	4.68	9.20	1.30	1.47	17	10	15
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	28	19	26
SBNHH-1D65A Antenna	55.0	11.9	7.1	4.55	2.71	4.62	7.75	1.29	1.42	17	11	16
4415 B25 RRH	15.0	13.2	5.4	1.37	0.56	1.13	2.78	1.20	1.21	5	2	4
4415 B25 RRH (Shielded)	15.0	6.6	5.4	0.69	0.56	2.27	2.78	1.20	1.21	2	2	2

Date: 8/31/2018
Project Name: New Hartford-Industrial Park
Project Number: CT1121
Designed By: AK Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	2.48	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	154	82	100
AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	2.95	6.10	12.20	1.36	1.57	225	130	154
AM-X-CD-14-65-00T-RET Antenna	48.0	11.8	9.0	3.93	3.00	4.07	5.33	1.27	1.33	140	111	118
800-10764 Antenna	55.2	11.8	6.0	4.52	2.30	4.68	9.20	1.30	1.47	164	95	112
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	270	181	203
SBNHH-1D65A Antenna	55.0	11.9	7.1	4.55	2.71	4.62	7.75	1.29	1.42	165	108	122
4415 B25 RRH	15.0	13.2	5.4	1.37	0.56	1.13	2.78	1.20	1.21	46	19	26
4415 B25 RRH (Shielded)	15.0	9.9	5.4	1.03	0.56	1.51	2.78	1.20	1.21	35	19	23

WIND LOADS WITH ICE:

7770 Antenna	60.0	16.0	10.0	6.65	4.15	3.76	6.02	1.26	1.36	43	29	33
AM-X-CD-16-65-00T-RET Antenna	77.0	16.8	10.9	8.96	5.81	4.59	7.09	1.29	1.40	60	42	47
AM-X-CD-14-65-00T-RET Antenna	53.0	16.8	14.0	6.16	5.14	3.16	3.79	1.23	1.26	39	33	35
800-10764 Antenna	60.2	16.8	11.0	7.00	4.58	3.59	5.49	1.25	1.33	45	32	35
HPA-65R-BUU-H6 Antenna	77.0	19.8	14.0	10.56	7.46	3.89	5.51	1.26	1.33	69	52	56
SBNHH-1D65A Antenna	60.0	16.9	12.1	7.02	5.02	3.56	4.97	1.25	1.31	45	34	37
4415 B25 RRH	19.9	18.2	10.4	2.51	1.43	1.10	1.92	1.20	1.20	16	9	11
4415 B25 RRH (Shielded)	19.9	13.6	10.4	1.88	1.43	1.46	1.92	1.20	1.20	12	9	10

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	16	9	10
AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	2.95	6.10	12.20	1.36	1.57	23	14	16
AM-X-CD-14-65-00T-RET Antenna	48.0	11.8	9.0	3.93	3.00	4.07	5.33	1.27	1.33	15	12	12
800-10764 Antenna	55.2	11.8	6.0	4.52	2.30	4.68	9.20	1.30	1.47	17	10	12
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	28	19	21
SBNHH-1D65A Antenna	55.0	11.9	7.1	4.55	2.71	4.62	7.75	1.29	1.42	17	11	13
4415 B25 RRH	15.0	13.2	5.4	1.37	0.56	1.13	2.78	1.20	1.21	5	2	3
4415 B25 RRH (Shielded)	15.0	9.9	5.4	1.03	0.56	1.51	2.78	1.20	1.21	4	2	2

Date: 8/31/2018

Project Name: New Hartford-Industrial Park

Project Number: CT1121

Designed By: AK Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	2.48	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	154	82	82
AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	2.95	6.10	12.20	1.36	1.57	225	130	130
AM-X-CD-14-65-00T-RET Antenna	48.0	11.8	9.0	3.93	3.00	4.07	5.33	1.27	1.33	140	111	111
800-10764 Antenna	55.2	11.8	6.0	4.52	2.30	4.68	9.20	1.30	1.47	164	95	95
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	270	181	181
SBNHH-1D65A Antenna	55.0	11.9	7.1	4.55	2.71	4.62	7.75	1.29	1.42	165	108	108
4415 B25 RRH	15.0	13.2	5.4	1.37	0.56	1.13	2.78	1.20	1.21	46	19	19
4415 B25 RRH (Shielded)	15.0	2.2	5.4	0.23	0.56	6.83	2.78	1.39	1.21	9	19	19

WIND LOADS WITH ICE:

7770 Antenna	60.0	16.0	10.0	6.65	4.15	3.76	6.02	1.26	1.36	43	29	29
AM-X-CD-16-65-00T-RET Antenna	77.0	16.8	10.9	8.96	5.81	4.59	7.09	1.29	1.40	60	42	42
AM-X-CD-14-65-00T-RET Antenna	53.0	16.8	14.0	6.16	5.14	3.16	3.79	1.23	1.26	39	33	33
800-10764 Antenna	60.2	16.8	11.0	7.00	4.58	3.59	5.49	1.25	1.33	45	32	32
HPA-65R-BUU-H6 Antenna	77.0	19.8	14.0	10.56	7.46	3.89	5.51	1.26	1.33	69	52	52
SBNHH-1D65A Antenna	60.0	16.9	12.1	7.02	5.02	3.56	4.97	1.25	1.31	45	34	34
4415 B25 RRH	19.9	18.2	10.4	2.51	1.43	1.10	1.92	1.20	1.20	16	9	9
4415 B25 RRH (Shielded)	19.9	7.2	10.4	0.99	1.43	2.79	1.92	1.21	1.20	6	9	9

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	16	9	9
AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	2.95	6.10	12.20	1.36	1.57	23	14	14
AM-X-CD-14-65-00T-RET Antenna	48.0	11.8	9.0	3.93	3.00	4.07	5.33	1.27	1.33	15	12	12
800-10764 Antenna	55.2	11.8	6.0	4.52	2.30	4.68	9.20	1.30	1.47	17	10	10
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	28	19	19
SBNHH-1D65A Antenna	55.0	11.9	7.1	4.55	2.71	4.62	7.75	1.29	1.42	17	11	11
4415 B25 RRH	15.0	13.2	5.4	1.37	0.56	1.13	2.78	1.20	1.21	5	2	2
4415 B25 RRH (Shielded)	15.0	2.2	5.4	0.23	0.56	6.83	2.78	1.39	1.21	1	2	2

Date: 8/31/2018

Project Name: New Hartford-Industrial Park

Project Number: CT1121

Designed By: AK Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	2.48	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	154	82	100
AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	2.95	6.10	12.20	1.36	1.57	225	130	154
AM-X-CD-14-65-00T-RET Antenna	48.0	11.8	9.0	3.93	3.00	4.07	5.33	1.27	1.33	140	111	118
800-10764 Antenna	55.2	11.8	6.0	4.52	2.30	4.68	9.20	1.30	1.47	164	95	112
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	270	181	203
SBNHH-1D65A Antenna	55.0	11.9	7.1	4.55	2.71	4.62	7.75	1.29	1.42	165	108	122
4415 B25 RRH	15.0	13.2	5.4	1.37	0.56	1.13	2.78	1.20	1.21	46	19	26
4415 B25 RRH (Shielded)	15.0	9.9	5.4	1.03	0.56	1.51	2.78	1.20	1.21	35	19	23

WIND LOADS WITH ICE:

7770 Antenna	60.0	16.0	10.0	6.65	4.15	3.76	6.02	1.26	1.36	43	29	33
AM-X-CD-16-65-00T-RET Antenna	77.0	16.8	10.9	8.96	5.81	4.59	7.09	1.29	1.40	60	42	47
AM-X-CD-14-65-00T-RET Antenna	53.0	16.8	14.0	6.16	5.14	3.16	3.79	1.23	1.26	39	33	35
800-10764 Antenna	60.2	16.8	11.0	7.00	4.58	3.59	5.49	1.25	1.33	45	32	35
HPA-65R-BUU-H6 Antenna	77.0	19.8	14.0	10.56	7.46	3.89	5.51	1.26	1.33	69	52	56
SBNHH-1D65A Antenna	60.0	16.9	12.1	7.02	5.02	3.56	4.97	1.25	1.31	45	34	37
4415 B25 RRH	19.9	18.2	10.4	2.51	1.43	1.10	1.92	1.20	1.20	16	9	11
4415 B25 RRH (Shielded)	19.9	13.6	10.4	1.88	1.43	1.46	1.92	1.20	1.20	12	9	10

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	16	9	10
AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	2.95	6.10	12.20	1.36	1.57	23	14	16
AM-X-CD-14-65-00T-RET Antenna	48.0	11.8	9.0	3.93	3.00	4.07	5.33	1.27	1.33	15	12	12
800-10764 Antenna	55.2	11.8	6.0	4.52	2.30	4.68	9.20	1.30	1.47	17	10	12
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	28	19	21
SBNHH-1D65A Antenna	55.0	11.9	7.1	4.55	2.71	4.62	7.75	1.29	1.42	17	11	13
4415 B25 RRH	15.0	13.2	5.4	1.37	0.56	1.13	2.78	1.20	1.21	5	2	3
4415 B25 RRH (Shielded)	15.0	9.9	5.4	1.03	0.56	1.51	2.78	1.20	1.21	4	2	2

Date: 8/31/2018
Project Name: New Hartford-Industrial Park
Project Number: CT1121
Designed By: AK Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	2.48	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	154	82	136
AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	2.95	6.10	12.20	1.36	1.57	225	130	201
AM-X-CD-14-65-00T-RET Antenna	48.0	11.8	9.0	3.93	3.00	4.07	5.33	1.27	1.33	140	111	133
800-10764 Antenna	55.2	11.8	6.0	4.52	2.30	4.68	9.20	1.30	1.47	164	95	147
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	270	181	248
SBNHH-1D65A Antenna	55.0	11.9	7.1	4.55	2.71	4.62	7.75	1.29	1.42	165	108	151
4415 B25 RRH	15.0	13.2	5.4	1.37	0.56	1.13	2.78	1.20	1.21	46	19	39
4415 B25 RRH (Shielded)	15.0	6.6	5.4	0.69	0.56	2.27	2.78	1.20	1.21	23	19	22

WIND LOADS WITH ICE:

7770 Antenna	60.0	16.0	10.0	6.65	4.15	3.76	6.02	1.26	1.36	43	29	40
AM-X-CD-16-65-00T-RET Antenna	77.0	16.8	10.9	8.96	5.81	4.59	7.09	1.29	1.40	60	42	56
AM-X-CD-14-65-00T-RET Antenna	53.0	16.8	14.0	6.16	5.14	3.16	3.79	1.23	1.26	39	33	38
800-10764 Antenna	60.2	16.8	11.0	7.00	4.58	3.59	5.49	1.25	1.33	45	32	42
HPA-65R-BUU-H6 Antenna	77.0	19.8	14.0	10.56	7.46	3.89	5.51	1.26	1.33	69	52	65
SBNHH-1D65A Antenna	60.0	16.9	12.1	7.02	5.02	3.56	4.97	1.25	1.31	45	34	43
4415 B25 RRH	19.9	18.2	10.4	2.51	1.43	1.10	1.92	1.20	1.20	16	9	14
4415 B25 RRH (Shielded)	19.9	9.1	10.4	1.26	1.43	2.20	1.92	1.20	1.20	8	9	8

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	16	9	14
AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	2.95	6.10	12.20	1.36	1.57	23	14	21
AM-X-CD-14-65-00T-RET Antenna	48.0	11.8	9.0	3.93	3.00	4.07	5.33	1.27	1.33	15	12	14
800-10764 Antenna	55.2	11.8	6.0	4.52	2.30	4.68	9.20	1.30	1.47	17	10	15
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	28	19	26
SBNHH-1D65A Antenna	55.0	11.9	7.1	4.55	2.71	4.62	7.75	1.29	1.42	17	11	16
4415 B25 RRH	15.0	13.2	5.4	1.37	0.56	1.13	2.78	1.20	1.21	5	2	4
4415 B25 RRH (Shielded)	15.0	6.6	5.4	0.69	0.56	2.27	2.78	1.20	1.21	2	2	2

Date: 8/30/2018
Project Name: New Hartford-Industrial Park
Project Number: CT1121
Designed By: AK **Checked By**: MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 2.48 in.
Density of ice: 56 pcf

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:		202 lbs
Weight of object:	35 lbs	
Combined weight of ice and object:		237 lbs

AM-X-CD-16-65-00T-RET Antenna
Weight of ice based on total radial SF area:

Height (in):	72.0	
Width (in):	11.8	
Depth (in):	5.9	
Total weight of ice on object:		285 lbs
Weight of object:	49 lbs	
Combined weight of ice and object:		334 lbs

AM-X-CD-14-65-00T-RET Antenna
Weight of ice based on total radial SF area:

Height (in):	48.0	
Width (in):	11.8	
Depth (in):	9.0	
Total weight of ice on object:		210 lbs
Weight of object:	37 lbs	
Combined weight of ice and object:		247 lbs

800-10764 Antenna
Weight of ice based on total radial SF area:

Height (in):	55.2	
Width (in):	11.8	
Depth (in):	6.0	
Total weight of ice on object:		219 lbs
Weight of object:	41 lbs	
Combined weight of ice and object:		260 lbs

HPA-65R-BUU-H6 Antenna
Weight of ice based on total radial SF area:

Height (in):	72.0	
Width (in):	14.8	
Depth (in):	9.0	
Total weight of ice on object:		360 lbs
Weight of object:	51 lbs	
Combined weight of ice and object:		411 lbs

SBNHH-1D65A Antenna
Weight of ice based on total radial SF area:

Height (in):	55.0	
Width (in):	11.9	
Depth (in):	7.1	
Total weight of ice on object:		227 lbs
Weight of object:	34 lbs	
Combined weight of ice and object:		261 lbs

4415 B25 RRH
Weight of ice based on total radial SF area:

Height (in):	15.0	
Width (in):	13.2	
Depth (in):	5.4	
Total weight of ice on object:		63 lbs
Weight of object:	44 lbs	
Combined weight of ice and object:		107 lbs

800-10764 Antenna
Weight of ice based on total radial SF area:

Height (in):	55.2	
Width (in):	11.8	
Depth (in):	6.0	
Total weight of ice on object:		219 lbs
Weight of object:	41 lbs	
Combined weight of ice and object:		260 lbs

DBC0061F1V51-2 Diplexer
Weight of ice based on total radial SF area:

Height (in):	8.0	
Width (in):	6.2	
Depth (in):	6.5	
Total weight of ice on object:		23 lbs
Weight of object:	19 lbs	
Combined weight of ice and object:		42 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:		43 lbs
Weight of object:	19 lbs	
Combined weight of ice and object:		62 lbs

Date: 8/30/2018
Project Name: New Hartford-Industrial Park
Project Number: CT1121
Designed By: AK **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 2.48 in.
Density of ice: 56 pcf

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: 202 lbs
Weight of object: 35 lbs
Combined weight of ice and object: 237 lbs

AM-X-CD-16-65-00T-RET Antenna
Weight of ice based on total radial SF area:
Height (in): 72.0
Width (in): 11.8
Depth (in): 5.9
Total weight of ice on object: 285 lbs
Weight of object: 49 lbs
Combined weight of ice and object: 334 lbs

AM-X-CD-14-65-00T-RET Antenna
Weight of ice based on total radial SF area:
Height (in): 48.0
Width (in): 11.8
Depth (in): 9.0
Total weight of ice on object: 210 lbs
Weight of object: 37 lbs
Combined weight of ice and object: 247 lbs

800-10764 Antenna
Weight of ice based on total radial SF area:
Height (in): 55.2
Width (in): 11.8
Depth (in): 6.0
Total weight of ice on object: 219 lbs
Weight of object: 41 lbs
Combined weight of ice and object: 260 lbs

HPA-65R-BUU-H6 Antenna
Weight of ice based on total radial SF area:
Height (in): 72.0
Width (in): 14.8
Depth (in): 9.0
Total weight of ice on object: 360 lbs
Weight of object: 51 lbs
Combined weight of ice and object: 411 lbs

SBNHH-1D65A Antenna
Weight of ice based on total radial SF area:
Height (in): 55.0
Width (in): 11.9
Depth (in): 7.1
Total weight of ice on object: 227 lbs
Weight of object: 34 lbs
Combined weight of ice and object: 261 lbs

4415 B25 RRH
Weight of ice based on total radial SF area:
Height (in): 15.0
Width (in): 13.2
Depth (in): 5.4
Total weight of ice on object: 63 lbs
Weight of object: 44 lbs
Combined weight of ice and object: 107 lbs

800-10764 Antenna
Weight of ice based on total radial SF area:
Height (in): 55.2
Width (in): 11.8
Depth (in): 6.0
Total weight of ice on object: 219 lbs
Weight of object: 41 lbs
Combined weight of ice and object: 260 lbs

DBC0061F1V51-2 Diplexer
Weight of ice based on total radial SF area:
Height (in): 8.0
Width (in): 6.2
Depth (in): 6.5
Total weight of ice on object: 23 lbs
Weight of object: 19 lbs
Combined weight of ice and object: 42 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: 43 lbs
Weight of object: 19 lbs
Combined weight of ice and object: 62 lbs

PL 6x1/2
Weight of ice based on total radial SF area:
Height (in): 6
Width (in): 0.5
Per foot weight of ice on object: 26 plf

2" pipe
Per foot weight of ice:
diameter (in): 2.38
Per foot weight of ice on object: 15 plf

3" Pipe
Per foot weight of ice:
diameter (in): 3.5
Per foot weight of ice on object: 18 plf

L 2x2x3/16 Angles
Weight of ice based on total radial SF area:
Height (in): 2
Width (in): 2
Per foot weight of ice on object: 16 plf

HSS 4x4
Weight of ice based on total radial SF area:
Height (in): 4
Width (in): 4
Per foot weight of ice on object: 25 plf

L 2-1/2x2-1/2x3/6
Weight of ice based on total radial SF area:
Height (in): 2.5
Width (in): 2.5
Per foot weight of ice on object: 18 plf

HUDSON
Design Group LLC

Mount Calculations
(Modified 2C/3C/4C Configuration)

Bentley

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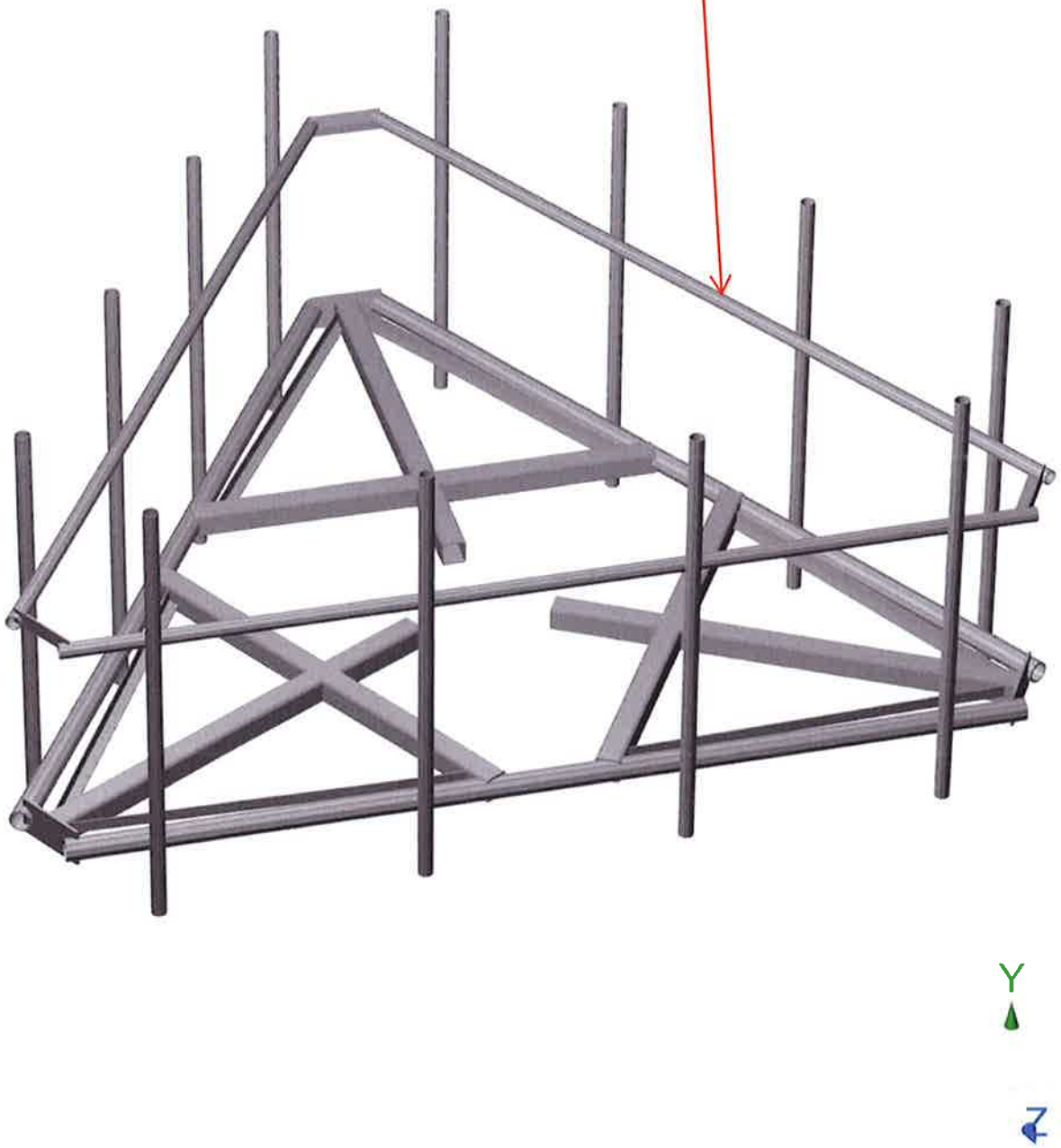

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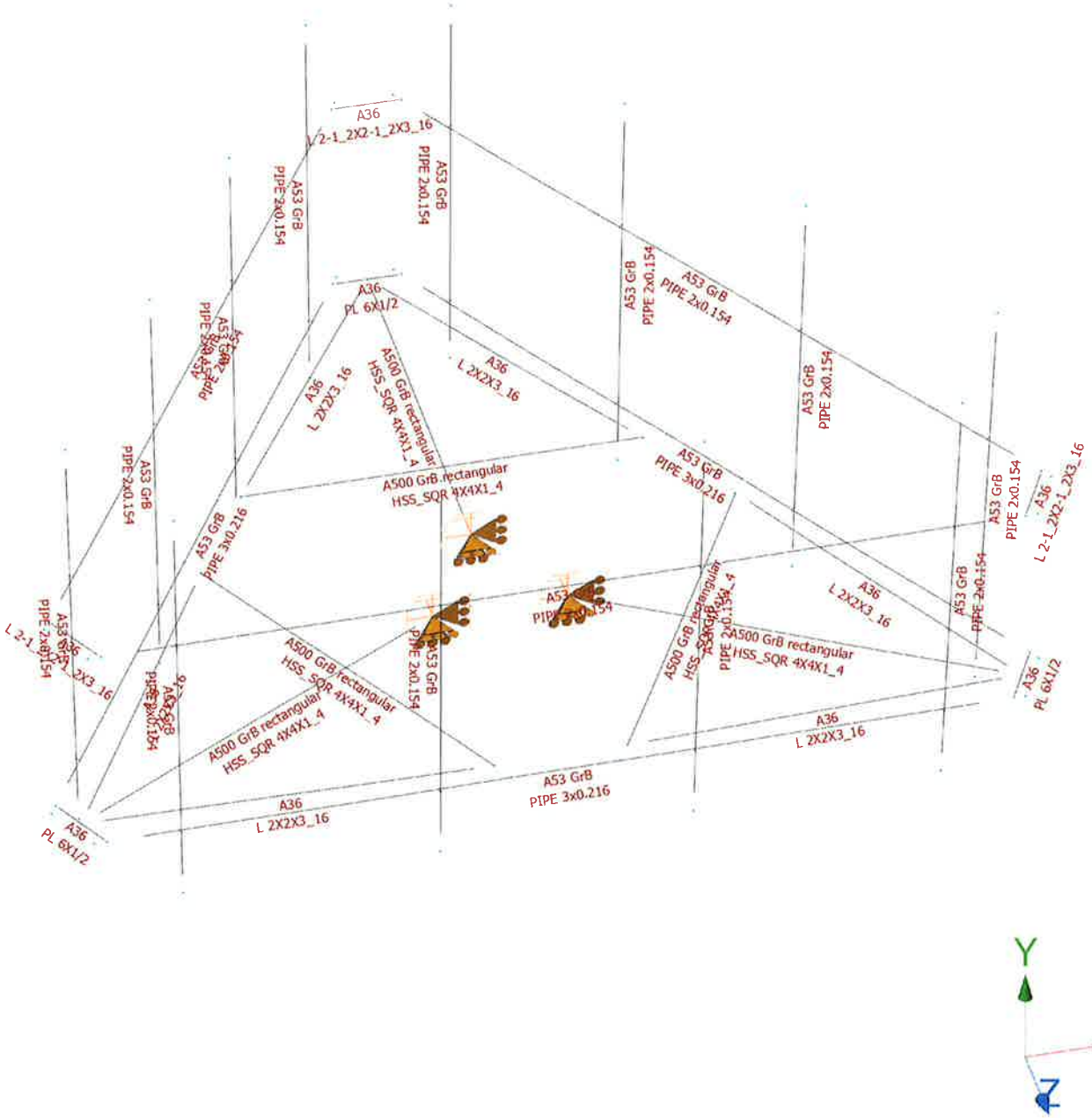

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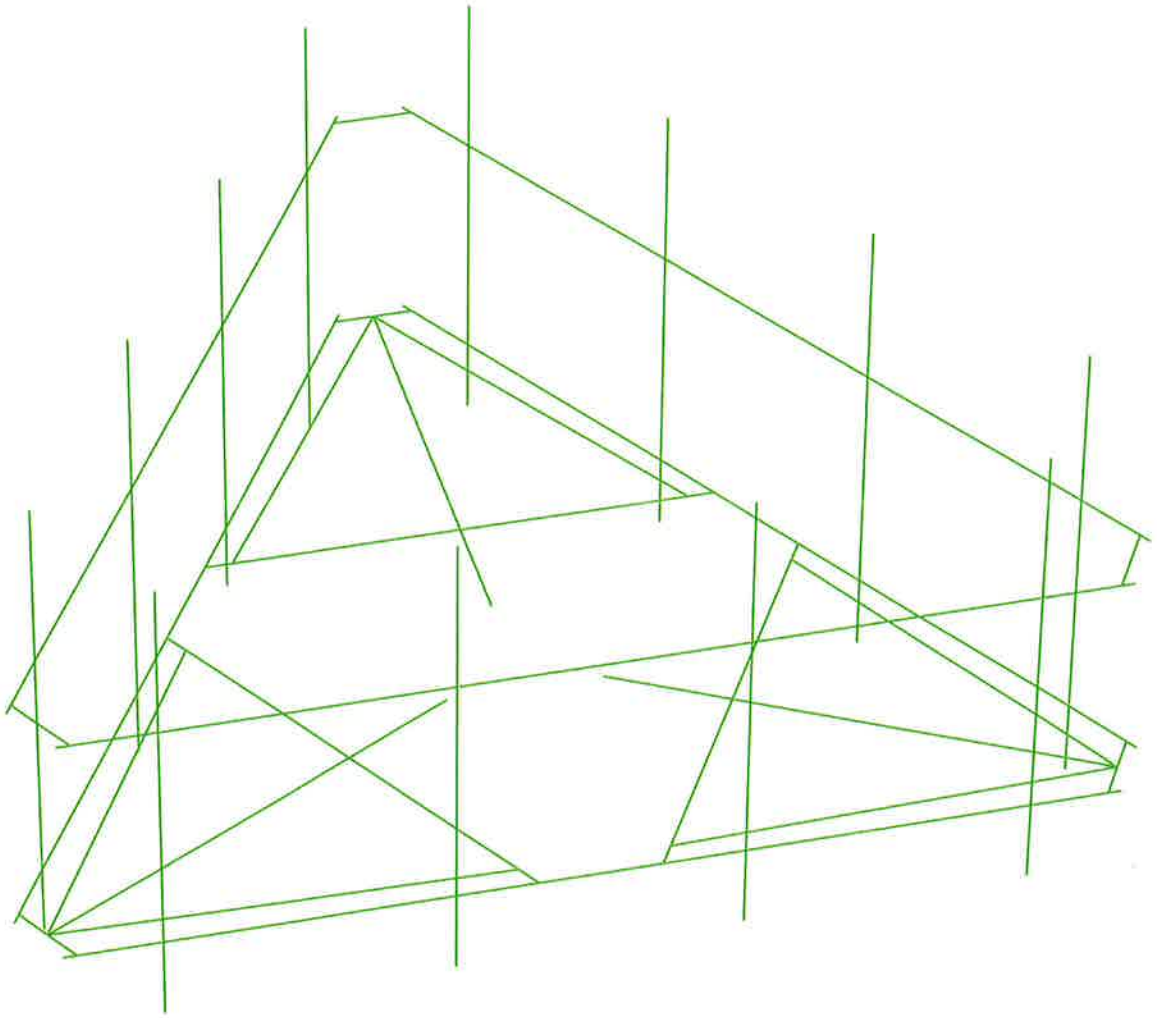
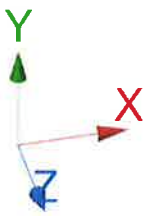
Design status

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





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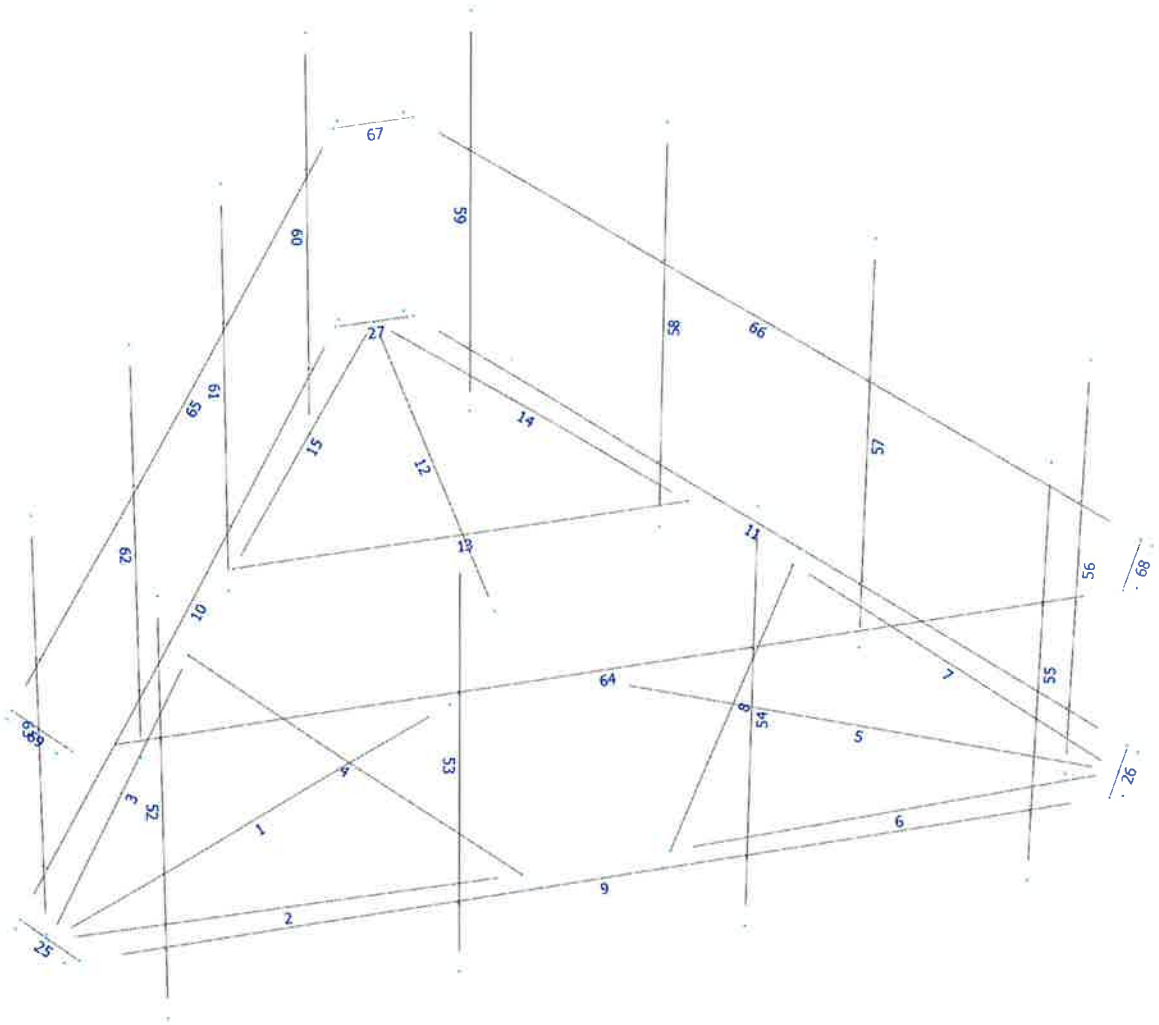

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Load data

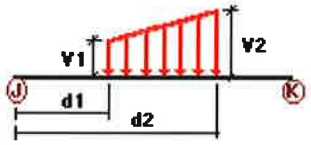
GLOSSARY

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	

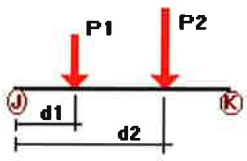
Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	1	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	2	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	3	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	5	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	6	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	7	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	12	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	14	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	15	Y	-0.01	-0.01	0.00	Yes	100.00	Yes

W0	10	Z	-0.01	-0.01	0.00	Yes	100.00	Yes
	11	Z	-0.01	-0.01	0.00	Yes	100.00	Yes
	64	Z	-0.007	-0.007	0.00	Yes	100.00	Yes
	65	Z	-0.007	-0.007	0.00	Yes	100.00	Yes
	66	Z	-0.007	-0.007	0.00	Yes	100.00	Yes
	9	Z	-0.01	-0.01	0.00	Yes	100.00	Yes
W30	10	X	-0.01	-0.01	0.00	Yes	100.00	Yes
	11	X	-0.01	-0.01	0.00	Yes	100.00	Yes
	64	X	-0.007	-0.007	0.00	Yes	100.00	Yes
	65	X	-0.007	-0.007	0.00	Yes	100.00	Yes
	66	X	-0.007	-0.007	0.00	Yes	100.00	Yes
	9	X	-0.01	-0.01	0.00	Yes	100.00	Yes
Di	1	Y	-0.025	-0.025	0.00	Yes	100.00	Yes
	2	Y	-0.016	-0.016	0.00	Yes	100.00	Yes
	3	Y	-0.016	-0.016	0.00	Yes	100.00	Yes
	4	Y	-0.025	-0.025	0.00	Yes	100.00	Yes
	5	Y	-0.025	-0.025	0.00	Yes	100.00	Yes
	6	Y	-0.016	-0.016	0.00	Yes	100.00	Yes
	7	Y	-0.016	-0.016	0.00	Yes	100.00	Yes
	8	Y	-0.025	-0.025	0.00	Yes	100.00	Yes
	10	Y	-0.018	-0.018	0.00	Yes	100.00	Yes
	11	Y	-0.018	-0.018	0.00	Yes	100.00	Yes
	12	Y	-0.025	-0.025	0.00	Yes	100.00	Yes
	13	Y	-0.025	-0.025	0.00	Yes	100.00	Yes
	14	Y	-0.016	-0.016	0.00	Yes	100.00	Yes
	15	Y	-0.016	-0.016	0.00	Yes	100.00	Yes
	25	Y	-0.026	-0.026	0.00	Yes	100.00	Yes
	26	Y	-0.026	-0.026	0.00	Yes	100.00	Yes
	27	Y	-0.026	-0.026	0.00	Yes	100.00	Yes
	52	Y	-0.015	-0.015	0.00	Yes	100.00	Yes
	53	Y	-0.015	-0.015	0.00	Yes	100.00	Yes
	54	Y	-0.015	-0.015	0.00	Yes	100.00	Yes
	55	Y	-0.015	-0.015	0.00	Yes	100.00	Yes
	56	Y	-0.015	-0.015	0.00	Yes	100.00	Yes
	57	Y	-0.015	-0.015	0.00	Yes	100.00	Yes
	58	Y	-0.015	-0.015	0.00	Yes	100.00	Yes
	59	Y	-0.015	-0.015	0.00	Yes	100.00	Yes
	60	Y	-0.015	-0.015	0.00	Yes	100.00	Yes
	61	Y	-0.015	-0.015	0.00	Yes	100.00	Yes
	62	Y	-0.015	-0.015	0.00	Yes	100.00	Yes
	63	Y	-0.015	-0.015	0.00	Yes	100.00	Yes
	64	Y	-0.015	-0.015	0.00	Yes	100.00	Yes
	65	Y	-0.015	-0.015	0.00	Yes	100.00	Yes
	66	Y	-0.015	-0.015	0.00	Yes	100.00	Yes
	67	Y	-0.018	-0.018	0.00	Yes	100.00	Yes
	68	Y	-0.018	-0.018	0.00	Yes	100.00	Yes
	69	Y	-0.018	-0.018	0.00	Yes	100.00	Yes
	9	Y	-0.018	-0.018	0.00	Yes	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	53	y	-0.017	4.54	No
		y	-0.017	1.46	No
		y	-0.044	3.00	No
	54	y	-0.019	4.25	No
		y	-0.019	1.75	No
		y	-0.019	3.00	No
	55	y	-0.018	4.54	No
		y	-0.018	1.46	No
		y	-0.038	4.00	No
	57	y	-0.026	5.25	No
		y	-0.026	0.75	No
		y	-0.044	2.00	No
	58	y	-0.025	5.25	No
		y	-0.025	0.75	No
		y	-0.019	4.00	No
	59	y	-0.018	4.54	No
		y	-0.018	1.46	No
		y	-0.038	4.00	No
	61	y	-0.017	4.54	No
		y	-0.017	1.46	No
		y	-0.044	2.00	No
	62	y	-0.021	4.55	No
		y	-0.021	1.45	No
		y	-0.019	3.00	No
	63	y	-0.018	4.54	No
		y	-0.018	1.46	No
		y	-0.038	4.00	No
W0	53	z	-0.083	4.54	No
		z	-0.083	1.46	No
		z	-0.009	3.00	No
	54	z	-0.07	4.25	No
		z	-0.07	1.75	No
	55	z	-0.078	4.54	No
		z	-0.078	1.46	No
	57	z	-0.102	5.25	No
		z	-0.102	0.75	No
		z	-0.023	2.00	No
	58	z	-0.077	5.25	No
		z	-0.077	0.75	No
	59	z	-0.051	4.54	No
		z	-0.051	1.46	No
	61	z	-0.062	4.54	No
		z	-0.062	1.46	No
		z	-0.023	2.00	No
	62	z	-0.057	4.55	No
		z	-0.057	1.45	No
	63	z	-0.051	4.54	No
		z	-0.051	1.46	No
W30	53	x	-0.055	4.54	No
		x	-0.055	1.46	No
		x	-0.019	2.00	No
	54	x	-0.056	4.25	No
		x	-0.056	1.75	No
	55	x	-0.041	4.54	No
		x	-0.041	1.46	No
	57	x	-0.124	5.25	No
		x	-0.124	0.75	No
		x	-0.022	2.00	No
	58	x	-0.101	5.25	No
		x	-0.101	0.75	No

	59	x	-0.069	4.54	No
		x	-0.069	1.46	No
	61	x	-0.076	4.54	No
		x	-0.076	1.46	No
		x	-0.022	2.00	No
	62	x	-0.074	4.55	No
		x	-0.074	1.45	No
	63	x	-0.069	4.54	No
		x	-0.069	1.46	No
Di	53	y	-0.114	4.54	No
		y	-0.114	1.46	No
		y	-0.063	3.00	No
	54	y	-0.105	4.25	No
		y	-0.105	1.75	No
		y	-0.023	3.00	No
	55	y	-0.101	4.54	No
		y	-0.101	1.46	No
		y	-0.086	4.00	No
	57	y	-0.18	5.25	No
		y	-0.18	0.75	No
		y	-0.063	2.00	No
	58	y	-0.143	5.25	No
		y	-0.143	0.75	No
		y	-0.023	4.00	No
	59	y	-0.101	4.54	No
		y	-0.101	1.46	No
		y	-0.086	4.00	No
	61	y	-0.114	4.54	No
		y	-0.114	1.46	No
		y	-0.063	2.00	No
	62	y	-0.11	4.55	No
		y	-0.11	1.45	No
		y	-0.023	3.00	No
	63	y	-0.101	4.54	No
		y	-0.101	1.46	No
		y	-0.086	4.00	No
Wi0	53	z	-0.024	4.54	No
		z	-0.024	1.46	No
		z	-0.007	3.00	No
	54	z	-0.021	4.25	No
		z	-0.021	1.75	No
	55	z	-0.023	4.54	No
		z	-0.023	1.46	No
	57	z	-0.028	5.25	No
		z	-0.028	0.75	No
		z	-0.01	2.00	No
	58	z	-0.024	5.25	No
		z	-0.024	0.75	No
	59	z	-0.017	4.54	No
		z	-0.017	1.46	No
	61	z	-0.019	4.54	No
		z	-0.019	1.46	No
		z	-0.01	2.00	No
	62	z	-0.018	4.55	No
		z	-0.018	1.45	No
	63	z	-0.017	4.54	No
		z	-0.017	1.46	No
Wi30	53	x	-0.018	4.54	No
		x	-0.018	1.46	No
		x	-0.009	2.00	No

	54	x	-0.017	4.25	No
		x	-0.017	1.75	No
	55	x	-0.015	4.54	No
		x	-0.015	1.46	No
	57	x	-0.033	5.25	No
		x	-0.033	0.75	No
		x	-0.008	2.00	No
	58	x	-0.028	5.25	No
		x	-0.028	0.75	No
	59	x	-0.02	4.54	No
		x	-0.02	1.46	No
	61	x	-0.022	4.54	No
		x	-0.022	1.46	No
		x	-0.008	2.00	No
	62	x	-0.021	4.55	No
		x	-0.021	1.45	No
	63	x	-0.02	4.54	No
		x	-0.02	1.46	No
WL0	53	z	-0.009	4.54	No
		z	-0.009	1.46	No
		z	-0.001	3.00	No
	54	z	-0.008	4.25	No
		z	-0.008	1.75	No
	55	z	-0.009	4.54	No
		z	-0.009	1.46	No
	57	z	-0.011	5.25	No
		z	-0.011	0.75	No
		z	-0.003	2.00	No
	58	z	-0.009	5.25	No
		z	-0.009	0.75	No
	59	z	-0.006	4.54	No
		z	-0.006	1.46	No
	61	z	-0.007	4.54	No
		z	-0.007	1.46	No
		z	-0.003	2.00	No
	62	z	-0.006	4.55	No
		z	-0.006	1.45	No
	63	z	-0.006	4.54	No
		z	-0.006	1.46	No
WL30	53	x	-0.006	4.54	No
		x	-0.006	1.46	No
		x	-0.002	2.00	No
	54	x	-0.006	4.25	No
		x	-0.006	1.75	No
	55	x	-0.005	4.54	No
		x	-0.005	1.46	No
	57	x	-0.013	5.25	No
		x	-0.013	0.75	No
		x	-0.003	2.00	No
	58	x	-0.011	5.25	No
		x	-0.011	0.75	No
	59	x	-0.008	4.54	No
		x	-0.008	1.46	No
	61	x	-0.008	4.54	No
		x	-0.008	1.46	No
		x	-0.003	2.00	No
	62	x	-0.008	4.55	No
		x	-0.008	1.45	No
	63	x	-0.008	4.54	No
		x	-0.008	1.46	No

LL1	64	y	-0.25	6.25	No
	9	y	-0.25	6.25	No
LL2	64	y	-0.25	0.00	No
	9	y	-0.25	0.00	No
LLa1	55	y	-0.25	3.00	No
LLa2	54	y	-0.25	3.00	No
LLa3	53	y	-0.25	3.00	No
LLa4	52	y	-0.25	3.00	No

Self weight multipliers for load conditions

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

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	0.00	0.00	0.00
Di	0.00	0.00	0.00
Wi0	0.00	0.00	0.00
Wi30	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00

LLa4	0.00	0.00	0.00
W180	0.00	0.00	0.00
W210	0.00	0.00	0.00
Wi180	0.00	0.00	0.00
Wi210	0.00	0.00	0.00
WL180	0.00	0.00	0.00
WL210	0.00	0.00	0.00

Bentley

Current Date: 8/30/2018 5:35 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT1121\CT1121 (mod).etz\

Steel Code Check

Report: Summary - For all selected load conditions

Load conditions to be included in design :

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

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	1	LC1 at 100.00%	0.10	OK	
			LC10 at 100.00%	**0.56**	**OK**	Eq. H1-1b
			LC11 at 100.00%	0.56	OK	
			LC12 at 100.00%	0.51	OK	
			LC13 at 100.00%	0.17	OK	
			LC14 at 100.00%	0.12	OK	
			LC15 at 100.00%	0.25	OK	
			LC16 at 100.00%	0.47	OK	
			LC17 at 100.00%	0.15	OK	
			LC18 at 100.00%	0.17	OK	
			LC19 at 100.00%	0.16	OK	
			LC2 at 100.00%	0.36	OK	
			LC20 at 100.00%	0.15	OK	
			LC21 at 100.00%	0.17	OK	
			LC22 at 100.00%	0.19	OK	
			LC23 at 100.00%	0.19	OK	
			LC24 at 100.00%	0.17	OK	

	LC25 at 100.00%	0.21	OK	
	LC26 at 100.00%	0.22	OK	
	LC27 at 100.00%	0.22	OK	
	LC28 at 100.00%	0.20	OK	
	LC29 at 100.00%	0.24	OK	
	LC3 at 100.00%	0.30	OK	
	LC30 at 100.00%	0.26	OK	
	LC31 at 100.00%	0.26	OK	
	LC32 at 100.00%	0.24	OK	
	LC4 at 75.00%	0.06	OK	
	LC5 at 75.00%	0.06	OK	
	LC6 at 100.00%	0.32	OK	
	LC7 at 100.00%	0.26	OK	
	LC8 at 75.00%	0.07	OK	
	LC9 at 100.00%	0.53	OK	
4	LC1 at 100.00%	0.07	OK	Eq. H1-1b
	LC10 at 50.00%	**0.33**	**OK**	Eq. H1-1b
	LC11 at 50.00%	0.33	OK	
	LC12 at 50.00%	0.31	OK	
	LC13 at 50.00%	0.09	OK	
	LC14 at 50.00%	0.07	OK	
	LC15 at 50.00%	0.18	OK	
	LC16 at 50.00%	0.18	OK	
	LC17 at 50.00%	0.10	OK	
	LC18 at 50.00%	0.11	OK	
	LC19 at 50.00%	0.11	OK	
	LC2 at 48.44%	0.19	OK	
	LC20 at 50.00%	0.10	OK	
	LC21 at 50.00%	0.11	OK	
	LC22 at 50.00%	0.12	OK	
	LC23 at 50.00%	0.12	OK	
	LC24 at 50.00%	0.11	OK	
	LC25 at 50.00%	0.12	OK	
	LC26 at 50.00%	0.13	OK	
	LC27 at 50.00%	0.13	OK	
	LC28 at 50.00%	0.12	OK	
	LC29 at 50.00%	0.12	OK	
	LC3 at 50.00%	0.17	OK	
	LC30 at 50.00%	0.12	OK	
	LC31 at 50.00%	0.12	OK	
	LC32 at 50.00%	0.12	OK	
	LC4 at 0.00%	0.06	OK	Eq. H1-1b
	LC5 at 100.00%	0.07	OK	
	LC6 at 48.44%	0.17	OK	
	LC7 at 50.00%	0.15	OK	
	LC8 at 0.00%	0.06	OK	
	LC9 at 50.00%	0.31	OK	
5	LC1 at 100.00%	0.15	OK	
	LC10 at 100.00%	0.56	OK	
	LC11 at 100.00%	0.61	OK	
	LC12 at 100.00%	**0.61**	**OK**	Eq. H1-1b
	LC13 at 100.00%	0.17	OK	
	LC14 at 100.00%	0.13	OK	
	LC15 at 100.00%	0.26	OK	
	LC16 at 100.00%	0.13	OK	
	LC17 at 100.00%	0.25	OK	
	LC18 at 100.00%	0.25	OK	
	LC19 at 100.00%	0.26	OK	
	LC2 at 75.00%	0.06	OK	
	LC20 at 100.00%	0.27	OK	
	LC21 at 100.00%	0.21	OK	
	LC22 at 100.00%	0.21	OK	

	LC23 at 100.00%	0.23	OK	
	LC24 at 100.00%	0.23	OK	
	LC25 at 100.00%	0.18	OK	
	LC26 at 100.00%	0.18	OK	
	LC27 at 100.00%	0.20	OK	
	LC28 at 100.00%	0.20	OK	
	LC29 at 100.00%	0.16	OK	
	LC3 at 100.00%	0.35	OK	
	LC30 at 100.00%	0.15	OK	
	LC31 at 100.00%	0.17	OK	
	LC32 at 100.00%	0.17	OK	
	LC4 at 100.00%	0.37	OK	
	LC5 at 100.00%	0.11	OK	
	LC6 at 75.00%	0.07	OK	
	LC7 at 100.00%	0.31	OK	
	LC8 at 100.00%	0.33	OK	
	LC9 at 100.00%	0.58	OK	
8	LC1 at 48.44%	0.08	OK	
	LC10 at 48.44%	0.33	OK	
	LC11 at 48.44%	0.35	OK	
	LC12 at 48.44%	**0.35**	**OK**	Eq. H1-1b
	LC13 at 50.00%	0.09	OK	
	LC14 at 50.00%	0.07	OK	
	LC15 at 50.00%	0.18	OK	
	LC16 at 50.00%	0.11	OK	
	LC17 at 50.00%	0.12	OK	
	LC18 at 50.00%	0.12	OK	
	LC19 at 50.00%	0.12	OK	
	LC2 at 0.00%	0.07	OK	Eq. H1-1b
	LC20 at 50.00%	0.13	OK	
	LC21 at 50.00%	0.13	OK	
	LC22 at 50.00%	0.12	OK	
	LC23 at 50.00%	0.13	OK	
	LC24 at 50.00%	0.13	OK	
	LC25 at 50.00%	0.12	OK	
	LC26 at 50.00%	0.11	OK	
	LC27 at 50.00%	0.12	OK	
	LC28 at 50.00%	0.12	OK	
	LC29 at 50.00%	0.10	OK	
	LC3 at 50.00%	0.18	OK	
	LC30 at 50.00%	0.10	OK	
	LC31 at 50.00%	0.11	OK	
	LC32 at 50.00%	0.11	OK	
	LC4 at 48.44%	0.20	OK	
	LC5 at 100.00%	0.08	OK	
	LC6 at 0.00%	0.06	OK	
	LC7 at 50.00%	0.15	OK	
	LC8 at 48.44%	0.17	OK	
	LC9 at 48.44%	0.34	OK	
12	LC1 at 0.00%	0.39	OK	
	LC10 at 0.00%	0.59	OK	
	LC11 at 0.00%	0.55	OK	
	LC12 at 0.00%	0.59	OK	
	LC13 at 0.00%	0.17	OK	
	LC14 at 0.00%	0.13	OK	
	LC15 at 0.00%	0.12	OK	
	LC16 at 0.00%	0.11	OK	
	LC17 at 0.00%	0.16	OK	
	LC18 at 0.00%	0.16	OK	
	LC19 at 0.00%	0.14	OK	
	LC2 at 0.00%	0.26	OK	
	LC20 at 0.00%	0.16	OK	

		LC21 at 0.00%	0.16	OK	
		LC22 at 0.00%	0.16	OK	
		LC23 at 0.00%	0.14	OK	
		LC24 at 0.00%	0.16	OK	
		LC25 at 0.00%	0.16	OK	
		LC26 at 0.00%	0.16	OK	
		LC27 at 0.00%	0.14	OK	
		LC28 at 0.00%	0.16	OK	
		LC29 at 0.00%	0.16	OK	
		LC3 at 25.00%	0.06	OK	
		LC30 at 0.00%	0.16	OK	
		LC31 at 0.00%	0.14	OK	
		LC32 at 0.00%	0.16	OK	
		LC4 at 0.00%	0.26	OK	
		LC5 at 0.00%	0.35	OK	
		LC6 at 0.00%	0.22	OK	
		LC7 at 0.00%	0.09	OK	
		LC8 at 0.00%	0.22	OK	
		LC9 at 0.00%	**0.61**	**OK**	Eq. H1-1b
	13	LC1 at 50.00%	0.19	OK	
		LC10 at 50.00%	0.35	OK	
		LC11 at 50.00%	0.34	OK	
		LC12 at 50.00%	0.35	OK	
		LC13 at 50.00%	0.10	OK	
		LC14 at 50.00%	0.07	OK	
		LC15 at 50.00%	0.06	OK	
		LC16 at 48.44%	0.10	OK	
		LC17 at 50.00%	0.10	OK	
		LC18 at 50.00%	0.09	OK	
		LC19 at 50.00%	0.09	OK	
		LC2 at 48.44%	0.13	OK	
		LC20 at 50.00%	0.10	OK	
		LC21 at 50.00%	0.09	OK	
		LC22 at 50.00%	0.09	OK	
		LC23 at 50.00%	0.08	OK	
		LC24 at 50.00%	0.09	OK	
		LC25 at 50.00%	0.09	OK	
		LC26 at 50.00%	0.09	OK	
		LC27 at 50.00%	0.08	OK	
		LC28 at 50.00%	0.09	OK	
		LC29 at 48.44%	0.09	OK	
		LC3 at 100.00%	0.03	OK	
		LC30 at 48.44%	0.09	OK	
		LC31 at 48.44%	0.09	OK	
		LC32 at 48.44%	0.09	OK	
		LC4 at 50.00%	0.14	OK	
		LC5 at 50.00%	0.17	OK	
		LC6 at 48.44%	0.11	OK	
		LC7 at 100.00%	0.03	OK	
		LC8 at 50.00%	0.12	OK	
		LC9 at 50.00%	**0.36**	**OK**	Eq. H1-1b
L 2-1_2X2-1_2X3_16	**67**	LC1 at 100.00%	0.26	OK	
		LC10 at 100.00%	0.25	OK	
		LC11 at 100.00%	0.24	OK	
		LC12 at 100.00%	0.29	OK	
		LC13 at 100.00%	0.08	OK	
		LC14 at 100.00%	0.06	OK	
		LC15 at 100.00%	0.08	OK	
		LC16 at 100.00%	0.15	OK	
		LC17 at 0.00%	0.09	OK	
		LC18 at 0.00%	0.08	OK	
		LC19 at 0.00%	0.08	OK	

	LC2 at 100.00%	**0.30**	**OK**	Eq. H3-8
	LC20 at 0.00%	0.09	OK	
	LC21 at 100.00%	0.08	OK	
	LC22 at 0.00%	0.07	OK	
	LC23 at 0.00%	0.07	OK	
	LC24 at 100.00%	0.08	OK	
	LC25 at 100.00%	0.09	OK	
	LC26 at 100.00%	0.07	OK	
	LC27 at 100.00%	0.07	OK	
	LC28 at 100.00%	0.09	OK	
	LC29 at 100.00%	0.10	OK	
	LC3 at 100.00%	0.11	OK	
	LC30 at 100.00%	0.09	OK	
	LC31 at 100.00%	0.08	OK	
	LC32 at 100.00%	0.10	OK	
	LC4 at 0.00%	0.29	OK	
	LC5 at 100.00%	0.24	OK	
	LC6 at 100.00%	0.30	OK	
	LC7 at 100.00%	0.13	OK	
	LC8 at 0.00%	0.29	OK	
	LC9 at 100.00%	0.30	OK	Sec. F1
68	LC1 at 100.00%	0.25	OK	Eq. H3-8
	LC10 at 100.00%	0.24	OK	
	LC11 at 100.00%	**0.28**	**OK**	Sec. F1
	LC12 at 100.00%	0.28	OK	
	LC13 at 100.00%	0.07	OK	
	LC14 at 100.00%	0.06	OK	
	LC15 at 100.00%	0.11	OK	
	LC16 at 0.00%	0.15	OK	
	LC17 at 100.00%	0.09	OK	
	LC18 at 100.00%	0.09	OK	
	LC19 at 100.00%	0.11	OK	
	LC2 at 0.00%	0.14	OK	
	LC20 at 100.00%	0.11	OK	
	LC21 at 100.00%	0.09	OK	
	LC22 at 100.00%	0.08	OK	
	LC23 at 100.00%	0.10	OK	
	LC24 at 100.00%	0.10	OK	
	LC25 at 0.00%	0.08	OK	
	LC26 at 100.00%	0.08	OK	
	LC27 at 100.00%	0.09	OK	
	LC28 at 100.00%	0.09	OK	
	LC29 at 0.00%	0.09	OK	
	LC3 at 0.00%	0.24	OK	
	LC30 at 0.00%	0.08	OK	
	LC31 at 0.00%	0.09	OK	
	LC32 at 0.00%	0.10	OK	
	LC4 at 0.00%	0.27	OK	
	LC5 at 100.00%	0.25	OK	
	LC6 at 0.00%	0.15	OK	
	LC7 at 0.00%	0.24	OK	
	LC8 at 0.00%	0.25	OK	
	LC9 at 0.00%	0.25	OK	
69	LC1 at 0.00%	0.19	OK	
	LC10 at 100.00%	**0.29**	**OK**	Sec. F1
	LC11 at 100.00%	0.26	OK	
	LC12 at 100.00%	0.23	OK	
	LC13 at 100.00%	0.07	OK	
	LC14 at 100.00%	0.06	OK	
	LC15 at 0.00%	0.10	OK	
	LC16 at 100.00%	0.26	OK	Sec. F1
	LC17 at 100.00%	0.09	OK	

		LC18 at 100.00%	0.10	OK	
		LC19 at 100.00%	0.10	OK	
		LC2 at 100.00%	0.27	OK	
		LC20 at 100.00%	0.08	OK	
		LC21 at 100.00%	0.08	OK	
		LC22 at 100.00%	0.09	OK	
		LC23 at 0.00%	0.08	OK	
		LC24 at 0.00%	0.07	OK	
		LC25 at 0.00%	0.08	OK	
		LC26 at 0.00%	0.09	OK	
		LC27 at 0.00%	0.09	OK	
		LC28 at 0.00%	0.08	OK	
		LC29 at 0.00%	0.09	OK	
		LC3 at 100.00%	0.21	OK	Eq. H3-8
		LC30 at 0.00%	0.10	OK	
		LC31 at 0.00%	0.10	OK	
		LC32 at 0.00%	0.09	OK	
		LC4 at 100.00%	0.14	OK	
		LC5 at 0.00%	0.19	OK	
		LC6 at 100.00%	0.26	OK	
		LC7 at 100.00%	0.20	OK	
		LC8 at 100.00%	0.15	OK	
		LC9 at 100.00%	0.25	OK	
L 2X2X3_16	**2**	LC1 at 0.00%	0.17	OK	
		LC10 at 100.00%	0.29	OK	
		LC11 at 100.00%	**0.30**	**OK**	Eq. H2-1
		LC12 at 100.00%	0.28	OK	
		LC13 at 100.00%	0.13	OK	
		LC14 at 100.00%	0.09	OK	
		LC15 at 0.00%	0.14	OK	
		LC16 at 100.00%	0.21	OK	
		LC17 at 100.00%	0.13	OK	
		LC18 at 100.00%	0.13	OK	
		LC19 at 100.00%	0.13	OK	
		LC2 at 0.00%	0.22	OK	
		LC20 at 100.00%	0.13	OK	
		LC21 at 100.00%	0.13	OK	
		LC22 at 100.00%	0.13	OK	
		LC23 at 100.00%	0.13	OK	
		LC24 at 100.00%	0.13	OK	
		LC25 at 0.00%	0.13	OK	
		LC26 at 0.00%	0.13	OK	
		LC27 at 0.00%	0.12	OK	
		LC28 at 0.00%	0.12	OK	
		LC29 at 100.00%	0.14	OK	
		LC3 at 100.00%	0.24	OK	
		LC30 at 100.00%	0.15	OK	
		LC31 at 100.00%	0.14	OK	
		LC32 at 100.00%	0.14	OK	
		LC4 at 100.00%	0.11	OK	
		LC5 at 0.00%	0.14	OK	
		LC6 at 0.00%	0.19	OK	
		LC7 at 100.00%	0.21	OK	
		LC8 at 50.00%	0.08	OK	
		LC9 at 100.00%	0.29	OK	
	3	LC1 at 100.00%	0.11	OK	
		LC10 at 100.00%	**0.30**	**OK**	Eq. H2-1
		LC11 at 100.00%	0.29	OK	
		LC12 at 100.00%	0.29	OK	
		LC13 at 100.00%	0.13	OK	
		LC14 at 100.00%	0.10	OK	
		LC15 at 100.00%	0.15	OK	

	LC16 at 100.00%	0.20	OK	
	LC17 at 100.00%	0.13	OK	
	LC18 at 100.00%	0.13	OK	
	LC19 at 100.00%	0.13	OK	
	LC2 at 100.00%	0.29	OK	
	LC20 at 100.00%	0.13	OK	
	LC21 at 100.00%	0.13	OK	
	LC22 at 100.00%	0.14	OK	
	LC23 at 100.00%	0.13	OK	
	LC24 at 100.00%	0.13	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%	0.14	OK	
	LC3 at 0.00%	0.16	OK	
	LC30 at 100.00%	0.15	OK	
	LC31 at 100.00%	0.15	OK	
	LC32 at 100.00%	0.15	OK	
	LC4 at 0.00%	0.16	OK	
	LC5 at 100.00%	0.08	OK	
	LC6 at 100.00%	0.26	OK	
	LC7 at 0.00%	0.14	OK	
	LC8 at 0.00%	0.13	OK	
	LC9 at 100.00%	0.29	OK	
6	LC1 at 0.00%	0.18	OK	
	LC10 at 100.00%	0.30	OK	
	LC11 at 100.00%	**0.31**	**OK**	Eq. H2-1
	LC12 at 100.00%	0.30	OK	
	LC13 at 100.00%	0.13	OK	
	LC14 at 100.00%	0.10	OK	
	LC15 at 0.00%	0.13	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%	0.12	OK	
	LC20 at 100.00%	0.15	OK	
	LC21 at 0.00%	0.12	OK	
	LC22 at 0.00%	0.12	OK	
	LC23 at 100.00%	0.12	OK	
	LC24 at 0.00%	0.12	OK	
	LC25 at 100.00%	0.13	OK	
	LC26 at 100.00%	0.13	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	
	LC30 at 100.00%	0.13	OK	
	LC31 at 100.00%	0.14	OK	
	LC32 at 100.00%	0.14	OK	
	LC4 at 100.00%	0.23	OK	
	LC5 at 0.00%	0.15	OK	
	LC6 at 43.75%	0.09	OK	
	LC7 at 100.00%	0.23	OK	
	LC8 at 0.00%	0.20	OK	
	LC9 at 100.00%	0.30	OK	
7	LC1 at 100.00%	0.11	OK	
	LC10 at 0.00%	0.29	OK	
	LC11 at 0.00%	0.29	OK	Eq. H2-1
	LC12 at 100.00%	**0.30**	**OK**	Eq. H2-1
	LC13 at 100.00%	0.13	OK	

	LC14 at 100.00%	0.09	OK	
	LC15 at 100.00%	0.15	OK	
	LC16 at 0.00%	0.13	OK	
	LC17 at 100.00%	0.14	OK	
	LC18 at 100.00%	0.14	OK	
	LC19 at 100.00%	0.15	OK	
	LC2 at 0.00%	0.16	OK	
	LC20 at 100.00%	0.15	OK	
	LC21 at 100.00%	0.13	OK	
	LC22 at 100.00%	0.13	OK	
	LC23 at 100.00%	0.14	OK	
	LC24 at 100.00%	0.14	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 0.00%	0.18	OK	
	LC30 at 100.00%	0.12	OK	
	LC31 at 100.00%	0.13	OK	
	LC32 at 100.00%	0.13	OK	
	LC4 at 100.00%	0.28	OK	
	LC5 at 100.00%	0.08	OK	
	LC6 at 0.00%	0.13	OK	
	LC7 at 0.00%	0.15	OK	
	LC8 at 100.00%	0.25	OK	
	LC9 at 100.00%	0.28	OK	
14	LC1 at 0.00%	0.28	OK	
	LC10 at 0.00%	0.29	OK	
	LC11 at 0.00%	0.29	OK	
	LC12 at 0.00%	0.29	OK	
	LC13 at 0.00%	0.13	OK	
	LC14 at 0.00%	0.10	OK	
	LC15 at 0.00%	0.12	OK	
	LC16 at 100.00%	0.12	OK	
	LC17 at 0.00%	0.13	OK	
	LC18 at 0.00%	0.13	OK	
	LC19 at 0.00%	0.13	OK	
	LC2 at 100.00%	0.18	OK	
	LC20 at 0.00%	0.13	OK	
	LC21 at 0.00%	0.13	OK	
	LC22 at 0.00%	0.13	OK	
	LC23 at 0.00%	0.12	OK	
	LC24 at 0.00%	0.13	OK	
	LC25 at 0.00%	0.13	OK	
	LC26 at 0.00%	0.13	OK	
	LC27 at 0.00%	0.12	OK	
	LC28 at 0.00%	0.12	OK	
	LC29 at 0.00%	0.12	OK	
	LC3 at 100.00%	0.13	OK	
	LC30 at 0.00%	0.12	OK	
	LC31 at 0.00%	0.12	OK	
	LC32 at 0.00%	0.12	OK	
	LC4 at 0.00%	0.18	OK	
	LC5 at 0.00%	0.25	OK	
	LC6 at 100.00%	0.15	OK	
	LC7 at 100.00%	0.10	OK	
	LC8 at 0.00%	0.15	OK	
	LC9 at 0.00%	**0.30**	**OK**	Eq. H2-1
15	LC1 at 0.00%	0.27	OK	
	LC10 at 0.00%	0.30	OK	
	LC11 at 0.00%	0.29	OK	

		LC12 at 0.00%	0.29	OK	
		LC13 at 0.00%	0.13	OK	
		LC14 at 0.00%	0.10	OK	
		LC15 at 0.00%	0.12	OK	
		LC16 at 0.00%	0.14	OK	
		LC17 at 0.00%	0.12	OK	
		LC18 at 0.00%	0.12	OK	
		LC19 at 0.00%	0.12	OK	
		LC2 at 0.00%	0.18	OK	
		LC20 at 0.00%	0.12	OK	
		LC21 at 0.00%	0.13	OK	
		LC22 at 0.00%	0.12	OK	
		LC23 at 0.00%	0.12	OK	
		LC24 at 0.00%	0.12	OK	
		LC25 at 0.00%	0.13	OK	
		LC26 at 0.00%	0.13	OK	
		LC27 at 0.00%	0.12	OK	
		LC28 at 0.00%	0.13	OK	
		LC29 at 0.00%	0.13	OK	
		LC3 at 100.00%	0.12	OK	
		LC30 at 0.00%	0.13	OK	
		LC31 at 0.00%	0.13	OK	
		LC32 at 0.00%	0.13	OK	
		LC4 at 100.00%	0.19	OK	
		LC5 at 0.00%	0.24	OK	
		LC6 at 0.00%	0.15	OK	
		LC7 at 100.00%	0.09	OK	
		LC8 at 100.00%	0.16	OK	
		LC9 at 0.00%	**0.31**	**OK**	Eq. H2-1
PIPE 2x0.154	**52**	LC1 at 81.25%	0.20	OK	
		LC10 at 81.25%	0.47	OK	
		LC11 at 81.25%	0.48	OK	
		LC12 at 81.25%	**0.50**	**OK**	Eq. H1-1b
		LC13 at 81.25%	0.15	OK	
		LC14 at 81.25%	0.11	OK	
		LC15 at 81.25%	0.13	OK	
		LC16 at 81.25%	0.43	OK	
		LC17 at 81.25%	0.17	OK	
		LC18 at 81.25%	0.16	OK	
		LC19 at 81.25%	0.16	OK	
		LC2 at 81.25%	0.13	OK	
		LC20 at 81.25%	0.17	OK	
		LC21 at 81.25%	0.15	OK	
		LC22 at 81.25%	0.14	OK	
		LC23 at 81.25%	0.14	OK	
		LC24 at 81.25%	0.15	OK	
		LC25 at 81.25%	0.14	OK	
		LC26 at 81.25%	0.13	OK	
		LC27 at 81.25%	0.14	OK	
		LC28 at 81.25%	0.14	OK	
		LC29 at 81.25%	0.21	OK	
		LC3 at 81.25%	0.22	OK	
		LC30 at 81.25%	0.20	OK	
		LC31 at 81.25%	0.21	OK	
		LC32 at 81.25%	0.21	OK	
		LC4 at 81.25%	0.26	OK	
		LC5 at 81.25%	0.16	OK	
		LC6 at 81.25%	0.14	OK	
		LC7 at 81.25%	0.21	OK	
		LC8 at 81.25%	0.23	OK	
		LC9 at 81.25%	0.49	OK	
	53	LC1 at 81.25%	0.45	OK	

	LC10 at 81.25%	0.41	OK	
	LC11 at 81.25%	0.39	OK	
	LC12 at 81.25%	0.47	OK	
	LC13 at 81.25%	0.12	OK	
	LC14 at 81.25%	0.09	OK	
	LC15 at 81.25%	0.13	OK	
	LC16 at 81.25%	0.24	OK	
	LC17 at 81.25%	0.15	OK	
	LC18 at 81.25%	0.12	OK	
	LC19 at 81.25%	0.12	OK	
	LC2 at 81.25%	0.25	OK	
	LC20 at 81.25%	0.14	OK	
	LC21 at 81.25%	0.13	OK	
	LC22 at 81.25%	0.10	OK	
	LC23 at 81.25%	0.09	OK	
	LC24 at 81.25%	0.12	OK	
	LC25 at 81.25%	0.18	OK	
	LC26 at 81.25%	0.15	OK	
	LC27 at 81.25%	0.13	OK	
	LC28 at 81.25%	0.16	OK	
	LC29 at 81.25%	0.19	OK	
	LC3 at 81.25%	0.42	OK	
	LC30 at 81.25%	0.16	OK	
	LC31 at 81.25%	0.15	OK	
	LC32 at 81.25%	0.18	OK	
	LC4 at 81.25%	0.34	OK	
	LC5 at 81.25%	0.41	OK	
	LC6 at 81.25%	0.26	OK	
	LC7 at 81.25%	0.41	OK	
	LC8 at 81.25%	0.33	OK	
	LC9 at 81.25%	**0.49**	**OK**	Eq. H1-1b
54	LC1 at 81.25%	0.47	OK	
	LC10 at 81.25%	0.51	OK	
	LC11 at 81.25%	0.42	OK	
	LC12 at 81.25%	0.44	OK	
	LC13 at 81.25%	0.13	OK	
	LC14 at 81.25%	0.10	OK	
	LC15 at 81.25%	0.14	OK	
	LC16 at 81.25%	0.21	OK	
	LC17 at 81.25%	0.20	OK	
	LC18 at 81.25%	0.19	OK	
	LC19 at 81.25%	0.16	OK	
	LC2 at 81.25%	0.35	OK	Eq. H1-1b
	LC20 at 81.25%	0.16	OK	
	LC21 at 81.25%	0.19	OK	
	LC22 at 81.25%	0.17	OK	
	LC23 at 81.25%	0.14	OK	
	LC24 at 81.25%	0.16	OK	
	LC25 at 81.25%	0.14	OK	
	LC26 at 81.25%	0.13	OK	
	LC27 at 81.25%	0.10	OK	
	LC28 at 81.25%	0.11	OK	
	LC29 at 81.25%	0.17	OK	
	LC3 at 81.25%	0.47	OK	
	LC30 at 81.25%	0.15	OK	
	LC31 at 81.25%	0.12	OK	
	LC32 at 81.25%	0.13	OK	
	LC4 at 81.25%	0.25	OK	
	LC5 at 81.25%	0.44	OK	
	LC6 at 81.25%	0.34	OK	
	LC7 at 81.25%	0.45	OK	
	LC8 at 81.25%	0.26	OK	
	LC9 at 81.25%	**0.53**	**OK**	Eq. H1-1b

55	LC1 at 81.25%	0.23	OK	
	LC10 at 81.25%	**0.53**	**OK**	Eq. H1-1b
	LC11 at 81.25%	0.50	OK	
	LC12 at 81.25%	0.50	OK	
	LC13 at 81.25%	0.15	OK	
	LC14 at 81.25%	0.11	OK	
	LC15 at 81.25%	0.13	OK	
	LC16 at 81.25%	0.25	OK	
	LC17 at 81.25%	0.22	OK	
	LC18 at 81.25%	0.22	OK	
	LC19 at 81.25%	0.21	OK	
	LC2 at 81.25%	0.27	OK	
	LC20 at 81.25%	0.21	OK	
	LC21 at 81.25%	0.15	OK	
	LC22 at 81.25%	0.15	OK	
	LC23 at 81.25%	0.14	OK	
	LC24 at 81.25%	0.14	OK	
	LC25 at 81.25%	0.16	OK	
	LC26 at 81.25%	0.16	OK	
	LC27 at 81.25%	0.14	OK	
	LC28 at 81.25%	0.15	OK	
	LC29 at 81.25%	0.18	OK	
	LC3 at 81.25%	0.26	OK	
	LC30 at 81.25%	0.18	OK	
	LC31 at 81.25%	0.17	OK	
	LC32 at 81.25%	0.17	OK	
	LC4 at 81.25%	0.13	OK	
	LC5 at 81.25%	0.20	OK	
	LC6 at 81.25%	0.23	OK	
	LC7 at 81.25%	0.25	OK	
	LC8 at 81.25%	0.15	OK	
	LC9 at 81.25%	0.53	OK	
56	LC1 at 33.33%	0.41	OK	
	LC10 at 81.25%	0.51	OK	
	LC11 at 81.25%	0.46	OK	
	LC12 at 81.25%	0.48	OK	
	LC13 at 81.25%	0.15	OK	
	LC14 at 81.25%	0.11	OK	
	LC15 at 81.25%	0.20	OK	
	LC16 at 81.25%	0.11	OK	
	LC17 at 81.25%	0.23	OK	
	LC18 at 81.25%	0.23	OK	
	LC19 at 81.25%	0.21	OK	
	LC2 at 81.25%	0.27	OK	
	LC20 at 81.25%	0.22	OK	
	LC21 at 81.25%	0.19	OK	
	LC22 at 81.25%	0.19	OK	
	LC23 at 81.25%	0.17	OK	
	LC24 at 81.25%	0.17	OK	
	LC25 at 81.25%	0.17	OK	
	LC26 at 81.25%	0.16	OK	
	LC27 at 81.25%	0.15	OK	
	LC28 at 81.25%	0.15	OK	
	LC29 at 81.25%	0.15	OK	
	LC3 at 81.25%	0.23	OK	
	LC30 at 81.25%	0.15	OK	
	LC31 at 81.25%	0.13	OK	
	LC32 at 81.25%	0.14	OK	
	LC4 at 33.33%	0.13	OK	
	LC5 at 33.33%	0.38	OK	
	LC6 at 81.25%	0.23	OK	
	LC7 at 81.25%	0.22	OK	

	LC8 at 33.33%	0.10	OK	
	LC9 at 81.25%	**0.52**	**OK**	Eq. H1-1b
57	LC1 at 81.25%	0.41	OK	
	LC10 at 81.25%	0.50	OK	
	LC11 at 81.25%	0.42	OK	
	LC12 at 81.25%	0.41	OK	
	LC13 at 81.25%	0.13	OK	
	LC14 at 81.25%	0.09	OK	
	LC15 at 81.25%	0.14	OK	
	LC16 at 81.25%	0.09	OK	
	LC17 at 81.25%	0.17	OK	
	LC18 at 81.25%	0.18	OK	
	LC19 at 81.25%	0.15	OK	
	LC2 at 81.25%	**0.50**	**OK**	Eq. H1-1b
	LC20 at 81.25%	0.14	OK	
	LC21 at 81.25%	0.15	OK	
	LC22 at 81.25%	0.16	OK	
	LC23 at 81.25%	0.13	OK	
	LC24 at 81.25%	0.12	OK	
	LC25 at 81.25%	0.14	OK	
	LC26 at 81.25%	0.14	OK	
	LC27 at 81.25%	0.12	OK	
	LC28 at 81.25%	0.11	OK	
	LC29 at 81.25%	0.13	OK	
	LC3 at 81.25%	0.46	OK	
	LC30 at 81.25%	0.14	OK	
	LC31 at 81.25%	0.11	OK	
	LC32 at 81.25%	0.11	OK	
	LC4 at 81.25%	0.47	OK	
	LC5 at 81.25%	0.41	OK	
	LC6 at 81.25%	0.50	OK	
	LC7 at 81.25%	0.45	OK	
	LC8 at 81.25%	0.47	OK	
	LC9 at 81.25%	0.48	OK	
58	LC1 at 81.25%	0.24	OK	
	LC10 at 81.25%	0.39	OK	
	LC11 at 81.25%	0.44	OK	
	LC12 at 81.25%	0.45	OK	
	LC13 at 81.25%	0.12	OK	
	LC14 at 81.25%	0.09	OK	
	LC15 at 81.25%	0.17	OK	
	LC16 at 81.25%	0.09	OK	
	LC17 at 81.25%	0.15	OK	
	LC18 at 33.33%	0.15	OK	
	LC19 at 81.25%	0.18	OK	
	LC2 at 81.25%	**0.61**	**OK**	Eq. H1-1b
	LC20 at 81.25%	0.19	OK	
	LC21 at 81.25%	0.13	OK	
	LC22 at 33.33%	0.13	OK	
	LC23 at 81.25%	0.15	OK	
	LC24 at 81.25%	0.16	OK	
	LC25 at 81.25%	0.11	OK	
	LC26 at 81.25%	0.12	OK	
	LC27 at 81.25%	0.14	OK	
	LC28 at 81.25%	0.15	OK	
	LC29 at 81.25%	0.10	OK	
	LC3 at 81.25%	0.40	OK	
	LC30 at 81.25%	0.12	OK	
	LC31 at 81.25%	0.12	OK	
	LC32 at 81.25%	0.13	OK	
	LC4 at 81.25%	0.48	OK	
	LC5 at 81.25%	0.26	OK	

	LC6 at 81.25%	0.58	OK	
	LC7 at 81.25%	0.38	OK	
	LC8 at 81.25%	0.46	OK	
	LC9 at 81.25%	0.37	OK	
59	LC1 at 33.33%	0.09	OK	
	LC10 at 81.25%	0.39	OK	
	LC11 at 81.25%	0.40	OK	
	LC12 at 81.25%	**0.41**	**OK**	Eq. H1-1b
	LC13 at 81.25%	0.12	OK	
	LC14 at 81.25%	0.09	OK	
	LC15 at 81.25%	0.14	OK	
	LC16 at 81.25%	0.15	OK	
	LC17 at 81.25%	0.16	OK	
	LC18 at 81.25%	0.15	OK	
	LC19 at 81.25%	0.18	OK	
	LC2 at 81.25%	0.25	OK	
	LC20 at 81.25%	0.18	OK	
	LC21 at 81.25%	0.13	OK	
	LC22 at 81.25%	0.12	OK	
	LC23 at 81.25%	0.15	OK	
	LC24 at 81.25%	0.15	OK	
	LC25 at 81.25%	0.11	OK	
	LC26 at 81.25%	0.12	OK	
	LC27 at 81.25%	0.13	OK	
	LC28 at 81.25%	0.13	OK	
	LC29 at 81.25%	0.11	OK	
	LC3 at 81.25%	0.30	OK	
	LC30 at 81.25%	0.13	OK	
	LC31 at 81.25%	0.12	OK	
	LC32 at 81.25%	0.11	OK	
	LC4 at 81.25%	0.37	OK	
	LC5 at 81.25%	0.10	OK	
	LC6 at 81.25%	0.23	OK	
	LC7 at 81.25%	0.27	OK	
	LC8 at 81.25%	0.34	OK	
	LC9 at 81.25%	0.35	OK	
60	LC1 at 33.33%	0.04	OK	
	LC10 at 81.25%	**0.45**	**OK**	Eq. H1-1b
	LC11 at 81.25%	0.43	OK	
	LC12 at 81.25%	0.38	OK	
	LC13 at 81.25%	0.13	OK	
	LC14 at 81.25%	0.09	OK	
	LC15 at 81.25%	0.15	OK	
	LC16 at 81.25%	0.31	OK	
	LC17 at 81.25%	0.11	OK	
	LC18 at 81.25%	0.12	OK	
	LC19 at 81.25%	0.11	OK	
	LC2 at 81.25%	0.37	OK	
	LC20 at 81.25%	0.12	OK	
	LC21 at 81.25%	0.12	OK	
	LC22 at 81.25%	0.14	OK	
	LC23 at 81.25%	0.13	OK	
	LC24 at 81.25%	0.11	OK	
	LC25 at 81.25%	0.14	OK	
	LC26 at 81.25%	0.16	OK	
	LC27 at 81.25%	0.15	OK	
	LC28 at 81.25%	0.13	OK	
	LC29 at 81.25%	0.17	OK	
	LC3 at 81.25%	0.24	OK	
	LC30 at 81.25%	0.19	OK	
	LC31 at 81.25%	0.18	OK	
	LC32 at 81.25%	0.16	OK	

	LC4 at 81.25%	0.23	OK	
	LC5 at 33.33%	0.03	OK	
	LC6 at 81.25%	0.34	OK	
	LC7 at 81.25%	0.21	OK	
	LC8 at 81.25%	0.21	OK	
	LC9 at 81.25%	0.40	OK	
61	LC1 at 81.25%	0.15	OK	
	LC10 at 81.25%	0.40	OK	
	LC11 at 81.25%	0.38	OK	
	LC12 at 81.25%	0.37	OK	
	LC13 at 81.25%	0.11	OK	
	LC14 at 81.25%	0.08	OK	
	LC15 at 81.25%	0.15	OK	
	LC16 at 81.25%	0.28	OK	
	LC17 at 81.25%	0.09	OK	
	LC18 at 81.25%	0.12	OK	
	LC19 at 81.25%	0.11	OK	
	LC2 at 81.25%	0.46	OK	
	LC20 at 81.25%	0.11	OK	
	LC21 at 81.25%	0.10	OK	
	LC22 at 81.25%	0.13	OK	
	LC23 at 81.25%	0.13	OK	
	LC24 at 81.25%	0.11	OK	
	LC25 at 81.25%	0.12	OK	
	LC26 at 81.25%	0.15	OK	
	LC27 at 81.25%	0.14	OK	
	LC28 at 81.25%	0.12	OK	
	LC29 at 81.25%	0.14	OK	
	LC3 at 81.25%	0.32	OK	
	LC30 at 81.25%	0.17	OK	
	LC31 at 81.25%	0.16	OK	
	LC32 at 81.25%	0.13	OK	
	LC4 at 81.25%	**0.51**	**OK**	Eq. H1-1b
	LC5 at 81.25%	0.17	OK	
	LC6 at 81.25%	0.44	OK	
	LC7 at 81.25%	0.29	OK	
	LC8 at 81.25%	0.48	OK	
	LC9 at 81.25%	0.32	OK	
62	LC1 at 81.25%	0.38	OK	
	LC10 at 81.25%	0.48	OK	
	LC11 at 81.25%	0.49	OK	
	LC12 at 81.25%	**0.56**	**OK**	Eq. H1-1b
	LC13 at 81.25%	0.15	OK	
	LC14 at 81.25%	0.11	OK	
	LC15 at 81.25%	0.15	OK	
	LC16 at 81.25%	0.25	OK	
	LC17 at 81.25%	0.15	OK	
	LC18 at 81.25%	0.12	OK	
	LC19 at 81.25%	0.12	OK	
	LC2 at 81.25%	0.36	OK	
	LC20 at 81.25%	0.15	OK	
	LC21 at 81.25%	0.16	OK	
	LC22 at 81.25%	0.13	OK	
	LC23 at 81.25%	0.13	OK	
	LC24 at 81.25%	0.16	OK	
	LC25 at 81.25%	0.17	OK	
	LC26 at 81.25%	0.14	OK	
	LC27 at 81.25%	0.14	OK	
	LC28 at 81.25%	0.17	OK	
	LC29 at 81.25%	0.19	OK	
	LC3 at 81.25%	0.34	OK	
	LC30 at 81.25%	0.16	OK	

	LC31 at 81.25%	0.16	OK	
	LC32 at 81.25%	0.19	OK	
	LC4 at 81.25%	0.43	OK	
	LC5 at 81.25%	0.35	OK	
	LC6 at 81.25%	0.37	OK	
	LC7 at 81.25%	0.34	OK	
	LC8 at 81.25%	0.39	OK	
	LC9 at 81.25%	0.56	OK	
63	LC1 at 81.25%	0.35	OK	
	LC10 at 81.25%	0.50	OK	
	LC11 at 81.25%	0.49	OK	
	LC12 at 81.25%	0.53	OK	
	LC13 at 81.25%	0.16	OK	
	LC14 at 81.25%	0.12	OK	
	LC15 at 81.25%	0.20	OK	
	LC16 at 81.25%	0.42	OK	
	LC17 at 81.25%	0.15	OK	
	LC18 at 81.25%	0.14	OK	
	LC19 at 81.25%	0.13	OK	
	LC2 at 33.33%	0.15	OK	
	LC20 at 81.25%	0.15	OK	
	LC21 at 81.25%	0.17	OK	
	LC22 at 81.25%	0.15	OK	
	LC23 at 81.25%	0.15	OK	
	LC24 at 81.25%	0.17	OK	
	LC25 at 81.25%	0.19	OK	
	LC26 at 81.25%	0.18	OK	
	LC27 at 81.25%	0.17	OK	
	LC28 at 81.25%	0.19	OK	
	LC29 at 81.25%	0.24	OK	
	LC3 at 81.25%	0.20	OK	
	LC30 at 81.25%	0.22	OK	
	LC31 at 81.25%	0.22	OK	
	LC32 at 81.25%	0.23	OK	
	LC4 at 81.25%	0.26	OK	
	LC5 at 81.25%	0.31	OK	
	LC6 at 33.33%	0.12	OK	
	LC7 at 81.25%	0.20	OK	
	LC8 at 81.25%	0.22	OK	
	LC9 at 81.25%	**0.55**	**OK**	Eq. H1-1b
64	LC1 at 91.07%	0.24	OK	Eq. H1-1b
	LC10 at 64.29%	0.38	OK	
	LC11 at 64.29%	**0.38**	**OK**	Eq. H1-1b
	LC12 at 64.29%	0.36	OK	
	LC13 at 64.29%	0.11	OK	
	LC14 at 64.29%	0.08	OK	
	LC15 at 50.00%	0.18	OK	Eq. H1-1b
	LC16 at 35.71%	0.22	OK	
	LC17 at 64.29%	0.15	OK	
	LC18 at 64.29%	0.15	OK	
	LC19 at 64.29%	0.16	OK	
	LC2 at 90.18%	0.23	OK	
	LC20 at 64.29%	0.15	OK	
	LC21 at 64.29%	0.10	OK	
	LC22 at 64.29%	0.11	OK	
	LC23 at 35.71%	0.11	OK	
	LC24 at 35.71%	0.11	OK	
	LC25 at 64.29%	0.11	OK	
	LC26 at 64.29%	0.11	OK	
	LC27 at 64.29%	0.12	OK	
	LC28 at 64.29%	0.11	OK	
	LC29 at 35.71%	0.14	OK	

	LC3 at 91.07%	0.21	OK	
	LC30 at 35.71%	0.14	OK	
	LC31 at 35.71%	0.15	OK	
	LC32 at 35.71%	0.15	OK	
	LC4 at 9.82%	0.23	OK	
	LC5 at 91.07%	0.24	OK	
	LC6 at 90.18%	0.21	OK	
	LC7 at 91.07%	0.22	OK	
	LC8 at 9.82%	0.21	OK	
	LC9 at 64.29%	0.36	OK	
65	LC1 at 63.39%	0.21	OK	Eq. H1-1b
	LC10 at 35.71%	0.37	OK	
	LC11 at 35.71%	0.35	OK	
	LC12 at 35.71%	0.36	OK	
	LC13 at 35.71%	0.11	OK	
	LC14 at 35.71%	0.08	OK	
	LC15 at 35.71%	0.13	OK	
	LC16 at 35.71%	0.23	OK	
	LC17 at 35.71%	0.11	OK	
	LC18 at 64.29%	0.11	OK	
	LC19 at 64.29%	0.10	OK	
	LC2 at 64.29%	0.24	OK	
	LC20 at 35.71%	0.10	OK	
	LC21 at 35.71%	0.12	OK	
	LC22 at 35.71%	0.11	OK	
	LC23 at 35.71%	0.10	OK	
	LC24 at 35.71%	0.11	OK	
	LC25 at 35.71%	0.13	OK	
	LC26 at 35.71%	0.12	OK	
	LC27 at 35.71%	0.11	OK	
	LC28 at 35.71%	0.12	OK	
	LC29 at 35.71%	0.15	OK	
	LC3 at 90.18%	0.21	OK	
	LC30 at 35.71%	0.14	OK	
	LC31 at 35.71%	0.14	OK	
	LC32 at 35.71%	0.14	OK	
	LC4 at 91.07%	0.21	OK	Eq. H1-1b
	LC5 at 63.39%	0.20	OK	
	LC6 at 64.29%	0.21	OK	
	LC7 at 90.18%	0.20	OK	
	LC8 at 91.07%	0.21	OK	
	LC9 at 35.71%	**0.38**	**OK**	Eq. H1-1b
66	LC1 at 64.29%	0.28	OK	
	LC10 at 35.71%	0.33	OK	
	LC11 at 35.71%	0.37	OK	
	LC12 at 35.71%	**0.39**	**OK**	Eq. H1-1b
	LC13 at 35.71%	0.11	OK	
	LC14 at 35.71%	0.08	OK	
	LC15 at 64.29%	0.12	OK	
	LC16 at 35.71%	0.10	OK	
	LC17 at 64.29%	0.15	OK	
	LC18 at 64.29%	0.13	OK	
	LC19 at 35.71%	0.13	OK	
	LC2 at 8.93%	0.25	OK	Eq. H1-1b
	LC20 at 64.29%	0.14	OK	
	LC21 at 64.29%	0.13	OK	
	LC22 at 64.29%	0.11	OK	
	LC23 at 35.71%	0.12	OK	
	LC24 at 35.71%	0.12	OK	
	LC25 at 64.29%	0.12	OK	
	LC26 at 64.29%	0.10	OK	
	LC27 at 35.71%	0.11	OK	

		LC28 at 35.71%	0.12	OK	
		LC29 at 64.29%	0.11	OK	
		LC3 at 63.39%	0.24	OK	
		LC30 at 35.71%	0.09	OK	
		LC31 at 35.71%	0.11	OK	
		LC32 at 35.71%	0.12	OK	
		LC4 at 35.71%	0.29	OK	
		LC5 at 64.29%	0.26	OK	
		LC6 at 8.93%	0.25	OK	
		LC7 at 63.39%	0.24	OK	
		LC8 at 63.39%	0.27	OK	
		LC9 at 64.29%	0.37	OK	Eq. H1-1b
PIPE 3x0.216	**9**	LC1 at 56.25%	0.16	OK	Eq. H3-1
		LC10 at 44.44%	0.31	OK	Eq. H1-1b
		LC11 at 55.56%	0.31	OK	
		LC12 at 55.56%	**0.32**	**OK**	Eq. H1-1b
		LC13 at 55.56%	0.09	OK	
		LC14 at 55.56%	0.07	OK	
		LC15 at 56.25%	0.10	OK	
		LC16 at 43.75%	0.22	OK	
		LC17 at 56.25%	0.13	OK	
		LC18 at 56.25%	0.12	OK	
		LC19 at 56.25%	0.13	OK	
		LC2 at 43.75%	0.16	OK	
		LC20 at 56.25%	0.13	OK	
		LC21 at 56.25%	0.10	OK	
		LC22 at 44.44%	0.10	OK	
		LC23 at 44.44%	0.10	OK	
		LC24 at 56.25%	0.10	OK	
		LC25 at 55.56%	0.10	OK	
		LC26 at 43.75%	0.10	OK	
		LC27 at 55.56%	0.10	OK	
		LC28 at 55.56%	0.10	OK	
		LC29 at 43.75%	0.12	OK	
		LC3 at 56.25%	0.18	OK	Eq. H1-1b
		LC30 at 43.75%	0.12	OK	
		LC31 at 43.75%	0.12	OK	
		LC32 at 43.75%	0.12	OK	
		LC4 at 56.25%	0.17	OK	
		LC5 at 56.25%	0.16	OK	
		LC6 at 43.75%	0.15	OK	
		LC7 at 56.25%	0.17	OK	
		LC8 at 56.25%	0.15	OK	
		LC9 at 55.56%	0.30	OK	
	10	LC1 at 56.25%	0.19	OK	
		LC10 at 55.56%	0.31	OK	
		LC11 at 55.56%	0.30	OK	
		LC12 at 55.56%	0.31	OK	
		LC13 at 55.56%	0.09	OK	
		LC14 at 55.56%	0.07	OK	
		LC15 at 44.44%	0.13	OK	
		LC16 at 43.75%	0.22	OK	
		LC17 at 55.56%	0.09	OK	
		LC18 at 44.44%	0.09	OK	
		LC19 at 44.44%	0.09	OK	
		LC2 at 43.75%	0.20	OK	
		LC20 at 55.56%	0.08	OK	
		LC21 at 44.44%	0.09	OK	
		LC22 at 44.44%	0.10	OK	
		LC23 at 44.44%	0.10	OK	
		LC24 at 44.44%	0.09	OK	
		LC25 at 44.44%	0.11	OK	

		LC26 at 44.44%	0.11	OK	
		LC27 at 44.44%	0.11	OK	
		LC28 at 44.44%	0.10	OK	
		LC29 at 44.44%	0.12	OK	
		LC3 at 43.75%	0.17	OK	
		LC30 at 44.44%	0.12	OK	
		LC31 at 44.44%	0.12	OK	
		LC32 at 44.44%	0.12	OK	
		LC4 at 56.25%	0.18	OK	
		LC5 at 56.25%	0.17	OK	
		LC6 at 43.75%	0.18	OK	
		LC7 at 43.75%	0.15	OK	
		LC8 at 56.25%	0.16	OK	
		LC9 at 55.56%	**0.32**	**OK**	Eq. H1-1b
	11	LC1 at 43.75%	0.19	OK	
		LC10 at 43.75%	0.30	OK	Eq. H1-1b
		LC11 at 56.25%	0.30	OK	Eq. H1-1b
		LC12 at 55.56%	0.30	OK	Eq. H1-1b
		LC13 at 44.44%	0.09	OK	
		LC14 at 44.44%	0.07	OK	
		LC15 at 55.56%	0.13	OK	
		LC16 at 55.56%	0.07	OK	
		LC17 at 55.56%	0.12	OK	
		LC18 at 55.56%	0.12	OK	
		LC19 at 55.56%	0.12	OK	
		LC2 at 43.75%	0.19	OK	
		LC20 at 55.56%	0.12	OK	
		LC21 at 55.56%	0.11	OK	
		LC22 at 55.56%	0.10	OK	
		LC23 at 55.56%	0.11	OK	
		LC24 at 55.56%	0.11	OK	
		LC25 at 55.56%	0.09	OK	
		LC26 at 55.56%	0.09	OK	
		LC27 at 55.56%	0.10	OK	
		LC28 at 55.56%	0.10	OK	
		LC29 at 44.44%	0.08	OK	
		LC3 at 56.25%	0.19	OK	
		LC30 at 55.56%	0.08	OK	
		LC31 at 55.56%	0.09	OK	
		LC32 at 55.56%	0.09	OK	
		LC4 at 56.25%	0.20	OK	Eq. H1-1b
		LC5 at 43.75%	0.17	OK	
		LC6 at 43.75%	0.17	OK	
		LC7 at 56.25%	0.17	OK	
		LC8 at 56.25%	0.18	OK	
		LC9 at 44.44%	**0.31**	**OK**	Eq. H1-1b
PL 6X1/2	**25**	LC1 at 50.00%	0.06	OK	
		LC10 at 50.00%	0.12	OK	Eq. H3-1
		LC11 at 0.00%	**0.13**	**OK**	Eq. H3-1
		LC12 at 0.00%	0.12	OK	
		LC13 at 0.00%	0.03	OK	
		LC14 at 0.00%	0.02	OK	
		LC15 at 50.00%	0.05	OK	
		LC16 at 0.00%	0.10	OK	
		LC17 at 0.00%	0.03	OK	
		LC18 at 0.00%	0.03	OK	
		LC19 at 0.00%	0.03	OK	
		LC2 at 46.88%	0.09	OK	Eq. H1-1b
		LC20 at 0.00%	0.03	OK	
		LC21 at 50.00%	0.03	OK	
		LC22 at 50.00%	0.03	OK	
		LC23 at 0.00%	0.04	OK	

	LC24 at 0.00%	0.03	OK	
	LC25 at 50.00%	0.04	OK	
	LC26 at 50.00%	0.04	OK	
	LC27 at 50.00%	0.04	OK	
	LC28 at 50.00%	0.04	OK	
	LC29 at 50.00%	0.05	OK	
	LC3 at 0.00%	0.08	OK	
	LC30 at 50.00%	0.05	OK	
	LC31 at 0.00%	0.05	OK	
	LC32 at 0.00%	0.05	OK	
	LC4 at 46.88%	0.09	OK	
	LC5 at 50.00%	0.06	OK	
	LC6 at 46.88%	0.09	OK	
	LC7 at 0.00%	0.08	OK	
	LC8 at 46.88%	0.09	OK	
	LC9 at 50.00%	0.12	OK	
26	LC1 at 0.00%	0.07	OK	
	LC10 at 50.00%	0.13	OK	
	LC11 at 50.00%	**0.14**	**OK**	Eq. H3-1
	LC12 at 0.00%	0.13	OK	Eq. H3-1
	LC13 at 0.00%	0.03	OK	
	LC14 at 0.00%	0.02	OK	
	LC15 at 0.00%	0.05	OK	
	LC16 at 50.00%	0.04	OK	
	LC17 at 0.00%	0.05	OK	
	LC18 at 50.00%	0.05	OK	
	LC19 at 50.00%	0.05	OK	
	LC2 at 50.00%	0.09	OK	
	LC20 at 0.00%	0.05	OK	
	LC21 at 0.00%	0.05	OK	
	LC22 at 0.00%	0.04	OK	
	LC23 at 50.00%	0.04	OK	
	LC24 at 0.00%	0.05	OK	
	LC25 at 0.00%	0.04	OK	
	LC26 at 50.00%	0.03	OK	
	LC27 at 50.00%	0.04	OK	
	LC28 at 0.00%	0.04	OK	
	LC29 at 0.00%	0.03	OK	
	LC3 at 50.00%	0.09	OK	
	LC30 at 50.00%	0.03	OK	
	LC31 at 50.00%	0.04	OK	
	LC32 at 50.00%	0.03	OK	
	LC4 at 50.00%	0.09	OK	Eq. H1-1b
	LC5 at 46.88%	0.07	OK	
	LC6 at 50.00%	0.09	OK	
	LC7 at 50.00%	0.09	OK	
	LC8 at 50.00%	0.09	OK	
	LC9 at 0.00%	0.13	OK	
27	LC1 at 50.00%	0.09	OK	Eq. H1-1b
	LC10 at 0.00%	**0.14**	**OK**	Eq. H3-1
	LC11 at 0.00%	0.12	OK	
	LC12 at 50.00%	0.13	OK	Eq. H3-1
	LC13 at 0.00%	0.03	OK	
	LC14 at 0.00%	0.02	OK	
	LC15 at 0.00%	0.02	OK	
	LC16 at 0.00%	0.03	OK	
	LC17 at 50.00%	0.03	OK	
	LC18 at 0.00%	0.03	OK	
	LC19 at 50.00%	0.03	OK	
	LC2 at 0.00%	0.09	OK	
	LC20 at 50.00%	0.03	OK	
	LC21 at 50.00%	0.03	OK	

LC22 at 0.00%	0.03	OK
LC23 at 0.00%	0.03	OK
LC24 at 50.00%	0.03	OK
LC25 at 0.00%	0.03	OK
LC26 at 0.00%	0.03	OK
LC27 at 0.00%	0.03	OK
LC28 at 50.00%	0.03	OK
LC29 at 0.00%	0.03	OK
LC3 at 50.00%	0.09	OK
LC30 at 0.00%	0.03	OK
LC31 at 0.00%	0.03	OK
LC32 at 50.00%	0.03	OK
LC4 at 50.00%	0.09	OK
LC5 at 50.00%	0.09	OK
LC6 at 0.00%	0.09	OK
LC7 at 50.00%	0.09	OK
LC8 at 50.00%	0.09	OK
LC9 at 0.00%	0.13	OK

Bentley

Current Date: 8/30/2018 5:35 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT1121\CT1121 (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
2	-0.7253	0.00	0.00	0
3	-6.0833	0.00	0.00	0
4	-6.25	0.00	0.00	0
5	-6.3333	0.00	-0.433	0
6	-6.5833	0.00	-0.866	0
7	-3.7376	0.00	-5.2176	0
8	-3.9043	0.00	-5.5062	0
9	-0.892	0.00	-0.2887	0
10	-6.6667	0.00	-0.7217	0
11	-3.179	0.00	-6.7625	0
12	-2.8457	0.00	-6.7625	0
13	-0.50	0.00	-11.4027	0
14	-0.4167	0.00	-11.547	0
17	0.7253	0.00	0.00	0
18	6.0833	0.00	0.00	0
19	6.25	0.00	0.00	0
20	6.3333	0.00	-0.433	0
21	6.5833	0.00	-0.866	0
22	3.7376	0.00	-5.2176	0
23	3.9043	0.00	-5.5062	0
24	0.892	0.00	-0.2887	0
25	6.6667	0.00	-0.7217	0

26	3.179	0.00	-6.7625	0
28	0.50	0.00	-11.4027	0
29	0.4167	0.00	-11.547	0
32	0.00	0.00	-11.4027	0
51	5.1136	5.00	0.05	0
53	-5.1136	5.00	0.05	0
63	5.1136	-1.00	0.05	0
67	-5.1136	-1.00	0.05	0
69	0.9427	0.00	-3.5453	0
70	0.00	0.00	-5.1781	0
72	1.7046	5.00	0.05	0
73	-1.7046	5.00	0.05	0
82	1.7046	-1.00	0.05	0
83	-1.7046	-1.00	0.05	0
122	6.1428	5.00	-1.7318	0
123	4.4383	5.00	-4.6842	0
124	2.7337	5.00	-7.6365	0
125	1.0292	5.00	-10.5889	0
126	6.1428	-1.00	-1.7318	0
127	4.4383	-1.00	-4.6842	0
128	2.7337	-1.00	-7.6365	0
130	-6.1428	5.00	-1.7318	0
131	-4.4383	5.00	-4.6842	0
132	-2.7337	5.00	-7.6365	0
133	-1.0292	5.00	-10.5889	0
134	-6.1428	-1.00	-1.7318	0
135	-4.4383	-1.00	-4.6842	0
136	-2.7337	-1.00	-7.6365	0
137	-1.0292	-1.00	-10.5889	0
170	-6.25	3.00	0.00	0
171	6.25	3.00	0.00	0
172	-6.6667	3.00	-0.7217	0
173	-0.4167	3.00	-11.547	0
174	0.4167	3.00	-11.547	0
175	6.6667	3.00	-0.7217	0
176	0.50	3.00	-11.4027	0
177	-0.50	3.00	-11.4027	0
178	6.0833	3.00	0.00	0
179	6.5833	3.00	-0.866	0
180	-6.5833	3.00	-0.866	0
181	-6.0833	3.00	0.00	0
71	-0.9427	0.00	-3.5453	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
69	1	1	1	1	1	1
70	1	1	1	1	1	1
71	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	Ig factor
1	5	71		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
2	5	9		L 2X2X3_16	A36	0.00	0.00	0.00
3	5	7		L 2X2X3_16	A36	0.00	0.00	0.00
4	8	2		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
5	20	69		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
6	20	24		L 2X2X3_16	A36	0.00	0.00	0.00
7	20	22		L 2X2X3_16	A36	0.00	0.00	0.00
8	23	17		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
10	10	14		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
11	29	25		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
12	70	32		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
13	11	26		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
14	27	32		L 2X2X3_16	A36	0.00	0.00	0.00
15	12	32		L 2X2X3_16	A36	0.00	0.00	0.00
25	6	3		PL 6X1/2	A36	0.00	0.00	0.00
26	18	21		PL 6X1/2	A36	0.00	0.00	0.00
27	28	13		PL 6X1/2	A36	0.00	0.00	0.00
52	53	67		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
53	73	83		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
54	72	82		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
55	51	63		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
56	122	126		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
57	123	127		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
58	124	128		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
59	125	129		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
60	133	137		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
61	132	136		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
62	131	135		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
63	130	134		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
64	170	171		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
65	172	173		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
66	174	175		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
67	176	177		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
68	178	179		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
69	180	181		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
9	4	19		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
2	270.00	0	0.00	0.00	0.00
4	180.00	0	0.00	0.00	0.00
7	270.00	0	0.00	0.00	0.00
8	90.00	0	0.00	0.00	0.00
13	90.00	0	0.00	0.00	0.00
14	270.00	0	0.00	0.00	0.00
67	270.00	0	0.00	0.00	0.00
68	270.00	0	0.00	0.00	0.00
69	270.00	0	0.00	0.00	0.00

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
52	0.00	0.00	2.00	0.00	0.00	2.00
53	0.00	0.00	2.00	0.00	0.00	2.00
54	0.00	0.00	2.00	0.00	0.00	2.00
55	0.00	0.00	2.00	0.00	0.00	2.00
56	1.7188	0.00	-1.00	1.7188	0.00	-1.00
57	1.7188	0.00	-1.00	1.7188	0.00	-1.00
58	1.7188	0.00	-1.00	1.7188	0.00	-1.00
59	1.7188	0.00	-1.00	1.7188	0.00	-1.00
60	-1.7188	0.00	-1.00	-1.7188	0.00	-1.00
61	-1.7188	0.00	-1.00	-1.7188	0.00	-1.00
62	-1.7188	0.00	-1.00	-1.7188	0.00	-1.00
63	-1.7188	0.00	-1.00	-1.7188	0.00	-1.00