SAI Group
12 Industrial Way
Salem, NH 03079
603-421-0470

June 21, 2022

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

Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT2128
3965 Congress Street, Fairfield, CT 06824
N 41.18834722
W 73.29907222

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 128-foot level of the existing 150-foot Monopole at 3965 Congress Street, Fairfield, CT. The tower and property are owned by the Town of Fairfield. AT&T now intends to replace nine (9) antennas and add three (3) antennas. This modification may include B2, B5, B17, B14, B29, B30, B66 & n77 hardware that is 4G (LTE) and/or 5GNR capable through remote software configuration and either or both services may be turned on or off at various times. The existing antenna mount will be replaced as documented in the attached drawings and Mount Analysis report.

AT&T Planned Modifications:

Remove:
(6) TMAs
(6) Diplexers

Remove and Replace:
(3) KATHREIN 800-10965 Antennas - (REMOVE) - (3) CCI TPA-65R-BU6DA-K Antennas (REPLACE)
(3) CCI HPA-65R-BUU-H6 Antennas (REMOVE) - (3) CCI OPA65R-BU6DA Antennas (REPLACE)
(3) ANDREW 7770 Antennas (REMOVE) - (3) Ericsson AIR 6419 B77G Antennas (REPLACE)
(3) Ericsson RRUS-12 + A2 (REMOVE) - (3) Ericsson 8843 B2/B66A RRU (REPLACE)

Install New:
(3) Ericsson AIR 6449 B77D Antennas
(3) Ericsson 4478 B14 RRU
(1) Raycap Surge Units
(1) Fiber Lines
(2) DC Lines

Existing to Remain:
(3) Ericsson 4415 B30 RRU
(3) Ericsson 4449 B5/B12 RRU
(2) Raycap Surge Units
(2) Fiber Lines
(4) DC Lines
(12) Coax – 1-1/4”

The tower was originally approved by the Town of Fairfield in May of 1994 and AT&T’s shared use of this facility was approved by the Connecticut Siting Council on March 9, 1999. Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Brenda Kupchick, First Selectwoman and Jim Wendt, Planning Director for the Town of Fairfield, as well as the property owner and tower owner.

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

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

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

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

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

6. The existing structure and its foundation can support the proposed loading.

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

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

Sincerely,

Mark Roberts

Mark Roberts
Consultant for SAI
Mark.Roberts@QCDevelopment.net

Attachments

Cc: Brenda Kupchick – Elected Official & Property Owner
Jim Wendt, Planning Director

Exhibit A

Original Facility Approval

Return

Town of Fairfield

Town Planning and Zoning Department

Zonning Compliance Permit

Hse Num: 3965 **Street:** Congress Street **Map:** 170 **Parcel:** 41 - ___ **Unit:** 0000 **Permit #** 23333

Zone: AAA **FIRM:** ___ **Date:** 05/25/1994 **Occupancy/Use:** per plans **Receipt #** 0

State Fee: $30.00

Description: 10' x 30' equipment shelter + 150' antenna Town Fee: $50.00

Applicant: Fairfield Town Of Total: $80.00

Print Date: 07/16/2019

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

10 Franklin Square
New Britain, Connecticut 06051
Phone: (860) 827-2935
Fax: (860) 827-2950

March 10, 1999

Peter J. Tyrrell
Senior Counsel
Springwich Cellular Limited Partnership
500 Enterprise Drive
Rocky Hill, CT 06067-3900

RE: **TS-SCLP-051-990219** - Springwich Cellular Limited Partnership request for an order to approve tower sharing at an existing telecommunications facility located at 3965 Congress Street in Fairfield, Connecticut.

Dear Mr. Tyrrell:

At a public meeting held on March 9, 1999, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures.

This facility has been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequency now used on this tower. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction.

The proposed shared use is to be implemented as specified in your letter dated February 19, 1999. Please notify the Council when all work is complete.

Very truly yours,

Mortimer A. Gelston
Chairman

MAG/sg

c: Honorable Kenneth A. Flatto, First Selectman, Town of Fairfield

Exhibit B

Property Card

3965 CONGRESS STREET

Location	3965 CONGRESS STREET	**Mblu**	170/ 41/ / /
Acct#	05308	**Owner**	FAIRFIELD TOWN OF
Assessment	$939,330	**Appraisal**	$1,341,900
PID	14189	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$508,400	$833,500	$1,341,900
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$355,880	$583,450	$939,330

Owner of Record

Owner	FAIRFIELD TOWN OF	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	725 OLD POST ROAD FAIRFIELD, CT 06824	**Book & Page**	395/ 523
		Sale Date	

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
FAIRFIELD TOWN OF	$0		395/ 523	

Building Information

Building 1 : Section 1

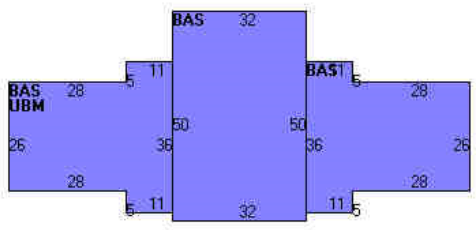
Year Built:	1959
Living Area:	3,848
Replacement Cost:	$670,756
Building Percent Good:	60
Replacement Cost Less Depreciation:	$402,500

Building Attributes	
Field	**Description**
STYLE	Fire Station
MODEL	Ind/Comm
Stories:	1
Occupancy	1
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	Brick/Masonry
Roof Structure	Gable/Hip
Roof Cover	Asphalt
Interior Wall 1	Minim/Masonry
Interior Wall 2	Plywood Panel
Interior Floor 1	Concr-Finished
Interior Floor 2	Vinyl/Asphalt
Heating Fuel	Gas
Heating Type	Hot Water
AC Type	None
Bldg Use	Fire Dept
Total Rooms	
Total Bedrms	00
Total Baths	0
Liv Area	
Effect Area	
1st Floor Use:	9032
Heat/AC	None
Frame Type	Masonry
Baths/Plumbing	Average

Building Photo

(http://images.vgsi.com/photos2/FairfieldCTPhotos//\02\03\13/91.jpg)

Building Layout



(http://images.vgsi.com/photos2/FairfieldCTPhotos//Sketches/14

Building Sub-Areas (sq ft)			
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	3,848	3,848
UBM	Basement, Unfinished	1,124	0
		4,972	3,848

Extra Features

Extra Features				
Code	**Description**	**Size**	**Value**	**Bldg #**

SPR1	SPRINKLERS-WET	4972 S.F.	$6,900	1

Land

Land Use

Use Code	9032
Description	Fire Dept
Zone	
Neighborhood	C6
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	1.2
Depth	0
Assessed Value	$583,450
Appraised Value	$833,500

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV1	PAVING-ASPHALT			5000 S.F.	$15,800	1
LT1	LIGHTS-IN W/PL			1 UNITS	$700	1
SHD2	W/LIGHTS ETC			80 S.F.	$1,200	1
GEN1	GENERATOR			1 UNITS	$10,000	1
SHD5	CELL SHED			300 SF	$16,200	1
SHD5	CELL SHED			300 SF	$16,200	1
SHD5	CELL SHED			300 SF	$16,200	1
SHD5	CELL SHED			300 SF	$16,200	1
FN4	FENCE-8' CHAIN			600 L.F.	$6,500	1

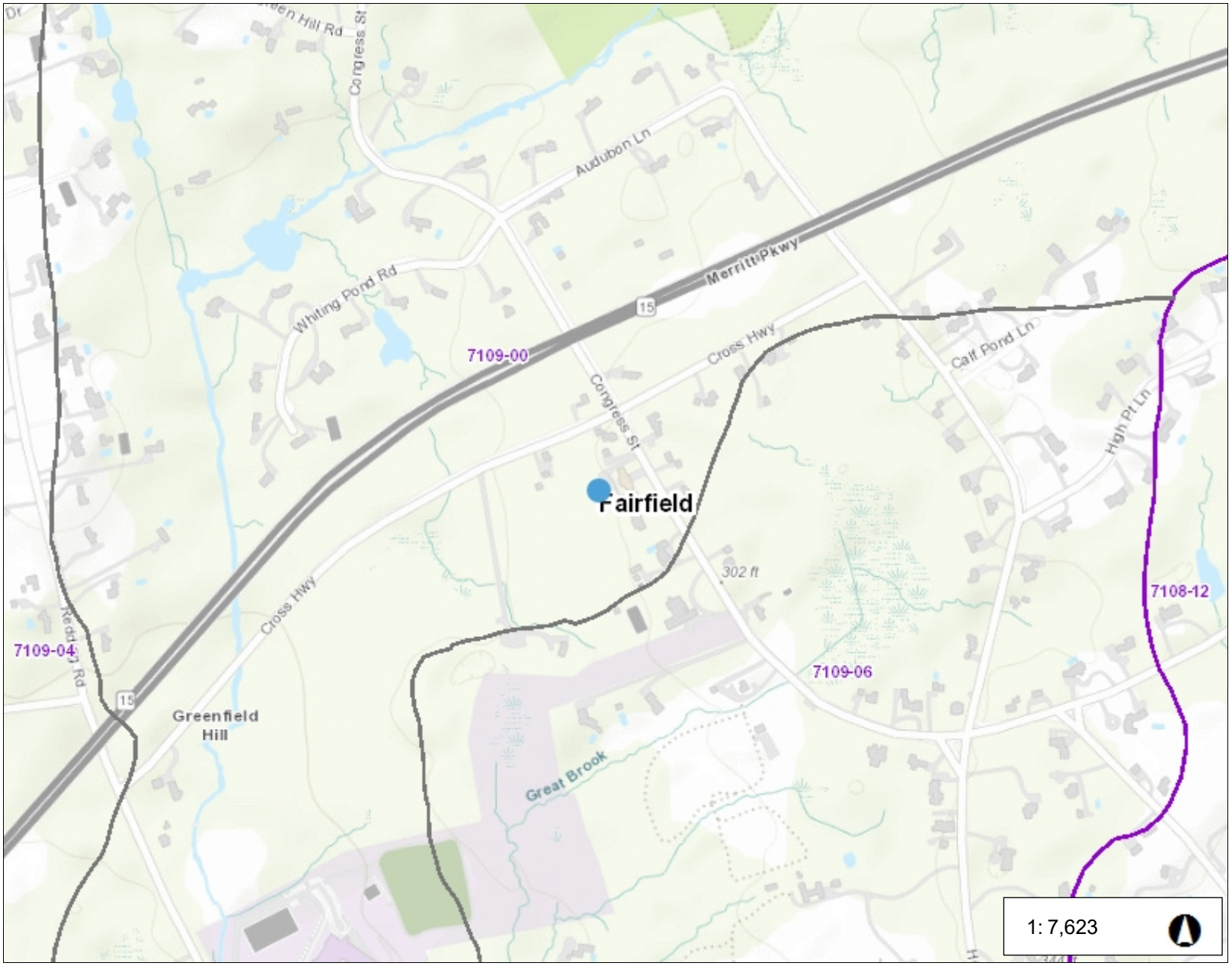
Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$508,400	$833,500	$1,341,900
2017	$508,400	$833,500	$1,341,900
2016	$508,400	$833,500	$1,341,900

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$355,880	$583,450	$939,330
2017	$355,880	$583,450	$939,330
2016	$355,880	$583,450	$939,330

Town of Fairfield

3965 CONGRESS ST



Legend

- Local Basin Boundary
  - Major
  - Regional
  - Subregional
  - Local
- Local Basin Area
- Town Boundary

1,270.5 0 635.23 1,270.5 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Created by Greater Bridgeport Regional Council

METROCOG
Connecticut Metropolitan Council of Governments

Exhibit C

Construction Drawings

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING MONOPOLE:
- NEW AT&T ANTENNAS: AIR6419 B77G (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: AIR6449 B77D (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: OPA65R-BU6DA (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: TPA65R-BU6DA-K (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 4478 B14 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 8843 B2/B66A (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRUS: 4415 B30 (TYP. OF 1 PER SECTOR, TOTAL OF 3). (TO BE RELOCATED)
- NEW AT&T DC & FIBER SURGE ARRESTOR DC6-48-60-18-8F (TOTAL OF 1) WITH (2) DC POWER & (1) FIBER RUN.
- ADD (6) Y-CABLES.
- PROPOSED AT&T PLATFORM (SITEPRO1#RMQLP-4120-H10) (TOTAL OF 1)

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- ADD (1) 6648 + XCEDE CABLE.
- ADD (5) RECTIFIERS.
- ADD (1) BATTERY RACK WITH (2) STRING OF BATTERIES.

ITEMS TO BE REMOVED:
- EXISTING AT&T ANTENNAS: 7770 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNAS: 800-10965 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNAS: HPA-65R-BUU-H6 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRUS: RRUS-12 B2+RRUS-A2 B25 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T TMA: LGP21401 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T DIPLEXER: LGP21901 (TYP. OF 2 PER SECTOR, TOTAL OF 6).

ITEMS TO REMAIN:
- (6) RRU'S, (2) SURGE ARRESTOR, (12) COAX CABLES, (4) DC POWER & (2) FIBER.

SITE ADDRESS:	3965 CONGRESS STREET FAIRFIELD, CT 06824
LATITUDE:	41.1883811° N, 41° 11' 18.17" N
LONGITUDE:	73.2990550° W, 73° 17' 56.59" W
TYPE OF SITE:	MONOPOLE / INDOOR EQUIPMENT
STRUCTURE HEIGHT:	150'-0"±
RAD CENTER:	128'-0"±(LTE), 129'-8"± (DOD) & 126'-2"± (C-Band)
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

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

SITE NUMBER: CT2128

SITE NAME: FAIRFIELD GREENFIELD HILL

FA CODE: 10035251

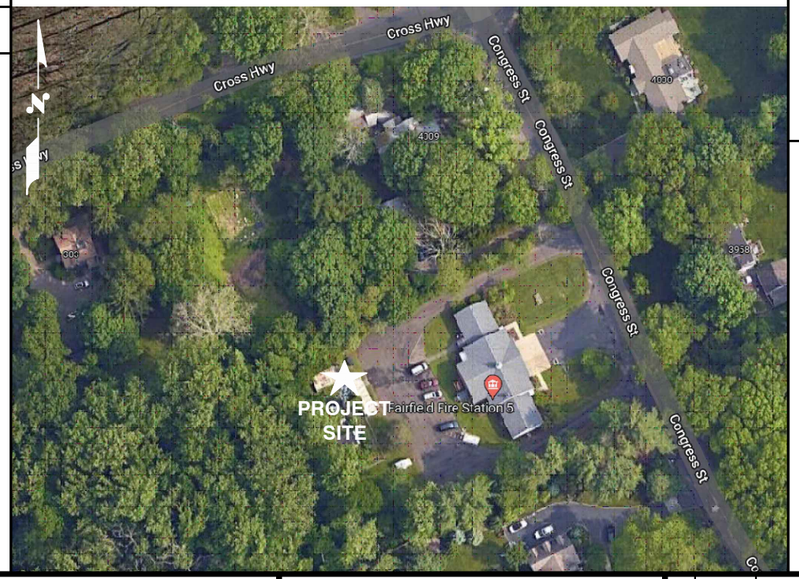
PACE ID: MRCTB060580, MRCTB060572, MRCTB060558, MRCTB060601, MRCTB060633

PROJECT: 5G NR 1SR CBAND_5G NR 1 DR-1_SITEOVERLAY.LTE.5TH CARRIER UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:

GET ON I-91 S FROM ENTERPRISE DR. HEAD SOUTHEAST TOWARD CAPITAL BLVD. TURN LEFT ONTO CAPITAL BLVD. USE THE LEFT 2 LANES TO TURN LEFT ONTO STATE HWY 411. TURN LEFT TO MERGE ONTO I-91 S. FOLLOW I-91 S AND CT-15 S TO CONGRESS ST IN FAIRFIELD. TAKE EXIT 44 FROM CT-15 S. MERGE ONTO I-91 S. KEEP RIGHT TO STAY ON I-91 S. TAKE EXIT 17 TO MERGE ONTO CT-15 S. KEEP RIGHT TO STAY ON CT-15 S, FOLLOW SIGNS FOR W CROSS PKWY. KEEP LEFT TO STAY ON CT-15 S. KEEP LEFT TO STAY ON CT-15 S. TAKE EXIT 44 TOWARD CONGRESS ST. DRIVE TO CONGRESS ST. TURN LEFT ONTO CONGRESS ST. USE THE MIDDLE LANE TO TURN LEFT ONTO CT-58 S. TURN RIGHT ONTO CONGRESS ST. DESTINATION WILL BE ON THE LEFT.
3965 CONGRESS ST FAIRFIELD, CT 06824



GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

72 HOURS

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

UNDERGROUND SERVICE ALERT

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

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT2128
SITE NAME: FAIRFIELD GREENFIELD HILL

3965 CONGRESS STREET
FAIRFIELD, CT 06824
FAIRFIELD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	05/19/22	ISSUED FOR CONSTRUCTION	GA	HC	DRK
A	05/05/22	ISSUED FOR REVIEW	GA	HC	DRK

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: JJ

STATE OF CONNECTICUT
DANIEL R. KAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

TITLE SHEET
5G NR 1SR CBAND_5G NR 1
DR-1_SITEOVERLAY.LTE.5TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2128	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 STANDARDS) 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 AND #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 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

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

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

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

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

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

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

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

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

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

ABBREVIATIONS

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

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12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT2128
SITE NAME: FAIRFIELD GREENFIELD HILL

3965 CONGRESS STREET
FAIRFIELD, CT 06824
FAIRFIELD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	05/19/22	ISSUED FOR CONSTRUCTION	AM	GC	DRH
A	05/05/22	ISSUED FOR REVIEW	GA	HC	DRH

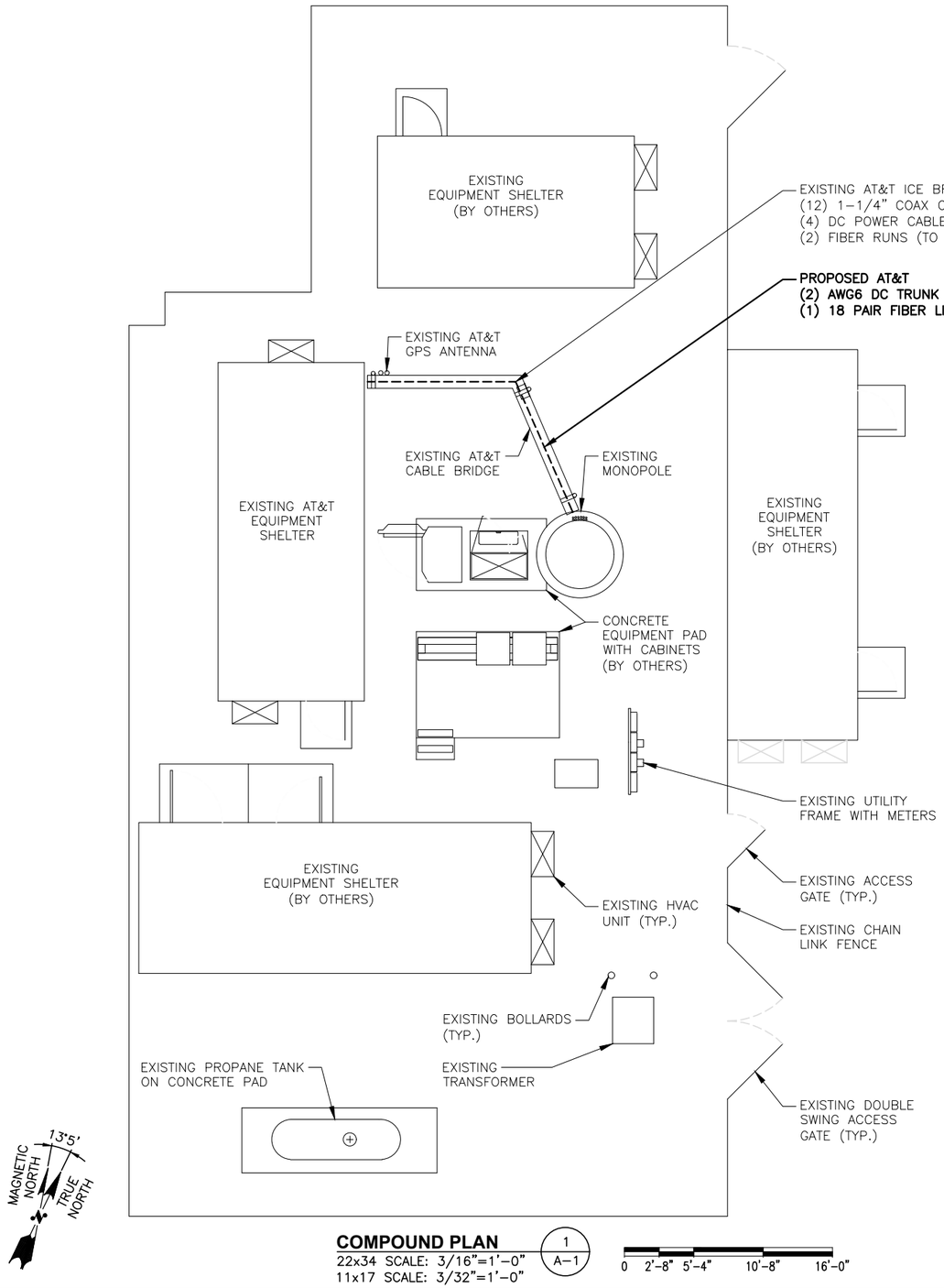
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: JJ

STATE OF CONNECTICUT – LICENSED PROFESSIONAL ENGINEER – 06.24.22

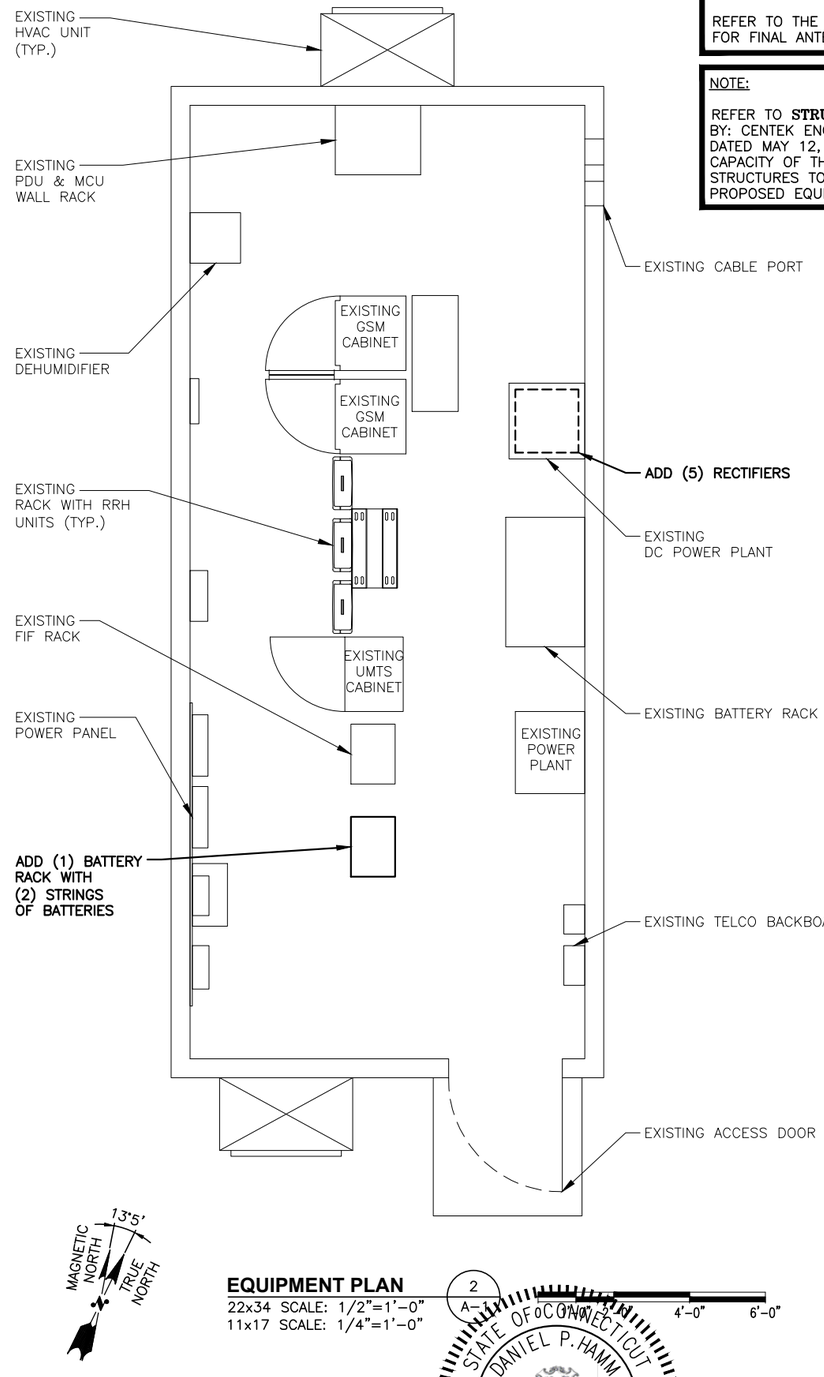
AT&T

GENERAL NOTES
5G NR 1SR CBAND_5G NR 1
DR-1_SITEOVERLAY.LTE.5TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2128	GN-1	1



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



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

NOTE:

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

NOTE:

REFER TO **STRUCTURAL ANALYSIS** BY: CENTEK ENGINEERING. DATED MAY 12, 2022. FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

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A	05/05/22	ISSUED FOR REVIEW	GA	HC	DPH

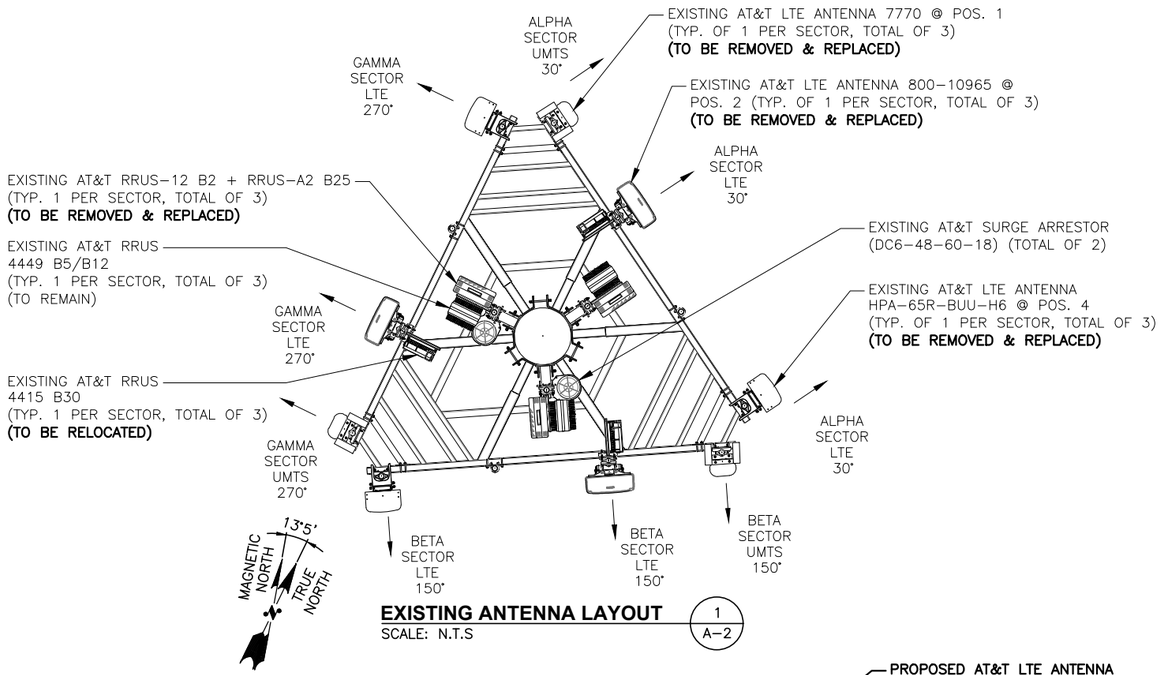
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: JJ

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

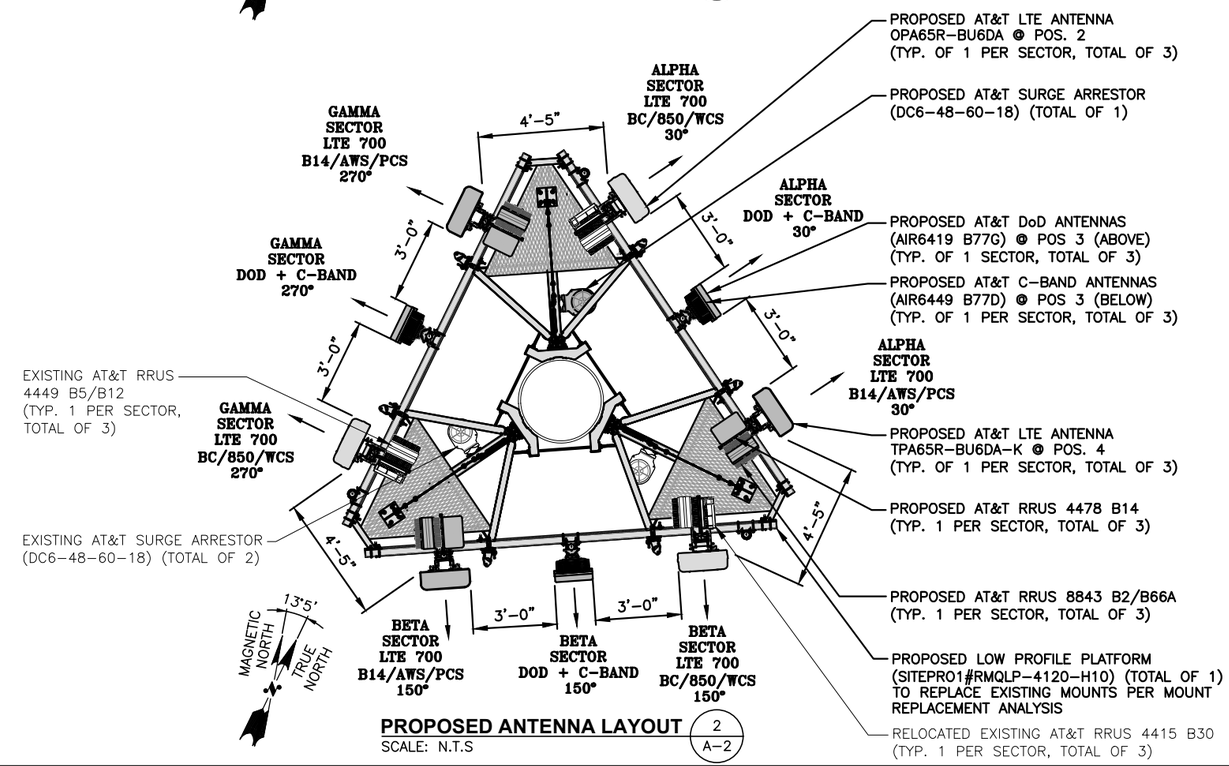
AT&T

COMPOUND & EQUIPMENT PLANS
5G NR 1SR CBAND_5G NR 1
DR-1_SITEOVERLAY.LTE.5TH CARRIER UPGRADE

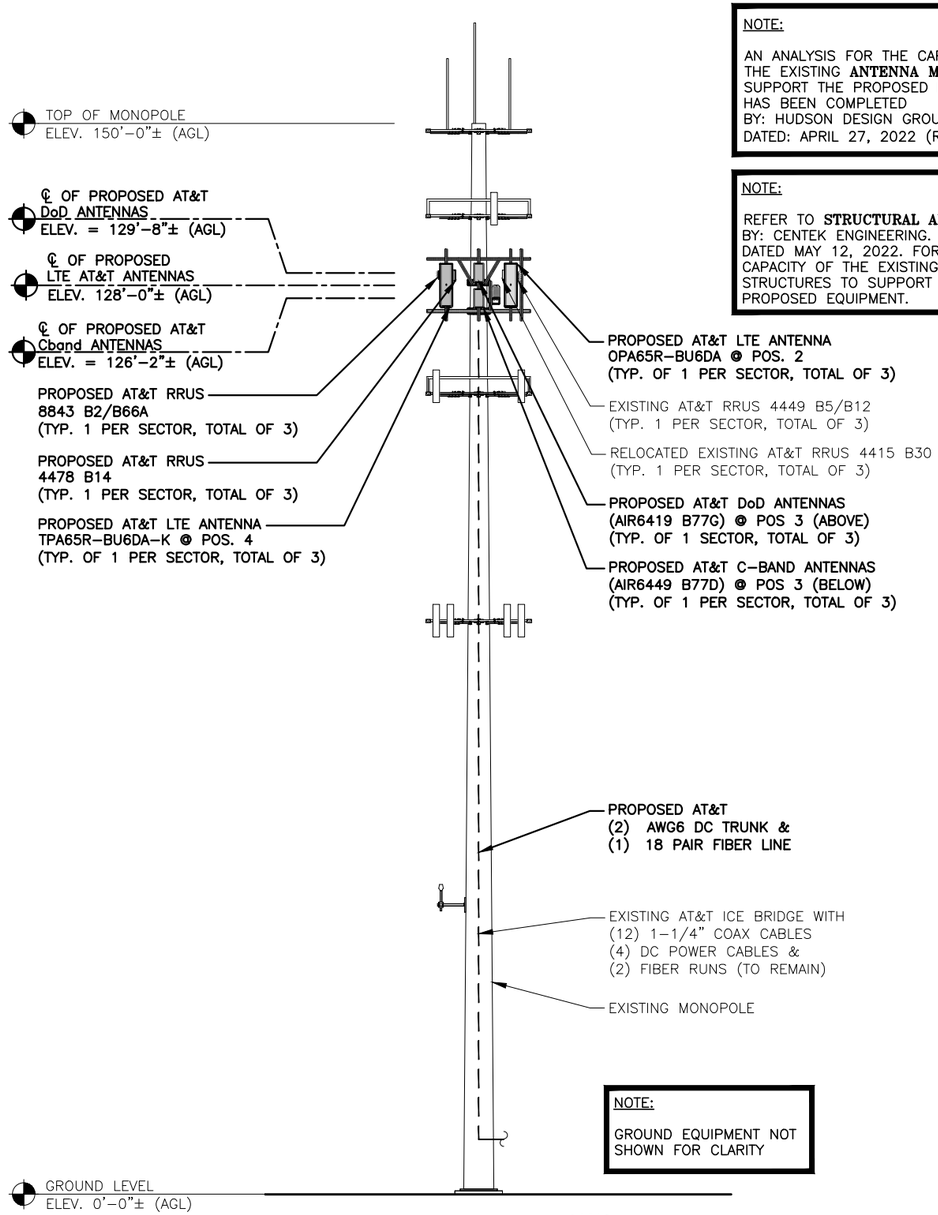
SITE NUMBER	DRAWING NUMBER	REV
CT2128	A-1	1



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



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



ELEVATION
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"
0 10'-8" 21'-4" 32'-0"

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

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED
BY: HUDSON DESIGN GROUP, LLC.
DATED: APRIL 27, 2022 (Rev.1).

NOTE:
REFER TO **STRUCTURAL ANALYSIS** BY: CENTEK ENGINEERING.
DATED MAY 12, 2022. FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY

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A	05/05/22	ISSUED FOR REVIEW	GA	HC	DRH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: JJ

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

ANTENNA LAYOUTS & ELEVATION
5G NR 1SR CBAND_5G NR 1
DR-1_SITEOVERLAY.LTE.5TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2128	A-2	1

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	ANTENNA TIP HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
–	–	–	–	–	–	–	–	–	–	–	(4)1–1/4 COAX	(P) (1) RAYCAP DC6–48–60–18
A2	PROPOSED	LTE 700 BC/850/WCS	OPA65R–BU6DA	71.2x21x7.8	128'–0"±	131'–0"±	30°	–	(E)(1) 4449 B5/B12 (850/700) (E)(1) 4415 B30 (WCS)	– – –	(P)(2) DC POWER & (1) FIBER (P)(1) Y–CABLE	
A3	PROPOSED	DOD + C–BAND	AIR6419 B77G + AIR6449 B77D (STACKED)	31.1X16.1X7.3 30.6X15.9X10.6	129'–8"± 126'–2"±	131'–0"± 127'–5"±	30°	–	–	– –	–	
A4	PROPOSED	LTE 700 B14/AWS/PCS	TPA65R–BU6DA–K	71.2x20.7x7.7	128'–0"±	131'–0"±	30°	–	(P)(1) 4478 B14 (700) (P)(1) 8843 B2/B66A	18.1X13.4X8.3 14.9X13.2X10.9	(P)(1) Y–CABLE	
–	–	–	–	–	–	–	–	–	–	–	(4)1–1/4 COAX	(E) (1) RAYCAP DC6–48–60–18
B2	PROPOSED	LTE 700 BC/850/WCS	OPA65R–BU6DA	71.2x21x7.8	128'–0"±	131'–0"±	150°	–	(E)(1) 4449 B5/B12 (850/700) (E)(1) 4415 B30 (WCS)	– – –	(E)(2) DC POWER & (1) FIBER	
B3	PROPOSED	DOD + C–BAND	AIR6419 B77G + AIR6449 B77D (STACKED)	31.1X16.1X7.3 30.6X15.9X10.6	129'–8"± 126'–2"±	131'–0"± 127'–5"±	150°	–	–	– –	–	
B4	PROPOSED	LTE 700 B14/AWS/PCS	TPA65R–BU6DA–K	71.2x20.7x7.7	128'–0"±	131'–0"±	150°	–	(P)(1) 4478 B14 (700) (P)(1) 8843 B2/B66A	18.1X13.4X8.3 14.9X13.2X10.9	(P)(1) Y–CABLE	
–	–	–	–	–	–	–	–	–	–	–	(4)1–1/4 COAX	(E) (1) RAYCAP DC6–48–60–18
C2	PROPOSED	LTE 700 BC/850/WCS	OPA65R–BU6DA	71.2x21x7.8	128'–0"±	131'–0"±	270°	–	(E)(1) 4449 B5/B12 (850/700) (E)(1) 4415 B30 (WCS)	– – –	(E)(2) DC POWER & (1) FIBER	
C3	PROPOSED	DOD + C–BAND	AIR6419 B77G + AIR6449 B77D (STACKED)	31.1X16.1X7.3 30.6X15.9X10.6	129'–8"± 126'–2"±	131'–0"± 127'–5"±	270°	–		– –	–	
C4	PROPOSED	LTE 700 B14/AWS/PCS	TPA65R–BU6DA–K	71.2x20.7x7.7	128'–0"±	131'–0"±	270°	–	(P)(1) 4478 B14 (700) (P)(1) 8843 B2/B66A	18.1X13.4X8.3 14.9X13.2X10.9	(P)(1) Y–CABLE	

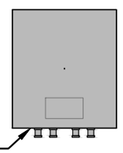
FINAL ANTENNA SCHEDULE
SCALE: N.T.S — 1 / A–3

RRU CHART

QUANTITY	MODEL	SIZE (L x W x D)
3(E)	4449 (850/700)	17.9"x13.2"x10.4"
3(P)	8843 (PCS/AWS)	14.9"x13.2"x10.9"
3(P)	4478 B14 (700)	18.1"x13.4"x8.3"
3(E)	4415	16.5"x13.4"x5.9"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

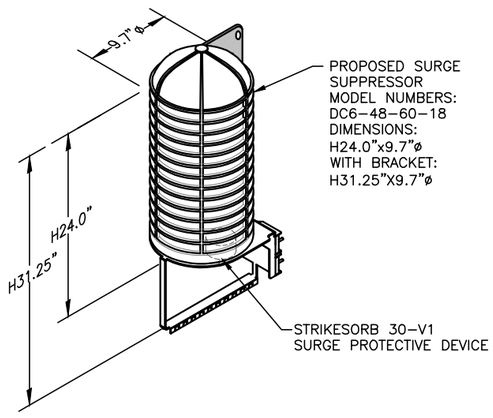
NOTE:
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



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

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL
SCALE: N.T.S — 2 / A–3



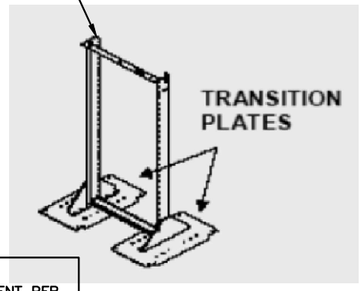
PROPOSED SURGE SUPPRESSOR
MODEL NUMBERS:
DC6–48–60–18
DIMENSIONS:
H24.0"x9.7"ø
WITH BRACKET:
H31.25"X9.7"ø

STRIKESORB 30–V1
SURGE PROTECTIVE DEVICE

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL
SCALE: N.T.S — 3 / A–3

PROPOSED BATTERY RACK
VERTIV #562353 WITH 5 STR BATT



NOTE:
MOUNT PROPOSED EQUIPMENT PER MANUFACTURER'S SPECIFICATIONS

PROPOSED VERTIV BATTERY RACK
SCALE: N.T.S — 4 / A–3

NOTE:
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NOTE:
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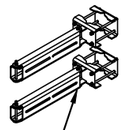
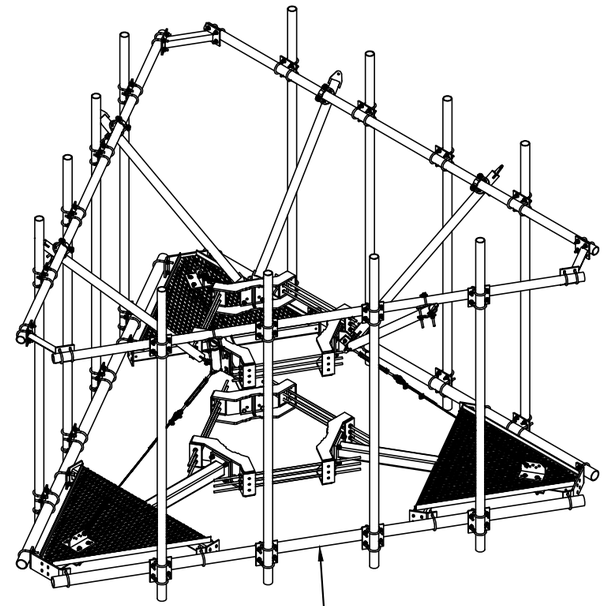


DUAL RRU MOUNT
(ROSENBERGER PART# D220RRUDSM) (TYP. OF 2 PER SECTOR, TOTAL OF 6)

DUAL RRU MOUNT DETAIL
SCALE: N.T.S — 6 / A–3



PROPOSED LOW PROFILE PLATFORM
(SITEPRO1#RMQLP–4120–H10) (TOTAL OF 1)
TO REPLACE EXISTING MOUNTS PER MOUNT REPLACEMENT ANALYSIS

LOW PROFILE PLATFORM KIT DETAIL
SCALE: N.T.S — 5 / A–3

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A	05/05/22	ISSUED FOR REVIEW	GA	HC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: JJ

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
5G NR 1SR CBAND_5G NR 1
DR–1_SITEOVERLAY.LTE.5TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2128	A–3	1

NOTE:

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

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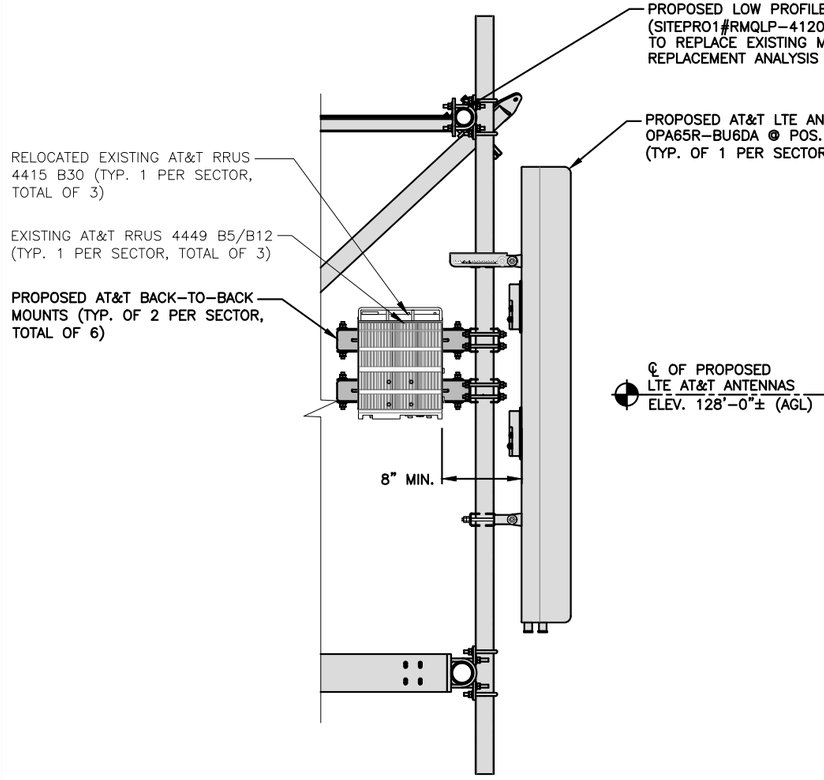
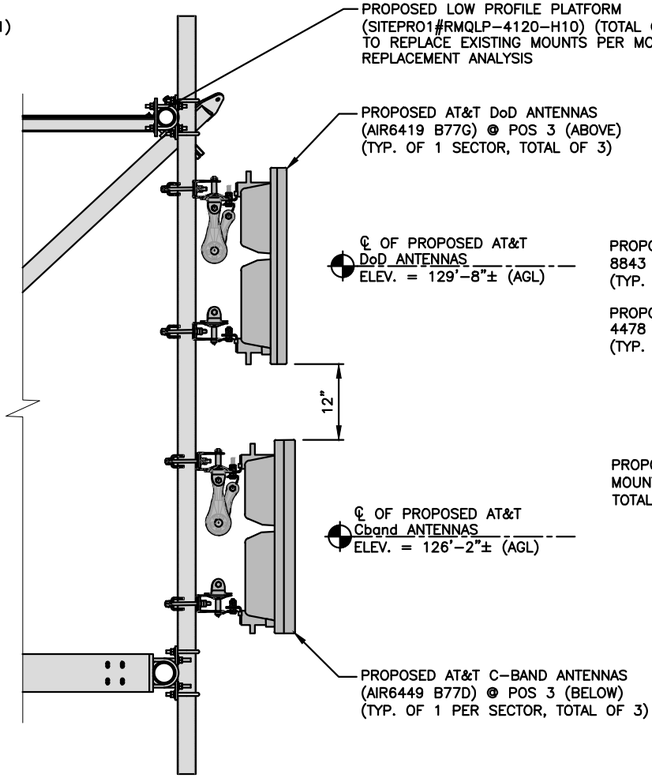
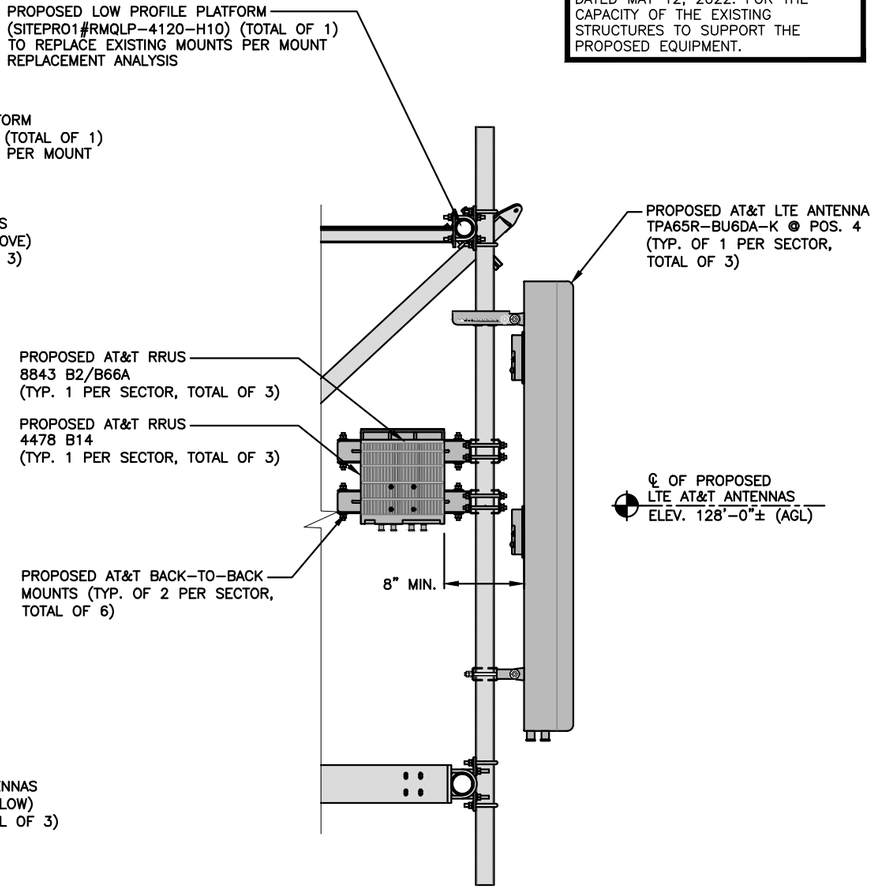


PROPOSED LTE ANTENNA MOUNTING DETAIL @ POS. 2 (1 / A-4)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"
0 0'-6" 1'-0" 2'-0" 3'-0"



PROPOSED C-BAND ANTENNA MOUNTING DETAIL @ POS. 3 (2 / A-4)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"
0 0'-6" 1'-0" 2'-0" 3'-0"



PROPOSED LTE ANTENNA MOUNTING DETAIL @ POS. 4 (3 / A-4)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"
0 0'-6" 1'-0" 2'-0" 3'-0"

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SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: JJ

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
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AT&T

MOUNT MODIFICATION DESIGN
5G NR 1SR CBAND_5G NR 1
DR-1_SITEOVERLAY.LTE.5TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2128	A-4	1

STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-H STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND DI.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

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

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

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

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

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

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

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT2128
SITE NAME: FAIRFIELD GREENFIELD HILL

3965 CONGRESS STREET
FAIRFIELD, CT 06824
FAIRFIELD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	05/19/22	ISSUED FOR CONSTRUCTION	AM	GA	DRH
A	05/05/22	ISSUED FOR REVIEW	GA	HC	DRH

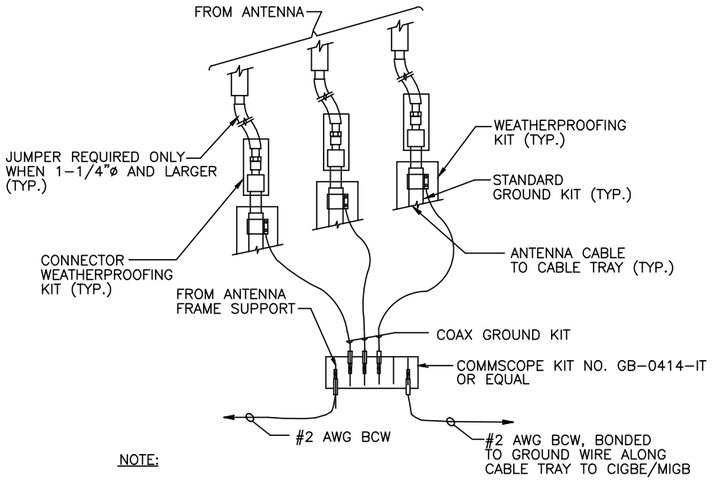
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: JJ

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

STRUCTURAL NOTES
5G NR 1SR CBAND_5G NR 1
DR-1_SITEOVERLAY.LTE.5TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2128	SN-1	1

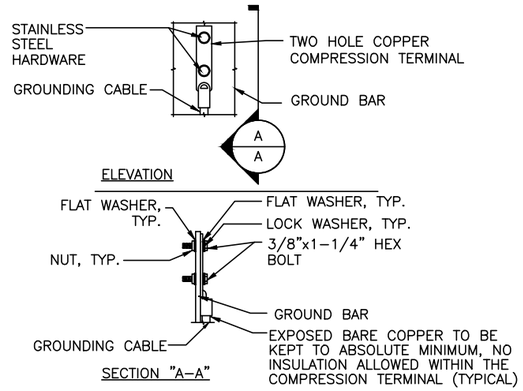


NOTE:

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

GROUND WIRE TO GROUND BAR CONNECTION DETAIL (1 / G-1)

SCALE: N.T.S

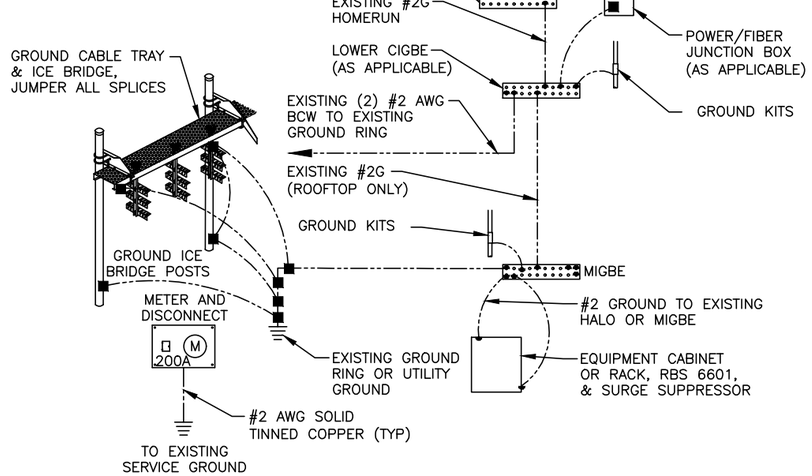


NOTES:

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 (3 / G-1)

SCALE: N.T.S



GROUNDING RISER DIAGRAM (2 / G-1)

SCALE: N.T.S

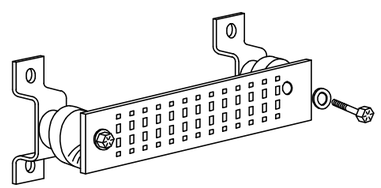
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



GROUND BAR - DETAIL (AS REQUIRED)

SCALE: N.T.S

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

12 INDUSTRIAL WAY
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SITE NUMBER: CT2128
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3965 CONGRESS STREET
FAIRFIELD, CT 06824
FAIRFIELD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	05/19/22	ISSUED FOR CONSTRUCTION	AM	GA	DRH
A	05/05/22	ISSUED FOR REVIEW	GA	HC	DRH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: JJ

STATE OF CONNECTICUT · DANIEL R. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

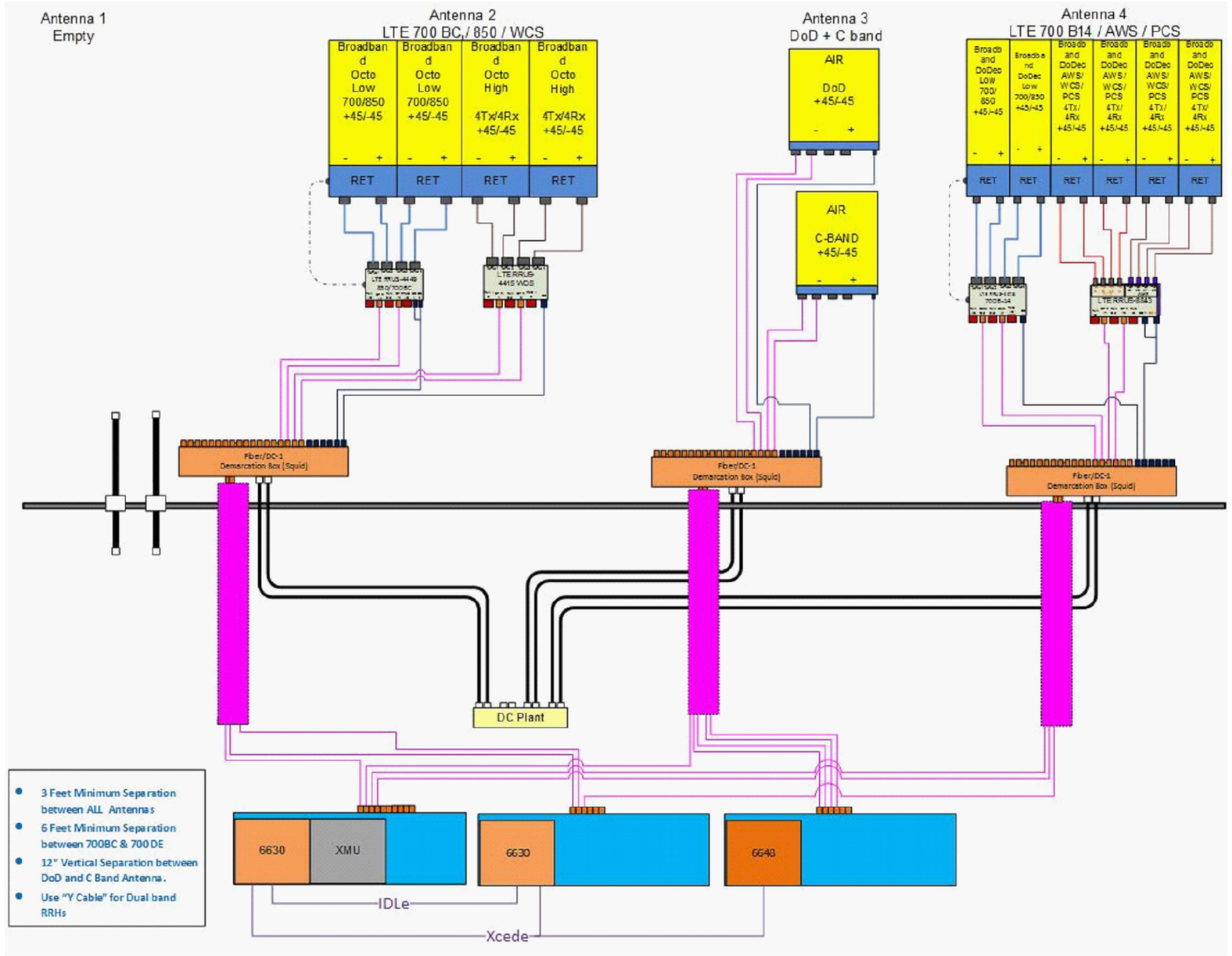
AT&T

GROUNDING DETAILS
5G NR 1SR CBAND_5G NR 1
DR-1_SITEOVERLAY.LTE.5TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2128	G-1	1

NOTE:

REV: 2
DATED: 04/05/2022
RFDS ID: 4887918



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.
3. RFDS USED FOR REFERENCE.

NOTE:

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

HUDSON Design Group LLC
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NORTH ANDOVER, MA 01845
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NO.	DATE	REVISIONS	BY	CHK	APP'D
1	05/19/22	ISSUED FOR CONSTRUCTION	AM	HC	DPH
A	05/05/22	ISSUED FOR REVIEW	GA	HC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: JJ

AT&T

RF PLUMBING DIAGRAM
5G NR 1SR CBAND_5G NR 1
DR–1_SITEOVERLAY.LTE.5TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2128	RF–1	1

Exhibit D

Structural Analysis Report

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

150-ft Existing Valmont Monopole

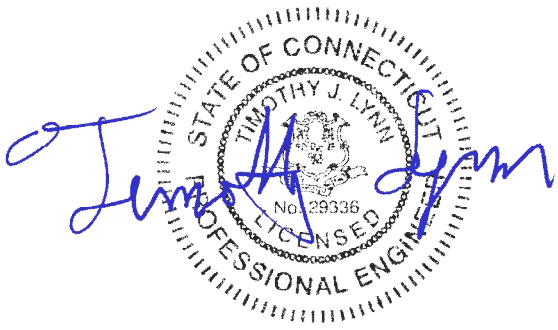
Proposed AT&T Mobility
Antenna Upgrade

AT&T Site Ref: CT2128

3965 Congress Street
Fairfield, CT

Centek Project No. 22059.00

Date: May 12, 2022



Prepared for:

AT&T Mobility
500 Enterprise Drive, Suite 3A
Rocky Hill, CT 06067

Table of Contents

Introduction

The purpose of this report is to summarize the results of the non-linear, P-Δ structural analysis of the antenna upgrade proposed by AT&T Mobility on the existing monopole (tower) located in Fairfield, CT.

The host tower is a 150-ft tall, three-section, twelve sided, tapered monopole, originally designed and manufactured by Valmont Structures. The manufacturer's drawings and calculations were unavailable for use in this report. The tower geometry, structure member sizes and foundation system information were obtained from a previous structural analysis report prepared by Centek Engineering job no; 16071.42, dated August 30, 3016.

Antenna and appurtenance information were obtained from a previous structural analysis report prepared by ProTerra Design Group dated November 29, 2021, a previous structural analysis report prepared by Tectonic dated September 1, 2020 and a AT&T RF data sheet.

The tower is made up of three (3) tapered vertical sections consisting of A572-65 pole sections. The vertical tower sections are slip joint connected. The diameter of the pole (flat-flat) is 23.61-in at the top and 49.6-in at the base.

Antenna and Appurtenance Summary

The existing, proposed and future loads considered in this analysis consist of the following:

- TOWN (Existing):
  Antennas: One (1) DB810K Omni-directional whip antenna and two (2) 10-ft Dipole antennas mounted on the three (3) T-Arms with respective RAD center elevations of 157-ft and 154-ft above grade.
  Coax Cables: Three (3) 1-5/8"∅ coax cables running on the inside of the existing tower.
- SPRINT (Existing):
  Antennas: Three (3) RFS APXVSPP18-C-A20 panel antennas, three (3) DT465B-2XR panel antennas, three (3) ALU 1900 MHz RRHs, three (3) ALU 800 MHz RRHs, three (3) Ericsson RRUS32 and three (3) Ericsson A2 mounted on a 13-ft platform with hand rails with a RAD center elevation of 138-ft above grade.
  Coax Cables: Three (3) 1-5/8" ∅ Hybriflex cables running on the inside of the existing tower.
- T-MOBILE (Existing):
  Antennas: Three (3) Ericsson AIR32 panel antennas, three (3) Ericsson AIR6449 panel antennas, three (3) RFS APXVARR24_43 panel antennas, three (3) Ericsson 4449 RRHs, three (3) Ericsson 4415 RRHs, three (3) 10" by 8" by 3" TMAs and three (3) diplexers mounted on a 14-ft platform with rails with a RAD center elevation of 116-ft above grade.
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables and three (3) 6x12 hybrid cables running on the exterior of the existing tower.

- TOWN (Existing):
  Antennas: Two (2) Andrew APSA685 Omni-directional whip antennas (inverted), one (1) DB-222 dipole antenna and one (1) PD1142-2B Omni-directional whip antenna mounted on two (2) standoffs with an elevation of 104-ft above grade.
  Coax Cables: Four (4) 1-5/8"∅ coax cables running on the inside of the existing tower.
- TOWN (Existing):
  Antennas: Two (2) empty standoffs with a RAD center elevation of 104-ft above grade.
- VERIZON (Existing):
  Antennas: Three (3) Antel BXA-70063-6CF panel antennas, six (6) Commscope JAHH-65B-R3B panel antennas, three (3) Samsung XXDWMM-12.5-65-8T panel antennas, three (3) Samsung B5/B13 RRHs, three (3) Samsung B2/B66 RRHs, three (3) CBRS RRHs, three (3) diplexers and one (1) main distribution mounted on an existing platform w/ handrail with a RAD center elevation of 80-ft above grade.
  Coax Cables: Six (6) 1-5/8" ∅ coax cables and one (1) 1-5/8" ∅ fiber cable running on the exterior of the existing tower.
- UNKNOWN (Existing):
  Antennas: One (1) GPS antenna on a GPS Stand-off mount with a RAD center elevation of 40-ft above grade.
  Coax Cables: One (1) 1/2"∅ coax cable running on the exterior of the existing tower.
- AT&T (Existing to Remain/**Relocate**):
  Antennas: Three (3) Ericsson 4449 RRHs, three (3) Ericsson 4415 RRHs and two (2) Raycap DC6-48-60-18-8F surge arrestors mounted on an existing low profile platform with a RAD center elevation of 128-ft above grade to be **relocated to proposed mount.**
  Cables: Six (6) 1-1/4" ∅ coax cables, one (1) fiber cable and two (2) dc control cables running on the exterior of the existing tower.
- **AT&T (Existing to Remove):**
  Antennas: Three (3) Powerwave 7770 panel antennas, three (3) CCI HPA-65R-BUU-H6 panel antennas, three (3) Kathrein 800-10965 panel antennas, three (3) Ericsson RRUS-12 and three (3) Ericsson A2 mounted on an existing low profile platform with a RAD center elevation of 128-ft above grade.
  Coax Cables: Six (6) 1-1/4" ∅ coax cables running on the exterior of the existing tower.
- **AT&T (Proposed):**
  Antennas: Three (3) CCI OPA65R-BU6D panel antennas, three (3) CCI TPA65R-BU6D panel antennas, three (3) Ericsson AIR6449 panel antennas, three (3) Ericsson AIR6419 panel antennas, three (3) Ericsson 4478 RRHs, three (3) Ericsson 8843 RRHs and one (1) Raycap DC6-48-60-18-8F surge arrestor mounted on a proposed platform (SitePro p/n RMQLP-4120-H10) with a RAD center elevation of 128-ft above grade.
  Cables: One (1) fiber cable and two (2) dc control cables running on the exterior of the existing tower.

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents or reinforcement drawings.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.
- All coax cables to be installed as indicated in this report.

Analysis

The existing tower was analyzed using a comprehensive computer program entitled tnxTower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower, and the model assumes that the tower members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for the controlling basic wind speed (3-second gust) with no ice and the applicable wind and ice combination to determine stresses in members as per guidelines of TIA-222-G-2005 entitled "Structural Standard for Antenna Support Structures and Antennas", the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Load and Resistance Factor Design (LRFD).

The controlling wind speed is determined by evaluating the local available wind speed data as provided in Appendix N of the CSBC[1] and the wind speed data available in the TIA-222-G-2005 Standard.

Tower Loading

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA-222-G-2005, gravity loads of the tower structure and its components, and the application of 0.75" radial ice on the tower structure and its components.

Basic Wind Speed:	Fairfield; v = 105 mph (V_{asd} / Risk Cat III)	*[Appendix N of the 2018 CT Building Code]*
Load Cases:	Load Case 1; 105 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation.	*[Appendix N of the 2018 CT Building Code]*
	Load Case 2; 50 mph wind speed w/ 0.75" radial ice plus gravity load – used in calculation of tower stresses.	*[Annex B of TIA-222-G-2005]*

[1] The 2015 International Building Code as amended by the 2018 Connecticut State Building Code (CSBC).

Tower Capacity

- Calculated stresses were found to be within allowable limits.

Tower Section	Elevation	Stress Ratio (percentage of capacity)	Result
Pole Shaft (L3)	30.00'-47.83'	82.5%	**PASS**

Note 1: Equivalent thickness of 0.58" used for section L4 of pole shaft with reinforcement.

Foundation and Anchors

The existing foundation consists of a 6.5 ∅ x 26.5-ft long reinforced concrete caisson. The sub-grade conditions used in the analysis of the existing foundation were obtained from the design documents prepared by SAC, dated May 18, 1994. The base of the tower is connected to the foundation by means of (16) 2.25"∅, ASTM A615-75 anchor bolts embedded approximately 5-ft into the concrete foundation structure.

- The tower base reactions developed from the governing Load Case were used in the verification of the foundation and its anchors:

Location	Vector	Proposed Reactions
Base	Shear	49 kips
	Compression	58 kips
	Moment	4533 kip-ft

- The foundation was found to be within allowable limits.

Foundation	Design Limit	Proposed Loading	Result
Reinforced Concrete Caisson	Moment Capacity	55.6%	**PASS**
	Lateral Deflection	0.26 in.(1)	**PASS**

(1) Lateral deflection limited to 0.75 in under service load combination per TIA-222-G section 9.5.

- The anchor bolts and base plate were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Tension	80.0%	**PASS**
Base Plate	Bending	79.0%	**PASS**

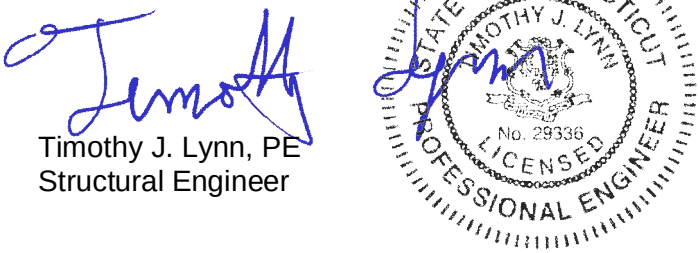
C o n c l u s i o n

This analysis shows that the subject tower **is adequate** to support the proposed antenna configuration.

The analysis is based, in part, on the information provided to this office by AT&T. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Timothy J. Lynn, PE
Structural Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

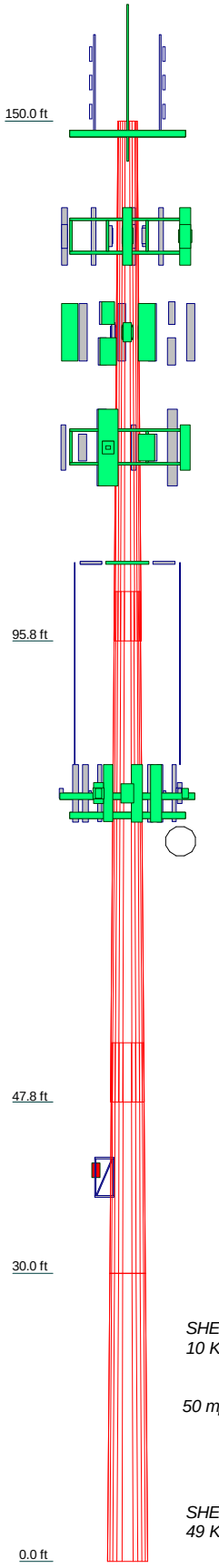
- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of CENTEK engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provide to CENTEK engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. CENTEK engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

General Description of Structural Analysis Program

tnxTower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, tnxTower, formerly ERITower, automates much of the tower analysis and design required by the TIA/EIA 222 Standard.

tnxTower Features:

- tnxTower can analyze and design 3- and 4-sided guyed towers, 3- and 4-sided self-supporting towers and either round or tapered ground mounted poles with or without guys.
- The program analyzes towers using the TIA-222-G (2005) standard or any of the previous TIA/EIA standards back to RS-222 (1959). Steel design is checked using the AISC ASD 9th Edition or the AISC LRFD specifications.
- Linear and non-linear (P-delta) analyses can be used in determining displacements and forces in the structure. Wind pressures and forces are automatically calculated.
- Extensive graphics plots include material take-off, shear-moment, leg compression, displacement, twist, feed line, guy anchor and stress plots.
- tnxTower contains unique features such as True Cable behavior, hog rod take-up, foundation stiffness and much more.



Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	54.170	12	0.281	5.170	23.610	33.469	A572-65	4.7
2	53.170	12	0.375	6.170	31.965	41.644		8.0
3	24.000	12	0.438		39.771	44.139		4.8
4	30.000	12	0.580		44.139	49.600		9.7
								27.2

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
10-ft Dipole (Town)	149	AIR32 (T-Mobile Existing)	116
10-ft Dipole (Town)	149	AIR6449 (T-Mobile Existing)	116
DB810K (Town)	149	APXVAARR24-43 (T-Mobile Existing)	116
Valmont T-Arm (1) (Town)	149	10"x8"x3" TMA (T-Mobile Existing)	116
Valmont T-Arm (1) (Town)	149	10"x8"x3" TMA (T-Mobile Existing)	116
Valmont T-Arm (1) (Town)	149	10"x8"x3" TMA (T-Mobile Existing)	116
APXVSPP18-C-A20 (Sprint Existing)	138	4449 B12,B71 (T-Mobile Existing)	116
APXVSPP18-C-A20 (Sprint Existing)	138	4449 B12,B71 (T-Mobile Existing)	116
APXVSPP18-C-A20 (Sprint Existing)	138	4449 B12,B71 (T-Mobile Existing)	116
DT465B-2XR (Sprint Existing)	138	4415 B25 (T-Mobile Existing)	116
DT465B-2XR (Sprint Existing)	138	4415 B25 (T-Mobile Existing)	116
DT465B-2XR (Sprint Existing)	138	4415 B25 (T-Mobile Existing)	116
RRUS-32 (Sprint Existing)	138	SDX1926Q-43 (T-Mobile Existing)	116
RRUS-32 (Sprint Existing)	138	SDX1926Q-43 (T-Mobile Existing)	116
RRUS-32 (Sprint Existing)	138	SDX1926Q-43 (T-Mobile Existing)	116
A2 (Sprint Existing)	138	F4P-12W Quad Platform w/ Handrail (T-Mobile Existing)	116
A2 (Sprint Existing)	138	4'-6" Standoff (Town - Existing)	104
A2 (Sprint Existing)	138	4'-6" Standoff (Town - Existing)	104
FD-RRH 4x45 1900 (Sprint Existing)	138	4'-6" Standoff (Town - Existing)	104
FD-RRH 4x45 1900 (Sprint Existing)	138	4'-6" Standoff (Town - Existing)	104
FD-RRH 4x45 1900 (Sprint Existing)	138	1142-2B (Town - Existing)	104
FD-RRH 2x50 800 (Sprint Existing)	138	ASPA685 (Town - Existing)	104
FD-RRH 2x50 800 (Sprint Existing)	138	DB222 (Town - Existing)	104
FD-RRH 2x50 800 (Sprint Existing)	138	ASPA685 (Town - Existing)	104
13' Platform w/Rails (Sprint Existing)	138	XXDWMM-12.5-65-8T (Verizon - Existing)	80
OPA65R-BU6D (ATT Proposed)	128	JAHH-65B-R3B (Verizon - Existing)	80
AIR6419 (ATT Proposed)	128	JAHH-65B-R3B (Verizon - Existing)	80
AIR6449 (ATT Proposed)	128	BXA-70063/6CF (Verizon - Existing)	80
TPA65R-BU6D (ATT Proposed)	128	XXDWMM-12.5-65-8T (Verizon - Existing)	80
OPA65R-BU6D (ATT Proposed)	128	JAHH-65B-R3B (Verizon - Existing)	80
AIR6419 (ATT Proposed)	128	JAHH-65B-R3B (Verizon - Existing)	80
AIR6449 (ATT Proposed)	128	BXA-70063/6CF (Verizon - Existing)	80
TPA65R-BU6D (ATT Proposed)	128	XXDWMM-12.5-65-8T (Verizon - Existing)	80
OPA65R-BU6D (ATT Proposed)	128	JAHH-65B-R3B (Verizon - Existing)	80
AIR6419 (ATT Proposed)	128	JAHH-65B-R3B (Verizon - Existing)	80
AIR6449 (ATT Proposed)	128	BXA-70063/6CF (Verizon - Existing)	80
TPA65R-BU6D (ATT Proposed)	128	B2/B66A RRH (Verizon - Existing)	80
4449 B5/B12 (ATT Existing)	128	B2/B66A RRH (Verizon - Existing)	80
4449 B5/B12 (ATT Existing)	128	B2/B66A RRH (Verizon - Existing)	80
4449 B5/B12 (ATT Existing)	128	B5/B13 RRH (Verizon - Existing)	80
4415 B30 (ATT Existing)	128	B5/B13 RRH (Verizon - Existing)	80
4415 B30 (ATT Existing)	128	B5/B13 RRH (Verizon - Existing)	80
4415 B30 (ATT Existing)	128	CBRS RRH-RT4401-48A (Verizon - Existing)	80
4478 B14 (ATT Proposed)	128	CBRS RRH-RT4401-48A (Verizon - Existing)	80
4478 B14 (ATT Proposed)	128	CBRS RRH-RT4401-48A (Verizon - Existing)	80
4478 B14 (ATT Proposed)	128	CBC78T-DS-43 (Verizon - Existing)	80
8843 B2/B66A (ATT Proposed)	128	CBC78T-DS-43 (Verizon - Existing)	80
8843 B2/B66A (ATT Proposed)	128	CBC78T-DS-43 (Verizon - Existing)	80
8843 B2/B66A (ATT Proposed)	128	RVZDC-6627-PF-48 (Verizon - Existing)	80
DC6-48-60-18-8F Surge Arrestor (ATT Existing)	128	SitePro F4P-HRK14 Hand Rails (Verizon - Existing)	80
DC6-48-60-18-8F Surge Arrestor (ATT Existing)	128	Valmont 13' Low Profile Platform (Verizon - Existing)	78
DC6-48-60-18-8F Surge Arrestor (ATT Proposed)	128	Stand-off	40
SitePro RMQP-4120-H10 (ATT Proposed)	125	GPS (Existing)	40
AIR32 (T-Mobile Existing)	116		
AIR6449 (T-Mobile Existing)	116		
APXVAARR24-43 (T-Mobile Existing)	116		
AIR32 (T-Mobile Existing)	116		
AIR6449 (T-Mobile Existing)	116		
APXVAARR24-43 (T-Mobile Existing)	116		

ALL REACTIONS ARE FACTORED

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-G Standard.
2. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class III.
6. Topographic Category 1 with Crest Height of 0.000 ft
7. TOWER RATING: 82.5%

Centek Engineering Inc.
63-2 North Branford Rd.
Branford, CT 06405
Phone: (203) 488-0580
FAX: (203) 488-8587

Job: **22059.00 - CT2128**
Project: **150-ft Valmont Monopole - Fairfield, CT**
Client: AT&T Mobility
Drawn by: TJL
App'd:
Code: TIA-222-G
Date: 05/13/22
Scale: NTS
Path: J:\Jobs\2205900.WI\05_Structural\Backup Documentation\Calcs\ERI Files\150' Monopole _ Fairfield_CT.eri
Dwg No. E-1

Tower Input Data

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

Basic wind speed of 97 mph.
Structure Class III.
Exposure Category B.
Topographic Category 1.
Crest Height 0.000 ft.
Nominal ice thickness of 0.750 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification		Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks		Consider Feed Line Torque
	Always Use Max Kz		Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known

Tapered Pole Section Geometry

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*
L1	150.000-95.830	54.170	5.170	12	23.610	33.469	0.281	1.125	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L2	95.830-47.830	53.170	6.170	12	31.965	41.644	0.375	1.500	A572-65 (65 ksi)
L3	47.830-30.000	24.000	0.000	12	39.771	44.139	0.438	1.750	A572-65 (65 ksi)
L4	30.000-0.000	30.000		12	44.139	49.600	0.580	2.320	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	24.344	21.131	1467.855	8.352	12.230	120.021	2974.272	10.400	5.574	19.814
	34.550	30.061	4226.132	11.881	17.337	243.765	8563.288	14.795	8.216	29.207
L2	33.935	38.145	4858.931	11.309	16.558	293.447	9845.511	18.774	7.562	20.165
	42.981	49.832	10832.905	14.774	21.572	502.184	21950.402	24.526	10.156	27.082
L3	42.182	55.411	10942.171	14.081	20.601	531.139	22171.804	27.272	9.486	21.683
	45.542	61.564	15007.519	15.645	22.864	656.382	30409.303	30.300	10.657	24.358
L4	45.491	81.351	19701.692	15.594	22.864	861.690	39920.969	40.038	10.275	17.715
	51.145	91.550	28079.524	17.549	25.693	1092.895	56896.728	45.058	11.738	20.239

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 150.000-95.830				1	1	1			
L2 95.830-47.830				1	1	1			
L3 47.830-30.000				1	1	1			
L4 30.000-0.000				1.2	1	1.1			

Monopole Base Plate Data

Base Plate Data	
Base plate is square	
Base plate is grouted	√
Anchor bolt grade	A615-75
Anchor bolt size	2.250 in
Number of bolts	16
Embedment length	60.000 in
f'_c	4.000 ksi
Grout space	3.000 in
Base plate grade	A633-60
Base plate thickness	2.750 in
Bolt circle diameter	57.850 in
Outer diameter	63.850 in
Inner diameter	40.000 in

Base Plate Data	
Base plate type	Plain Plate

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
1 1/4 (AT&T - Existing)	A	Yes	Surface Ar (CaAa)	125.000 - 3.000	6	6	0.000 0.000	1.550		0.001
RG6-Fiber (AT&T - Existing)	C	Yes	Surface Ar (CaAa)	129.000 - 3.000	3	3	0.000 0.000	0.500		0.001
#8 AWG Copper WIre (AT&T - Existing)	C	Yes	Surface Ar (CaAa)	129.000 - 3.000	6	6	0.000 0.000	0.129		0.000
HYBRIFLEX 1-5/8" (T-Mobile - Existing)	A	Yes	Surface Ar (CaAa)	116.000 - 3.000	3	3	0.000 0.000	1.980		0.002
1 5/8 (T-Mobile - Existing)	A	Yes	Surface Ar (CaAa)	116.000 - 3.000	12	6	0.000 0.000	1.980		0.001
HYBRIFLEX 1-5/8" (Verizon - Existing)	A	Yes	Surface Ar (CaAa)	80.000 - 3.000	1	1	0.000 0.000	1.980		0.002
1 5/8 (Verizon - Existing)	A	Yes	Surface Ar (CaAa)	80.000 - 3.000	6	3	0.000 0.000	1.980		0.001
1/2 (GPS - Existing)	B	Yes	Surface Ar (CaAa)	40.000 - 3.000	1	1	0.000 0.000	0.580		0.000

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
1 5/8 (Town - Existing)	A	No	Yes	Inside Pole	149.000 - 3.000	3	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
HYBRIFLEX 1-5/8" (Sprint - Existing)	C	No	Yes	Inside Pole	138.000 - 3.000	3	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.002 0.002 0.002
7/8 (Town - Existing)	B	No	Yes	Inside Pole	104.000 - 3.000	4	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001

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	150.000-95.830	A	0.000	0.000	63.071	0.000	0.648
		B	0.000	0.000	0.000	0.000	0.018
		C	0.000	0.000	7.533	0.000	0.350
L2	95.830-47.830	A	0.000	0.000	155.655	0.000	1.474
		B	0.000	0.000	0.000	0.000	0.104

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
		C	0.000	0.000	10.901	0.000	0.432
L3	47.830-30.000	A	0.000	0.000	62.476	0.000	0.596
		B	0.000	0.000	0.580	0.000	0.041
		C	0.000	0.000	4.049	0.000	0.160
L4	30.000-0.000	A	0.000	0.000	94.608	0.000	0.902
		B	0.000	0.000	1.566	0.000	0.065
		C	0.000	0.000	6.132	0.000	0.243

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	150.000-95.830	A	2.137	0.000	0.000	115.966	0.000	2.635
		B		0.000	0.000	0.000	0.000	0.018
		C		0.000	0.000	44.850	0.000	0.866
L2	95.830-47.830	A	2.026	0.000	0.000	300.820	0.000	7.013
		B		0.000	0.000	0.000	0.000	0.104
		C		0.000	0.000	64.902	0.000	1.179
L3	47.830-30.000	A	1.906	0.000	0.000	120.553	0.000	2.769
		B		0.000	0.000	4.631	0.000	0.105
		C		0.000	0.000	23.120	0.000	0.414
L4	30.000-0.000	A	1.729	0.000	0.000	172.958	0.000	3.708
		B		0.000	0.000	10.905	0.000	0.197
		C		0.000	0.000	31.012	0.000	0.537

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	3	1 1/4	95.83 - 125.00	1.0000	1.0000
L1	4	RG6-Fiber	95.83 - 129.00	1.0000	1.0000
L1	5	#8 AWG Copper WIre	95.83 - 129.00	1.0000	1.0000
L1	6	HYBRIFLEX 1-5/8"	95.83 - 116.00	1.0000	1.0000
L1	7	1 5/8	95.83 - 116.00	1.0000	1.0000
L2	3	1 1/4	47.83 - 95.83	1.0000	1.0000
L2	4	RG6-Fiber	47.83 - 95.83	1.0000	1.0000
L2	5	#8 AWG Copper WIre	47.83 - 95.83	1.0000	1.0000
L2	6	HYBRIFLEX 1-5/8"	47.83 - 95.83	1.0000	1.0000
L2	7	1 5/8	47.83 - 95.83	1.0000	1.0000
L2	9	HYBRIFLEX 1-5/8"	47.83 - 80.00	1.0000	1.0000
L2	10	1 5/8	47.83 - 80.00	1.0000	1.0000
L3	3	1 1/4	30.00 - 47.83	1.0000	1.0000
L3	4	RG6-Fiber	30.00 - 47.83	1.0000	1.0000
L3	5	#8 AWG Copper WIre	30.00 - 47.83	1.0000	1.0000
L3	6	HYBRIFLEX 1-5/8"	30.00 - 47.83	1.0000	1.0000
L3	7	1 5/8	30.00 - 47.83	1.0000	1.0000
L3	9	HYBRIFLEX 1-5/8"	30.00 - 47.83	1.0000	1.0000
L3	10	1 5/8	30.00 - 47.83	1.0000	1.0000
L3	11	1/2	30.00 - 40.00	1.0000	1.0000
L4	3	1 1/4	3.00 - 30.00	1.0000	1.0000
L4	4	RG6-Fiber	3.00 - 30.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L4	5	#8 AWG Copper WIre	3.00 - 30.00	1.0000	1.0000
L4	6	HYBRIFLEX 1-5/8"	3.00 - 30.00	1.0000	1.0000
L4	7	1 5/8	3.00 - 30.00	1.0000	1.0000
L4	9	HYBRIFLEX 1-5/8"	3.00 - 30.00	1.0000	1.0000
L4	10	1 5/8	3.00 - 30.00	1.0000	1.0000
L4	11	1/2	3.00 - 30.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
10-ft Dipole (Town)	A	From Face	3.000 0.000 5.000	0.000	149.000	No Ice 1/2" Ice 1" Ice	3.150 5.670 8.190	3.150 5.670 8.190	0.032 0.042 0.051
10-ft Dipole (Town)	B	From Face	3.000 0.000 5.000	0.000	149.000	No Ice 1/2" Ice 1" Ice	3.150 5.670 8.190	3.150 5.670 8.190	0.032 0.042 0.051
DB810K (Town)	C	From Face	3.000 0.000 5.000	0.000	149.000	No Ice 1/2" Ice 1" Ice	4.075 5.734 7.410	4.075 5.734 7.410	0.035 0.065 0.106
Valmont T-Arm (1) (Town)	A	None		0.000	149.000	No Ice 1/2" Ice 1" Ice	10.540 14.450 18.360	10.540 14.450 18.360	0.336 0.412 0.488
Valmont T-Arm (1) (Town)	B	None		0.000	149.000	No Ice 1/2" Ice 1" Ice	10.540 14.450 18.360	10.540 14.450 18.360	0.336 0.412 0.488
Valmont T-Arm (1) (Town)	C	None		0.000	149.000	No Ice 1/2" Ice 1" Ice	10.540 14.450 18.360	10.540 14.450 18.360	0.336 0.412 0.488
APXVSPP18-C-A20 (Sprint Existing)	A	From Face	3.000 0.000 0.000	0.000	138.000	No Ice 1/2" Ice 1" Ice	8.024 8.480 8.943	5.283 5.736 6.196	0.057 0.107 0.162
APXVSPP18-C-A20 (Sprint Existing)	B	From Face	3.000 0.000 0.000	0.000	138.000	No Ice 1/2" Ice 1" Ice	8.024 8.480 8.943	5.283 5.736 6.196	0.057 0.107 0.162
APXVSPP18-C-A20 (Sprint Existing)	C	From Face	3.000 0.000 0.000	0.000	138.000	No Ice 1/2" Ice 1" Ice	8.024 8.480 8.943	5.283 5.736 6.196	0.057 0.107 0.162
DT465B-2XR (Sprint Existing)	A	From Face	3.000 -6.000 0.000	0.000	138.000	No Ice 1/2" Ice 1" Ice	9.098 9.564 10.036	5.973 6.432 6.898	0.060 0.118 0.182
DT465B-2XR (Sprint Existing)	B	From Face	3.000 -6.000 0.000	0.000	138.000	No Ice 1/2" Ice 1" Ice	9.098 9.564 10.036	5.973 6.432 6.898	0.060 0.118 0.182
DT465B-2XR (Sprint Existing)	C	From Face	3.000 -6.000 0.000	0.000	138.000	No Ice 1/2" Ice 1" Ice	9.098 9.564 10.036	5.973 6.432 6.898	0.060 0.118 0.182
RRUS-32 (Sprint Existing)	A	From Face	3.000 -6.000 0.000	0.000	138.000	No Ice 1/2" Ice 1" Ice	3.314 3.558 3.809	2.424 2.638 2.860	0.077 0.105 0.136

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
RRUS-32	B	From Face	3.000	0.000	138.000	No Ice	3.314	2.424	0.077
(Sprint Existing)			-6.000			1/2" Ice	3.558	2.638	0.105
			0.000			1" Ice	3.809	2.860	0.136
RRUS-32	C	From Face	3.000	0.000	138.000	No Ice	3.314	2.424	0.077
(Sprint Existing)			-6.000			1/2" Ice	3.558	2.638	0.105
			0.000			1" Ice	3.809	2.860	0.136
A2	A	From Face	3.000	0.000	138.000	No Ice	2.077	0.505	0.022
(Sprint Existing)			-6.000			1/2" Ice	2.257	0.615	0.035
			0.000			1" Ice	2.443	0.732	0.050
A2	B	From Face	3.000	0.000	138.000	No Ice	2.077	0.505	0.022
(Sprint Existing)			-6.000			1/2" Ice	2.257	0.615	0.035
			0.000			1" Ice	2.443	0.732	0.050
A2	C	From Face	3.000	0.000	138.000	No Ice	2.077	0.505	0.022
(Sprint Existing)			-6.000			1/2" Ice	2.257	0.615	0.035
			0.000			1" Ice	2.443	0.732	0.050
FD-RRH 4x45 1900	A	From Face	1.000	0.000	138.000	No Ice	2.319	2.384	0.060
(Sprint Existing)			0.000			1/2" Ice	2.524	2.590	0.084
			0.000			1" Ice	2.736	2.804	0.111
FD-RRH 4x45 1900	B	From Face	1.000	0.000	138.000	No Ice	2.319	2.384	0.060
(Sprint Existing)			0.000			1/2" Ice	2.524	2.590	0.084
			0.000			1" Ice	2.736	2.804	0.111
FD-RRH 4x45 1900	C	From Face	1.000	0.000	138.000	No Ice	2.319	2.384	0.060
(Sprint Existing)			0.000			1/2" Ice	2.524	2.590	0.084
			0.000			1" Ice	2.736	2.804	0.111
FD-RRH 2x50 800	A	From Face	1.000	0.000	138.000	No Ice	2.058	1.932	0.064
(Sprint Existing)			0.000			1/2" Ice	2.240	2.109	0.086
			0.000			1" Ice	2.429	2.293	0.111
FD-RRH 2x50 800	B	From Face	1.000	0.000	138.000	No Ice	2.058	1.932	0.064
(Sprint Existing)			0.000			1/2" Ice	2.240	2.109	0.086
			0.000			1" Ice	2.429	2.293	0.111
FD-RRH 2x50 800	C	From Face	1.000	0.000	138.000	No Ice	2.058	1.932	0.064
(Sprint Existing)			0.000			1/2" Ice	2.240	2.109	0.086
			0.000			1" Ice	2.429	2.293	0.111
13' Platform w/Rails	C	None		0.000	138.000	No Ice	31.300	31.300	1.822
(Sprint Existing)						1/2" Ice	40.200	40.200	2.452
						1" Ice	49.100	49.100	3.082
OPA65R-BU6D	A	From Face	3.000	0.000	128.000	No Ice	12.871	5.673	0.070
(AT&T Proposed)			-2.000			1/2" Ice	13.369	6.125	0.145
			0.000			1" Ice	13.873	6.585	0.227
AIR6419	A	From Face	3.000	0.000	128.000	No Ice	3.663	1.661	0.066
(AT&T Proposed)			2.000			1/2" Ice	3.910	1.851	0.091
			2.000			1" Ice	4.164	2.047	0.120
AIR6449	A	From Face	3.000	0.000	128.000	No Ice	5.655	2.416	0.103
(AT&T Proposed)			2.000			1/2" Ice	5.956	2.641	0.141
			-2.000			1" Ice	6.265	2.874	0.184
TPA65R-BU6D	A	From Face	3.000	0.000	128.000	No Ice	12.709	5.615	0.075
(AT&T Proposed)			6.000			1/2" Ice	13.206	6.067	0.149
			0.000			1" Ice	13.709	6.526	0.230
OPA65R-BU6D	B	From Face	3.000	0.000	128.000	No Ice	12.871	5.673	0.070
(AT&T Proposed)			-2.000			1/2" Ice	13.369	6.125	0.145
			0.000			1" Ice	13.873	6.585	0.227
AIR6419	B	From Face	3.000	0.000	128.000	No Ice	3.663	1.661	0.066
(AT&T Proposed)			2.000			1/2" Ice	3.910	1.851	0.091
			2.000			1" Ice	4.164	2.047	0.120
AIR6449	B	From Face	3.000	0.000	128.000	No Ice	5.655	2.416	0.103
(AT&T Proposed)			2.000			1/2" Ice	5.956	2.641	0.141
			-2.000			1" Ice	6.265	2.874	0.184

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
TPA65R-BU6D	B	From Face	3.000	0.000	128.000	No Ice	12.709	5.615	0.075
(AT&T Proposed)			6.000			1/2" Ice	13.206	6.067	0.149
			0.000			1" Ice	13.709	6.526	0.230
OPA65R-BU6D	C	From Face	3.000	0.000	128.000	No Ice	12.871	5.673	0.070
(AT&T Proposed)			-2.000			1/2" Ice	13.369	6.125	0.145
			0.000			1" Ice	13.873	6.585	0.227
AIR6419	C	From Face	3.000	0.000	128.000	No Ice	3.663	1.661	0.066
(AT&T Proposed)			2.000			1/2" Ice	3.910	1.851	0.091
			2.000			1" Ice	4.164	2.047	0.120
AIR6449	C	From Face	3.000	0.000	128.000	No Ice	5.655	2.416	0.103
(AT&T Proposed)			2.000			1/2" Ice	5.956	2.641	0.141
			-2.000			1" Ice	6.265	2.874	0.184
TPA65R-BU6D	C	From Face	3.000	0.000	128.000	No Ice	12.709	5.615	0.075
(AT&T Proposed)			6.000			1/2" Ice	13.206	6.067	0.149
			0.000			1" Ice	13.709	6.526	0.230
4449 B5/B12	A	From Face	0.500	0.000	128.000	No Ice	1.968	1.408	0.071
(AT&T Existing)			0.000			1/2" Ice	2.144	1.564	0.090
			0.000			1" Ice	2.328	1.727	0.111
4449 B5/B12	B	From Face	0.500	0.000	128.000	No Ice	1.968	1.408	0.071
(AT&T Existing)			0.000			1/2" Ice	2.144	1.564	0.090
			0.000			1" Ice	2.328	1.727	0.111
4449 B5/B12	C	From Face	0.500	0.000	128.000	No Ice	1.968	1.408	0.071
(AT&T Existing)			0.000			1/2" Ice	2.144	1.564	0.090
			0.000			1" Ice	2.328	1.727	0.111
4415 B30	A	From Face	0.500	0.000	128.000	No Ice	1.843	0.820	0.046
(AT&T Existing)			0.000			1/2" Ice	2.012	0.943	0.060
			0.000			1" Ice	2.190	1.075	0.077
4415 B30	B	From Face	0.500	0.000	128.000	No Ice	1.843	0.820	0.046
(AT&T Existing)			0.000			1/2" Ice	2.012	0.943	0.060
			0.000			1" Ice	2.190	1.075	0.077
4415 B30	C	From Face	0.500	0.000	128.000	No Ice	1.843	0.820	0.046
(AT&T Existing)			0.000			1/2" Ice	2.012	0.943	0.060
			0.000			1" Ice	2.190	1.075	0.077
4478 B14	A	From Face	0.500	0.000	128.000	No Ice	1.843	1.059	0.060
(AT&T Proposed)			0.000			1/2" Ice	2.012	1.197	0.076
			0.000			1" Ice	2.190	1.342	0.094
4478 B14	B	From Face	0.500	0.000	128.000	No Ice	1.843	1.059	0.060
(AT&T Proposed)			0.000			1/2" Ice	2.012	1.197	0.076
			0.000			1" Ice	2.190	1.342	0.094
4478 B14	C	From Face	0.500	0.000	128.000	No Ice	1.843	1.059	0.060
(AT&T Proposed)			0.000			1/2" Ice	2.012	1.197	0.076
			0.000			1" Ice	2.190	1.342	0.094
8843 B2/B66A	A	From Face	0.500	0.000	128.000	No Ice	1.639	1.353	0.072
(AT&T Proposed)			0.000			1/2" Ice	1.799	1.500	0.090
			0.000			1" Ice	1.966	1.655	0.110
8843 B2/B66A	B	From Face	0.500	0.000	128.000	No Ice	1.639	1.353	0.072
(AT&T Proposed)			0.000			1/2" Ice	1.799	1.500	0.090
			0.000			1" Ice	1.966	1.655	0.110
8843 B2/B66A	C	From Face	0.500	0.000	128.000	No Ice	1.639	1.353	0.072
(AT&T Proposed)			0.000			1/2" Ice	1.799	1.500	0.090
			0.000			1" Ice	1.966	1.655	0.110
DC6-48-60-18-8F Surge Arrestor	A	From Face	0.500	0.000	128.000	No Ice	1.909	1.909	0.020
(AT&T Existing)			0.000			1/2" Ice	2.098	2.098	0.039
			0.000			1" Ice	2.294	2.294	0.062
DC6-48-60-18-8F Surge Arrestor	B	From Face	0.500	0.000	128.000	No Ice	1.909	1.909	0.020
(AT&T Existing)			0.000			1/2" Ice	2.098	2.098	0.039
			0.000			1" Ice	2.294	2.294	0.062

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
DC6-48-60-18-8F Surge Arrestor (AT&T Proposed)	C	From Face	0.500 0.000 0.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	1.909 2.098 2.294	1.909 2.098 2.294	0.020 0.039 0.062
SitePro RMQP-4120-H10 (AT&T Proposed)	C	None		0.000	125.000	No Ice 1/2" Ice 1" Ice	30.000 38.000 46.000	30.000 38.000 46.000	3.000 2.750 2.500
AIR32 (T-Mobile Existing)	A	From Face	3.000 -6.000 0.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	6.510 6.887 7.271	4.712 5.068 5.431	0.133 0.179 0.230
AIR6449 (T-Mobile Existing)	A	From Face	3.000 -2.000 0.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	5.655 5.956 6.265	2.416 2.641 2.874	0.103 0.141 0.184
APXVAARR24-43 (T-Mobile Existing)	A	From Face	3.000 2.000 0.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	20.243 20.890 21.544	8.889 9.487 10.092	0.153 0.266 0.387
AIR32 (T-Mobile Existing)	B	From Face	3.000 -6.000 0.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	6.510 6.887 7.271	4.712 5.068 5.431	0.133 0.179 0.230
AIR6449 (T-Mobile Existing)	B	From Face	3.000 -2.000 0.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	5.655 5.956 6.265	2.416 2.641 2.874	0.103 0.141 0.184
APXVAARR24-43 (T-Mobile Existing)	B	From Face	3.000 2.000 0.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	20.243 20.890 21.544	8.889 9.487 10.092	0.153 0.266 0.387
AIR32 (T-Mobile Existing)	C	From Face	3.000 -6.000 0.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	6.510 6.887 7.271	4.712 5.068 5.431	0.133 0.179 0.230
AIR6449 (T-Mobile Existing)	C	From Face	3.000 -2.000 0.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	5.655 5.956 6.265	2.416 2.641 2.874	0.103 0.141 0.184
APXVAARR24-43 (T-Mobile Existing)	C	From Face	3.000 2.000 0.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	20.243 20.890 21.544	8.889 9.487 10.092	0.153 0.266 0.387
10"x8"x3" TMA (T-Mobile Existing)	A	From Face	3.000 6.000 0.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.292 0.380 0.477	0.015 0.020 0.025
10"x8"x3" TMA (T-Mobile Existing)	B	From Face	3.000 6.000 0.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.292 0.380 0.477	0.015 0.020 0.025
10"x8"x3" TMA (T-Mobile Existing)	C	From Face	3.000 6.000 0.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.292 0.380 0.477	0.015 0.020 0.025
4449 B12,B71 (T-Mobile Existing)	A	From Face	3.000 2.000 0.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	1.650 1.810 1.978	1.156 1.295 1.441	0.080 0.096 0.115
4449 B12,B71 (T-Mobile Existing)	B	From Face	3.000 2.000 0.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	1.650 1.810 1.978	1.156 1.295 1.441	0.080 0.096 0.115
4449 B12,B71 (T-Mobile Existing)	C	From Face	3.000 2.000 0.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	1.650 1.810 1.978	1.156 1.295 1.441	0.080 0.096 0.115
4415 B25 (T-Mobile Existing)	A	From Face	3.000 2.000 0.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	1.843 2.012 2.190	0.820 0.943 1.075	0.046 0.060 0.077
4415 B25 (T-Mobile Existing)	B	From Face	3.000 2.000 0.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	1.843 2.012 2.190	0.820 0.943 1.075	0.046 0.060 0.077

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
4415 B25	C	From Face	3.000	0.000	116.000	No Ice	1.843	0.820	0.046
(T-Mobile Existing)			2.000			1/2" Ice	2.012	0.943	0.060
			0.000			1" Ice	2.190	1.075	0.077
SDX1926Q-43	A	From Face	3.000	0.000	116.000	No Ice	0.241	0.101	0.030
(T-Mobile Existing)			2.000			1/2" Ice	0.306	0.144	0.032
			0.000			1" Ice	0.379	0.195	0.036
SDX1926Q-43	B	From Face	3.000	0.000	116.000	No Ice	0.241	0.101	0.030
(T-Mobile Existing)			2.000			1/2" Ice	0.306	0.144	0.032
			0.000			1" Ice	0.379	0.195	0.036
SDX1926Q-43	C	From Face	3.000	0.000	116.000	No Ice	0.241	0.101	0.030
(T-Mobile Existing)			2.000			1/2" Ice	0.306	0.144	0.032
			0.000			1" Ice	0.379	0.195	0.036
F4P-12W Quad Platform w/ Handrail	C	None		0.000	116.000	No Ice	35.000	35.000	2.500
(T-Mobile Existing)						1/2" Ice	41.000	41.000	3.100
						1" Ice	47.000	47.000	3.700
4'-6" Standoff	A	From Face	3.000	0.000	104.000	No Ice	1.800	0.133	0.040
(Town - Existing)			0.000			1/2" Ice	2.126	0.181	0.057
			0.000			1" Ice	2.459	0.237	0.077
4'-6" Standoff	A	From Face	3.000	0.000	104.000	No Ice	1.800	0.133	0.040
(Town - Existing)			0.000			1/2" Ice	2.126	0.181	0.057
			0.000			1" Ice	2.459	0.237	0.077
4'-6" Standoff	B	From Face	3.000	0.000	104.000	No Ice	1.800	0.133	0.040
(Town - Existing)			0.000			1/2" Ice	2.126	0.181	0.057
			0.000			1" Ice	2.459	0.237	0.077
4'-6" Standoff	C	From Face	3.000	0.000	104.000	No Ice	1.800	0.133	0.040
(Town - Existing)			0.000			1/2" Ice	2.126	0.181	0.057
			0.000			1" Ice	2.459	0.237	0.077
1142-2B	B	From Face	5.000	0.000	104.000	No Ice	1.120	1.120	0.010
(Town - Existing)			0.000			1/2" Ice	2.535	2.535	0.021
			4.000			1" Ice	3.967	3.967	0.041
ASPA685	B	From Face	5.000	0.000	104.000	No Ice	5.250	5.250	0.022
(Town - Existing)			0.000			1/2" Ice	7.379	7.379	0.060
			-10.500			1" Ice	9.525	9.525	0.112
DB222	A	From Face	5.000	0.000	104.000	No Ice	1.600	1.600	0.016
(Town - Existing)			0.000			1/2" Ice	2.880	2.880	0.021
			5.000			1" Ice	4.160	4.160	0.026
ASPA685	A	From Face	5.000	0.000	104.000	No Ice	5.250	5.250	0.022
(Town - Existing)			0.000			1/2" Ice	7.379	7.379	0.060
			-10.500			1" Ice	9.525	9.525	0.112
XXDWMM-12.5-65-8T	A	From Face	3.000	0.000	80.000	No Ice	0.892	0.175	0.005
(Verizon - Existing)			-6.000			1/2" Ice	1.012	0.255	0.010
			0.000			1" Ice	1.140	0.339	0.017
JAHH-65B-R3B	A	From Face	3.000	0.000	80.000	No Ice	9.113	5.983	0.063
(Verizon - Existing)			-3.000			1/2" Ice	9.579	6.442	0.121
			0.000			1" Ice	10.052	6.909	0.185
JAHH-65B-R3B	A	From Face	3.000	0.000	80.000	No Ice	9.113	5.983	0.063
(Verizon - Existing)			-1.000			1/2" Ice	9.579	6.442	0.121
			0.000			1" Ice	10.052	6.909	0.185
BXA-70063/6CF	A	From Face	3.000	0.000	80.000	No Ice	7.569	4.158	0.012
(Verizon - Existing)			2.000			1/2" Ice	8.016	4.595	0.054
			0.000			1" Ice	8.470	5.040	0.103
XXDWMM-12.5-65-8T	B	From Face	3.000	0.000	80.000	No Ice	0.892	0.175	0.005
(Verizon - Existing)			-6.000			1/2" Ice	1.012	0.255	0.010
			0.000			1" Ice	1.140	0.339	0.017
JAHH-65B-R3B	B	From Face	3.000	0.000	80.000	No Ice	9.113	5.983	0.063
(Verizon - Existing)			-3.000			1/2" Ice	9.579	6.442	0.121
			0.000			1" Ice	10.052	6.909	0.185

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
JAHH-65B-R3B	B	From Face	3.000	0.000	80.000	No Ice	9.113	5.983	0.063
(Verizon - Existing)			-1.000			1/2" Ice	9.579	6.442	0.121
			0.000			1" Ice	10.052	6.909	0.185
BXA-70063/6CF	B	From Face	3.000	0.000	80.000	No Ice	7.569	4.158	0.012
(Verizon - Existing)			2.000			1/2" Ice	8.016	4.595	0.054
			0.000			1" Ice	8.470	5.040	0.103
XXDWMM-12.5-65-8T	C	From Face	3.000	0.000	80.000	No Ice	0.892	0.175	0.005
(Verizon - Existing)			-6.000			1/2" Ice	1.012	0.255	0.010
			0.000			1" Ice	1.140	0.339	0.017
JAHH-65B-R3B	C	From Face	3.000	0.000	80.000	No Ice	9.113	5.983	0.063
(Verizon - Existing)			-3.000			1/2" Ice	9.579	6.442	0.121
			0.000			1" Ice	10.052	6.909	0.185
JAHH-65B-R3B	C	From Face	3.000	0.000	80.000	No Ice	9.113	5.983	0.063
(Verizon - Existing)			-1.000			1/2" Ice	9.579	6.442	0.121
			0.000			1" Ice	10.052	6.909	0.185
BXA-70063/6CF	C	From Face	3.000	0.000	80.000	No Ice	7.569	4.158	0.012
(Verizon - Existing)			2.000			1/2" Ice	8.016	4.595	0.054
			0.000			1" Ice	8.470	5.040	0.103
B2/B66A RRH	A	From Face	3.000	0.000	80.000	No Ice	2.537	1.610	0.060
(Verizon - Existing)			3.000			1/2" Ice	2.750	1.791	0.080
			0.000			1" Ice	2.970	1.978	0.103
B2/B66A RRH	B	From Face	3.000	0.000	80.000	No Ice	2.537	1.610	0.060
(Verizon - Existing)			3.000			1/2" Ice	2.750	1.791	0.080
			0.000			1" Ice	2.970	1.978	0.103
B2/B66A RRH	C	From Face	3.000	0.000	80.000	No Ice	2.537	1.610	0.060
(Verizon - Existing)			3.000			1/2" Ice	2.750	1.791	0.080
			0.000			1" Ice	2.970	1.978	0.103
B5/B13 RRH	A	From Face	3.000	0.000	80.000	No Ice	1.865	1.016	0.070
(Verizon - Existing)			3.000			1/2" Ice	2.035	1.148	0.086
			0.000			1" Ice	2.212	1.288	0.106
B5/B13 RRH	B	From Face	3.000	0.000	80.000	No Ice	1.865	1.016	0.070
(Verizon - Existing)			3.000			1/2" Ice	2.035	1.148	0.086
			0.000			1" Ice	2.212	1.288	0.106
B5/B13 RRH	C	From Face	3.000	0.000	80.000	No Ice	1.865	1.016	0.070
(Verizon - Existing)			3.000			1/2" Ice	2.035	1.148	0.086
			0.000			1" Ice	2.212	1.288	0.106
CBRS RRH-RT4401-48A	A	From Face	3.000	0.000	80.000	No Ice	0.857	0.420	0.020
(Verizon - Existing)			3.000			1/2" Ice	0.975	0.510	0.027
			0.000			1" Ice	1.101	0.608	0.036
CBRS RRH-RT4401-48A	B	From Face	3.000	0.000	80.000	No Ice	0.857	0.420	0.020
(Verizon - Existing)			3.000			1/2" Ice	0.975	0.510	0.027
			0.000			1" Ice	1.101	0.608	0.036
CBRS RRH-RT4401-48A	C	From Face	3.000	0.000	80.000	No Ice	0.857	0.420	0.020
(Verizon - Existing)			3.000			1/2" Ice	0.975	0.510	0.027
			0.000			1" Ice	1.101	0.608	0.036
CBC78T-DS-43	A	From Face	3.000	0.000	80.000	No Ice	0.368	0.256	0.011
(Verizon - Existing)			0.000			1/2" Ice	0.446	0.322	0.015
			0.000			1" Ice	0.531	0.395	0.021
CBC78T-DS-43	B	From Face	3.000	0.000	80.000	No Ice	0.368	0.256	0.011
(Verizon - Existing)			0.000			1/2" Ice	0.446	0.322	0.015
			0.000			1" Ice	0.531	0.395	0.021
CBC78T-DS-43	C	From Face	3.000	0.000	80.000	No Ice	0.368	0.256	0.011
(Verizon - Existing)			0.000			1/2" Ice	0.446	0.322	0.015
			0.000			1" Ice	0.531	0.395	0.021
RVZDC-6627-PF-48	C	From Face	3.000	0.000	80.000	No Ice	3.250	2.150	0.030
(Verizon - Existing)			0.000			1/2" Ice	3.477	2.347	0.058
			0.000			1" Ice	3.712	2.551	0.090

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
SitePro F4P-HRK14 Hand Rails	C	None		0.000	80.000	No Ice	6.390	8.210	0.547
						1/2" Ice	8.930	11.640	0.673
(Verizon - Existing)						1" Ice	11.550	15.160	0.847
Valmont 13' Low Profile Platform	C	None		0.000	78.000	No Ice	15.700	15.700	1.300
						1/2" Ice	20.100	20.100	1.765
(Verizon - Existing)						1" Ice	24.500	24.500	2.230
Stand-off	A	From Face	1.000	0.000	40.000	No Ice	0.750	0.750	0.027
			0.000			1/2" Ice	0.950	0.950	0.036
			0.000			1" Ice	5.060	5.060	0.138
GPS	A	From Face	2.000	0.000	40.000	No Ice	1.000	1.000	0.010
(Existing)			0.000			1/2" Ice	1.500	1.500	0.015
			0.000			1" Ice	2.000	2.000	0.020

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z ksf	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	121.775	1.045	0.027	132.929	A	0.000	132.929	132.929	100.00	63.071	0.000
150.000-95.83					B	0.000	132.929		100.00	0.000	0.000
0					C	0.000	132.929		100.00	7.533	0.000
L2	71.467	0.898	0.024	153.832	A	0.000	153.832	153.832	100.00	155.655	0.000
95.830-47.830					B	0.000	153.832		100.00	0.000	0.000
					C	0.000	153.832		100.00	10.901	0.000
L3	38.802	0.754	0.020	65.171	A	0.000	65.171	65.171	100.00	62.476	0.000
47.830-30.000					B	0.000	65.171		100.00	0.580	0.000
					C	0.000	65.171		100.00	4.049	0.000
L4	14.709	0.7	0.018	120.796	A	0.000	120.796	120.796	100.00	94.608	0.000
30.000-0.000					B	0.000	120.796		100.00	1.566	0.000
					C	0.000	120.796		100.00	6.132	0.000

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z ksf	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	121.775	1.045	0.006	2.137	152.218	A	0.000	152.218	152.218	100.00	115.966	0.000
150.000-95.830						B	0.000	152.218		100.00	0.000	0.000
						C	0.000	152.218		100.00	44.850	0.000
L2	71.467	0.898	0.005	2.026	170.924	A	0.000	170.924	170.924	100.00	300.820	0.000
95.830-47.830						B	0.000	170.924		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z ksf	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
						C	0.000	170.924		100.00	64.902	0.000
L3	38.802	0.754	0.005	1.906	71.191	A	0.000	71.191	71.191	100.00	120.553	0.000
47.830-30.000						B	0.000	71.191		100.00	4.631	0.000
						C	0.000	71.191		100.00	23.120	0.000
L4 30.000-0.000	14.709	0.7	0.004	1.729	129.443	A	0.000	129.443	129.443	100.00	172.958	0.000
						B	0.000	129.443		100.00	10.905	0.000
						C	0.000	129.443		100.00	31.012	0.000

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z ksf	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	121.775	1.045	0.008	132.929	A	0.000	132.929	132.929	100.00	63.071	0.000
150.000-95.83					B	0.000	132.929		100.00	0.000	0.000
0					C	0.000	132.929		100.00	7.533	0.000
L2	71.467	0.898	0.007	153.832	A	0.000	153.832	153.832	100.00	155.655	0.000
95.830-47.830					B	0.000	153.832		100.00	0.000	0.000
					C	0.000	153.832		100.00	10.901	0.000
L3	38.802	0.754	0.006	65.171	A	0.000	65.171	65.171	100.00	62.476	0.000
47.830-30.000					B	0.000	65.171		100.00	0.580	0.000
					C	0.000	65.171		100.00	4.049	0.000
L4	14.709	0.7	0.005	120.796	A	0.000	120.796	120.796	100.00	94.608	0.000
30.000-0.000					B	0.000	120.796		100.00	1.566	0.000
					C	0.000	120.796		100.00	6.132	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	1.016	4.718	A	1	1	0.027	1	1	132.929	4.014	0.074	C
150.000-95.83			B	1	1		1	1	132.929			
0			C	1	1		1	1	132.929			
L2	2.010	7.959	A	1	1	0.024	1	1	153.832	4.042	0.084	C
95.830-47.830			B	1	1.016		1	1	153.832			
			C	1	1.016		1	1	153.832			
L3	0.797	4.777	A	1	1	0.020	1	1	65.171	1.465	0.082	C
47.830-30.000			B	1	1.03		1	1	65.171			
			C	1	1.03		1	1	65.171			
L4	1.210	9.708	A	1	1	0.018	1	1	120.796	2.448	0.082	C
30.000-0.000			B	1	1		1	1	120.796			
			C	1	1		1	1	120.796			
Sum Weight:	5.032	27.161						OTM	870.519 kip-ft	11.969		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	1.016	4.718	A	1	1	0.027	1	1	132.929	4.014	0.074	C
150.000-95.83			B	1	1		1	1	132.929			
0			C	1	1		1	1	132.929			
L2	2.010	7.959	A	1	1	0.024	1	1	153.832	6.526	0.136	C
95.830-47.830			B	1	1		1	1	153.832			
			C	1	1.2		1	1	153.832			
L3	0.797	4.777	A	1	1	0.020	1	1	65.171	2.357	0.132	C
47.830-30.000			B	1	1		1	1	65.171			
			C	1	1.2		1	1	65.171			
L4	1.210	9.708	A	1	1	0.018	1	1	120.796	3.851	0.128	C
30.000-0.000			B	1	1		1	1	120.796			
			C	1	1.2		1	1	120.796			
Sum Weight:	5.032	27.161						OTM	1103.280 kip-ft	16.748		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	1.016	4.718	A	1	1	0.027	1	1	132.929	4.014	0.074	C
150.000-95.83			B	1	1		1	1	132.929			
0			C	1	1		1	1	132.929			
L2	2.010	7.959	A	1	1.016	0.024	1	1	153.832	4.042	0.084	C
95.830-47.830			B	1	1		1	1	153.832			
			C	1	1.016		1	1	153.832			
L3	0.797	4.777	A	1	1.03	0.020	1	1	65.171	1.465	0.082	C
47.830-30.000			B	1	1		1	1	65.171			
			C	1	1.03		1	1	65.171			
L4	1.210	9.708	A	1	1	0.018	1	1	120.796	2.448	0.082	C
30.000-0.000			B	1	1		1	1	120.796			
			C	1	1		1	1	120.796			
Sum Weight:	5.032	27.161						OTM	870.519 kip-ft	11.969		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	1.016	4.718	A	1	1.085	0.027	1	1	132.929	4.357	0.080	A

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
150.000-95.83			B	1	1		1	1	132.929			
0			C	1	1		1	1	132.929			
L2	2.010	7.959	A	1	1.2	0.024	1	1	153.832	7.065	0.147	A
95.830-47.830			B	1	1		1	1	153.832			
			C	1	1		1	1	153.832			
L3	0.797	4.777	A	1	1.2	0.020	1	1	65.171	2.553	0.143	A
47.830-30.000			B	1	1		1	1	65.171			
			C	1	1		1	1	65.171			
L4	1.210	9.708	A	1	1.2	0.018	1	1	120.796	4.126	0.138	A
30.000-0.000			B	1	1		1	1	120.796			
			C	1	1		1	1	120.796			
Sum Weight:	5.032	27.161						OTM	1195.182 kip-ft	18.101		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	3.519	9.164	A	1	1.2	0.006	1	1	152.218	1.274	0.024	C
150.000-95.83			B	1	1.2		1	1	152.218			
0			C	1	1.2		1	1	152.218			
L2	8.296	12.744	A	1	1.2	0.005	1	1	170.037	1.219	0.025	C
95.830-47.830			B	1	1.2		1	1	170.037			
			C	1	1.2		1	1	170.037			
L3	3.288	6.667	A	1	1.2	0.005	1	1	70.834	0.429	0.024	C
47.830-30.000			B	1	1.2		1	1	70.834			
			C	1	1.2		1	1	70.834			
L4	4.442	12.865	A	1	1.2	0.004	1	1	129.443	0.727	0.024	C
30.000-0.000			B	1	1.2		1	1	129.443			
			C	1	1.2		1	1	129.443			
Sum Weight:	19.545	41.439						OTM	269.609 kip-ft	3.649		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	3.519	9.164	A	1	1.2	0.006	1	1	152.218	1.274	0.024	C
150.000-95.83			B	1	1.2		1	1	152.218			
0			C	1	1.2		1	1	152.218			
L2	8.296	12.744	A	1	1.2	0.005	1	1	170.037	1.945	0.041	C
95.830-47.830			B	1	1.2		1	1	170.037			
			C	1	1.2		1	1	170.037			
L3	3.288	6.667	A	1	1.2	0.005	1	1	70.834	0.689	0.039	C
47.830-30.000			B	1	1.2		1	1	70.834			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
			C	1	1.2		1	1	70.834			
L4	4.442	12.865	A	1	1.2	0.004	1	1	129.443	1.070	0.036	C
30.000-0.000			B	1	1.2		1	1	129.443			
			C	1	1.2		1	1	129.443			
Sum Weight:	19.545	41.439						OTM	336.654 kip-ft	4.978		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	3.519	9.164	A	1	1.2	0.006	1	1	152.218	1.274	0.024	C
150.000-95.83			B	1	1.2		1	1	152.218			
0			C	1	1.2		1	1	152.218			
L2	8.296	12.744	A	1	1.2	0.005	1	1	170.037	1.219	0.025	C
95.830-47.830			B	1	1.2		1	1	170.037			
			C	1	1.2		1	1	170.037			
L3	3.288	6.667	A	1	1.2	0.005	1	1	70.834	0.429	0.024	C
47.830-30.000			B	1	1.2		1	1	70.834			
			C	1	1.2		1	1	70.834			
L4	4.442	12.865	A	1	1.2	0.004	1	1	129.443	0.727	0.024	C
30.000-0.000			B	1	1.2		1	1	129.443			
			C	1	1.2		1	1	129.443			
Sum Weight:	19.545	41.439						OTM	269.609 kip-ft	3.649		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	3.519	9.164	A	1	1.2	0.006	1	1	152.218	1.274	0.024	C
150.000-95.83			B	1	1.2		1	1	152.218			
0			C	1	1.2		1	1	152.218			
L2	8.296	12.744	A	1	1.2	0.005	1	1	170.037	2.081	0.043	A
95.830-47.830			B	1	1.2		1	1	170.037			
			C	1	1.2		1	1	170.037			
L3	3.288	6.667	A	1	1.2	0.005	1	1	70.834	0.738	0.041	A
47.830-30.000			B	1	1.2		1	1	70.834			
			C	1	1.2		1	1	70.834			
L4	4.442	12.865	A	1	1.2	0.004	1	1	129.443	1.139	0.038	A
30.000-0.000			B	1	1.2		1	1	129.443			
			C	1	1.2		1	1	129.443			
Sum Weight:	19.545	41.439						OTM	349.264 kip-ft	5.232		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	1.016	4.718	A	1	1	0.008	1	1	132.929	1.195	0.022	C
150.000-95.83			B	1	1		1	1	132.929			
0			C	1	1		1	1	132.929			
L2	2.010	7.959	A	1	1	0.007	1	1	153.832	1.203	0.025	C
95.830-47.830			B	1	1.016		1	1	153.832			
			C	1	1.016		1	1	153.832			
L3	0.797	4.777	A	1	1	0.006	1	1	65.171	0.436	0.024	C
47.830-30.000			B	1	1.03		1	1	65.171			
			C	1	1.03		1	1	65.171			
L4	1.210	9.708	A	1	1	0.005	1	1	120.796	0.729	0.024	C
30.000-0.000			B	1	1		1	1	120.796			
			C	1	1		1	1	120.796			
Sum Weight:	5.032	27.161						OTM	259.140 kip-ft	3.563		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	1.016	4.718	A	1	1	0.008	1	1	132.929	1.195	0.022	C
150.000-95.83			B	1	1		1	1	132.929			
0			C	1	1		1	1	132.929			
L2	2.010	7.959	A	1	1	0.007	1	1	153.832	1.943	0.040	C
95.830-47.830			B	1	1		1	1	153.832			
			C	1	1.2		1	1	153.832			
L3	0.797	4.777	A	1	1	0.006	1	1	65.171	0.702	0.039	C
47.830-30.000			B	1	1		1	1	65.171			
			C	1	1.2		1	1	65.171			
L4	1.210	9.708	A	1	1	0.005	1	1	120.796	1.146	0.038	C
30.000-0.000			B	1	1		1	1	120.796			
			C	1	1.2		1	1	120.796			
Sum Weight:	5.032	27.161						OTM	328.429 kip-ft	4.986		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	1.016	4.718	A	1	1	0.008	1	1	132.929	1.195	0.022	C
150.000-95.83			B	1	1		1	1	132.929			
0			C	1	1		1	1	132.929			
L2	2.010	7.959	A	1	1.016	0.007	1	1	153.832	1.203	0.025	C
95.830-47.830			B	1	1		1	1	153.832			
			C	1	1.016		1	1	153.832			
L3	0.797	4.777	A	1	1.03	0.006	1	1	65.171	0.436	0.024	C
47.830-30.000			B	1	1		1	1	65.171			
			C	1	1.03		1	1	65.171			
L4	1.210	9.708	A	1	1	0.005	1	1	120.796	0.729	0.024	C
30.000-0.000			B	1	1		1	1	120.796			
			C	1	1		1	1	120.796			
Sum Weight:	5.032	27.161						OTM	259.140 kip-ft	3.563		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	1.016	4.718	A	1	1.085	0.008	1	1	132.929	1.297	0.024	A
150.000-95.83			B	1	1		1	1	132.929			
0			C	1	1		1	1	132.929			
L2	2.010	7.959	A	1	1.2	0.007	1	1	153.832	2.103	0.044	A
95.830-47.830			B	1	1		1	1	153.832			
			C	1	1		1	1	153.832			
L3	0.797	4.777	A	1	1.2	0.006	1	1	65.171	0.760	0.043	A
47.830-30.000			B	1	1		1	1	65.171			
			C	1	1		1	1	65.171			
L4	1.210	9.708	A	1	1.2	0.005	1	1	120.796	1.228	0.041	A
30.000-0.000			B	1	1		1	1	120.796			
			C	1	1		1	1	120.796			
Sum Weight:	5.032	27.161						OTM	355.787 kip-ft	5.388		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	27.161					
Bracing Weight	0.000					
Total Member Self-Weight	27.161			-0.218	0.280	
Total Weight	48.127			-0.218	0.280	
Wind 0 deg - No Ice		-0.021	-24.756	-2392.692	2.451	-0.203
Wind 30 deg - No Ice		15.423	-26.739	-2352.241	-1356.480	-0.616
Wind 45 deg - No Ice		20.865	-20.869	-1855.003	-1854.608	-0.765

Load Case	*Vertical Forces* K	*Sum of Forces X* K	*Sum of Forces Z* K	*Sum of Overturning Moments, M_x* kip-ft	*Sum of Overturning Moments, M_z* kip-ft	*Sum of Torques* kip-ft
Wind 60 deg - No Ice		21.424	-12.360	-1194.574	-2070.703	-0.863
Wind 90 deg - No Ice		24.642	0.021	1.954	-2386.004	-0.879
Wind 120 deg - No Ice		21.351	12.342	1194.732	-2067.388	-0.660
Wind 135 deg - No Ice		17.439	17.443	1688.573	-1688.613	-0.478
Wind 150 deg - No Ice		12.339	21.356	2067.325	-1194.742	-0.263
Wind 180 deg - No Ice		0.021	24.756	2392.256	-1.891	0.203
Wind 210 deg - No Ice		-15.423	26.739	2351.806	1357.041	0.616
Wind 225 deg - No Ice		-20.865	20.869	1854.568	1855.169	0.765
Wind 240 deg - No Ice		-21.424	12.360	1194.139	2071.264	0.863
Wind 270 deg - No Ice		-24.642	-0.021	-2.389	2386.564	0.879
Wind 300 deg - No Ice		-21.351	-12.342	-1195.168	2067.949	0.660
Wind 315 deg - No Ice		-17.439	-17.443	-1689.008	1689.173	0.478
Wind 330 deg - No Ice		-12.339	-21.356	-2067.760	1195.303	0.263
Member Ice	14.278					
Total Weight Ice	100.744			-1.380	0.590	
Wind 0 deg - Ice		-0.008	-8.799	-890.972	1.443	-0.142
Wind 30 deg - Ice		5.185	-8.986	-840.345	-483.491	-0.611
Wind 45 deg - Ice		7.157	-7.156	-677.220	-675.529	-0.791
Wind 60 deg - Ice		7.618	-4.392	-445.437	-769.733	-0.917
Wind 90 deg - Ice		8.801	0.008	-0.527	-889.395	-0.977
Wind 120 deg - Ice		7.626	4.406	444.155	-770.586	-0.775
Wind 135 deg - Ice		6.229	6.227	628.260	-629.328	-0.591
Wind 150 deg - Ice		4.407	7.624	769.456	-445.142	-0.366
Wind 180 deg - Ice		0.008	8.799	888.212	-0.263	0.142
Wind 210 deg - Ice		-5.185	8.986	837.585	484.671	0.611
Wind 225 deg - Ice		-7.157	7.156	674.461	676.709	0.791
Wind 240 deg - Ice		-7.618	4.392	442.677	770.913	0.917
Wind 270 deg - Ice		-8.801	-0.008	-2.233	890.575	0.977
Wind 300 deg - Ice		-7.626	-4.406	-446.915	771.766	0.775
Wind 315 deg - Ice		-6.229	-6.227	-631.020	630.508	0.591
Wind 330 deg - Ice		-4.407	-7.624	-772.216	446.322	0.366
Total Weight	48.127			-0.218	0.280	
Wind 0 deg - Service		-0.006	-7.369	-712.421	0.927	-0.061
Wind 30 deg - Service		4.591	-7.960	-700.379	-403.607	-0.183
Wind 45 deg - Service		6.211	-6.212	-552.359	-551.892	-0.228
Wind 60 deg - Service		6.378	-3.679	-355.759	-616.220	-0.257
Wind 90 deg - Service		7.336	0.006	0.429	-710.080	-0.262
Wind 120 deg - Service		6.356	3.674	355.501	-615.233	-0.196
Wind 135 deg - Service		5.191	5.193	502.509	-502.477	-0.142
Wind 150 deg - Service		3.673	6.357	615.258	-355.460	-0.078
Wind 180 deg - Service		0.006	7.369	711.985	-0.366	0.061
Wind 210 deg - Service		-4.591	7.960	699.944	404.167	0.183
Wind 225 deg - Service		-6.211	6.212	551.924	552.452	0.228
Wind 240 deg - Service		-6.378	3.679	355.324	616.780	0.257
Wind 270 deg - Service		-7.336	-0.006	-0.864	710.641	0.262
Wind 300 deg - Service		-6.356	-3.674	-355.936	615.793	0.196
Wind 315 deg - Service		-5.191	-5.193	-502.945	503.038	0.142
Wind 330 deg - Service		-3.673	-6.357	-615.694	356.020	0.078

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

Comb. No.	Description
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 45 deg - No Ice
7	0.9 Dead+1.6 Wind 45 deg - No Ice
8	1.2 Dead+1.6 Wind 60 deg - No Ice
9	0.9 Dead+1.6 Wind 60 deg - No Ice
10	1.2 Dead+1.6 Wind 90 deg - No Ice
11	0.9 Dead+1.6 Wind 90 deg - No Ice
12	1.2 Dead+1.6 Wind 120 deg - No Ice
13	0.9 Dead+1.6 Wind 120 deg - No Ice
14	1.2 Dead+1.6 Wind 135 deg - No Ice
15	0.9 Dead+1.6 Wind 135 deg - No Ice
16	1.2 Dead+1.6 Wind 150 deg - No Ice
17	0.9 Dead+1.6 Wind 150 deg - No Ice
18	1.2 Dead+1.6 Wind 180 deg - No Ice
19	0.9 Dead+1.6 Wind 180 deg - No Ice
20	1.2 Dead+1.6 Wind 210 deg - No Ice
21	0.9 Dead+1.6 Wind 210 deg - No Ice
22	1.2 Dead+1.6 Wind 225 deg - No Ice
23	0.9 Dead+1.6 Wind 225 deg - No Ice
24	1.2 Dead+1.6 Wind 240 deg - No Ice
25	0.9 Dead+1.6 Wind 240 deg - No Ice
26	1.2 Dead+1.6 Wind 270 deg - No Ice
27	0.9 Dead+1.6 Wind 270 deg - No Ice
28	1.2 Dead+1.6 Wind 300 deg - No Ice
29	0.9 Dead+1.6 Wind 300 deg - No Ice
30	1.2 Dead+1.6 Wind 315 deg - No Ice
31	0.9 Dead+1.6 Wind 315 deg - No Ice
32	1.2 Dead+1.6 Wind 330 deg - No Ice
33	0.9 Dead+1.6 Wind 330 deg - No Ice
34	1.2 Dead+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
39	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
40	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
41	1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp
42	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
43	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
44	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
45	1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp
46	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
47	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
48	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
49	1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp
50	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
51	Dead+Wind 0 deg - Service
52	Dead+Wind 30 deg - Service
53	Dead+Wind 45 deg - Service
54	Dead+Wind 60 deg - Service
55	Dead+Wind 90 deg - Service
56	Dead+Wind 120 deg - Service
57	Dead+Wind 135 deg - Service
58	Dead+Wind 150 deg - Service
59	Dead+Wind 180 deg - Service
60	Dead+Wind 210 deg - Service
61	Dead+Wind 225 deg - Service
62	Dead+Wind 240 deg - Service
63	Dead+Wind 270 deg - Service
64	Dead+Wind 300 deg - Service
65	Dead+Wind 315 deg - Service

Comb. No.	Description
66	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	150 - 95.83	Pole	Max Tension	2	0.000	-0.000	-0.000
			Max. Compression	34	-46.057	0.097	1.897
			Max. Mx	26	-19.989	636.772	0.413
			Max. My	2	-19.991	0.357	636.825
			Max. Vy	26	-24.034	636.772	0.413
			Max. Vx	2	-23.997	0.357	636.825
			Max. Torque	26			-1.719
L2	95.83 - 47.83	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	34	-77.135	0.097	1.106
			Max. Mx	26	-34.971	2009.046	1.973
			Max. My	2	-34.965	2.016	2010.317
			Max. Vy	26	-33.833	2009.046	1.973
			Max. Vx	2	-33.935	2.016	2010.317
			Max. Torque	26			-1.718
L3	47.83 - 30	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	34	-92.048	0.646	1.423
			Max. Mx	26	-43.862	2854.370	2.877
			Max. My	2	-43.856	2.962	2858.926
			Max. Vy	26	-36.485	2854.370	2.877
			Max. Vx	4	-38.002	-1566.320	2715.969
			Max. Torque	26			-1.399
L4	30 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	34	-111.539	0.646	1.423
			Max. Mx	26	-57.732	3992.911	3.891
			Max. My	2	-57.732	3.979	4002.952
			Max. Vy	26	-39.458	3992.911	3.891
			Max. Vx	4	-42.812	-2264.888	3927.166
			Max. Torque	26			-1.398

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	36	111.539	-5.185	8.987
	Max. H_x	26	57.753	39.427	0.033
	Max. H_z	5	43.315	-24.677	42.782
	Max. M_x	2	4002.952	0.033	39.609
	Max. M_z	10	3992.198	-39.427	-0.033
	Max. Torsion	10	1.396	-39.427	-0.033
	Min. Vert	15	43.315	-27.903	-27.909
	Min. H_x	10	57.753	-39.427	-0.033
	Min. H_z	21	43.315	24.677	-42.782
	Min. M_x	18	-4002.391	-0.033	-39.609
	Min. M_z	26	-3992.911	39.427	0.033
	Min. Torsion	26	-1.398	39.427	0.033

Tower Mast Reaction Summary

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	48.127	0.000	0.000	-0.218	0.280	0.000
1.2 Dead+1.6 Wind 0 deg - No Ice	57.753	-0.033	-39.609	-4002.952	3.979	-0.325
0.9 Dead+1.6 Wind 0 deg - No Ice	43.315	-0.033	-39.609	-3955.928	3.846	-0.325
1.2 Dead+1.6 Wind 30 deg - No Ice	57.753	24.677	-42.782	-3927.166	-2264.889	-0.979
0.9 Dead+1.6 Wind 30 deg - No Ice	43.315	24.677	-42.782	-3882.956	-2239.515	-0.978
1.2 Dead+1.6 Wind 45 deg - No Ice	57.753	33.385	-33.391	-3097.946	-3097.520	-1.217
0.9 Dead+1.6 Wind 45 deg - No Ice	43.315	33.385	-33.391	-3062.862	-3062.591	-1.216
1.2 Dead+1.6 Wind 60 deg - No Ice	57.753	34.278	-19.776	-1998.488	-3464.528	-1.372
0.9 Dead+1.6 Wind 60 deg - No Ice	43.315	34.278	-19.776	-1974.965	-3423.948	-1.371
1.2 Dead+1.6 Wind 90 deg - No Ice	57.753	39.427	0.033	3.355	-3992.198	-1.396
0.9 Dead+1.6 Wind 90 deg - No Ice	43.315	39.427	0.033	3.386	-3945.401	-1.396
1.2 Dead+1.6 Wind 120 deg - No Ice	57.753	34.162	19.747	1999.016	-3459.124	-1.047
0.9 Dead+1.6 Wind 120 deg - No Ice	43.315	34.162	19.747	1975.603	-3418.572	-1.047
1.2 Dead+1.6 Wind 135 deg - No Ice	57.753	27.903	27.909	2825.270	-2825.379	-0.758
0.9 Dead+1.6 Wind 135 deg - No Ice	43.315	27.903	27.909	2792.151	-2792.273	-0.758
1.2 Dead+1.6 Wind 150 deg - No Ice	57.753	19.743	34.169	3458.970	-1999.067	-0.418
0.9 Dead+1.6 Wind 150 deg - No Ice	43.315	19.743	34.169	3418.406	-1975.670	-0.418
1.2 Dead+1.6 Wind 180 deg - No Ice	57.753	0.033	39.609	4002.391	-3.267	0.324
0.9 Dead+1.6 Wind 180 deg - No Ice	43.315	0.033	39.609	3955.516	-3.320	0.324
1.2 Dead+1.6 Wind 210 deg - No Ice	57.753	-24.677	42.782	3926.613	2265.589	0.979
0.9 Dead+1.6 Wind 210 deg - No Ice	43.315	-24.677	42.782	3882.549	2240.032	0.978
1.2 Dead+1.6 Wind 225 deg - No Ice	57.753	-33.385	33.391	3097.399	3098.219	1.217
0.9 Dead+1.6 Wind 225 deg - No Ice	43.315	-33.385	33.391	3062.460	3063.107	1.216
1.2 Dead+1.6 Wind 240 deg - No Ice	57.753	-34.278	19.776	1997.946	3465.229	1.372
0.9 Dead+1.6 Wind 240 deg - No Ice	43.315	-34.278	19.776	1974.566	3424.467	1.372
1.2 Dead+1.6 Wind 270 deg - No Ice	57.753	-39.427	-0.033	-3.891	3992.911	1.398
0.9 Dead+1.6 Wind 270 deg - No Ice	43.315	-39.427	-0.033	-3.780	3945.927	1.397
1.2 Dead+1.6 Wind 300 deg - No Ice	57.753	-34.162	-19.747	-1999.559	3459.849	1.048
0.9 Dead+1.6 Wind 300 deg -	43.315	-34.162	-19.747	-1976.003	3419.106	1.047

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
No Ice						
1.2 Dead+1.6 Wind 315 deg - No Ice	57.753	-27.903	-27.909	-2825.819	2826.105	0.758
0.9 Dead+1.6 Wind 315 deg - No Ice	43.315	-27.903	-27.909	-2792.554	2792.808	0.758
1.2 Dead+1.6 Wind 330 deg - No Ice	57.753	-19.743	-34.169	-3459.525	1999.790	0.417
0.9 Dead+1.6 Wind 330 deg - No Ice	43.315	-19.743	-34.169	-3418.814	1976.204	0.417
1.2 Dead+1.0 Ice+1.0 Temp	111.539	0.000	0.000	-1.423	0.646	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	111.539	-0.008	-8.799	-988.886	1.645	-0.140
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	111.539	5.185	-8.987	-929.348	-534.572	-0.617
1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp	111.539	7.157	-7.156	-749.375	-747.318	-0.800
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	111.539	7.618	-4.392	-494.462	-854.166	-0.929
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	111.539	8.801	0.008	-0.728	-986.954	-0.992
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	111.539	7.626	4.407	492.752	-855.100	-0.789
1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp	111.539	6.229	6.228	697.060	-698.336	-0.602
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	111.539	4.408	7.624	853.752	-493.934	-0.375
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	111.539	0.008	8.799	985.543	-0.232	0.140
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	111.539	-5.185	8.987	926.008	535.981	0.617
1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp	111.539	-7.157	7.156	746.037	748.726	0.800
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	111.539	-7.618	4.392	491.127	855.575	0.929
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	111.539	-8.801	-0.008	-2.605	988.368	0.992
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	111.539	-7.626	-4.407	-496.088	856.518	0.789
1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp	111.539	-6.229	-6.228	-700.399	699.755	0.602
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	111.539	-4.408	-7.624	-857.092	495.352	0.375
Dead+Wind 0 deg - Service	48.127	-0.006	-7.369	-740.109	0.966	-0.061
Dead+Wind 30 deg - Service	48.127	4.591	-7.960	-726.431	-418.614	-0.184
Dead+Wind 45 deg - Service	48.127	6.211	-6.212	-573.020	-572.528	-0.228
Dead+Wind 60 deg - Service	48.127	6.378	-3.679	-369.590	-640.166	-0.257
Dead+Wind 90 deg - Service	48.127	7.336	0.006	0.438	-737.704	-0.262
Dead+Wind 120 deg - Service	48.127	6.356	3.674	369.322	-639.165	-0.197
Dead+Wind 135 deg - Service	48.127	5.191	5.193	522.050	-522.022	-0.142
Dead+Wind 150 deg - Service	48.127	3.673	6.357	639.185	-369.284	-0.079
Dead+Wind 180 deg - Service	48.127	0.006	7.369	739.645	-0.374	0.061
Dead+Wind 210 deg - Service	48.127	-4.591	7.960	725.967	419.205	0.184
Dead+Wind 225 deg - Service	48.127	-6.211	6.212	572.556	573.119	0.228
Dead+Wind 240 deg - Service	48.127	-6.378	3.679	369.126	640.757	0.257
Dead+Wind 270 deg - Service	48.127	-7.336	-0.006	-0.902	738.295	0.262
Dead+Wind 300 deg - Service	48.127	-6.356	-3.674	-369.786	639.757	0.197
Dead+Wind 315 deg - Service	48.127	-5.191	-5.193	-522.514	522.614	0.142
Dead+Wind 330 deg - Service	48.127	-3.673	-6.357	-639.649	369.876	0.078

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	0.000	-48.127	0.000	0.000	48.127	0.000	0.000%
2	-0.033	-57.753	-39.609	0.033	57.753	39.609	0.000%
3	-0.033	-43.315	-39.609	0.033	43.315	39.609	0.000%
4	24.677	-57.753	-42.782	-24.677	57.753	42.782	0.000%
5	24.677	-43.315	-42.782	-24.677	43.315	42.782	0.000%
6	33.385	-57.753	-33.391	-33.385	57.753	33.391	0.000%
7	33.385	-43.315	-33.391	-33.385	43.315	33.391	0.000%
8	34.278	-57.753	-19.776	-34.278	57.753	19.776	0.000%
9	34.278	-43.315	-19.776	-34.278	43.315	19.776	0.000%
10	39.427	-57.753	0.033	-39.427	57.753	-0.033	0.000%
11	39.427	-43.315	0.033	-39.427	43.315	-0.033	0.000%
12	34.162	-57.753	19.747	-34.162	57.753	-19.747	0.000%
13	34.162	-43.315	19.747	-34.162	43.315	-19.747	0.000%
14	27.903	-57.753	27.909	-27.903	57.753	-27.909	0.000%
15	27.903	-43.315	27.909	-27.903	43.315	-27.909	0.000%
16	19.743	-57.753	34.169	-19.743	57.753	-34.169	0.000%
17	19.743	-43.315	34.169	-19.743	43.315	-34.169	0.000%
18	0.033	-57.753	39.609	-0.033	57.753	-39.609	0.000%
19	0.033	-43.315	39.609	-0.033	43.315	-39.609	0.000%
20	-24.677	-57.753	42.782	24.677	57.753	-42.782	0.000%
21	-24.677	-43.315	42.782	24.677	43.315	-42.782	0.000%
22	-33.385	-57.753	33.391	33.385	57.753	-33.391	0.000%
23	-33.385	-43.315	33.391	33.385	43.315	-33.391	0.000%
24	-34.278	-57.753	19.776	34.278	57.753	-19.776	0.000%
25	-34.278	-43.315	19.776	34.278	43.315	-19.776	0.000%
26	-39.427	-57.753	-0.033	39.427	57.753	0.033	0.000%
27	-39.427	-43.315	-0.033	39.427	43.315	0.033	0.000%
28	-34.162	-57.753	-19.747	34.162	57.753	19.747	0.000%
29	-34.162	-43.315	-19.747	34.162	43.315	19.747	0.000%
30	-27.903	-57.753	-27.909	27.903	57.753	27.909	0.000%
31	-27.903	-43.315	-27.909	27.903	43.315	27.909	0.000%
32	-19.743	-57.753	-34.169	19.743	57.753	34.169	0.000%
33	-19.743	-43.315	-34.169	19.743	43.315	34.169	0.000%
34	0.000	-111.539	0.000	0.000	111.539	0.000	0.000%
35	-0.008	-111.539	-8.799	0.008	111.539	8.799	0.000%
36	5.185	-111.539	-8.986	-5.185	111.539	8.987	0.000%
37	7.157	-111.539	-7.156	-7.157	111.539	7.156	0.000%
38	7.618	-111.539	-4.392	-7.618	111.539	4.392	0.000%
39	8.801	-111.539	0.008	-8.801	111.539	-0.008	0.000%
40	7.626	-111.539	4.406	-7.626	111.539	-4.407	0.000%
41	6.229	-111.539	6.227	-6.229	111.539	-6.228	0.000%
42	4.407	-111.539	7.624	-4.408	111.539	-7.624	0.000%
43	0.008	-111.539	8.799	-0.008	111.539	-8.799	0.000%
44	-5.185	-111.539	8.986	5.185	111.539	-8.987	0.000%
45	-7.157	-111.539	7.156	7.157	111.539	-7.156	0.000%
46	-7.618	-111.539	4.392	7.618	111.539	-4.392	0.000%
47	-8.801	-111.539	-0.008	8.801	111.539	0.008	0.000%
48	-7.626	-111.539	-4.406	7.626	111.539	4.407	0.000%
49	-6.229	-111.539	-6.227	6.229	111.539	6.228	0.000%
50	-4.407	-111.539	-7.624	4.408	111.539	7.624	0.000%
51	-0.006	-48.127	-7.369	0.006	48.127	7.369	0.000%
52	4.591	-48.127	-7.960	-4.591	48.127	7.960	0.000%
53	6.211	-48.127	-6.212	-6.211	48.127	6.212	0.000%
54	6.378	-48.127	-3.679	-6.378	48.127	3.679	0.000%
55	7.336	-48.127	0.006	-7.336	48.127	-0.006	0.000%
56	6.356	-48.127	3.674	-6.356	48.127	-3.674	0.000%
57	5.191	-48.127	5.193	-5.191	48.127	-5.193	0.000%
58	3.673	-48.127	6.357	-3.673	48.127	-6.357	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
59	0.006	-48.127	7.369	-0.006	48.127	-7.369	0.000%
60	-4.591	-48.127	7.960	4.591	48.127	-7.960	0.000%
61	-6.211	-48.127	6.212	6.211	48.127	-6.212	0.000%
62	-6.378	-48.127	3.679	6.378	48.127	-3.679	0.000%
63	-7.336	-48.127	-0.006	7.336	48.127	0.006	0.000%
64	-6.356	-48.127	-3.674	6.356	48.127	3.674	0.000%
65	-5.191	-48.127	-5.193	5.191	48.127	5.193	0.000%
66	-3.673	-48.127	-6.357	3.673	48.127	6.357	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00071367
3	Yes	4	0.00000001	0.00030986
4	Yes	6	0.00000001	0.00006263
5	Yes	5	0.00000001	0.00049506
6	Yes	6	0.00000001	0.00006703
7	Yes	5	0.00000001	0.00053401
8	Yes	6	0.00000001	0.00005705
9	Yes	5	0.00000001	0.00045892
10	Yes	4	0.00000001	0.00089220
11	Yes	4	0.00000001	0.00046597
12	Yes	5	0.00000001	0.00099574
13	Yes	5	0.00000001	0.00044475
14	Yes	6	0.00000001	0.00006241
15	Yes	5	0.00000001	0.00050391
16	Yes	6	0.00000001	0.00005645
17	Yes	5	0.00000001	0.00045409
18	Yes	4	0.00000001	0.00070207
19	Yes	4	0.00000001	0.00029913
20	Yes	6	0.00000001	0.00006398
21	Yes	5	0.00000001	0.00050594
22	Yes	6	0.00000001	0.00006703
23	Yes	5	0.00000001	0.00053401
24	Yes	5	0.00000001	0.00099175
25	Yes	5	0.00000001	0.00044272
26	Yes	4	0.00000001	0.00094046
27	Yes	4	0.00000001	0.00050311
28	Yes	6	0.00000001	0.00005696
29	Yes	5	0.00000001	0.00045824
30	Yes	6	0.00000001	0.00006245
31	Yes	5	0.00000001	0.00050420
32	Yes	6	0.00000001	0.00005577
33	Yes	5	0.00000001	0.00044847
34	Yes	4	0.00000001	0.00000001
35	Yes	5	0.00000001	0.00082666
36	Yes	5	0.00000001	0.00093847
37	Yes	5	0.00000001	0.00095676
38	Yes	5	0.00000001	0.00089515
39	Yes	5	0.00000001	0.00082526
40	Yes	5	0.00000001	0.00088959
41	Yes	5	0.00000001	0.00091218
42	Yes	5	0.00000001	0.00089130
43	Yes	5	0.00000001	0.00082222

44	Yes	5	0.00000001	0.00093765
45	Yes	5	0.00000001	0.00095355
46	Yes	5	0.00000001	0.00088887
47	Yes	5	0.00000001	0.00082622
48	Yes	5	0.00000001	0.00089747
49	Yes	5	0.00000001	0.00091718
50	Yes	5	0.00000001	0.00089457
51	Yes	4	0.00000001	0.00009957
52	Yes	4	0.00000001	0.00023909
53	Yes	4	0.00000001	0.00025855
54	Yes	4	0.00000001	0.00021302
55	Yes	4	0.00000001	0.00010198
56	Yes	4	0.00000001	0.00019944
57	Yes	4	0.00000001	0.00022944
58	Yes	4	0.00000001	0.00020726
59	Yes	4	0.00000001	0.00009943
60	Yes	4	0.00000001	0.00025038
61	Yes	4	0.00000001	0.00025857
62	Yes	4	0.00000001	0.00019868
63	Yes	4	0.00000001	0.00010223
64	Yes	4	0.00000001	0.00021185
65	Yes	4	0.00000001	0.00023026
66	Yes	4	0.00000001	0.00020278

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 95.83	20.408	52	1.091	0.001
L2	101 - 47.83	9.763	52	0.906	0.001
L3	54 - 30	2.707	52	0.479	0.000
L4	30 - 0	0.800	52	0.254	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.000	10-ft Dipole	52	20.178	1.089	0.001	73640
138.000	APXVSPP18-C-A20	52	17.654	1.062	0.001	30683
128.000	OPA65R-BU6D	52	15.400	1.033	0.001	16736
125.000	SitePro RMQP-4120-H10	52	14.736	1.023	0.001	14727
116.000	AIR32	52	12.792	0.988	0.001	10828
104.000	4'-6" Standoff	52	10.344	0.925	0.001	8010
80.000	XXDWMM-12.5-65-8T	52	6.116	0.735	0.001	6689
78.000	Valmont 13' Low Profile Platform	52	5.809	0.717	0.001	6620
40.000	Stand-off	52	1.435	0.345	0.000	5225

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 95.83	110.370	4	5.913	0.004
L2	101 - 47.83	52.830	4	4.911	0.005
L3	54 - 30	14.649	4	2.597	0.001
L4	30 - 0	4.326	4	1.374	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.000	10-ft Dipole	4	109.125	5.900	0.004	13881
138.000	APXVSPP18-C-A20	4	95.485	5.755	0.005	5782
128.000	OPA65R-BU6D	4	83.301	5.599	0.005	3152
125.000	SitePro RMQP-4120-H10	4	79.713	5.545	0.005	2773
116.000	AIR32	4	69.205	5.355	0.005	2036
104.000	4'-6" Standoff	4	55.969	5.015	0.005	1504
80.000	XXDWMM-12.5-65-8T	4	33.101	3.985	0.003	1247
78.000	Valmont 13' Low Profile Platform	4	31.438	3.883	0.003	1234
40.000	Stand-off	4	7.766	1.868	0.001	967

Base Plate Design Data

Plate Thickness in	Number of Anchor Bolts	Anchor Bolt Size in	Actual Allowable Ratio Bolt Tension K	Actual Allowable Ratio Concrete Stress ksi	Actual Allowable Ratio Plate Stress ksi	Actual Allowable Ratio Stiffener Stress ksi	Controlling Condition	Critical Ratio
2.750	16	2.250	179.432 223.654 0.80	3.187 4.080 0.78	42.787 54.000 0.79		Bolt T	0.80 ✔

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	150 - 95.83 (1)	TP33.469x23.61x0.281	54.170	0.000	0.0	29.209	-19.812	1941.050	0.010
L2	95.83 - 47.83 (2)	TP41.644x31.965x0.375	53.170	0.000	0.0	48.476	-34.603	3318.110	0.010
L3	47.83 - 30 (3)	TP44.139x39.771x0.438	24.000	0.000	0.0	61.564	-43.589	4330.050	0.010
L4	30 - 0 (4)	TP49.6x44.139x0.58	30.000	0.000	0.0	91.550	-57.723	6748.130	0.009

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

Pole Bending Design Data

Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		kip-ft	kip-ft		kip-ft	kip-ft	
L1	150 - 95.83 (1)	TP33.469x23.61x0.281	651.044	1274.158	0.511	0.000	1274.158	0.000
L2	95.83 - 47.83 (2)	TP41.644x31.965x0.375	2141.767	2709.992	0.790	0.000	2709.992	0.000
L3	47.83 - 30 (3)	TP44.139x39.771x0.438	3135.258	3847.142	0.815	0.000	3847.142	0.000
L4	30 - 0 (4)	TP49.6x44.139x0.58	4533.467	6713.108	0.675	0.000	6713.108	0.000

Pole Shear Design Data

Section No.	Elevation	Size	Actual V_u	ϕV_n	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u	ϕT_n	Ratio $\frac{T_u}{\phi T_n}$
	ft		K	K		kip-ft	kip-ft	
L1	150 - 95.83 (1)	TP33.469x23.61x0.281	24.581	970.523	0.025	0.989	2591.242	0.000
L2	95.83 - 47.83 (2)	TP41.644x31.965x0.375	38.782	1659.050	0.023	0.778	5512.408	0.000
L3	47.83 - 30 (3)	TP44.139x39.771x0.438	43.869	2165.020	0.020	0.980	7827.233	0.000
L4	30 - 0 (4)	TP49.6x44.139x0.58	49.424	3374.070	0.015	0.979	13666.500	0.000

Pole Interaction Design Data

Section No.	Elevation	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
	ft								
L1	150 - 95.83 (1)	0.010	0.511	0.000	0.025	0.000	0.522 ✔	1.000	4.8.2 ✔
L2	95.83 - 47.83 (2)	0.010	0.790	0.000	0.023	0.000	0.801 ✔	1.000	4.8.2 ✔
L3	47.83 - 30 (3)	0.010	0.815	0.000	0.020	0.000	0.825 ✔	1.000	4.8.2 ✔
L4	30 - 0 (4)	0.009	0.675	0.000	0.015	0.000	0.684 ✔	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	150 - 95.83	Pole	TP33.469x23.61x0.281	1	-19.812	1941.050	52.2	Pass
L2	95.83 - 47.83	Pole	TP41.644x31.965x0.375	2	-34.603	3318.110	80.1	Pass
L3	47.83 - 30	Pole	TP44.139x39.771x0.438	3	-43.589	4330.050	82.5	Pass
L4	30 - 0	Pole	TP49.6x44.139x0.58	4	-57.723	6748.130	68.4	Pass
							Summary	
						Pole (L3)	82.5	Pass
						Base Plate	80.2	Pass
						RATING =	**82.5**	**Pass**

CENTEK engineering
Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject:	CAISSON FOUNDATION ANALYSIS
Location:	Fairfield, CT
Rev. 0: 5/12/22	Prepared by: TJL Checked by: C.F.C. Job No. 22059.00

Caisson Foundation:

Input Data:

Shear Force =	$S := 49k$	*USER INPUT-FROM RisaTower*
Overturning Moment =	$M := 4533ft \cdot k$	*USER INPUT-FROM RisaTower*
Applied Axial Load =	$A1 := 58k$	*USER INPUT-FROM RisaTower*
Bending Moment =	$Mu := 4754ft \cdot k$	*USER INPUT--FROM LPILE*
Moment Capacity =	$Mn := 9403ft \cdot k$	*USER INPUT--FROM LPILE*
Foundation Diameter =	$d := 6.6ft$	*USER INPUT*
Overall Length of Caisson =	$L_c := 26.5ft$	*USER INPUT*
Depth From Top of Caisson to Grade =	$L_{pag} := 1ft$	*USER INPUT*
Number of Rebar =	$n := 40$	*USER INPUT*
Area of Rebar =	$Ar := 1.56in^2$	*USER INPUT*
Rebar Yield Strength =	$fy := 60ksi$	*USER INPUT*
Concrete Comp Strength =	$f'c := 3.0ksi$	*USER INPUT*

Check Moment Capacity:

Factor of Safety = $FS := \frac{0.9Mn}{Mu} = 1.8$

Factor of Safety Required = $FS_{reqd} := 1.0$

$FOSCheck := if(FS \geq FS_{reqd}, "OK", "NO GOOD")$

FOSCheck = "OK"

==========

LPILE Plus for Windows, Version 5.0 (5.0.47)

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

==========

This program is licensed to:

TJL
Centek Engineering

Files Used for Analysis

Path to file locations: J:\Jobs\2205900.WI\05_Structural\Backup Documentation\Calcs\Foundation\
Name of input data file: Caisson Analysis.lpd
Name of output file: Caisson Analysis.lpo
Name of plot output file: Caisson Analysis.lpp
Name of runtime file: Caisson Analysis.lpr

Time and Date of Analysis

Date: May 12, 2022 Time: 14:21:37

Problem Title

22059.00 - CT2128

Program Options

Units Used in Computations - US Customary Units: Inches, Pounds

Basic Program Options:

Analysis Type 3:
- Computation of Nonlinear Bending Stiffness and Ultimate Bending Moment
  Capacity with Pile Response Computed Using Nonlinear EI

Computation Options:
- Only internally-generated p-y curves used in analysis
- Analysis does not use p-y multipliers (individual pile or shaft action only)
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- Analysis includes computation of foundation stiffness matrix elements
- Output pile response for full length of pile
- Analysis assumes no soil movements acting on pile
- No additional p-y curves to be computed at user-specified depths

Solution Control Parameters:
- Number of pile increments = 100
- Maximum number of iterations allowed = 100
- Deflection tolerance for convergence = 1.0000E-04 in
- Maximum allowable deflection = 5.0000E+02 in

Printing Options:
- Values of pile-head deflection, bending moment, shear force, and
  soil reaction are printed for full length of pile.
- Printing Increment (spacing of output points) = 8

Pile Structural Properties and Geometry

Pile Length = 318.00 in

Depth of ground surface below top of pile = 12.00 in

Slope angle of ground surface = 0.00 deg.

Structural properties of pile defined using 2 points

Point No.	Point Depth in	Pile Diameter in	Moment of Inertia in**4	Pile Area Sq.in	Modulus of Elasticity lbs/Sq.in
1	0.0000	78.00000000	1816972.	4778.4000	3122018.
2	318.0000	78.00000000	1816972.	4778.4000	3122018.

Please note that because this analysis makes computations of ultimate
moment capacity and pile response using nonlinear bending stiffness
that the above values of moment of inertia and modulus of are not used
for any computations other than total stress due to combined axial
loading and bending.

Soil and Rock Layering Information

The soil profile is modelled using 3 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974
Distance from top of pile to top of layer = 12.000 in
Distance from top of pile to bottom of layer = 48.000 in
p-y subgrade modulus k for top of soil layer = 10.000 lbs/in**3
p-y subgrade modulus k for bottom of layer = 10.000 lbs/in**3

Layer 2 is sand, p-y criteria by Reese et al., 1974
Distance from top of pile to top of layer = 48.000 in
Distance from top of pile to bottom of layer = 114.000 in
p-y subgrade modulus k for top of soil layer = 90.000 lbs/in**3
p-y subgrade modulus k for bottom of layer = 90.000 lbs/in**3

Layer 3 is sand, p-y criteria by Reese et al., 1974
Distance from top of pile to top of layer = 114.000 in
Distance from top of pile to bottom of layer = 318.000 in
p-y subgrade modulus k for top of soil layer = 27.000 lbs/in**3
p-y subgrade modulus k for bottom of layer = 27.000 lbs/in**3

(Depth of lowest layer extends 0.00 in below pile tip)

Effective Unit Weight of Soil vs. Depth

Effective unit weight of soil with depth defined using 6 points

Point No.	Depth X in	Eff. Unit Weight lbs/in**3
1	12.00	0.05700
2	48.00	0.05700
3	48.00	0.06900
4	114.00	0.06900
5	114.00	0.06100
6	318.00	0.06100

Shear Strength of Soils

Shear strength parameters with depth defined using 6 points

Point No.	Depth X in	Cohesion c lbs/in**2	Angle of Friction Deg.	E50 or k_rm	RQD %
1	12.000	0.00000	30.00	------	------
2	48.000	0.00000	30.00	------	------
3	48.000	0.00000	35.00	------	------
4	114.000	0.00000	35.00	------	------
5	114.000	0.00000	30.00	------	------
6	318.000	0.00000	30.00	------	------

Notes:

(1) Cohesion = uniaxial compressive strength for rock materials.
(2) Values of E50 are reported for clay strata.
(3) Default values will be generated for E50 when input values are 0.
(4) RQD and k_rm are reported only for weak rock strata.

Loading Type

Static loading criteria was used for computation of p-y curves.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 2

Load Case Number 1

Pile-head boundary conditions are Shear and Moment (BC Type 1)
Shear force at pile head   =   49000.000 lbs
Bending moment at pile head =   54396000.000 in-lbs
Axial load at pile head   =   58000.000 lbs

Non-zero moment at pile head for this load case indicates the pile-head
may rotate under the applied pile-head loading, but is not a free-head
(zero moment) condition.

Load Case Number 2

Pile-head boundary conditions are Shear and Moment (BC Type 1)
Shear force at pile head   =   9200.000 lbs

Bending moment at pile head = 10068000.000 in-lbs
Axial load at pile head = 48000.000 lbs

Non-zero moment at pile head for this load case indicates the pile-head may rotate under the applied pile-head loading, but is not a free-head (zero moment) condition.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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Number of sections = 1

Pile Section No. 1

The sectional shape is a circular drilled shaft (bored pile).

Outside Diameter = 78.0000 in

Material Properties:

Compressive Strength of Concrete	= 3.000	kip/in**2
Yield Stress of Reinforcement	= 60.	kip/in**2
Modulus of Elasticity of Reinforcement	= 29000.	kip/in**2
Number of Reinforcing Bars	= 40	
Area of Single Bar	= 1.56000	in**2
Number of Rows of Reinforcing Bars	= 21	
Area of Steel	= 62.400	in**2
Area of Shaft	= 4778.362	in**2
Percentage of Steel Reinforcement	= 1.306	percent
Cover Thickness (edge to bar center)	= 4.000	in

Unfactored Axial Squash Load Capacity = 15769.70 kip

Distribution and Area of Steel Reinforcement

Row Number	Area of Reinforcement in**2	Distance to Centroidal Axis in
1	1.560	35.000
2	3.120	34.569
3	3.120	33.287
4	3.120	31.185
5	3.120	28.316
6	3.120	24.749
7	3.120	20.572

8	3.120	15.890
9	3.120	10.816
10	3.120	5.475
11	3.120	0.000
12	3.120	-5.475
13	3.120	-10.816
14	3.120	-15.890
15	3.120	-20.572
16	3.120	-24.749
17	3.120	-28.316
18	3.120	-31.185
19	3.120	-33.287
20	3.120	-34.569
21	1.560	-35.000

Axial Thrust Force = 58000.00 lbs

Bending Moment in-lbs	Bending Stiffness lb-in2	Bending Curvature rad/in	Maximum Strain in/in	Neutral Axis Position inches	Max. Concrete Stress psi	Max. Steel Stress psi
5670861.	6.805034E+12	8.333333E-07	0.00003608	43.29940233	110.70518	949.73556
11278287.	6.766972E+12	0.00000167	0.00006873	41.23940733	208.60392	1799.90469
16818954.	6.727582E+12	0.00000250	0.00010134	40.53565201	304.37140	2648.83477
22296303.	6.688891E+12	0.00000333	0.00013403	40.20954582	398.38777	3500.25610
22296303.	5.351113E+12	0.00000417	0.00010292	24.70184889	305.85453	5956.85993
22296303.	4.459261E+12	0.00000500	0.00012169	24.33702216	359.35999	7201.13179
22296303.	3.822223E+12	0.00000583	0.00014033	24.05667534	411.88755	8448.74575
22296303.	3.344445E+12	0.00000667	0.00015901	23.85120329	463.86861	9695.43403
22296303.	2.972840E+12	0.00000750	0.00017772	23.69568649	515.30062	10941.18819
22296303.	2.675556E+12	0.00000833	0.00019646	23.57517555	566.18102	12185.99924
22296303.	2.432324E+12	0.00000917	0.00021523	23.48015133	616.50706	13429.85977
22296303.	2.229630E+12	0.00001000	0.00023404	23.40427932	666.27626	14672.75900
23025364.	2.125418E+12	0.00001083	0.00025325	23.37734208	716.47473	

15903.95170
   24698490. 2.117013E+12   0.00001167   0.00027213   23.32510176   765.09927
17145.00724
   26368544. 2.109483E+12   0.00001250   0.00029103   23.28271070   813.16405
18385.01737
   28035492. 2.102662E+12   0.00001333   0.00030998   23.24834409   860.66597
19623.97362
   29699315. 2.096422E+12   0.00001417   0.00032896   23.22061649   907.60223
20861.86339
   31359985. 2.090666E+12   0.00001500   0.00034798   23.19844696   953.96981
22098.67557
   33017474. 2.085314E+12   0.00001583   0.00036703   23.18098006   999.76558
23334.39999
   34671753. 2.080305E+12   0.00001667   0.00038613   23.16753468   1044.98647
24569.02491
   36322794. 2.075588E+12   0.00001750   0.00040526   23.15755758   1089.62925
25802.53953
   37970573. 2.071122E+12   0.00001833   0.00042443   23.15060243   1133.69093
27034.92971
   39615055. 2.066872E+12   0.00001917   0.00044364   23.14629266   1177.16806
28266.18567
   41256215. 2.062811E+12   0.00002000   0.00046289   23.14432141   1220.05746
29496.29358
   42894023. 2.058913E+12   0.00002083   0.00048218   23.14442834   1262.35577
30725.24121
   44528448. 2.055159E+12   0.00002167   0.00050151   23.14639494   1304.05962
31953.01518
   46159457. 2.051531E+12   0.00002250   0.00052088   23.15003291   1345.16547
33179.60353
   47787017. 2.048015E+12   0.00002333   0.00054029   23.15518185   1385.66976
34404.99361
   49411102. 2.044597E+12   0.00002417   0.00055974   23.16170928   1425.56913
35629.16875
   51031673. 2.041267E+12   0.00002500   0.00057924   23.16949198   1464.85972
36852.11832
   52648700. 2.038014E+12   0.00002583   0.00059878   23.17842999   1503.53797
38073.82620
   54262146. 2.034830E+12   0.00002667   0.00061836   23.18843266   1541.60008
39294.27874
   55871977. 2.031708E+12   0.00002750   0.00063798   23.19942096   1579.04218
40513.46179
   57478158. 2.028641E+12   0.00002833   0.00065765   23.21132746   1615.86045
41731.35927
   59080659. 2.025623E+12   0.00002917   0.00067737   23.22409406   1652.05108
42947.95377
   60679432. 2.022648E+12   0.00003000   0.00069713   23.23766264   1687.60977
44163.23350
   62274443. 2.019712E+12   0.00003083   0.00071694   23.25198671   1722.53246
45377.18188
   63865656. 2.016810E+12   0.00003167   0.00073679   23.26702675   1756.81513
46589.78043

65453034.	2.013939E+12	0.00003250	0.00075669	23.28274557	1790.45352
47801.01230					
68616113.	2.008276E+12	0.00003417	0.00079663	23.31608704	1855.77987
50219.31043					
71763345.	2.002698E+12	0.00003583	0.00083677	23.35178563	1918.47584
52631.93610					
74894389.	1.997184E+12	0.00003750	0.00087711	23.38966468	1978.50456
55038.73966					
77933082.	1.989781E+12	0.00003917	0.00091650	23.39999977	2034.18772
57473.16693					
81118768.	1.986582E+12	0.00004083	0.00095660	23.42683938	2087.96751
59887.05103					
83706354.	1.969561E+12	0.00004250	0.00099519	23.41628811	2136.88845
60000.00000					
85816337.	1.943011E+12	0.00004417	0.00103350	23.39999977	2182.72773
60000.00000					
87614014.	1.911578E+12	0.00004583	0.00106895	23.32262376	2222.65946
60000.00000					
89258754.	1.879132E+12	0.00004750	0.00110354	23.23236725	2259.36969
60000.00000					
90669658.	1.844129E+12	0.00004917	0.00113701	23.12564805	2292.78791
60000.00000					
92069007.	1.811194E+12	0.00005083	0.00117058	23.02789941	2324.25970
60000.00000					
93171251.	1.774690E+12	0.00005250	0.00120252	22.90522429	2352.24754
60000.00000					
94267257.	1.740319E+12	0.00005417	0.00123457	22.79212180	2378.47323
60000.00000					
95356940.	1.707885E+12	0.00005583	0.00126673	22.68777135	2402.91851
60000.00000					
96225295.	1.673483E+12	0.00005750	0.00129753	22.56579128	2424.53611
60000.00000					
97052585.	1.640325E+12	0.00005917	0.00132819	22.44822094	2444.34297
60000.00000					
97874617.	1.608898E+12	0.00006083	0.00135894	22.33874479	2462.50791
60000.00000					
98691288.	1.579061E+12	0.00006250	0.00138980	22.23673519	2479.01419
60000.00000					
99393136.	1.548984E+12	0.00006417	0.00141988	22.12805870	2493.43699
60000.00000					
1.000393E+08	1.519584E+12	0.00006583	0.00145273	22.06679437	2507.35477
60000.00000					
1.006290E+08	1.490800E+12	0.00006750	0.00148170	21.95103952	2517.95432
60000.00000					
1.012145E+08	1.463342E+12	0.00006917	0.00151075	21.84222355	2527.07013
60000.00000					
1.017958E+08	1.437117E+12	0.00007083	0.00153991	21.73988387	2534.68730
60000.00000					
1.023727E+08	1.412037E+12	0.00007250	0.00156916	21.64359042	2540.79035
60000.00000					
1.028635E+08	1.386924E+12	0.00007417	0.00159766	21.54147854	2545.24846

60000.00000
1.032710E+08 1.361816E+12 0.00007583 0.00162542 21.43409684 2548.18308
60000.00000
1.036750E+08 1.337742E+12 0.00007750 0.00165327 21.33245918 2549.73651
60000.00000
1.040742E+08 1.314621E+12 0.00007917 0.00168120 21.23621920 2548.17791
60000.00000
1.044685E+08 1.292393E+12 0.00008083 0.00170923 21.14505842 2545.53616
60000.00000
1.048600E+08 1.271031E+12 0.00008250 0.00173734 21.05868629 2548.21149
60000.00000
1.052488E+08 1.250481E+12 0.00008417 0.00176555 20.97683313 2549.68750
60000.00000
1.056343E+08 1.230690E+12 0.00008583 0.00179387 20.89941296 2548.74817
60000.00000
1.060150E+08 1.211600E+12 0.00008750 0.00182229 20.82620957 2544.33194
60000.00000
1.063048E+08 1.192204E+12 0.00008917 0.00185467 20.79999992 2547.11398
60000.00000
1.065931E+08 1.173502E+12 0.00009083 0.00188164 20.71529683 2548.94606
60000.00000
1.068443E+08 1.155073E+12 0.00009250 0.00190804 20.62750670 2549.86157
60000.00000
1.070931E+08 1.137272E+12 0.00009417 0.00193455 20.54388687 2548.39448
60000.00000
1.073396E+08 1.120065E+12 0.00009583 0.00196115 20.46420720 2544.67810
60000.00000
1.075849E+08 1.103435E+12 0.00009750 0.00198782 20.38788190 2544.50678
60000.00000
1.078290E+08 1.087351E+12 0.00009917 0.00201455 20.31474826 2546.94878
60000.00000
1.083134E+08 1.056716E+12 0.00010250 0.00206819 20.17746547 2549.70095
60000.00000
1.087909E+08 1.027946E+12 0.00010583 0.00212216 20.05191717 2546.26997
60000.00000
1.092371E+08 1.000645E+12 0.00010917 0.00217590 19.93192461 2543.44920
60000.00000
1.095447E+08 9.737305E+11 0.00011250 0.00222718 19.79714075 2547.53971
60000.00000
1.098497E+08 9.483428E+11 0.00011583 0.00227863 19.67165986 2549.67282
60000.00000
1.101510E+08 9.243438E+11 0.00011917 0.00233033 19.55520299 2547.57082
60000.00000
1.103402E+08 9.007361E+11 0.00012250 0.00238875 19.49999884 2540.74373
60000.00000
1.108049E+08 8.805685E+11 0.00012583 0.00244344 19.41808525 2544.43942
60000.00000
1.110885E+08 8.600402E+11 0.00012917 0.00249416 19.30960169 2547.69013
60000.00000
1.113707E+08 8.405334E+11 0.00013250 0.00254501 19.20759442 2549.54122
60000.00000

1.116509E+08	8.219697E+11	0.00013583	0.00259602	19.11183098	2549.04213
60000.00000					
1.119166E+08	8.041913E+11	0.00013917	0.00264784	19.02640727	2544.13344
60000.00000					
1.121589E+08	7.870803E+11	0.00014250	0.00269974	18.94555137	2539.21046
60000.00000					
1.122801E+08	7.699204E+11	0.00014583	0.00275088	18.86321005	2540.12733
60000.00000					
1.123997E+08	7.535174E+11	0.00014917	0.00280218	18.78553882	2544.13895
60000.00000					
1.125184E+08	7.378256E+11	0.00015250	0.00285358	18.71200302	2547.12250
60000.00000					
1.126362E+08	7.227991E+11	0.00015583	0.00290510	18.64234462	2549.06275
60000.00000					
1.127531E+08	7.083963E+11	0.00015917	0.00295673	18.57633582	2549.94422
60000.00000					
1.128570E+08	6.945048E+11	0.00016250	0.00300933	18.51895353	2547.04432
60000.00000					
1.129389E+08	6.810387E+11	0.00016583	0.00306349	18.47330573	2542.48493
60000.00000					
1.130201E+08	6.680988E+11	0.00016917	0.00311775	18.43007782	2537.90712
60000.00000					
1.131004E+08	6.556546E+11	0.00017250	0.00317213	18.38914195	2533.79240
60000.00000					
1.131800E+08	6.436777E+11	0.00017583	0.00322661	18.35037723	2538.84163
60000.00000					
1.132588E+08	6.321420E+11	0.00017917	0.00328120	18.31367442	2542.96955
60000.00000					
1.133367E+08	6.210232E+11	0.00018250	0.00333591	18.27893588	2546.16218
60000.00000					
1.134139E+08	6.102989E+11	0.00018583	0.00339073	18.24606398	2548.40491
60000.00000					
1.134902E+08	5.999480E+11	0.00018917	0.00344567	18.21497503	2549.68281
60000.00000					
1.136443E+08	5.903599E+11	0.00019250	0.00350350	18.20000008	2548.72471
60000.00000					
1.138690E+08	5.814588E+11	0.00019583	0.00356417	18.20000008	2543.78409
60000.00000					
1.140886E+08	5.728299E+11	0.00019917	0.00362483	18.20000008	2538.84346
60000.00000					
1.142071E+08	5.639854E+11	0.00020250	0.00368550	18.20000008	2533.90284
60000.00000					
1.143187E+08	5.553947E+11	0.00020583	0.00374617	18.20000008	2528.96222
60000.00000					
1.144443E+08	5.471441E+11	0.00020917	0.00380683	18.20000008	2535.09334
60000.00000					

Unfactored (Nominal) Moment Capacity at Concrete Strain of 0.003 = 112838.58894 in-kip

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Computed Values of Load Distribution and Deflection
for Lateral Loading for Load Case Number 1

Pile-head boundary conditions are Shear and Moment (Pile-head Condition Type 1)
Specified shear force at pile head = 49000.000 lbs
Specified moment at pile head = 54396000.000 in-lbs
Specified axial load at pile head = 58000.000 lbs

Depth X in	Deflect. y in	Moment M lbs-in	Shear V lbs	Slope S Rad.	Total Stress lbs/in**2	Flx. Rig. EI lbs-in**2	Soil Res. Es*h p lbs/in	F/L
0.000	2.481	5.44E+07	49000.	-0.014375	1179.709	2.03E+12	0.000	0.000
25.440	2.124	5.57E+07	47008.	-0.013686	1206.722	2.03E+12	-285.492	427.392
50.880	1.785	5.67E+07	32921.	-0.012982	1229.803	2.03E+12	-1498.002	2668.794
76.320	1.464	5.70E+07	-22584.	-0.012268	1234.653	2.03E+12	-2857.899	6208.787
101.760	1.161	5.53E+07	-1.11E+05	-0.011563	1199.943	2.03E+12	-4081.915	11184.
127.200	0.875136	5.13E+07	-2.02E+05	-0.010894	1112.501	2.04E+12	-2926.117	10633.
152.640	0.605809	4.52E+07	-2.71E+05	-0.010293	983.048	2.05E+12	-2441.711	12817.
178.080	0.350697	3.76E+07	-3.24E+05	-0.009780	820.002	2.07E+12	-1654.370	15001.
203.520	0.107315	2.90E+07	-3.53E+05	-0.009373	634.286	2.10E+12	-579.957	17186.
228.960	-0.127487	2.00E+07	-3.51E+05	-0.009147	440.823	6.70E+12	776.540	19370.
254.400	-0.359368	1.15E+07	-3.11E+05	-0.009088	258.491	6.76E+12	2435.802	21554.
279.840	-0.590137	4.58E+06	-2.24E+05	-0.009059	110.349	6.81E+12	4405.313	23738.
305.280	-0.820448	5.40E+05	-84697.	-0.009050	23.736	6.81E+12	6399.455	24804.

Please note that because this analysis makes computations of ultimate moment capacity and pile response using nonlinear bending stiffness that the above values of total stress due to combined axial stress and bending may not be representative of actual conditions.

Output Verification:

Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection	=	2.48117391 in
Computed slope at pile head	=	-0.01437486
Maximum bending moment	=	57041054. lbs-in
Maximum shear force	=	-356177.71591 lbs
Depth of maximum bending moment	=	66.78000000 in
Depth of maximum shear force	=	216.24000 in
Number of iterations	=	18
Number of zero deflection points	=	1

Computed Values of Load Distribution and Deflection
for Lateral Loading for Load Case Number 2

Pile-head boundary conditions are Shear and Moment (Pile-head Condition Type 1)
Specified shear force at pile head = 9200.000 lbs
Specified moment at pile head = 10068000.000 in-lbs
Specified axial load at pile head = 48000.000 lbs

Depth X	Deflect. y	Moment M	Shear V	Slope S	Total Stress	Flx. Rig. EI	Soil Res. Es*h p
in	in	lbs-in	lbs	Rad.	lbs/in**2	lbs-in**2	lbs/in F/L
0.000	0.255423	1.01E+07	9200.000	-0.001426	226.148	6.77E+12	0.000 0.000
25.440	0.219622	1.03E+07	8994.204	-0.001388	231.189	6.77E+12	-29.517 427.392
50.880	0.184806	1.05E+07	6881.679	-0.001349	235.824	6.77E+12	-566.619 9749.945
76.320	0.150993	1.05E+07	-10926.	-0.001309	235.044	6.77E+12	-808.662 17031.
101.760	0.118179	9.93E+06	-33005.	-0.001271	223.196	6.77E+12	-903.501 24312.
127.200	0.086309	8.86E+06	-47350.	-0.001235	200.232	6.78E+12	-288.582 10633.
152.640	0.055283	7.57E+06	-53938.	-0.001205	172.531	6.79E+12	-222.818 12817.

```
 178.080  0.024978  6.14E+06   -58352. -0.001179   141.779  6.80E+12  -117.833
15001.
 203.520 -0.004742  4.63E+06   -59604. -0.001159   109.434  6.81E+12    25.629
17186.
 228.960 -0.034023  3.14E+06   -56722. -0.001144    77.487  6.81E+12   207.237
19370.
 254.400 -0.063003  1.79E+06   -48734. -0.001135    48.463  6.81E+12   427.037
21554.
 279.840 -0.091811  7.16E+05   -34665. -0.001130    25.414  6.81E+12   685.363
23738.
 305.280 -0.120548    87835.   -13529. -0.001129    11.931  6.81E+12   982.680
25923.
```

Please note that because this analysis makes computations of ultimate moment capacity and pile response using nonlinear bending stiffness that the above values of total stress due to combined axial stress and bending may not be representative of actual conditions.

Output Verification:

Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

```
Pile-head deflection             =     0.25542292 in
Computed slope at pile head      =    -0.00142633
Maximum bending moment           =      10557781. lbs-in
Maximum shear force              =   -59653.89418 lbs
Depth of maximum bending moment  =    60.42000000 in
Depth of maximum shear force     =      200.34000 in
Number of iterations             =              5
Number of zero deflection points =              1
```

Summary of Pile Response(s)

Definition of Symbols for Pile-Head Loading Conditions:

```
Type 1 = Shear and Moment,          y = pile-head displacment in
Type 2 = Shear and Slope,           M = Pile-head Moment lbs-in
Type 3 = Shear and Rot. Stiffness,  V = Pile-head Shear Force lbs
Type 4 = Deflection and Moment,     S = Pile-head Slope, radians
Type 5 = Deflection and Slope,      R = Rot. Stiffness of Pile-head in-lbs/rad
```

Load Type	Pile-Head Condition 1	Pile-Head Condition 2	Axial Load lbs	Pile-Head Deflection in	Maximum Moment in-lbs	Maximum Shear lbs
1	V= 49000.	M= 5.44E+07	58000.0000	2.4812	5.7041E+07	-356178.
1	V= 9200.000	M= 1.01E+07	48000.0000	0.2554229	1.0558E+07	-59653.8942

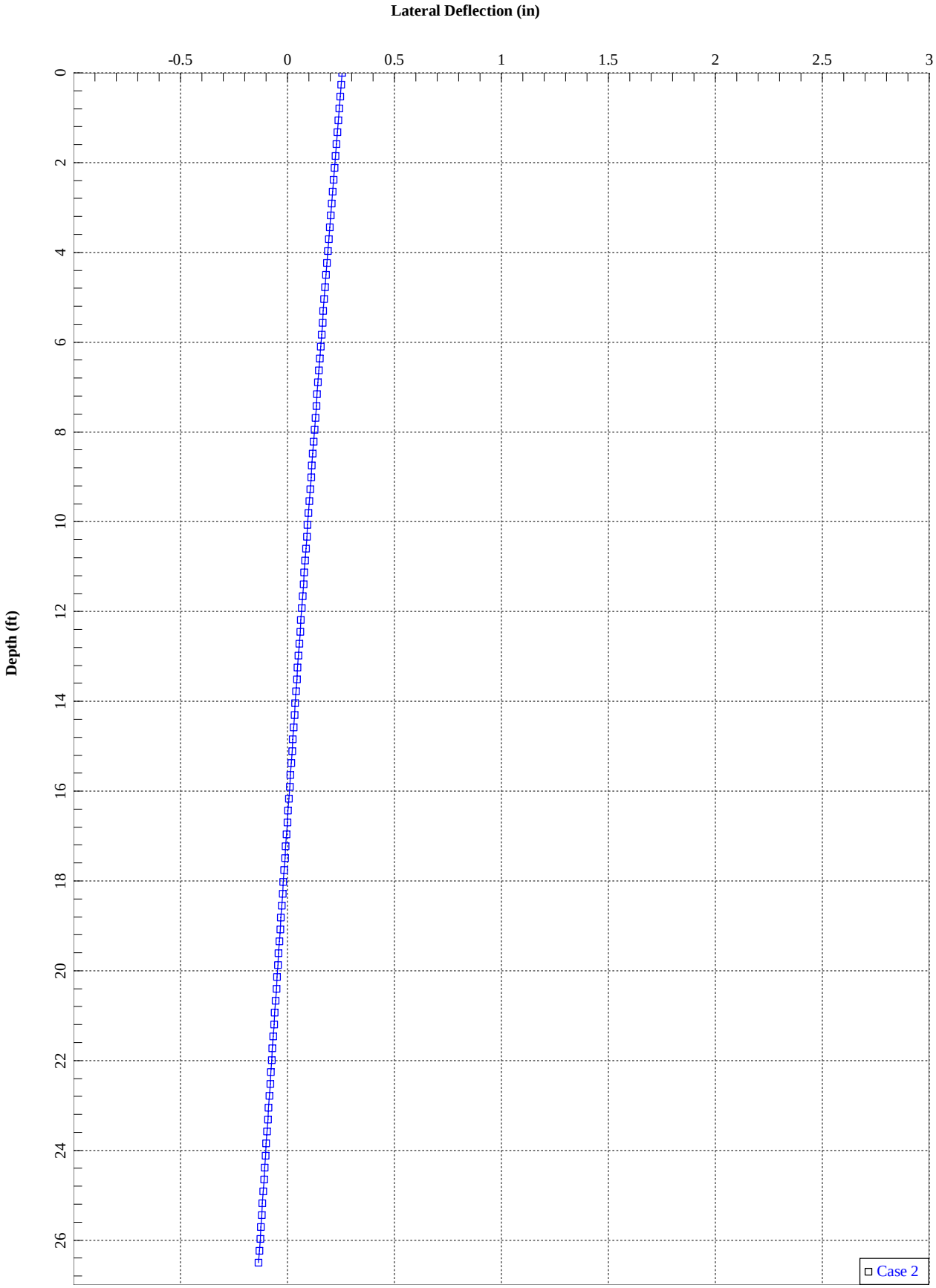
Computed Pile-head Stiffness Matrix Members
K22, K23, K32, K33 for Superstructure

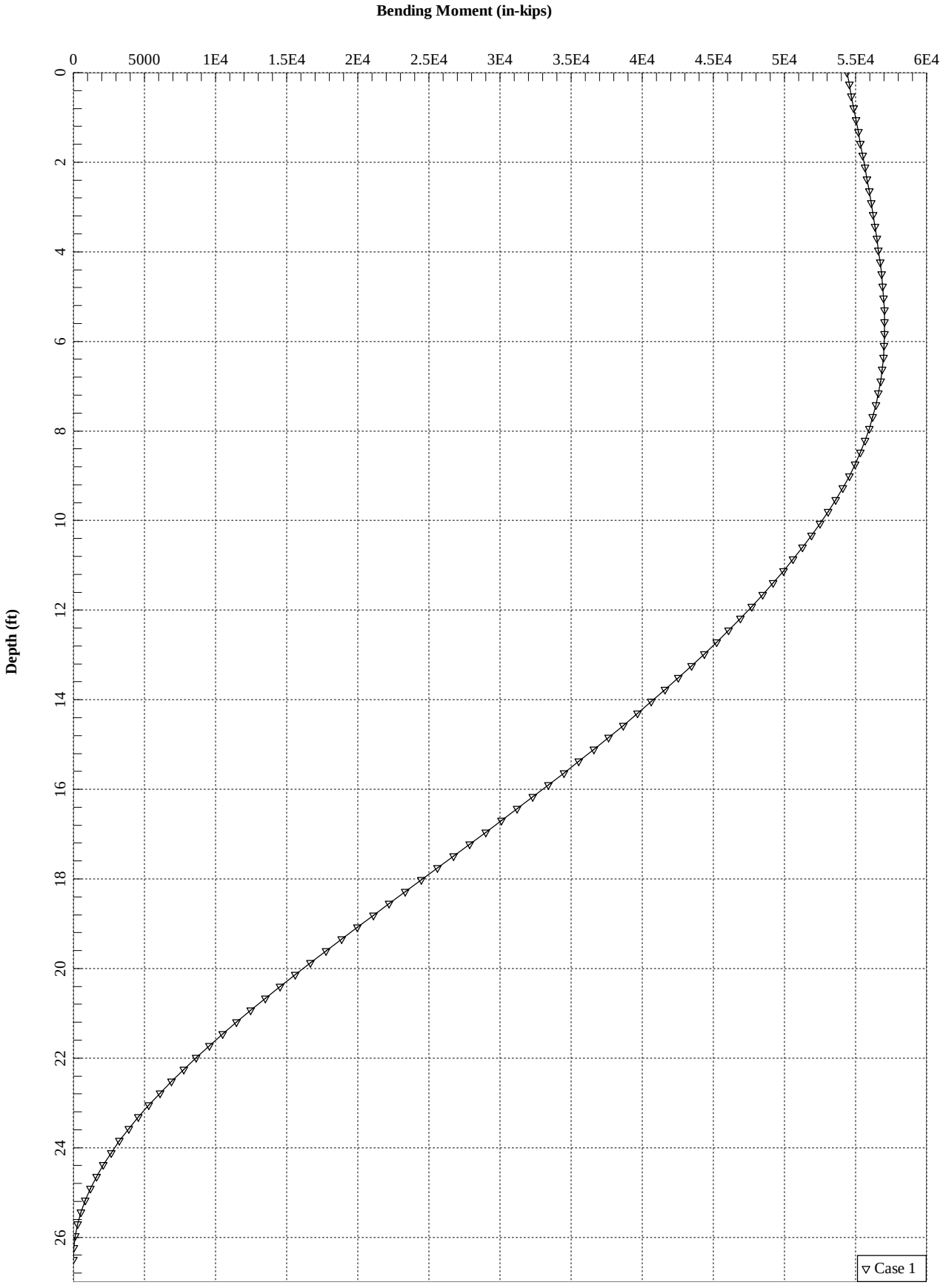
Top y in	Shear React. lbs	Mom. React. in-lbs	K22 lbs/in	K32 in-lbs/in
0.00478954	4900.00007	847011.46281	1023064.	1.768463E+08
0.01441794	14750.46979	2549759.	1023064.	1.768463E+08
0.02285189	23378.94148	4041272.	1023064.	1.768463E+08
0.02883588	29500.93958	5099517.	1023064.	1.768463E+08
0.03347773	34249.53021	5920341.	1023054.	1.768441E+08
0.03727293	38129.41127	6590876.	1022979.	1.768274E+08
0.04048347	41409.80396	7157711.	1022882.	1.768058E+08
0.04326548	44251.40936	7648672.	1022788.	1.767846E+08
0.04571994	46757.88296	8081695.	1022702.	1.767652E+08
0.04791586	49000.00000	8469025.	1022626.	1.767478E+08

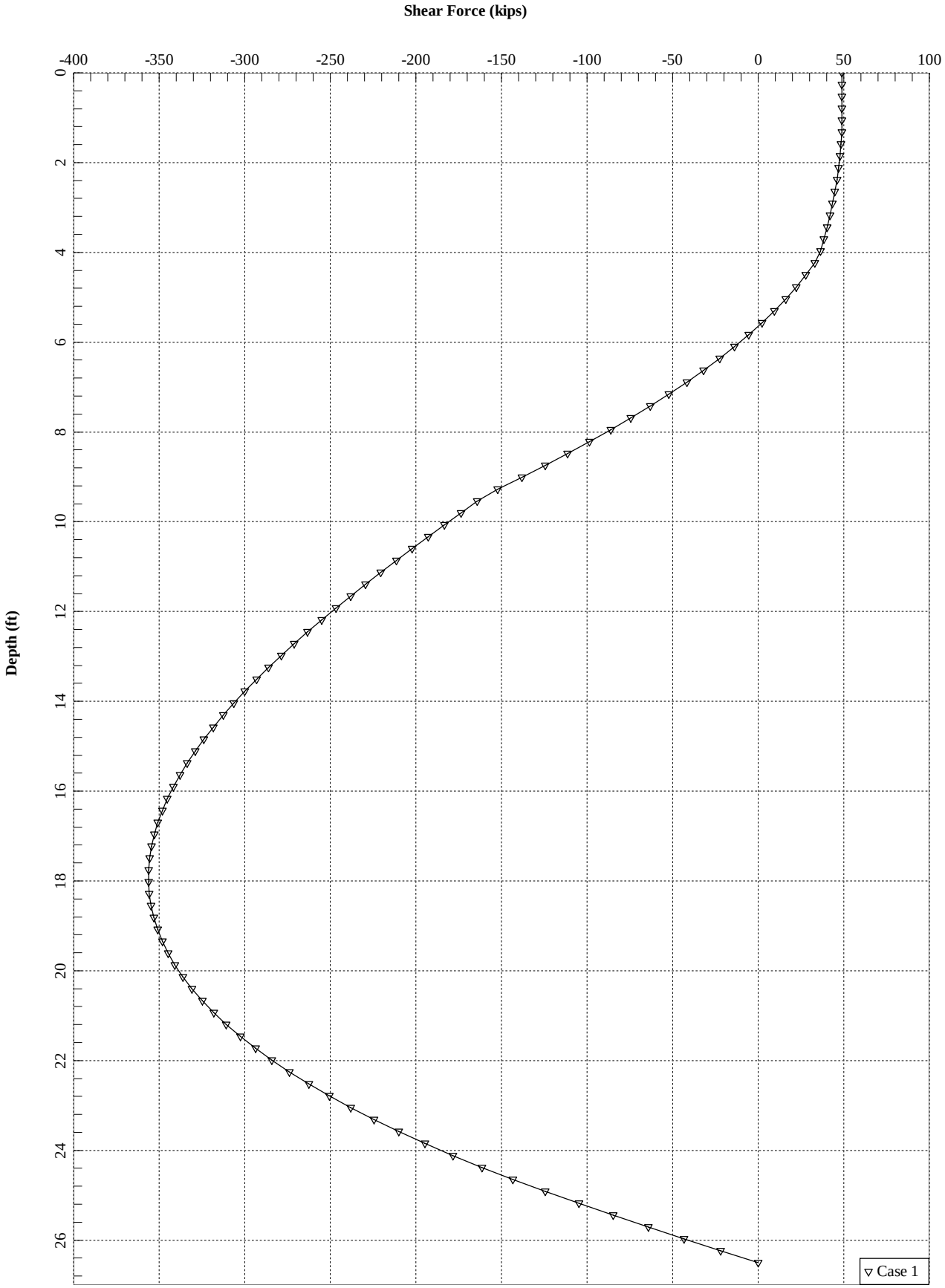
Top Rota. rad	Shear React. lbs	Mom. React. in-lbs	K23 lbs/rad	K33 in-lbs/rad
0.00014039	24827.15925	5439600.	1.768463E+08	3.874680E+10
0.00042391	74751.08322	16374828.	1.763385E+08	3.862836E+10
0.00083104	118884.32708	25953488.	1.430553E+08	3.123022E+10
0.00135257	153293.12549	32749655.	1.133351E+08	2.421299E+10
0.00168176	180381.53781	38021172.	1.072577E+08	2.260799E+10
0.00193770	202573.39163	42328315.	1.045432E+08	2.184461E+10
0.00215416	221506.44363	45969953.	1.028273E+08	2.134007E+10
0.00233332	237702.29126	49124483.	1.018732E+08	2.105351E+10
0.00249118	252013.50081	51906976.	1.011624E+08	2.083631E+10
0.00262840	264681.64713	54396000.	1.007009E+08	2.069552E+10

K22 = abs(Shear Reaction/Top y)
K23 = abs(Shear Reaction/Top Rotation)
K32 = abs(Moment Reaction/Top y)
K33 = abs(Moment Reaction/Top Rotation)

The analysis ended normally.


Lateral Deflection (in)
-0.5
0
0.5
1
1.5
2
2.5
3
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
Case 2


Bending Moment (in-kips)
0
5000
1E4
1.5E4
2E4
2.5E4
3E4
3.5E4
4E4
4.5E4
5E4
5.5E4
6E4
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
Case 1


Shear Force (kips)
-400
-350
-300
-250
-200
-150
-100
-50
0
50
100
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
Case 1

Section 1 - RFDS GENERAL INFORMATION

RFDS NAME:	CT2128	DATE:	12/1/2021	RF DESIGN ENG:	Prashanth Simha	RF PERF ENG:		RFDS PROGRAM TYPE:	2021 5G NR Radio
ISSUE:	Bronze Standard	Approved? (Y/N):	Yes	RF DESIGN PHONE:	2016285071	RF PERF PHONE:		RFDS TECHNOLOGY:	5G NR 1SR CBAND
REVISION:	Preliminary	RF MANAGER:	John Benedetto	RF DESIGN EMAIL:	pn5165@att.com	RF PERF EMAIL:		STATE/STATUS:	Final/Approved
						ADDITIONAL WORKFLOW NOTIFICATIONS:		RFDS ID:	4887918
						RFDS VERSION:	2.00	Created By:	pn5165
						UMTS FREQUENCY:	850	Created:	12/1/2021
						LTE FREQUENCY:	700,850,1900,WCS	Estimated SQIN:	15.585
						5G FREQUENCY:	850	RER Initiative:	
INITIATIVE PROJECT	C-Band , 3.45 GHz DoD					IPLAN JOB # 1:	ER_-RCTB-21-09456	PRD || SUB GRP #1	5G NR Radio || 5G NR 1SR CBand
						IPLAN JOB # 2:	ER_-RCTB-21-09455	PRD || SUB GRP #2	5G NR Radio || 5G NR 1SR CBand
						IPLAN JOB # 3:	ER_-RCTB-21-09374	PRD || SUB GRP #3	LTE Next Carrier || LTE 5C
						IPLAN JOB # 4:	ER_-RCTB-21-09382	PRD || SUB GRP #4	5G NR Radio || 5G NR 1DR-1
						IPLAN JOB # 5:	ER_-RCTB-21-09669	PRD || SUB GRP #5	Cell Site RF Modifications || 5G NR Software Uporade
						IPLAN JOB # 6:		PRD || SUB GRP #6	
						IPLAN JOB # 7:		PRD || SUB GRP #7	
						IPLAN JOB # 8:		PRD || SUB GRP #8	
						IPLAN JOB # 9:		PRD || SUB GRP #9	
						IPLAN JOB #10:		PRD || SUB GRP #10	
						IPLAN JOB # 11:		PRD || SUB GRP #11	
						IPLAN JOB # 12:		PRD || SUB GRP #12	
						IPLAN JOB # 13:		PRD || SUB GRP #13	
						IPLAN JOB # 14:		PRD || SUB GRP #14	
						IPLAN JOB # 15:		PRD || SUB GRP #15	
						IPLAN JOB # 16:		PRD || SUB GRP #16	

Section 2 - LOCATION INFORMATION

USID:	5787	FA LOCATION CODE:	10035251	LOCATION NAME:	FAIRFIELD GREENFIELD HILL	ORACLE PRJT # 1:	2051A134VZ	PACE JOB #1:	MRCTB060580
REGION:	NORTHEAST	MARKET CLUSTER:	NEW ENGLAND	MARKET:	CONNECTICUT	ORACLE PRJT # 2:	2051A134VY	PACE JOB #2:	MRCTB060572
ADDRESS:	3965 CONGRESS STREET	CITY:	FAIRFIELD	STATE:	CT	ORACLE PRJT # 3:	2051A134NM	PACE JOB #3:	MRCTB060558
ZIP CODE:	06824	COUNTY:	FAIRFIELD	LONG (DEC. DEG.):	-73.2990550	ORACLE PRJT # 4:	2051A134NV	PACE JOB #4:	MRCTB060601
LATITUDE (D-M-S):	41d 11m18.17196s	LONGITUDE (D-M-S):	-73d -17m-56.598s	LAT (DEC. DEG.):	41.1883811	ORACLE PRJT # 5:	2051A134QK	PACE JOB #5:	MRCTB060633
						ORACLE PRJT # 6:		PACE JOB #6:	
						ORACLE PRJT # 7:		PACE JOB #7:	
						ORACLE PRJT # 8:		PACE JOB #8:	
						ORACLE PRJT # 9:		PACE JOB #9:	
						ORACLE PRJT # 10:		PACE JOB #10:	
						ORACLE PRJT # 11:		PACE JOB #11:	
						ORACLE PRJT # 12:		PACE JOB #12:	
						ORACLE PRJT # 13:		PACE JOB #13:	
						ORACLE PRJT # 14:		PACE JOB #14:	
DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:	UPDATED 4/04 CT-083 FAIRFIELD-GREENFIELD HILL TAKE RT. 17 NORTH TO GARDEN STATE PARKWAY NORTH TO I-87 SOUTH. GO ACROSS TAPPAN ZEE BRIDGE; FOLLOW SIGNS TO I-287 EAST; ONCE ON I-287 YOU WILL GET OFF EXIT 9N FOR THE HUTCHINSON AND MERRITT PARKWAY YOU NEED TO					ORACLE PRJT # 15:		PACE JOB #15:	
						ORACLE PRJT # 16:		PACE JOB #16:	
						BORDER CELL WITH CONTOUR COORD:		SEARCH RING NAME:	
						AM STUDY REQ'D (Y/N):	No	SEARCH RING ID:	
						FREQ COORD:		BTA:	MSA / RSA:
								LAC(UMTS):	05989
						RF DISTRICT:	TBD		
						RF ZONE:	TBD	RNC(UMTS):	BRIDGEPORT RNC06 ERICSSON 3820
								MME POOL ID(LTE):	FF01
						PARENT NAME(UMTS):	BRPTCT04CRBR06		

Section 3 - LICENSE COVERAGE/FILING INFORMATION

CGSA - NO FILING TRIGGERED (Yes/No):	No	CGSA LOSS:		PCS REDUCED - UPS ZIP:		CGSA CALL SIGNS:	z_KNLB312,z_KNLB312,z_KNLB312
CGSA - MINOR FILING NEEDED (Yes/No):	No	CGSA EXT AGMT NEEDED:		PCS POPS REDUCED:			
CGSA - MAJOR FILING NEEDED (Yes/No):	Yes	CGSA SCORECARD UPDATED:					

Section 4 - TOWER/REGULATORY INFORMATION

STRUCTURE AT&T OWNED?:	No	GROUND ELEVATION (ft):		STRUCTURE TYPE:	MONOPOLE	MARKET LOCATION 700 MHz Band:	
ADDITIONAL REGULATORY?:	No	HEIGHT OVERALL (ft):	0.00	FCC ASR NUMBER:	NR	MARKET LOCATION 850 MHz Band:	
SUB-LEASE RIGHTS?:	No	STRUCTURE HEIGHT (ft):	90.00			MARKET LOCATION 1900 MHz Band:	
LIGHTING TYPE:	NOT REQUIRED					MARKET LOCATION AWS Band:	
						MARKET LOCATION WCS Band:	
						MARKET LOCATION Future Band:	

Section 5 - E-911 INFORMATION - existing

		PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:
SECTOR A	E-911				INTRADO_MAMI		0		
SECTOR B					INTRADO_MAMI		0		
SECTOR C					INTRADO_MAMI		0		
SECTOR D									
SECTOR E									
SECTOR F									
OMNI									

Section 5 - E-911 INFORMATION - final

		PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:
SECTOR A	E-911				INTRADO_MAMI		0		
SECTOR B					INTRADO_MAMI		0		
SECTOR C					INTRADO_MAMI		0		
SECTOR D									
SECTOR E									
SECTOR F									
OMNI									

Section 6/7 - BBU INFORMATION - existing

	BBU 1	BBU 2	BBU 3	BBU 4
BBU ID:	172438	222852	362938	662059
TECHNOLOGY:	UMTS	UMTS	LTE	5G
BBU NAME:	CTU2128	CTV2128	CTL02128	CTCN002128
BBU USID:	5787	5787	5787	5787
CELL ID / BCF:	CTU2128	CTU2128	CTL02128	CTCN002128
BTA/TID:	321V	321W	321L	321L
4-9 DIGIT SITE ID:	2128	9128	02128	02128
COW OR TOY?:	No	No	No	No
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED
SITE TYPE:	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL
BTS LOCATION ID:	INTERNAL	INTERNAL	INTERNAL	INTERNAL
BASE STATION TYPE:	BASE	OVERLAY	BASE	BASE
EQUIPMENT NAME:	FAIRFIELD GREENFIELD HILL	FAIRFIELD GREENFIELD HILL	FAIRFIELD GREENFIELD HILL	FAIRFIELD GREENFIELD HILL
DISASTER PRIORITY:	2	0	3	3
EQUIPMENT VENDOR:	ERICSSON	ERICSSON	ERICSSON	ERICSSON
EQUIPMENT TYPE (Model):			BASEBAND 6630	BASEBAND 6630
BASEBAND CONFIGURATION :			xxxxx / 1x6630 / xxxxx	xxxxx / 1x6630 / xxxxx
MARKET STATE CODE:			CT	CTC
NODE B NUMBER:	0	0	2128	2128
SIDEHAUL SWITCH VENDOR:				
SIDEHAUL SWITCH MODEL:				
SIDEHAUL SWITCH NAME:				
CSS - CTS COMMON ID:	CTU2128	CTV2128	CTL02128	CTCN002128
CSS - SECONDARY FUNCTION ID:				

Section 6/7 - BBU INFORMATION - final

	BBU 1	BBU 2	BBU 3
BBU ID:	362938	0	662059
TECHNOLOGY:	LTE	5G	LTE,5G
BBU NAME:	CTL02128	CTCN032128	CTL06128R,CTCN002128
BBU USID:	5787	5787	5787
CELL ID / BCF:	CTL02128	CTCN032128	CTCN002128
BTA/TID:	321L		321L
4-9 DIGIT SITE ID:	02128	14032128	02128
COW OR TOY?:	No	No	No
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED
SITE TYPE:	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL
BTS LOCATION ID:	INTERNAL	INTERNAL	INTERNAL
BASE STATION TYPE:	BASE	OVERLAY	BASE
EQUIPMENT NAME:	FAIRFIELD GREENFIELD HILL	CTCN032128	FAIRFIELD GREENFIELD HILL
DISASTER PRIORITY:	3	0	3
EQUIPMENT VENDOR:	ERICSSON	ERICSSON	ERICSSON
EQUIPMENT TYPE (Model):	BASEBAND 6630	BASEBAND 6648	BASEBAND 6630
BASEBAND CONFIGURATION :	xxxxx / 1x6630 / xxxxx	xxxxx / 1x6648 / xxxxx	xxxxx / 1x6630 Mixed-Mode / xxxxx + 1
MARKET STATE CODE:	CT	CTC	CT,CTC
NODE B NUMBER:	2128	32128	6128,2128
SIDEHAUL SWITCH VENDOR:			
SIDEHAUL SWITCH MODEL:			
SIDEHAUL SWITCH NAME:			
CSS - CTS COMMON ID:	CTL02128		CTCN002128
CSS - SECONDARY FUNCTION ID:			

Section 7b - Radio INFORMATION - existing

Section 7b - Radio INFORMATION - final

Section 8 - RBS/SECTOR ASSOCIATION - existing

	BBU 1	BBU 2	BBU 3	BBU 4
CTS Common ID	CTU2128	CTV2128	CTL02128	CTCN002128
Soft Sector IDs		CTV21281	CTL02128_3A_1	CTCN002128_N005A_1
		CTV21282	CTL02128_3B_1	CTCN002128_N005B_1
		CTV21283	CTL02128_3C_1	CTCN002128_N005C_1
			CTL02128_7A_1	
			CTL02128_7B_1	
			CTL02128_7C_1	
			CTL02128_8A_1	
			CTL02128_8B_1	
			CTL02128_8C_1	
			CTL02128_9A_1	
			CTL02128_9A_2	
			CTL02128_9B_1	
			CTL02128_9B_2	
			CTL02128_9C_1	
			CTL02128_9C_2	

Section 8 - RBS/SECTOR ASSOCIATION - final

	BBU 1	BBU 2	BBU 3
CTS Common ID	CTL02128	CTCN032128	CTL06128R,CTCN002128
Soft Sector IDs	CTL02128_2A_1	CTCN032128_N077A_1	CTCN002128_N002A_1
	CTL02128_2B_1	CTCN032128_N077A_2	CTCN002128_N002B_1
	CTL02128_2C_1	CTCN032128_N077B_1	CTCN002128_N002C_1
	CTL02128_3A_1	CTCN032128_N077B_2	CTCN002128_N005A_1
	CTL02128_3B_1	CTCN032128_N077C_1	CTCN002128_N005B_1
	CTL02128_3C_1	CTCN032128_N077C_2	CTCN002128_N005C_1
	CTL02128_7A_1		CTCN002128_N066A_1
	CTL02128_7A_3_F		CTCN002128_N066B_1
	CTL02128_7B_1		CTCN002128_N066C_1
	CTL02128_7B_3_F		CTL06128_9A_1
	CTL02128_7C_1		CTL06128_9A_2
	CTL02128_7C_3_F		CTL06128_9B_1
			CTL06128_9B_2
			CTL06128_9C_1
			CTL06128_9C_2

Section 9 - SOFT SECTOR ID - existing

	UMTS 1ST 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST CBAND	5G 2ND CBAND
USEID (excluding Hard Sector)	5787.850.3G.1												
SECTOR A SOFT SECTOR ID	CTV21281	CTL02128_7A_1	CTL02128_8A_1	CTL02128_9A_1		CTL02128_3A_1		CTL02128_9A_2	CTCN002128_N005A_1				
SECTOR B	CTV21282	CTL02128_7B_1	CTL02128_8B_1	CTL02128_9B_1		CTL02128_3B_1		CTL02128_9B_2	CTCN002128_N005B_1				
SECTOR C	CTV21283	CTL02128_7C_1	CTL02128_8C_1	CTL02128_9C_1		CTL02128_3C_1		CTL02128_9C_2	CTCN002128_N005C_1				
SECTOR D													
SECTOR E													
SECTOR F													
OMNI													

Section 9 - SOFT SECTOR ID - final

	UMTS 1ST 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST CBAND	5G 2ND CBAND
USEID (excluding Hard Sector)													
SECTOR A SOFT SECTOR ID		CTL02128_7A_1		CTL06128_9A_1	CTL02128_2A_1	CTL02128_3A_1	CTL02128_7A_3_F	CTL06128_9A_2	CTCN002128_N005A	CTCN002128_N002A	CTCN002128_N066A	CTCN032128_N077A	CTCN032128_N077A_2
SECTOR B		CTL02128_7B_1		CTL06128_9B_1	CTL02128_2B_1	CTL02128_3B_1	CTL02128_7B_3_F	CTL06128_9B_2	CTCN002128_N005B	CTCN002128_N002B	CTCN002128_N066B	CTCN032128_N077B	CTCN032128_N077B_2
SECTOR C		CTL02128_7C_1		CTL06128_9C_1	CTL02128_2C_1	CTL02128_3C_1	CTL02128_7C_3_F	CTL06128_9C_2	CTCN002128_N005C	CTCN002128_N002C	CTCN002128_N066C	CTCN032128_N077C	CTCN032128_N077C_2
SECTOR D													
SECTOR E													
SECTOR F													
OMNI													

Section 9 - Cell Number - existing

	UMTS 1ST 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST CBAND	5G 2ND CBAND
USEID (excluding Hard Sector)	5787.850.3G.1												
SECTOR A CELL NUMBER		15	1	8		149		178	25				
SECTOR B		16	2	9		150		179	49				
SECTOR C		17	3	10		151		180	73				
SECTOR D													
SECTOR E													
SECTOR F													
OMNI													

Section 9 - Cell Number - final

	UMTS 1ST 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST CBAND	5G 2ND CBAND
USEID (excluding Hard Sector)													
SECTOR A CELL NUMBER		15		8	22	149	171	178	25	26	27	36	37
SECTOR B		16		9	23	150	172	179	49	50	51	60	61
SECTOR C		17		10	24	151	173	180	73	74	75	84	85
SECTOR D													
SECTOR E													
SECTOR F													
OMNI													

Section 10 - CID/SAC - existing

	UMTS 1ST 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST CBAND	5G 2ND CBAND
SECTOR A CID/SAC	21281												
SECTOR B	21282												
SECTOR C	21283												
SECTOR D													
SECTOR E													
SECTOR F													
OMNI													

Section 10 - CID/SAC - final

	UMTS 1ST 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST CBAND	5G 2ND CBAND
SECTOR A CID/SAC													
SECTOR B													
SECTOR C													
SECTOR D													
SECTOR E													
SECTOR F													
OMNI													

Section 15A - CURRENT TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	7770		800-10965				HPA-65R-BUU-H6							
ANTENNA VENDOR	Powerwave		Kathrein				CCI							
ANTENNA SIZE (H x W x D)	55X11X5		78.7X20X6.9				72X14.8X9							
ANTENNA WEIGHT	35		108.6				50.7							
AZIMUTH	143		30				30							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	128.03		128.03				128.03							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0		0				0							
FEEDER AMOUNT	2						Fiber + 2 Coax							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)	2	Powerwave 7020		Internal				Internal						
SURGE ARRESTOR (QTY/MODEL)														
DIPLEXER (QTY/MODEL)	2	LGP21901												
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)	1	860-10006		RRH CONTROLLED				RRH CONTROLLED						
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	LGP21401												
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	1000860												
PDU FOR TMAS (QTY/MODEL)	1	LGP12104												
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)			1	DC6-48-60-18			1	DC6-48-60-18						
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
REPEATER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)			1	4449 B5/B12										
RRH - 850 band (QTY/MODEL)				with another band										
RRH - 1900 band (QTY/MODEL)							1	RRUS-12 B2 + RRUS-A2 B25						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)			1	4415 B30										
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
RRH_7B_1 (QTY/MODEL)														
RRH_7B_2 (QTY/MODEL)														
RRH_7B_3 (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	- Add Homerun RET to UMTS antenna - Replace GSM antenna with LTE 8 port													
Local Market Note 2														
Local Market Note 3	xxxxx / 1x6630 / xxxxx || xxxxx / 1x6630 / xxxxx													

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID(cssng)
ANTENNA POSITION 1	PORT 1		5787.A.850.3G.1	CTV21281	CTV21281		UMTS 850	7770.00.850.07	13.5	143	7	None	Commscope 1-1/4 (850)	155.039685						252.35		1	
ANTENNA POSITION 2	PORT 1		5787.A.700.4G.1	CTL02128_7A_1	CTL02128_7A_1		LTE 700	80010965_716MHz_02DT	14.9	30	2	TOP	FIBER	0						1475.7065		3	
	PORT 3		5787.A.WCS.4G.1	CTL02128_3A_1	CTL02128_3A_1		LTE WCS	80010965_2355MHz_03DT	18.1	30	3	TOP	FIBER	0						1285.2866		4	
ANTENNA POSITION 4	PORT 3		5787.A.1900.4G.1	CTL02128_9A_1	CTL02128_9A_1		LTE 1900	H6_1930MHz_03DT	17	30	3	TOP	FIBER	0						3664.3757		8	

Section 15B - CURRENT TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	7770		800-10965				HPA-65R-BUU-H6							
ANTENNA VENDOR	Powerwave		Kathrein				CCI							
ANTENNA SIZE (H x W x D)	55X11X5		78.7X20X6.9				72X14.8X9							
ANTENNA WEIGHT	35		108.6				50.7							
AZIMUTH	263		150				150							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	128.03		128.03				128.03							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0		0				0							
FEEDER AMOUNT	2						Fiber + 2 Coax							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)	2	Powerwave 7020		Internal				Internal						
SURGE ARRESTOR (QTY/MODEL)														
DIPLEXER (QTY/MODEL)	2	LGP21901												
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)				RRH CONTROLLED				RRH CONTROLLED						
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	LGP21401												
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	1000860												
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
REPEATER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)			1	4449 B5/B12										
RRH - 850 band (QTY/MODEL)				with another band										
RRH - 1900 band (QTY/MODEL)							1	RRUS-12 B2 + RRUS-A2 B25						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)			1	4415 B30										
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
RRH_7B_1 (QTY/MODEL)														
RRH_7B_2 (QTY/MODEL)														
RRH_7B_3 (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	- Add Homerun RET to UMTS antenna - Replace GSM antenna with LTE 8 port													
Local Market Note 2														
Local Market Note 3	xxxxx / 1x6630 / xxxxx || xxxxx / 1x6630 / xxxxx													

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID(cssng)
ANTENNA POSITION 1	PORT 1		5787.B.850.3G.1	CTV21282	CTV21282		UMTS 850	7770.00.850.07	13.5	263	7	None	Commscope 1-1/4 (850)	155.039685						252.35		9	
ANTENNA POSITION 2	PORT 1		5787.B.700.4G.1	CTL02128_7B_1	CTL02128_7B_1		LTE 700	80010965_716MHz_07DT	14.6	150	7	TOP	FIBER	0						1475.7065		11	
	PORT 3		5787.B.WCS.4G.1	CTL02128_3B_1	CTL02128_3B_1		LTE WCS	80010965_2355MHz_03DT	18.1	150	3	TOP	FIBER	0						1285.2866		12	
ANTENNA POSITION 4	PORT 3		5787.B.1900.4G.1	CTL02128_9B_1	CTL02128_9B_1		LTE 1900	H6_1930MHz_02DT	16.85	150	2	TOP	FIBER	0						3664.3757		16	

Section 15C - CURRENT TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	7770		800-10965				HPA-65R-BUU-H6							
ANTENNA VENDOR	Powerwave		Kathrein				CCI							
ANTENNA SIZE (H x W x D)	55X11X5		78.7X20X6.9				72X14.8X9							
ANTENNA WEIGHT	35		108.6				50.7							
AZIMUTH	23		270				270							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	128.03		128.03				128.03							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0		0				0							
FEEDER AMOUNT	2						Fiber + 2 Coax							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)	2	Powerwave 7020		Internal				Internal						
SURGE ARRESTOR (QTY/MODEL)														
DIPLEXER (QTY/MODEL)	2	LGP21901												
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)				RRH CONTROLLED				RRH CONTROLLED						
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	LGP21401												
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	1000860												
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
REPEATER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)			1	4449 B5/B12										
RRH - 850 band (QTY/MODEL)				with another band										
RRH - 1900 band (QTY/MODEL)							1	RRUS-12 B2 + RRUS-A2 B25						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)			1	4415 B30										
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
RRH_7B_1 (QTY/MODEL)														
RRH_7B_2 (QTY/MODEL)														
RRH_7B_3 (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	- Add Homerun RET to UMTS antenna - Replace GSM antenna with LTE 8 port													
Local Market Note 2														
Local Market Note 3	xxxxx / 1x6630 / xxxxx || xxxxx / 1x6630 / xxxxx													

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID(cssng)
ANTENNA POSITION 1	PORT 1		5787.C.850.3G.1	CTV21283	CTV21283		UMTS 850	7770.00.850.06	13.5	23	6	None	Commscope 1-1/4 (850)	155.039685						252.35		17	
ANTENNA POSITION 2	PORT 1		5787.C.700.4G.1	CTL02128_7C_1	CTL02128_7C_1		LTE 700	80010965_716MHz_02DT	14.9	270	2	TOP	FIBER	0						1475.7065		19	
	PORT 3		5787.C.WCS.4G.1	CTL02128_3C_1	CTL02128_3C_1		LTE WCS	80010965_2355MHz_03DT	18.1	270	3	TOP	FIBER	0						1285.2866		20	
ANTENNA POSITION 4	PORT 3		5787.C.1900.4G.1	CTL02128_9C_1	CTL02128_9C_1		LTE 1900	H6_1930MHz_02DT	16.85	270	2	TOP	FIBER	0						3664.3757		24	

Section 16A - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL		OPA65R-BU6DA	AIR6449 B77D+AIR6419 B77G STACKED	TPA65R-BU6DA-K			
ANTENNA VENDOR		CCI	Ericsson	CCI			
ANTENNA SIZE (H x W x D)		71.2X21X7.8	30.4X15.9X8.1	71.2X20.7X7.7			
ANTENNA WEIGHT		60.2	81.6	69			
AZIMUTH							
MAGNETIC DECLINATION							
RADIATION CENTER (feet)							
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT							
FEEDER AMOUNT							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)							
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)				1 DC6-48-60-18			
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)				1 4478 B14			
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)				1 8843 B2/B66A			
RRH - AWS band (QTY/MODEL)				with another band			
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)			1 integrated within: AIR6449 B77D				
Additional RRH #2 - any band (QTY/MODEL)			1 integrated within: AIR6419 B77G				
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)		1 Y Cable		1 Y Cable			
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Arrange antenna and radio postions as per PD. Swap and add antennas. Swap and add LTE radios. Add C-band and DoD antenna/radio.Add DC6 Fiber Squid. Add IDLe. Add 6648+Xcede Cable. Add Y-Cable for dual band radios.Decomm UMTS.						
Local Market Note 2							
Local Market Note 3	5216+XMU / 6630+IDLe / 6648+Xcede						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RX/AIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID(cssng)
ANTENNA POSITION 2	PORT 5			CTCN002128_N005A_1	CTCN002128_N005A_1		5G 850	BU6DA_850MHz_06DT		150	0	TOP	FIBER	0						1000			
ANTENNA POSITION 3	PORT 1			CTCN032128_N077A_1	CTCN032128_N077A_1		5G CBAND	B77D+AIR6419 B77G STACKED		30	0	TOP	FIBER	0									
	PORT 2			CTCN032128_N077A_2	CTCN032128_N077A_2		5G DoD	B77D+AIR6419 B77G STACKED		30	0	TOP	FIBER	0									
ANTENNA POSITION 4	PORT 1			CTL02128_7A_3_F	CTL02128_7A_3_F		LTE 700	K_776MHz_06DT		30	0	TOP	FIBER	0						1475.7065			
	PORT 7			CTL02128_2A_1	CTL02128_2A_1		LTE AWS	K_2130MHz_06DT		30	0	TOP	FIBER	0						5070.2572			
	PORT 8			CTCN002128_N002A_1	CTCN002128_N002A_1		5G 1900	K_1930MHz_06DT		30	0	TOP	FIBER	0						1285.2866			
	PORT 11			CTCN002128_N066A_1	CTCN002128_N066A_1		5G AWS	K_2170MHz_06DT		30	0	TOP	FIBER	0						5070.2572			

Section 16B - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL		OPA65R-BU6DA	AIR6449 B77D+AIR6419 B77G STACKED	TPA65R-BU6DA-K			
ANTENNA VENDOR		CCI	Ericsson	CCI			
ANTENNA SIZE (H x W x D)		71.2X21X7.8	30.4X15.9X8.1	71.2X20.7X7.7			
ANTENNA WEIGHT		60.2	81.6	69			
AZIMUTH							
MAGNETIC DECLINATION							
RADIATION CENTER (feet)							
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT							
FEEDER AMOUNT							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)							
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)				1 4478 B14			
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)				1 8843 B2/B66A			
RRH - AWS band (QTY/MODEL)				with another band			
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)			1 integrated within: AIR6449 B77D				
Additional RRH #2 - any band (QTY/MODEL)			1 integrated within: AIR6419 B77G				
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)		1 Y Cable		1 Y Cable			
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Arrange antenna and radio postions as per PD. Swap and add antennas. Swap and add LTE radios. Add C-band and DoD antenna/radio.Add DC6 Fiber Squid. Add IDLe. Add 6648+Xcede Cable. Add Y-Cable for dual band radios.Decomm UMTS.						
Local Market Note 2							
Local Market Note 3	5216+XMU / 6630+IDLe / 6648+Xcede						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RX/AIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID(cssng)
ANTENNA POSITION 2	PORT 5			CTCN002128_N005B_1	CTCN002128_N005B_1		5G 850	BU6DA_850MHz_06DT		150	0	TOP	FIBER	0						1000			
ANTENNA POSITION 3	PORT 1			CTCN032128_N077B_1	CTCN032128_N077B_1		5G CBAND	B77D+AIR6419 B77G STACKED		150	0	TOP	FIBER	0									
	PORT 2			CTCN032128_N077B_2	CTCN032128_N077B_2		5G DoD	B77D+AIR6419 B77G STACKED		150	0	TOP	FIBER	0									
ANTENNA POSITION 4	PORT 1			CTL02128_7B_3_F	CTL02128_7B_3_F		LTE 700	K_776MHz_06DT		150	0	TOP	FIBER	0						1475.7065			
	PORT 7			CTL02128_2B_1	CTL02128_2B_1		LTE AWS	K_2130MHz_06DT		150	0	TOP	FIBER	0						5070.2572			
	PORT 8			CTCN002128_N002B_1	CTCN002128_N002B_1		5G 1900	K_1930MHz_06DT		150	0	TOP	FIBER	0						1285.2866			
	PORT 11			CTCN002128_N066B_1	CTCN002128_N066B_1		5G AWS	K_2170MHz_06DT		150	0	TOP	FIBER	0						5070.2572			

Section 16C - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL		OPA65R-BU6DA	AIR6449 B77D+AIR6419 B77G STACKED	TPA65R-BU6DA-K			
ANTENNA VENDOR		CCI	Ericsson	CCI			
ANTENNA SIZE (H x W x D)		71.2X21X7.8	30.4X15.9X8.1	71.2X20.7X7.7			
ANTENNA WEIGHT		60.2	81.6	69			
AZIMUTH							
MAGNETIC DECLINATION							
RADIATION CENTER (feet)							
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT							
FEEDER AMOUNT							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)							
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)				1 4478 B14			
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)				1 8843 B2/B66A			
RRH - AWS band (QTY/MODEL)				with another band			
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)			1 integrated within: AIR6449 B77D				
Additional RRH #2 - any band (QTY/MODEL)			1 integrated within: AIR6419 B77G				
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)		1 Y Cable		1 Y Cable			
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Arrange antenna and radio postions as per PD. Swap and add antennas. Swap and add LTE radios. Add C-band and DoD antenna/radio.Add DC6 Fiber Squid. Add IDLe. Add 6648+Xcede Cable. Add Y-Cable for dual band radios.Decomm UMTS.						
Local Market Note 2							
Local Market Note 3	5216+XMU / 6630+IDLe / 6648+Xcede						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RX/AIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID(cssng)
ANTENNA POSITION 2	PORT 5			CTCN002128_N005C_1	CTCN002128_N005C_1		5G 850	BU6DA_850MHz_06DT		270	0	TOP	FIBER	0						1000			
ANTENNA POSITION 3	PORT 1			CTCN032128_N077C_1	CTCN032128_N077C_1		5G CBAND	B77D+AIR6419 B77G STACKED		270	0	TOP	FIBER	0									
	PORT 2			CTCN032128_N077C_2	CTCN032128_N077C_2		5G DoD	B77D+AIR6419 B77G STACKED		270	0	TOP	FIBER	0									
ANTENNA POSITION 4	PORT 1			CTL02128_7C_3_F	CTL02128_7C_3_F		LTE 700	K_776MHz_06DT		270	0	TOP	FIBER	0						1475.7065			
	PORT 7			CTL02128_2C_1	CTL02128_2C_1		LTE AWS	K_2130MHz_06DT		270	0	TOP	FIBER	0						5070.2572			
	PORT 8			CTCN002128_N002C_1	CTCN002128_N002C_1		5G 1900	K_1930MHz_06DT		270	0	TOP	FIBER	0						1285.2866			
	PORT 11			CTCN002128_N066C_1	CTCN002128_N066C_1		5G AWS	K_2170MHz_06DT		270	0	TOP	FIBER	0						5070.2572			

Section 16.5A - SCOPING TOWER CONFIGURATION - SECTOR A (OR OMNI)

Section 17A - FINAL TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL		OPA65R-BU6DA	AIR6449 B77D+AIR6419 B77G STACKED	TPA65R-BU6DA-K			
ANTENNA VENDOR		CCI	Ericsson	CCI			
ANTENNA SIZE (H x W x D)		71.2X21X7.8	30.4X15.9X8.1	71.2X20.7X7.7			
ANTENNA WEIGHT		60.2	81.6	69			
AZIMUTH		30	30	30			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		128.03	128.03	128.03			
ANTENNA TIP HEIGHT		131.03	131.03	131.03			
MECHANICAL DOWNTILT		0	0	0			
FEEDER AMOUNT		2					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)		Built in	Built in	Built in			
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		RRH CONTROLLED	RRH CONTROLLED	RRH CONTROLLED			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)		1 DC6-48-60-18	1 DC6-48-60-18	1 DC6-48-60-18			
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)		1 4449 B5/B12		1 4478 B14			
RRH - 850 band (QTY/MODEL)		with another band					
RRH - 1900 band (QTY/MODEL)				1 8843 B2/B66A			
RRH - AWS band (QTY/MODEL)				with another band			
RRH - WCS band (QTY/MODEL)		1 4415 B30					
Additional RRH #1 - any band (QTY/MODEL)			1 integrated within: AIR6449 B77D				
Additional RRH #2 - any band (QTY/MODEL)			1 integrated within: AIR6419 B77G				
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)		1 Y Cable		1 Y Cable			
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Arrange antenna and radio postions as per PD. Swap and add antennas. Swap and add LTE radios. Add C-band and DoD antenna/radio.Add DC6 Fiber Squid. Add IDLe. Add 6648+Xcede Cable. Add Y-Cable for dual band radios.Decomm UMTS.						
Local Market Note 2							
Local Market Note 3	5216+XMU / 6630+IDLe / 6648+Xcede						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RX/AIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID(cssng)
ANTENNA POSITION 2	PORT 1	5787.A.700.4G.1		CTL02128_7A_1	CTL02128_7A_1		LTE 700	BU6DA_725MHz_06DT		30	0	TOP	FIBER	0						1475.7065			
	PORT 2	5787.A.WCS.4G.1		CTL02128_3A_1	CTL02128_3A_1		LTE WCS	BU6DA_2355MHz_06DT		30	0	TOP	FIBER	0						1285.2866			
	PORT 5	5787.A.850.5G.1		CTCN002128_N005A_1	CTCN002128_N005A_1		5G 850	BU6DA_850MHz_06DT		150	0	TOP	FIBER	0						1000			
ANTENNA POSITION 3	PORT 1	5787.A.CBAND.5G.tmp1		CTCN032128_N077A_1	CTCN032128_N077A_1		5G CBAND	B77D+AIR6419 B77G STACKED		30	0	TOP	FIBER	0									
	PORT 2	5787.A.CBAND.5G.tmp2		CTCN032128_N077A_2	CTCN032128_N077A_2		5G DoD	B77D+AIR6419 B77G STACKED		30	0	TOP	FIBER	0									
ANTENNA POSITION 4	PORT 1	5787.A.700.4G.tmp2		CTL02128_7A_3_F	CTL02128_7A_3_F		LTE 700	K_776MHz_06DT		30	0	TOP	FIBER	0						1475.7065			
	PORT 3	5787.A.1900.4G.tmp1		CTL06128_9A_1	CTL06128_9A_1		LTE 1900	K_1930MHz_06DT		30	0	TOP	FIBER	0						1285.2866			
	PORT 4	5787.A.1900.4G.tmp2		CTL06128_9A_2	CTL06128_9A_2		LTE 1900	K_1930MHz_06DT		30	0	TOP	FIBER	0						1285.2866			
	PORT 7	5787.AAWS.4G.tmp1		CTL02128_2A_1	CTL02128_2A_1		LTE AWS	K_2130MHz_06DT		30	0	TOP	FIBER	0						5070.2572			
	PORT 8	5787.A.1900.5G.tmp1		CTCN002128_N002A_1	CTCN002128_N002A_1		5G 1900	K_1930MHz_06DT		30	0	TOP	FIBER	0						1285.2866			
	PORT 11	5787.AAWS.5G.tmp1		CTCN002128_N066A_1	CTCN002128_N066A_1		5G AWS	K_2170MHz_06DT		30	0	TOP	FIBER	0						5070.2572			

Section 17B - FINAL TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL		OPA65R-BU6DA	AIR6449 B77D+AIR6419 B77G STACKED	TPA65R-BU6DA-K			
ANTENNA VENDOR		CCI	Ericsson	CCI			
ANTENNA SIZE (H x W x D)		71.2X21X7.8	30.4X15.9X8.1	71.2X20.7X7.7			
ANTENNA WEIGHT		60.2	81.6	69			
AZIMUTH		150	150	150			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		128.03	128.03	128.03			
ANTENNA TIP HEIGHT		131.03	131.03	131.03			
MECHANICAL DOWNTILT		0	0	0			
FEEDER AMOUNT		2					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)		Built in	Built in	Built in			
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		RRH CONTROLLED	RRH CONTROLLED	RRH CONTROLLED			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)		1 4449 B5/B12		1 4478 B14			
RRH - 850 band (QTY/MODEL)		with another band					
RRH - 1900 band (QTY/MODEL)				1 8843 B2/B66A			
RRH - AWS band (QTY/MODEL)				with another band			
RRH - WCS band (QTY/MODEL)		1 4415 B30					
Additional RRH #1 - any band (QTY/MODEL)			1 integrated within: AIR6449 B77D				
Additional RRH #2 - any band (QTY/MODEL)			1 integrated within: AIR6419 B77G				
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)		1 Y Cable		1 Y Cable			
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Arrange antenna and radio postions as per PD. Swap and add antennas. Swap and add LTE radios. Add C-band and DoD antenna/radio.Add DC6 Fiber Squid. Add IDLe. Add 6648+Xcede Cable. Add Y-Cable for dual band radios.Decomm UMTS.						
Local Market Note 2							
Local Market Note 3	5216+XMU / 6630+IDLe / 6648+Xcede						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID(cssng)
ANTENNA POSITION 2	PORT 1	5787.B.700.4G.1		CTL02128_7B_1	CTL02128_7B_1		LTE 700	BU6DA_725MHz_06DT		150	0	TOP	FIBER	0						1475.7065			
	PORT 3	5787.B.WCS.4G.1		CTL02128_3B_1	CTL02128_3B_1		LTE WCS	BU6DA_2355MHz_06DT		150	0	TOP	FIBER	0						1285.2866			
	PORT 5	5787.B.850.5G.1		CTCN002128_N005B_1	CTCN002128_N005B_1		5G 850	BU6DA_850MHz_06DT		150	0	TOP	FIBER	0						1000			
ANTENNA POSITION 3	PORT 1	5787.B.CBAND.5G.tmp1		CTCN032128_N077B_1	CTCN032128_N077B_1		5G CBAND	B77D+AIR6419 B77G STACKED		150	0	TOP	FIBER	0									
	PORT 2	5787.B.CBAND.5G.tmp2		CTCN032128_N077B_2	CTCN032128_N077B_2		5G DoD	B77D+AIR6419 B77G STACKED		150	0	TOP	FIBER	0									
ANTENNA POSITION 4	PORT 1	5787.B.700.4G.tmp2		CTL02128_7B_3_F	CTL02128_7B_3_F		LTE 700	K_776MHz_06DT		150	0	TOP	FIBER	0						1475.7065			
	PORT 3	5787.B.1900.4G.tmp1		CTL06128_9B_1	CTL06128_9B_1		LTE 1900	K_1930MHz_06DT		150	0	TOP	FIBER	0						1285.2866			
	PORT 4	5787.B.1900.4G.tmp2		CTL06128_9B_2	CTL06128_9B_2		LTE 1900	K_1930MHz_06DT		150	0	TOP	FIBER	0						1285.2866			
	PORT 7	5787.B.AWS.4G.tmp1		CTL02128_2B_1	CTL02128_2B_1		LTE AWS	K_2130MHz_06DT		150	0	TOP	FIBER	0						5070.2572			
	PORT 8	5787.B.1900.5G.tmp1		CTCN002128_N002B_1	CTCN002128_N002B_1		5G 1900	K_1930MHz_06DT		150	0	TOP	FIBER	0						1285.2866			
	PORT 11	5787.B.AWS.5G.tmp1		CTCN002128_N066B_1	CTCN002128_N066B_1		5G AWS	K_2170MHz_06DT		150	0	TOP	FIBER	0						5070.2572			

Section 17C - FINAL TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL		OPA65R-BU6DA	AIR6449 B77D+AIR6419 B77G STACKED	TPA65R-BU6DA-K			
ANTENNA VENDOR		CCI	Ericsson	CCI			
ANTENNA SIZE (H x W x D)		71.2X21X7.8	30.4X15.9X8.1	71.2X20.7X7.7			
ANTENNA WEIGHT		60.2	81.6	69			
AZIMUTH		270	270	270			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		128.03	128.03	128.03			
ANTENNA TIP HEIGHT		131.03	131.03	131.03			
MECHANICAL DOWNTILT		0	0	0			
FEEDER AMOUNT		2					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)		Built in	Built in	Built in			
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		RRH CONTROLLED	RRH CONTROLLED	RRH CONTROLLED			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)		1 4449 B5/B12		1 4478 B14			
RRH - 850 band (QTY/MODEL)		with another band					
RRH - 1900 band (QTY/MODEL)				1 8843 B2/B66A			
RRH - AWS band (QTY/MODEL)				with another band			
RRH - WCS band (QTY/MODEL)		1 4415 B30					
Additional RRH #1 - any band (QTY/MODEL)			1 integrated within: AIR6449 B77D				
Additional RRH #2 - any band (QTY/MODEL)			1 integrated within: AIR6419 B77G				
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)		1 Y Cable		1 Y Cable			
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Arrange antenna and radio postions as per PD. Swap and add antennas. Swap and add LTE radios. Add C-band and DoD antenna/radio.Add DC6 Fiber Squid. Add IDLe. Add 6648+Xcede Cable. Add Y-Cable for dual band radios.Decomm UMTS.						
Local Market Note 2							
Local Market Note 3	5216+XMU / 6630+IDLe / 6648+Xcede						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID(cssng)
ANTENNA POSITION 2	PORT 1	5787.C.700.4G.1		CTL02128_7C_1	CTL02128_7C_1		LTE 700	BU6DA_725MHz_06DT		270	0	TOP	FIBER	0						1475.7065			
	PORT 3	5787.C.WCS.4G.1		CTL02128_3C_1	CTL02128_3C_1		LTE WCS	BU6DA_2355MHz_06DT		270	0	TOP	FIBER	0						1285.2866			
	PORT 5	5787.C.850.5G.1		CTCN002128_N005C_1	CTCN002128_N005C_1		5G 850	BU6DA_850MHz_06DT		270	0	TOP	FIBER	0						1000			
ANTENNA POSITION 3	PORT 1	5787.C.CBAND.5G.tmp1		CTCN032128_N077C_1	CTCN032128_N077C_1		5G CBAND	B77D+AIR6419 B77G STACKED		270	0	TOP	FIBER	0									
	PORT 2	5787.C.CBAND.5G.tmp2		CTCN032128_N077C_2	CTCN032128_N077C_2		5G DoD	B77D+AIR6419 B77G STACKED		270	0	TOP	FIBER	0									
ANTENNA POSITION 4	PORT 1	5787.C.700.4G.tmp2		CTL02128_7C_3_F	CTL02128_7C_3_F		LTE 700	K_776MHz_06DT		270	0	TOP	FIBER	0						1475.7065			
	PORT 3	5787.C.1900.4G.1 tmp1		CTL06128_9C_1	CTL06128_9C_1		LTE 1900	K_1930MHz_06DT		270	0	TOP	FIBER	0						1285.2866			
	PORT 4	5787.C.1900.4G.2 tmp2		CTL06128_9C_2	CTL06128_9C_2		LTE 1900	K_1930MHz_06DT		270	0	TOP	FIBER	0						1285.2866			
	PORT 7	5787.C.AWS.4G.tmp1		CTL02128_2C_1	CTL02128_2C_1		LTE AWS	K_2130MHz_06DT		270	0	TOP	FIBER	0						5070.2572			
	PORT 8	5787.C.1900.5G.tmp1		CTCN002128_N002C_1	CTCN002128_N002C_1		5G 1900	K_1930MHz_06DT		270	0	TOP	FIBER	0						1285.2866			
	PORT 11	5787.C.AWS.5G.tmp1		CTCN002128_N066C_1	CTCN002128_N066C_1		5G AWS	K_2170MHz_06DT		270	0	TOP	FIBER	0						5070.2572			

Exhibit E

Mount Analysis

April 18, 2022
April 27, 2022 (Rev.1)

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:		
	Site Number:	CT2128
	FA Number:	10035251
	PACE Number:	MRCTB060572
	PT Number:	2051A134VY
	Site Name:	FAIRFIELD GREENFIELD HILL
	Site Address:	3965 Congress Street Fairfield, CT 06824

To Whom It May Concern:

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

- (3) 4449 B5/B12 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)
- (3) 4415 B30 RRH's (16.5"x13.4"x5.9" – Wt. = 46 lbs. /each)
- (2) DC6-48-60-18 Surge Arrestors (31.4"x10.2" Ø – Wt. = 29 lbs.)
- **(3) OPA65R-BU6DA Antennas (71.2"x21.0"x7.8" – Wt. = 64 lbs. /each)**
- **(3) AIR6419 Antennas (31.0"x16.1"x7.3" – Wt. = 66 lbs. /each)**
- **(3) AIR6449 Antennas (30.6"x15.9"x10.6" – Wt. = 82 lbs. /each)**
- **(3) TPA65R-BU6DA-K Antennas (71.2"x20.7"x7.7" – Wt. = 69 lbs. /each)**
- **(3) 4478 B14 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**
- **(3) 8843 B2/B66A RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)**
- **(1) DC6-48-60-18 Surge Arrestor (31.4"x10.2" Ø – Wt. = 29 lbs.)**

*Proposed equipment shown in bold.

Mount fabrication drawings prepared by SitePro1 P/N RMQLP-4120-H10 dated October 18, 2019, were used to perform this analysis. HDG conducted a ground audit of the existing AT&T antenna mount on November 8, 2021.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R16.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 135 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.43 in was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- HDG considers this site to have a spectral response acceleration parameter at short periods, S_S, of 0.215 and a spectral response acceleration parameter at a period of 1 second, S_1, of 0.065.
- The mount has been analyzed with load combinations consisting of 500 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 3.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The proposed mount is to be secured to the existing monopole with ring mounts and threaded rods. HDG considers the threaded rods to be the governing connection member.

Based on our evaluation, we have determined that the Proposed SitePro1 RMQLP-4120-H10 mount **IS CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Proposed Mount Rating	45	LC2	44%	**PASS**

Reference Documents:

- Fabrication drawings prepared by SitePro1 P/N RMQLP-4120-H10 dated October 18, 2019.

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 proposed mount will be adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mount 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

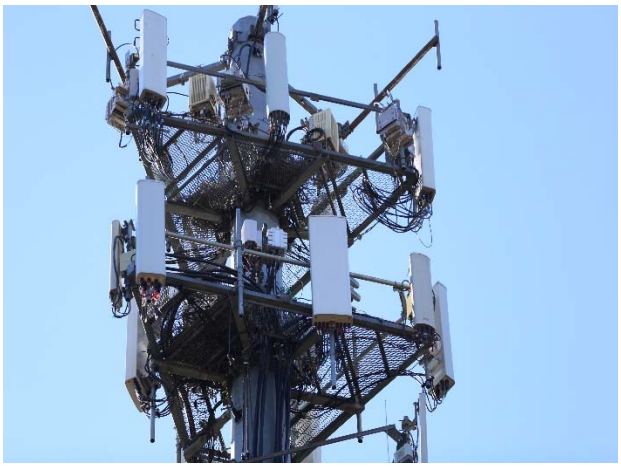
Michael Cabral
Vice President

STATE OF CONNECTICUT
DANIEL HAMM
24178
LICENSED
PROFESSIONAL ENGINEER

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:

*Note: Existing mount to be removed.



FIELD PHOTOS (CONT.):

*Note: Existing mount to be removed.

HUDSON
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Wind & Ice
Calculations

Date: 4/27/2022
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Designed By: KSBM **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

z=	128.0	(ft)
z_g=	1200	(ft)
α=	7	

K_z= 1.060

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_c
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

2.6.6.2 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

$K_{zt} = [1+(K_c\ K_t/K_h)]^2$ $K_h = e^{(f*z/H)}$

K_{zt}= 1

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

Category= **1**

K_h=	1	
K_c=	0.9	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0	(from Table 2-5)
z=	128.0	
z_s=	271	(Mean elevation of base of structure above sea level)
H=	0	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	0.99	(from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness = t_i =	1.00	in
Importance Factor = I=	1.25	(from Table 2-3)
K_{iz} =	1.15	(from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$ t_{iz} = 1.43 in

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2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

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

h=	150	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

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

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

2.6.11.2 Design Wind Force on Appurtenances

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

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

		K_z=	1.060	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**46.54**	K_e=	0.99	(from 2.6.8)
$q_{z\ (ice)}$=	**6.38**	K_d=	0.95	(from Table 2-2)
$q_{z\ (30)}$=	**2.30**	V_{max}=	135	mph (Ultimate Wind Speed)
		$V_{max\ (ice)}$=	50	mph
		V_{30}=	30	mph

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
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

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Determine Ca:

Table 2-9

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
Square/Rectangular HSS		1.2 - 2.8(r_s) ≥ 0.85	1.4 - 4.0(r_s) ≥ 0.90	2.0 - 6.0(r_s) ≥ 1.25
Round	C < 39 (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{1.0})$
	C > 78 (Supercritical)	0.5	0.6	0.6

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

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

Ice Thickness = 1.43 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)
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.39	1.24	599	97	30
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.93	1.20	194	34	10
AIR6449 Antenna	30.6	15.9	10.6	3.38	1.92	1.20	189	33	9
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.44	1.24	592	96	29
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.90	1.20	65	14	3
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	3.81	1.26	34	9	2
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	2.80	1.21	38	9	2
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	5.59	1.34	21	7	1
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	2.18	1.20	58	12	3
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	4.36	1.28	31	8	2
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.20	63	13	3
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	2.73	1.21	32	8	2
DC6-48-60-18 Surge Arrestor	31.4	10.2	10.2	2.22	3.08	0.70	72	14	4
Plate 6x3/8	6.0	12.0		0.50	0.50	2.00	47		
2x2 Angle	2.0	12.0		0.17	0.17	2.00	16		
2-1/2x2-1/2 Angle	2.5	12.0		0.21	0.21	2.00	19		
2" Pipe	2.4	12.0		0.20	0.20	1.20	11		
2-1/2" Pipe	2.9	12.0		0.24	0.24	1.20	13		
3" Pipe	3.5	12.0		0.29	0.29	1.20	16		
HSS 4x4	4.0	12.0		0.33	0.33	1.25	19		

Date: 4/27/2022
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Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.43	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)	Force (lbs)	Force (lbs)
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	599	264	515
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	194	94	169
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	189	128	173
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	592	261	509
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	65	92	72
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	34	92	49
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	38	86	50
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	21	86	37
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	58	94	67
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	31	94	47
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	63	76	66
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	32	76	43

WIND LOADS WITH ICE:

OPA65R-BU6DA Antenna	74.1	23.9	10.7	12.27	5.48	3.10	6.95	1.23	1.40	96	49	84
AIR6419 Antenna	34.0	19.0	10.2	4.47	2.40	1.79	3.34	1.20	1.24	34	19	30
AIR6449 Antenna	33.5	18.8	13.5	4.36	3.13	1.78	2.49	1.20	1.20	33	24	31
TPA65R-BU6DA-K Antenna	74.1	23.6	10.6	12.12	5.43	3.14	7.01	1.23	1.40	95	49	83
4449 B5/B12 RRH (Side)	20.8	12.3	16.1	1.77	2.32	1.69	1.29	1.20	1.20	14	18	15
4449 B5/B12 RRH (Shielded)	20.8	7.6	16.1	1.09	2.32	2.75	1.29	1.21	1.20	8	18	11
4415 B30 RRH (Side)	19.4	8.8	16.3	1.18	2.19	2.21	1.19	1.20	1.20	9	17	11
4415 B30 RRH (Shielded)	19.4	5.8	16.3	0.78	2.19	3.33	1.19	1.24	1.20	6	17	9
4478 B14 RRH (Side)	21.0	11.2	16.3	1.63	2.37	1.88	1.29	1.20	1.20	12	18	14
4478 B14 RRH (Shielded)	21.0	7.0	16.3	1.02	2.37	2.99	1.29	1.22	1.20	8	18	11
8843 B2/B66A RRH (Side)	17.8	13.8	16.1	1.70	1.98	1.29	1.11	1.20	1.20	13	15	14
8843 B2/B66A RRH (Shielded)	17.8	8.3	16.1	1.03	1.98	2.14	1.11	1.20	1.20	8	15	10

WIND LOADS AT 30 MPH:

OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	30	13	25
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	10	5	8
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	9
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	29	13	25
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	4
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	2
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	2
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	1	4	2
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	3
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	2	5	2
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	3
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	2

Date: 4/27/2022
Project Name: FAIRFIELD GREENFIELD HILL
Project No.: CT2128
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.43	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)	Force (lbs)	Force (lbs)
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	599	264	348
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	194	94	119
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	189	128	143
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	592	261	344
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	65	92	85
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	34	92	77
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	38	86	74
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	21	86	70
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	58	94	85
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	31	94	78
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	63	76	73
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	32	76	65

WIND LOADS WITH ICE:

OPA65R-BU6DA Antenna	74.1	23.9	10.7	12.27	5.48	3.10	6.95	1.23	1.40	96	49	61
AIR6419 Antenna	34.0	19.0	10.2	4.47	2.40	1.79	3.34	1.20	1.24	34	19	23
AIR6449 Antenna	33.5	18.8	13.5	4.36	3.13	1.78	2.49	1.20	1.20	33	24	26
TPA65R-BU6DA-K Antenna	74.1	23.6	10.6	12.12	5.43	3.14	7.01	1.23	1.40	95	49	60
4449 B5/B12 RRH (Side)	20.8	12.3	16.1	1.77	2.32	1.69	1.29	1.20	1.20	14	18	17
4449 B5/B12 RRH (Shielded)	20.8	7.6	16.1	1.09	2.32	2.75	1.29	1.21	1.20	8	18	15
4415 B30 RRH (Side)	19.4	8.8	16.3	1.18	2.19	2.21	1.19	1.20	1.20	9	17	15
4415 B30 RRH (Shielded)	19.4	5.8	16.3	0.78	2.19	3.33	1.19	1.24	1.20	6	17	14
4478 B14 RRH (Side)	21.0	11.2	16.3	1.63	2.37	1.88	1.29	1.20	1.20	12	18	17
4478 B14 RRH (Shielded)	21.0	7.0	16.3	1.02	2.37	2.99	1.29	1.22	1.20	8	18	16
8843 B2/B66A RRH (Side)	17.8	13.8	16.1	1.70	1.98	1.29	1.11	1.20	1.20	13	15	15
8843 B2/B66A RRH (Shielded)	17.8	8.3	16.1	1.03	1.98	2.14	1.11	1.20	1.20	8	15	13

WIND LOADS AT 30 MPH:

OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	30	13	17
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	10	5	6
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	7
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	29	13	17
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	4
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	4
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	4
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	1	4	3
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	2	5	4
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	3

Date: 4/27/2022
Project Name: FAIRFIELD GREENFIELD HILL
Project No.: CT2128
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.43	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)	Force (lbs)	Force (lbs)
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	599	264	264
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	194	94	94
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	189	128	128
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	592	261	261
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	65	92	92
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	34	92	92
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	38	86	86
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	21	86	86
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	58	94	94
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	31	94	94
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	63	76	76
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	32	76	76

WIND LOADS WITH ICE:

OPA65R-BU6DA Antenna	74.1	23.9	10.7	12.27	5.48	3.10	6.95	1.23	1.40	96	49	49
AIR6419 Antenna	34.0	19.0	10.2	4.47	2.40	1.79	3.34	1.20	1.24	34	19	19
AIR6449 Antenna	33.5	18.8	13.5	4.36	3.13	1.78	2.49	1.20	1.20	33	24	24
TPA65R-BU6DA-K Antenna	74.1	23.6	10.6	12.12	5.43	3.14	7.01	1.23	1.40	95	49	49
4449 B5/B12 RRH (Side)	20.8	12.3	16.1	1.77	2.32	1.69	1.29	1.20	1.20	14	18	18
4449 B5/B12 RRH (Shielded)	20.8	7.6	16.1	1.09	2.32	2.75	1.29	1.21	1.20	8	18	18
4415 B30 RRH (Side)	19.4	8.8	16.3	1.18	2.19	2.21	1.19	1.20	1.20	9	17	17
4415 B30 RRH (Shielded)	19.4	5.8	16.3	0.78	2.19	3.33	1.19	1.24	1.20	6	17	17
4478 B14 RRH (Side)	21.0	11.2	16.3	1.63	2.37	1.88	1.29	1.20	1.20	12	18	18
4478 B14 RRH (Shielded)	21.0	7.0	16.3	1.02	2.37	2.99	1.29	1.22	1.20	8	18	18
8843 B2/B66A RRH (Side)	17.8	13.8	16.1	1.70	1.98	1.29	1.11	1.20	1.20	13	15	15
8843 B2/B66A RRH (Shielded)	17.8	8.3	16.1	1.03	1.98	2.14	1.11	1.20	1.20	8	15	15

WIND LOADS AT 30 MPH:

OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	30	13	13
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	10	5	5
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	6
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	29	13	13
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	5
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	5
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	4
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	1	4	4
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	5
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	2	5	5
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	4

Date: 4/27/2022
Project Name: FAIRFIELD GREENFIELD HILL
Project No.: CT2128
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.43	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)	Force (lbs)	Force (lbs)
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	599	264	348
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	194	94	119
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	189	128	143
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	592	261	344
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	65	92	85
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	34	92	77
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	38	86	74
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	21	86	70
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	58	94	85
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	31	94	78
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	63	76	73
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	32	76	65

WIND LOADS WITH ICE:

OPA65R-BU6DA Antenna	74.1	23.9	10.7	12.27	5.48	3.10	6.95	1.23	1.40	96	49	61
AIR6419 Antenna	34.0	19.0	10.2	4.47	2.40	1.79	3.34	1.20	1.24	34	19	23
AIR6449 Antenna	33.5	18.8	13.5	4.36	3.13	1.78	2.49	1.20	1.20	33	24	26
TPA65R-BU6DA-K Antenna	74.1	23.6	10.6	12.12	5.43	3.14	7.01	1.23	1.40	95	49	60
4449 B5/B12 RRH (Side)	20.8	12.3	16.1	1.77	2.32	1.69	1.29	1.20	1.20	14	18	17
4449 B5/B12 RRH (Shielded)	20.8	7.6	16.1	1.09	2.32	2.75	1.29	1.21	1.20	8	18	15
4415 B30 RRH (Side)	19.4	8.8	16.3	1.18	2.19	2.21	1.19	1.20	1.20	9	17	15
4415 B30 RRH (Shielded)	19.4	5.8	16.3	0.78	2.19	3.33	1.19	1.24	1.20	6	17	14
4478 B14 RRH (Side)	21.0	11.2	16.3	1.63	2.37	1.88	1.29	1.20	1.20	12	18	17
4478 B14 RRH (Shielded)	21.0	7.0	16.3	1.02	2.37	2.99	1.29	1.22	1.20	8	18	16
8843 B2/B66A RRH (Side)	17.8	13.8	16.1	1.70	1.98	1.29	1.11	1.20	1.20	13	15	15
8843 B2/B66A RRH (Shielded)	17.8	8.3	16.1	1.03	1.98	2.14	1.11	1.20	1.20	8	15	13

WIND LOADS AT 30 MPH:

OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	30	13	17
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	10	5	6
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	7
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	29	13	17
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	4
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	4
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	4
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	1	4	3
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	2	5	4
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	3

Date: 4/27/2022
Project Name: FAIRFIELD GREENFIELD HILL
Project No.: CT2128
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.43	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)	Force (lbs)	Force (lbs)
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	599	264	515
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	194	94	169
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	189	128	173
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	592	261	509
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	65	92	72
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	34	92	49
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	38	86	50
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	21	86	37
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	58	94	67
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	31	94	47
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	63	76	66
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	32	76	43

WIND LOADS WITH ICE:

OPA65R-BU6DA Antenna	74.1	23.9	10.7	12.27	5.48	3.10	6.95	1.23	1.40	96	49	84
AIR6419 Antenna	34.0	19.0	10.2	4.47	2.40	1.79	3.34	1.20	1.24	34	19	30
AIR6449 Antenna	33.5	18.8	13.5	4.36	3.13	1.78	2.49	1.20	1.20	33	24	31
TPA65R-BU6DA-K Antenna	74.1	23.6	10.6	12.12	5.43	3.14	7.01	1.23	1.40	95	49	83
4449 B5/B12 RRH (Side)	20.8	12.3	16.1	1.77	2.32	1.69	1.29	1.20	1.20	14	18	15
4449 B5/B12 RRH (Shielded)	20.8	7.6	16.1	1.09	2.32	2.75	1.29	1.21	1.20	8	18	11
4415 B30 RRH (Side)	19.4	8.8	16.3	1.18	2.19	2.21	1.19	1.20	1.20	9	17	11
4415 B30 RRH (Shielded)	19.4	5.8	16.3	0.78	2.19	3.33	1.19	1.24	1.20	6	17	9
4478 B14 RRH (Side)	21.0	11.2	16.3	1.63	2.37	1.88	1.29	1.20	1.20	12	18	14
4478 B14 RRH (Shielded)	21.0	7.0	16.3	1.02	2.37	2.99	1.29	1.22	1.20	8	18	11
8843 B2/B66A RRH (Side)	17.8	13.8	16.1	1.70	1.98	1.29	1.11	1.20	1.20	13	15	14
8843 B2/B66A RRH (Shielded)	17.8	8.3	16.1	1.03	1.98	2.14	1.11	1.20	1.20	8	15	10

WIND LOADS AT 30 MPH:

OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	30	13	25
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	10	5	8
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	9
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	29	13	25
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	4
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	2
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	2
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	1	4	2
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	3
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	2	5	2
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	3
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	2

Date: 4/27/2022
Project Name: FAIRFIELD GREENFIELD HILL
Project No.: CT2128
Designed By: KSBM **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.43 in.
Density of ice: 56 pcf

OPA65R-BU6DA Antenna
Weight of ice based on total radial SF area:
Height (in): 71.2
Width (in): 21.0
Depth (in): 7.8
Total weight of ice on object: 247 lbs
Weight of object: 64.0 lbs
Combined weight of ice and object: 311 lbs

AIR6419 Antenna
Weight of ice based on total radial SF area:
Height (in): 31.1
Width (in): 16.1
Depth (in): 7.3
Total weight of ice on object: 87 lbs
Weight of object: 66.0 lbs
Combined weight of ice and object: 153 lbs

AIR6449 Antenna
Weight of ice based on total radial SF area:
Height (in): 30.6
Width (in): 15.9
Depth (in): 10.6
Total weight of ice on object: 92 lbs
Weight of object: 82.0 lbs
Combined weight of ice and object: 174 lbs

TPA65R-BU6DA-K Antenna
Weight of ice based on total radial SF area:
Height (in): 71.2
Width (in): 20.7
Depth (in): 7.7
Total weight of ice on object: 244 lbs
Weight of object: 69.0 lbs
Combined weight of ice and object: 313 lbs

4449 B5/B12 RRH
Weight of ice based on total radial SF area:
Height (in): 17.9
Width (in): 13.2
Depth (in): 9.4
Total weight of ice on object: 46 lbs
Weight of object: 73.0 lbs
Combined weight of ice and object: 119 lbs

4415 B30 RRH
Weight of ice based on total radial SF area:
Height (in): 16.5
Width (in): 13.4
Depth (in): 5.9
Total weight of ice on object: 39 lbs
Weight of object: 46.0 lbs
Combined weight of ice and object: 85 lbs

4478 B14 RRH
Weight of ice based on total radial SF area:
Height (in): 18.1
Width (in): 13.4
Depth (in): 8.3
Total weight of ice on object: 45 lbs
Weight of object: 60.0 lbs
Combined weight of ice and object: 105 lbs

8843 B2/B66A RRH
Weight of ice based on total radial SF area:
Height (in): 14.9
Width (in): 13.2
Depth (in): 10.9
Total weight of ice on object: 40 lbs
Weight of object: 72.0 lbs
Combined weight of ice and object: 112 lbs

DC6-48-60-18-8F Surge Arrestor
Weight of ice based on total radial SF area:
Depth (in): 31.4
Diameter(in): 10.2
Total weight of ice on object: 53 lbs
Weight of object: 29 lbs
Combined weight of ice and object: 82 lbs

PL 6x3/8
Weight of ice based on total radial SF area:
Height (in): 6
Width (in): 0.38
Per foot weight of ice on object: 13 plf

L 2-1/2x2-1/2 Angles
Weight of ice based on total radial SF area:
Height (in): 2.5
Width (in): 2.5
Per foot weight of ice on object: 9 plf

L 2x2 Angles
Weight of ice based on total radial SF area:
Height (in): 2
Width (in): 2
Per foot weight of ice on object: 7 plf

2" pipe
Per foot weight of ice:
diameter (in): 2.38
Per foot weight of ice on object: 7 plf

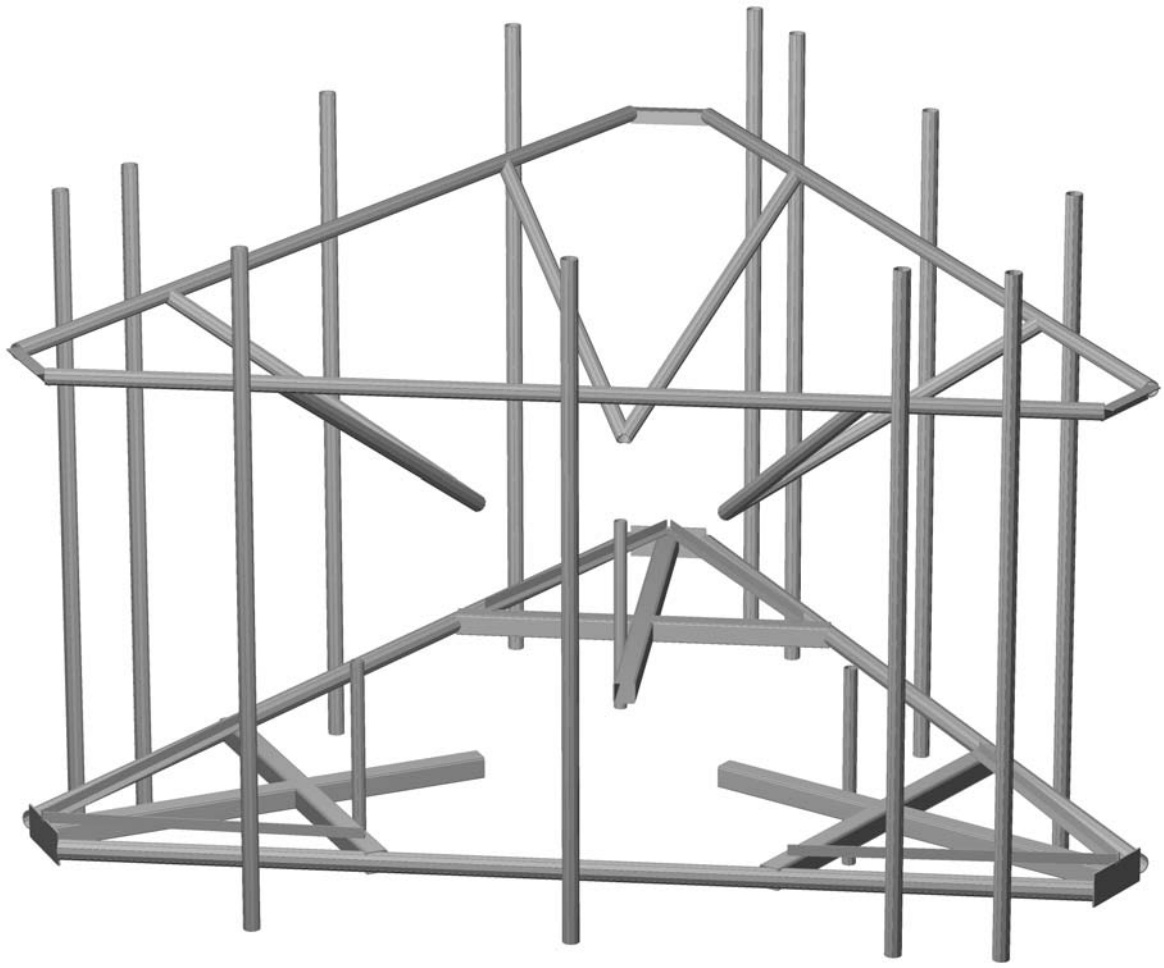
HSS 4x4
Weight of ice based on total radial SF area:
Height (in): 4
Width (in): 4
Per foot weight of ice on object: 12 plf

2-1/2" pipe
Per foot weight of ice:
diameter (in): 2.88
Per foot weight of ice on object: 8 plf

3" Pipe
Per foot weight of ice:
diameter (in): 3.5
Per foot weight of ice on object: 9 plf

HUDSON
Design Group LLC

Mount Calculations
(Proposed Conditions)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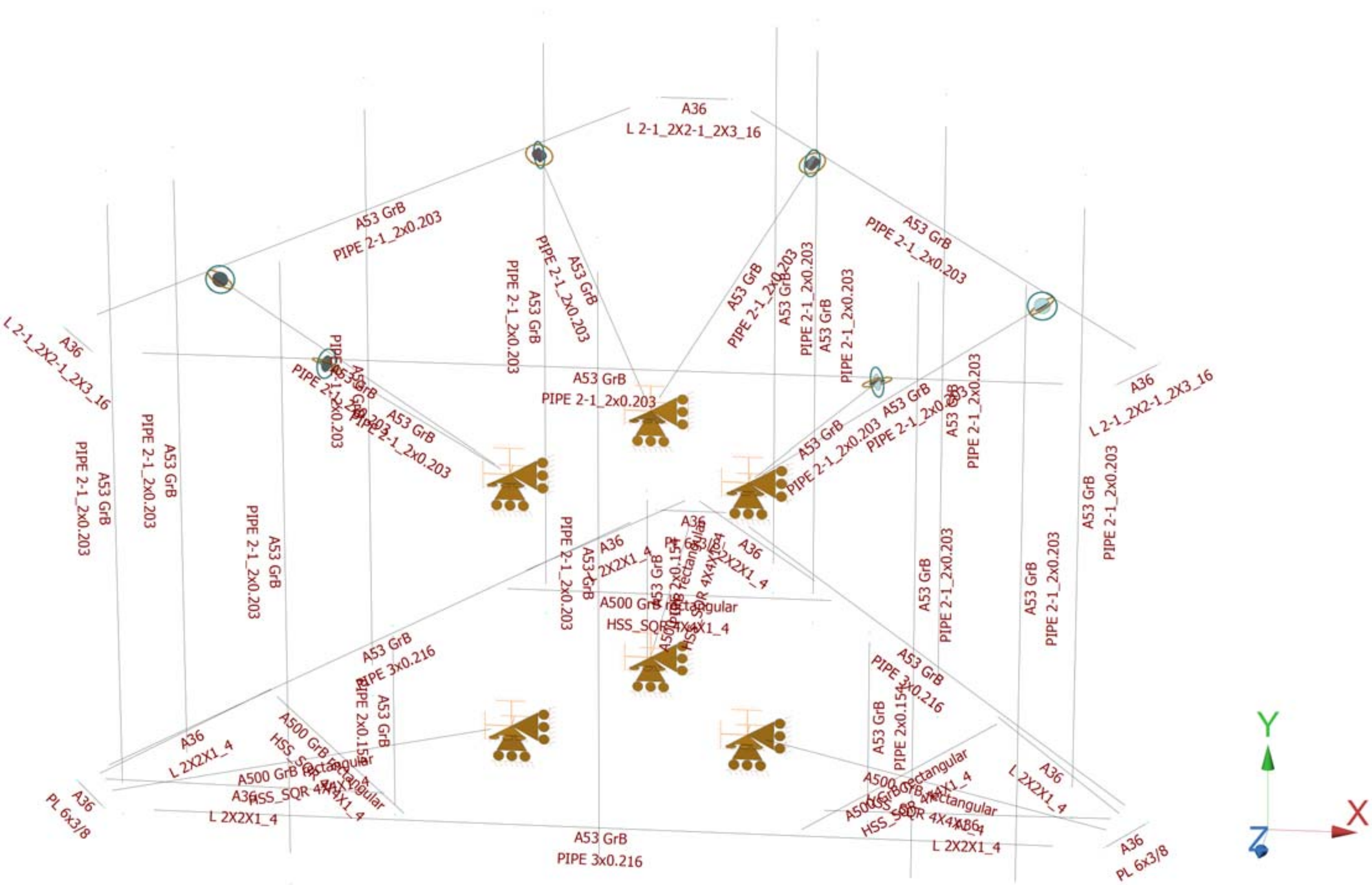

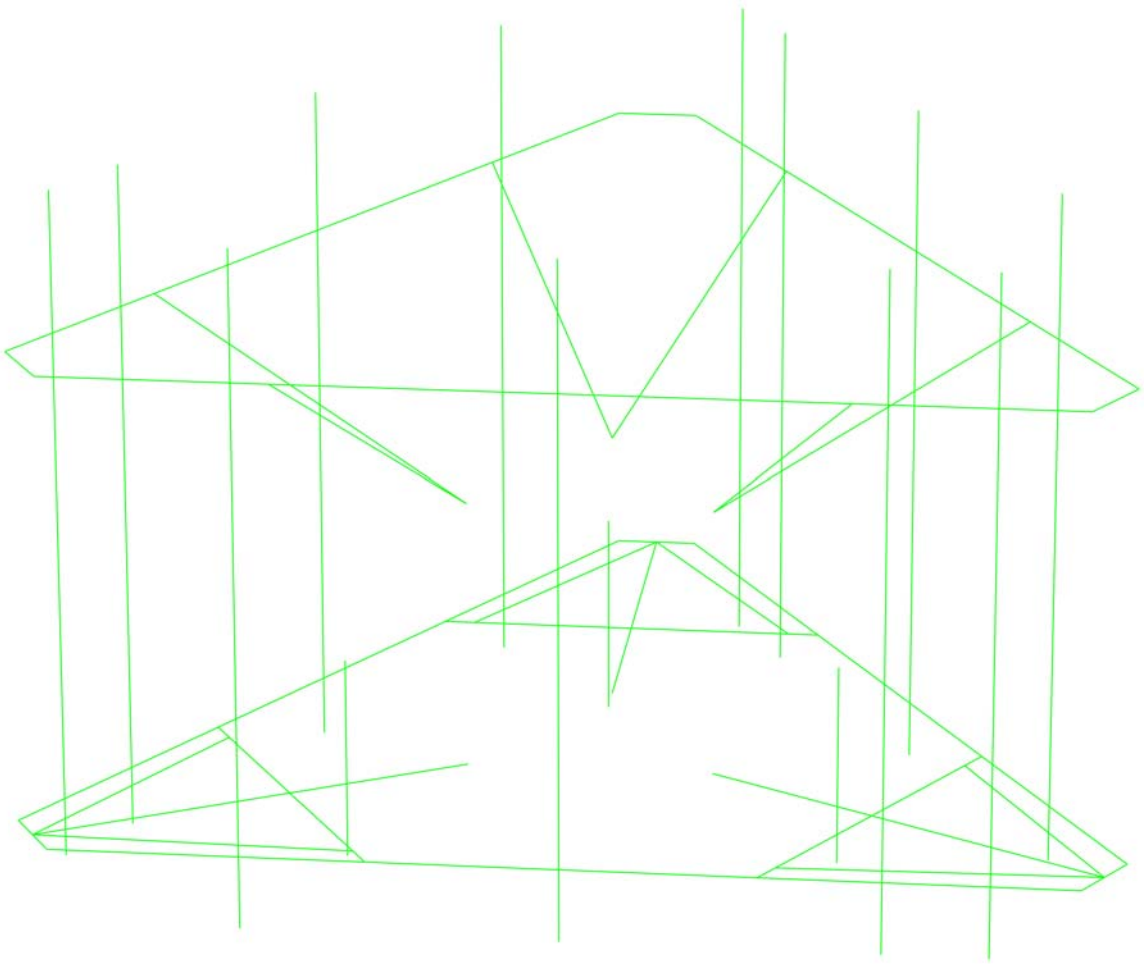
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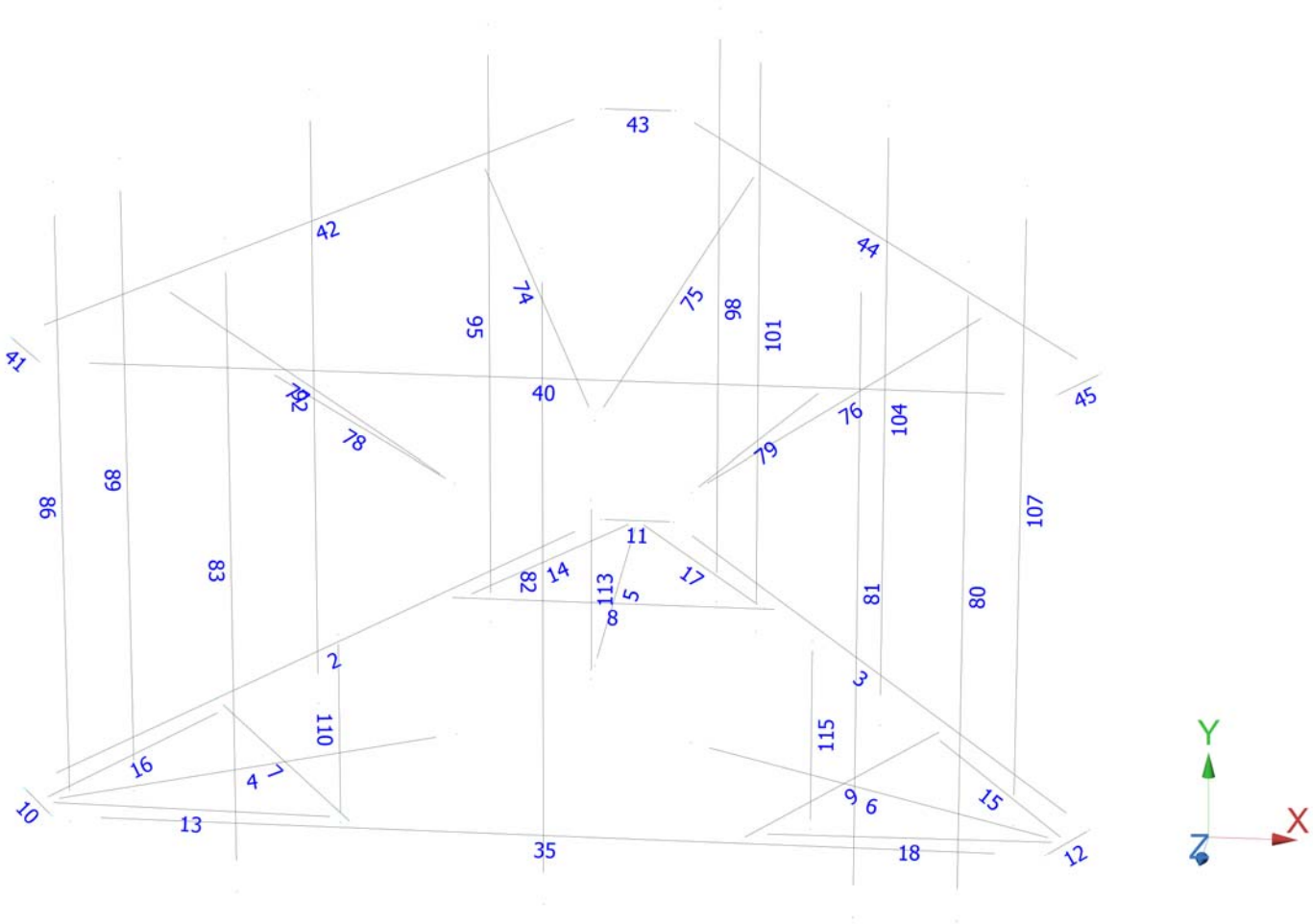
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Z

RAM® Elements
CONNECT Edition

Current Date: 4/27/2022 4:36 PM
Units system: English

Load data

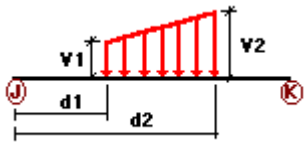
GLOSSARY

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 Antenna 1	No	LL
LLa2	500 lb Live Load Antenna 2	No	LL
LLa3	500 lb Live Load Antenna 3	No	LL
LLa4	500 lb Live Load Antenna 4	No	LL

Distributed force on members



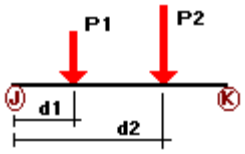
Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	4	y	-0.01	-0.01	0.00	No	3.90	No
	5	y	-0.01	-0.01	0.00	No	3.90	No
	6	y	-0.01	-0.01	0.00	No	3.90	No
	7	y	-0.01	0.00	0.00	No	0.00	No
	8	y	-0.01	0.00	0.00	No	0.00	No
	9	y	-0.01	0.00	0.00	No	0.00	No
	13	y	-0.01	0.00	0.00	No	0.00	No
	14	y	-0.01	0.00	0.00	No	0.00	No
	15	y	-0.01	0.00	0.00	No	0.00	No
	16	y	-0.01	0.00	0.00	No	0.00	No
	17	y	-0.01	0.00	0.00	No	0.00	No
	18	y	-0.01	0.00	0.00	No	0.00	No
W0	2	z	-0.016	0.00	0.00	No	0.00	No
	3	z	-0.016	0.00	0.00	No	0.00	No
	4	z	-0.019	0.00	0.00	No	0.00	No
	5	z	-0.019	0.00	0.00	No	0.00	No

	6	z	-0.019	0.00	0.00	No	0.00	No
	7	z	-0.019	0.00	0.00	No	0.00	No
	8	z	-0.019	0.00	0.00	No	0.00	No
	9	z	-0.019	0.00	0.00	No	0.00	No
	10	z	-0.047	0.00	0.00	No	0.00	No
	11	z	-0.047	0.00	0.00	No	0.00	No
	12	z	-0.047	0.00	0.00	No	0.00	No
	13	z	-0.016	0.00	0.00	No	0.00	No
	14	z	-0.016	0.00	0.00	No	0.00	No
	15	z	-0.016	0.00	0.00	No	0.00	No
	16	z	-0.016	0.00	0.00	No	0.00	No
	17	z	-0.016	0.00	0.00	No	0.00	No
	18	z	-0.016	0.00	0.00	No	0.00	No
	35	z	-0.016	0.00	0.00	No	0.00	No
	40	z	-0.013	0.00	0.00	No	0.00	No
	41	z	-0.019	0.00	0.00	No	0.00	No
	42	z	-0.013	0.00	0.00	No	0.00	No
	43	z	-0.019	0.00	0.00	No	0.00	No
	44	z	-0.013	0.00	0.00	No	0.00	No
	45	z	-0.019	0.00	0.00	No	0.00	No
	74	z	-0.013	0.00	0.00	No	0.00	No
	75	z	-0.013	0.00	0.00	No	0.00	No
	76	z	-0.013	0.00	0.00	No	0.00	No
	77	z	-0.013	0.00	0.00	No	0.00	No
	78	z	-0.013	0.00	0.00	No	0.00	No
	79	z	-0.013	0.00	0.00	No	0.00	No
	80	z	-0.013	0.00	0.00	No	0.00	No
	81	z	-0.013	-0.013	0.00	No	2.00	No
		z	-0.013	-0.013	8.00	No	10.00	No
	82	z	-0.013	-0.013	0.00	No	1.75	No
		z	-0.013	-0.013	8.25	No	10.00	No
	83	z	-0.013	-0.013	0.00	No	2.00	No
		z	-0.013	-0.013	8.00	No	10.00	No
	86	z	-0.013	0.00	0.00	No	0.00	No
	89	z	-0.013	0.00	0.00	No	0.00	No
	92	z	-0.013	0.00	0.00	No	0.00	No
	95	z	-0.013	0.00	0.00	No	0.00	No
	98	z	-0.013	0.00	0.00	No	0.00	No
	101	z	-0.013	0.00	0.00	No	0.00	No
	104	z	-0.013	0.00	0.00	No	0.00	No
	107	z	-0.013	0.00	0.00	No	0.00	No
	110	z	-0.011	0.00	0.00	No	0.00	No
	113	z	-0.011	0.00	0.00	No	0.00	No
	115	z	-0.011	0.00	0.00	No	0.00	No
W30	2	x	-0.016	0.00	0.00	No	0.00	No
	3	x	-0.016	0.00	0.00	No	0.00	No
	4	x	-0.019	0.00	0.00	No	0.00	No
	5	x	-0.019	0.00	0.00	No	0.00	No
	6	x	-0.019	0.00	0.00	No	0.00	No
	7	x	-0.019	0.00	0.00	No	0.00	No
	8	x	-0.019	0.00	0.00	No	0.00	No
	9	x	-0.019	0.00	0.00	No	0.00	No
	10	x	-0.047	0.00	0.00	No	0.00	No
	11	x	-0.047	0.00	0.00	No	0.00	No
	12	x	-0.047	0.00	0.00	No	0.00	No
	13	x	-0.016	0.00	0.00	No	0.00	No
	14	x	-0.016	0.00	0.00	No	0.00	No
	15	x	-0.016	0.00	0.00	No	0.00	No
	16	x	-0.016	0.00	0.00	No	0.00	No
	17	x	-0.016	0.00	0.00	No	0.00	No

	18	x	-0.016	0.00	0.00	No	0.00	No
	41	x	-0.019	0.00	0.00	No	0.00	No
	42	x	-0.013	0.00	0.00	No	0.00	No
	43	x	-0.019	0.00	0.00	No	0.00	No
	44	x	-0.013	0.00	0.00	No	0.00	No
	45	x	-0.019	0.00	0.00	No	0.00	No
	74	x	-0.013	0.00	0.00	No	0.00	No
	75	x	-0.013	0.00	0.00	No	0.00	No
	76	x	-0.013	0.00	0.00	No	0.00	No
	77	x	-0.013	0.00	0.00	No	0.00	No
	78	x	-0.013	0.00	0.00	No	0.00	No
	79	x	-0.013	0.00	0.00	No	0.00	No
	80	x	-0.013	0.00	0.00	No	0.00	No
	81	x	-0.013	0.00	0.00	No	0.00	No
	82	x	-0.013	0.00	0.00	No	0.00	No
	83	x	-0.013	0.00	0.00	No	0.00	No
	86	x	-0.013	0.00	0.00	No	0.00	No
	89	x	-0.013	0.00	0.00	No	0.00	No
	92	x	-0.013	0.00	0.00	No	0.00	No
	95	x	-0.013	0.00	0.00	No	0.00	No
	98	x	-0.013	0.00	0.00	No	0.00	No
	101	x	-0.013	0.00	0.00	No	0.00	No
	104	x	-0.013	0.00	0.00	No	0.00	No
	107	x	-0.013	0.00	0.00	No	0.00	No
	110	x	-0.011	0.00	0.00	No	0.00	No
	113	x	-0.011	0.00	0.00	No	0.00	No
	115	x	-0.011	0.00	0.00	No	0.00	No
Di	2	y	-0.009	0.00	0.00	No	0.00	No
	3	y	-0.009	0.00	0.00	No	0.00	No
	4	y	-0.012	0.00	0.00	No	0.00	No
	5	y	-0.012	0.00	0.00	No	0.00	No
	6	y	-0.012	0.00	0.00	No	0.00	No
	7	y	-0.012	0.00	0.00	No	0.00	No
	8	y	-0.012	0.00	0.00	No	0.00	No
	9	y	-0.012	0.00	0.00	No	0.00	No
	10	y	-0.013	0.00	0.00	No	0.00	No
	11	y	-0.013	0.00	0.00	No	0.00	No
	12	y	-0.013	0.00	0.00	No	0.00	No
	13	y	-0.007	0.00	0.00	No	0.00	No
	14	y	-0.007	0.00	0.00	No	0.00	No
	15	y	-0.007	0.00	0.00	No	0.00	No
	16	y	-0.007	0.00	0.00	No	0.00	No
	17	y	-0.007	0.00	0.00	No	0.00	No
	18	y	-0.007	0.00	0.00	No	0.00	No
	35	y	-0.009	0.00	0.00	No	0.00	No
	40	y	-0.008	0.00	0.00	No	0.00	No
	41	y	-0.009	0.00	0.00	No	0.00	No
	42	y	-0.008	0.00	0.00	No	0.00	No
	43	y	-0.009	0.00	0.00	No	0.00	No
	44	y	-0.008	0.00	0.00	No	0.00	No
	45	y	-0.009	0.00	0.00	No	0.00	No
	74	y	-0.008	0.00	0.00	No	0.00	No
	75	y	-0.008	0.00	0.00	No	0.00	No
	76	y	-0.008	0.00	0.00	No	0.00	No
	77	y	-0.008	0.00	0.00	No	0.00	No
	78	y	-0.008	0.00	0.00	No	0.00	No
	79	y	-0.008	0.00	0.00	No	0.00	No
	80	y	-0.008	0.00	0.00	No	0.00	No
	81	y	-0.008	0.00	0.00	No	0.00	No
	82	y	-0.008	0.00	0.00	No	0.00	No

83	y	-0.008	0.00	0.00	No	0.00	No
86	y	-0.008	0.00	0.00	No	0.00	No
89	y	-0.008	0.00	0.00	No	0.00	No
92	y	-0.008	0.00	0.00	No	0.00	No
95	y	-0.008	0.00	0.00	No	0.00	No
98	y	-0.008	0.00	0.00	No	0.00	No
101	y	-0.008	0.00	0.00	No	0.00	No
104	y	-0.008	0.00	0.00	No	0.00	No
107	y	-0.008	0.00	0.00	No	0.00	No
110	y	-0.007	0.00	0.00	No	0.00	No
113	y	-0.007	0.00	0.00	No	0.00	No
115	y	-0.007	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	81	y	-0.032	2.50	No
		y	-0.032	7.50	No
		y	-0.073	4.00	No
		y	-0.046	4.00	No
	82	y	-0.033	2.25	No
		y	-0.033	4.00	No
		y	-0.041	6.00	No
		y	-0.041	7.75	No
	83	y	-0.035	2.50	No
		y	-0.035	7.50	No
		y	-0.06	4.00	No
		y	-0.072	4.00	No
	89	y	-0.032	2.50	No
		y	-0.032	7.50	No
		y	-0.073	4.00	No
		y	-0.046	4.00	No
	92	y	-0.033	2.25	No
		y	-0.033	4.00	No
		y	-0.041	6.00	No
		y	-0.041	7.75	No
	95	y	-0.035	2.50	No
		y	-0.035	7.50	No
		y	-0.06	4.00	No
		y	-0.072	4.00	No
	101	y	-0.032	2.50	No
		y	-0.032	7.50	No
		y	-0.073	4.00	No
		y	-0.046	4.00	No
	104	y	-0.033	2.25	No
		y	-0.033	4.00	No
		y	-0.041	6.00	No
		y	-0.041	7.75	No
	107	y	-0.035	2.50	No

		y	-0.035	7.50	No
		y	-0.06	4.00	No
		y	-0.072	4.00	No
	110	y	-0.029	1.00	No
	113	y	-0.029	1.00	No
	115	y	-0.029	1.00	No
W0	81	z	-0.30	2.50	No
		z	-0.30	7.50	No
		z	-0.034	4.00	No
		z	-0.021	4.00	No
	82	z	-0.098	2.25	No
		z	-0.098	4.00	No
		z	-0.095	6.00	No
		z	-0.095	7.75	No
	83	z	-0.296	2.50	No
		z	-0.296	7.50	No
		z	-0.031	4.00	No
		z	-0.032	4.00	No
	89	z	-0.174	2.50	No
		z	-0.174	7.50	No
		z	-0.077	4.00	No
	92	z	-0.06	2.25	No
		z	-0.06	4.00	No
		z	-0.072	6.00	No
		z	-0.072	7.75	No
	95	z	-0.172	2.50	No
		z	-0.172	7.50	No
		z	-0.078	4.00	No
	101	z	-0.174	2.50	No
		z	-0.174	7.50	No
		z	-0.077	4.00	No
	104	z	-0.06	2.25	No
		z	-0.06	4.00	No
		z	-0.072	6.00	No
		z	-0.072	7.75	No
	107	z	-0.172	2.50	No
		z	-0.172	7.50	No
		z	-0.078	4.00	No
	110	z	-0.072	1.00	No
	113	z	-0.072	1.00	No
	115	z	-0.072	1.00	No
W30	81	x	-0.133	2.50	No
		x	-0.133	7.50	No
		x	-0.092	4.00	No
	82	x	-0.047	2.25	No
		x	-0.047	4.00	No
		x	-0.064	6.00	No
		x	-0.064	7.75	No
	83	x	-0.131	2.50	No
		x	-0.131	7.50	No
		x	-0.094	4.00	No
	89	x	-0.258	2.50	No
		x	-0.258	7.50	No
		x	-0.049	4.00	No
	92	x	-0.085	2.25	No
		x	-0.085	4.00	No
		x	-0.087	6.00	No
		x	-0.087	7.75	No
	95	x	-0.255	2.50	No
		x	-0.255	7.50	No

		x	-0.047	4.00	No
	101	x	-0.258	2.50	No
		x	-0.258	7.50	No
		x	-0.049	4.00	No
	104	x	-0.085	2.25	No
		x	-0.085	4.00	No
		x	-0.087	6.00	No
		x	-0.087	7.75	No
	107	x	-0.255	2.50	No
		x	-0.255	7.50	No
		x	-0.047	4.00	No
	110	x	-0.072	1.00	No
	113	x	-0.072	1.00	No
	115	x	-0.072	1.00	No
Di	81	y	-0.124	2.50	No
		y	-0.124	7.50	No
		y	-0.046	4.00	No
		y	-0.039	4.00	No
	82	y	-0.044	2.25	No
		y	-0.044	4.00	No
		y	-0.046	6.00	No
		y	-0.046	7.75	No
	83	y	-0.122	2.50	No
		y	-0.122	7.50	No
		y	-0.045	4.00	No
		y	-0.04	4.00	No
	89	y	-0.124	2.50	No
		y	-0.124	7.50	No
		y	-0.046	4.00	No
		y	-0.039	4.00	No
	92	y	-0.044	2.25	No
		y	-0.044	4.00	No
		y	-0.046	6.00	No
		y	-0.046	7.75	No
	95	y	-0.122	2.50	No
		y	-0.122	7.50	No
		y	-0.045	4.00	No
		y	-0.04	4.00	No
	101	y	-0.124	2.50	No
		y	-0.124	7.50	No
		y	-0.046	4.00	No
		y	-0.039	4.00	No
	104	y	-0.044	2.25	No
		y	-0.044	4.00	No
		y	-0.046	6.00	No
		y	-0.046	7.75	No
	107	y	-0.122	2.50	No
		y	-0.122	7.50	No
		y	-0.045	4.00	No
		y	-0.04	4.00	No
	110	y	-0.053	1.00	No
	113	y	-0.053	1.00	No
	115	y	-0.053	1.00	No
Wi0	81	z	-0.049	2.50	No
		z	-0.049	7.50	No
		z	-0.009	4.00	No
		z	-0.007	4.00	No
	82	z	-0.018	2.25	No
		z	-0.018	4.00	No
		z	-0.017	6.00	No

		z	-0.017	7.75	No
	83	z	-0.049	2.50	No
		z	-0.049	7.50	No
		z	-0.008	4.00	No
		z	-0.008	4.00	No
	89	z	-0.031	2.50	No
		z	-0.031	7.50	No
		z	-0.015	4.00	No
	92	z	-0.012	2.25	No
		z	-0.012	4.00	No
		z	-0.014	6.00	No
		z	-0.014	7.75	No
	95	z	-0.031	2.50	No
		z	-0.031	7.50	No
		z	-0.016	4.00	No
	101	z	-0.031	2.50	No
		z	-0.031	7.50	No
		z	-0.015	4.00	No
	104	z	-0.012	2.25	No
		z	-0.012	4.00	No
		z	-0.014	6.00	No
		z	-0.014	7.75	No
	107	z	-0.031	2.50	No
		z	-0.031	7.50	No
		z	-0.016	4.00	No
	110	z	-0.014	1.00	No
	113	z	-0.014	1.00	No
	115	z	-0.014	1.00	No
Wi30	81	x	-0.025	2.50	No
		x	-0.025	7.50	No
		x	-0.018	4.00	No
	82	x	-0.01	2.25	No
		x	-0.01	4.00	No
		x	-0.012	6.00	No
		x	-0.012	7.75	No
	83	x	-0.025	2.50	No
		x	-0.025	7.50	No
		x	-0.018	4.00	No
	89	x	-0.043	2.50	No
		x	-0.043	7.50	No
		x	-0.011	4.00	No
	92	x	-0.016	2.25	No
		x	-0.016	4.00	No
		x	-0.016	6.00	No
		x	-0.016	7.75	No
	95	x	-0.042	2.50	No
		x	-0.042	7.50	No
		x	-0.011	4.00	No
	101	x	-0.043	2.50	No
		x	-0.043	7.50	No
		x	-0.011	4.00	No
	104	x	-0.016	2.25	No
		x	-0.016	4.00	No
		x	-0.016	6.00	No
		x	-0.016	7.75	No
	107	x	-0.042	2.50	No
		x	-0.042	7.50	No
		x	-0.011	4.00	No
	110	x	-0.014	1.00	No
	113	x	-0.014	1.00	No

	115	x	-0.014	1.00	No
WL0	81	z	-0.015	2.50	No
		z	-0.015	7.50	No
		z	-0.002	4.00	No
		z	-0.001	4.00	No
	82	z	-0.005	2.25	No
		z	-0.005	4.00	No
		z	-0.005	6.00	No
		z	-0.005	7.75	No
	83	z	-0.015	2.50	No
		z	-0.015	7.50	No
		z	-0.002	4.00	No
		z	-0.002	4.00	No
	89	z	-0.009	2.50	No
		z	-0.009	7.50	No
		z	-0.004	4.00	No
	92	z	-0.003	2.25	No
		z	-0.003	4.00	No
		z	-0.004	6.00	No
		z	-0.004	7.75	No
	95	z	-0.009	2.50	No
		z	-0.009	7.50	No
		z	-0.004	4.00	No
	101	z	-0.009	2.50	No
		z	-0.009	7.50	No
		z	-0.004	4.00	No
	104	z	-0.003	2.25	No
		z	-0.003	4.00	No
		z	-0.004	6.00	No
		z	-0.004	7.75	No
	107	z	-0.009	2.50	No
		z	-0.009	7.50	No
		z	-0.004	4.00	No
	110	z	-0.004	1.00	No
	113	z	-0.004	1.00	No
	115	z	-0.004	1.00	No
WL30	81	x	-0.007	2.50	No
		x	-0.007	7.50	No
		x	-0.005	4.00	No
	82	x	-0.003	2.25	No
		x	-0.003	4.00	No
		x	-0.004	6.00	No
		x	-0.004	7.75	No
	83	x	-0.007	2.50	No
		x	-0.007	7.50	No
		x	-0.005	4.00	No
	89	x	-0.013	2.50	No
		x	-0.013	7.50	No
		x	-0.002	4.00	No
	92	x	-0.005	2.25	No
		x	-0.005	4.00	No
		x	-0.005	6.00	No
		x	-0.005	7.75	No
	95	x	-0.013	2.50	No
		x	-0.013	7.50	No
		x	-0.002	4.00	No
	101	x	-0.013	2.50	No
		x	-0.013	7.50	No
		x	-0.002	4.00	No
	104	x	-0.005	2.25	No

		x	-0.005	4.00	No
		x	-0.005	6.00	No
		x	-0.005	7.75	No
	107	x	-0.013	2.50	No
		x	-0.013	7.50	No
		x	-0.002	4.00	No
	110	x	-0.004	1.00	No
	113	x	-0.004	1.00	No
	115	x	-0.004	1.00	No
LL1	40	y	-0.25	50.00	Yes
LL2	40	y	-0.25	100.00	Yes
LLa1	80	y	-0.50	50.00	Yes
LLa2	81	y	-0.50	50.00	Yes
LLa3	82	y	-0.50	50.00	Yes
LLa4	83	y	-0.50	50.00	Yes

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 Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	500 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	500 lb Live Load Antenna 4	No	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

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Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+W0
LC2=1.2DL+W30
LC3=1.2DL-W0
LC4=1.2DL-W30
LC5=0.9DL+W0
LC6=0.9DL+W30
LC7=0.9DL-W0
LC8=0.9DL-W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.4DL
LC14=1.2DL+1.6LL1
LC15=1.2DL+1.6LL2
LC16=1.2DL+WL0+1.6LLa1
LC17=1.2DL+WL30+1.6LLa1
LC18=1.2DL-WL0+1.6LLa1
LC19=1.2DL-WL30+1.6LLa1
LC20=1.2DL+WL0+1.6LLa2
LC21=1.2DL+WL30+1.6LLa2
LC22=1.2DL-WL0+1.6LLa2
LC23=1.2DL-WL30+1.6LLa2
LC24=1.2DL+WL0+1.6LLa3
LC25=1.2DL+WL30+1.6LLa3
LC26=1.2DL-WL0+1.6LLa3
LC27=1.2DL-WL30+1.6LLa3
LC28=1.2DL+WL0+1.6LLa4
LC29=1.2DL+WL30+1.6LLa4
LC30=1.2DL-WL0+1.6LLa4
LC31=1.2DL-WL30+1.6LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	**4**	LC3 at 100.00%	0.15	OK	
		5	LC4 at 100.00%	**0.18**	**OK**	
		6	LC3 at 100.00%	0.15	OK	
		7	LC2 at 50.00%	0.16	OK	
		8	LC1 at 48.44%	0.15	OK	
		9	LC4 at 48.44%	0.16	OK	
	L 2-1_2X2-1_2X3_16	**41**	LC4 at 100.00%	0.38	OK	
		43	LC3 at 0.00%	0.43	OK	
		45	LC2 at 100.00%	**0.44**	**OK**	
	L 2X2X1_4	**13**	LC3 at 100.00%	0.17	OK	
		14	LC1 at 100.00%	0.17	OK	
		15	LC4 at 100.00%	**0.18**	**OK**	
		16	LC2 at 0.00%	0.17	OK	
		17	LC1 at 0.00%	0.16	OK	
		18	LC3 at 0.00%	0.16	OK	
	PIPE 2-1_2x0.203	**40**	LC1 at 76.79%	0.20	OK	

	42	LC3 at 76.79%	0.23	OK
	44	LC2 at 76.79%	0.24	OK
	74	LC2 at 0.00%	0.23	OK
	75	LC4 at 0.00%	**0.25**	**OK**
	76	LC4 at 0.00%	0.19	OK
	77	LC1 at 0.00%	0.21	OK
	78	LC3 at 0.00%	0.14	OK
	79	LC3 at 0.00%	0.16	OK
	80	LC4 at 89.58%	0.10	OK
	81	LC3 at 75.00%	0.12	OK
	82	LC3 at 60.42%	0.10	OK
	83	LC3 at 75.00%	0.13	OK
	86	LC2 at 89.58%	0.14	OK
	89	LC2 at 89.58%	0.15	OK
	92	LC1 at 89.58%	0.12	OK
	95	LC1 at 89.58%	0.17	OK
	98	LC1 at 89.58%	0.12	OK
	101	LC1 at 89.58%	0.15	OK
	104	LC1 at 89.58%	0.12	OK
	107	LC4 at 89.58%	0.17	OK
PIPE 2x0.154	**110**	LC3 at 65.63%	0.05	OK
	113	LC2 at 65.63%	**0.05**	**OK**
	115	LC3 at 65.63%	0.05	OK
PIPE 3x0.216	**2**	LC1 at 81.25%	0.13	OK
	3	LC4 at 81.25%	0.16	OK
	35	LC25 at 50.00%	**0.17**	**OK**
PL 6x3/8	**10**	LC2 at 50.00%	0.13	OK
	11	LC1 at 50.00%	**0.15**	**OK**
	12	LC4 at 46.88%	0.14	OK

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Geometry data

GLOSSARY

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

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
3	0.596	-4.00	-8.7157	0
4	7.846	-4.00	3.8417	0
9	-7.846	-4.00	3.8417	0
10	-0.596	-4.00	-8.7157	0
12	7.25	-4.00	4.874	0
13	-7.25	-4.00	4.874	0
14	7.548	-4.00	4.3578	0
15	1.7716	-4.00	1.0228	0
18	-7.548	-4.00	4.3578	0
19	-1.7716	-4.00	1.0228	0
20	0.00	-4.00	-8.7157	0
21	0.00	-4.00	-2.0457	0
22	2.846	-4.00	-4.8186	0
23	5.596	-4.00	-0.0554	0
26	-2.846	-4.00	-4.8186	0
27	-5.596	-4.00	-0.0554	0
28	-2.75	-4.00	4.874	0
29	2.75	-4.00	4.874	0
30	5.3725	-4.00	0.3317	0
31	2.9735	-4.00	4.4869	0
34	-2.9735	-4.00	4.4869	0
35	-5.3725	-4.00	0.3317	0
36	-2.399	-4.00	-4.8186	0

37	2.399	-4.00	-4.8186	0
108	-7.25	3.00	4.874	0
109	-7.846	3.00	3.8417	0
110	-0.596	3.00	-8.7157	0
111	0.596	3.00	-8.7157	0
112	7.25	3.00	4.874	0
113	7.846	3.00	3.8417	0
114	-1.7716	0.00	1.0228	0
115	0.00	0.00	-2.0457	0
116	1.7716	0.00	1.0228	0
173	6.221	3.00	1.0271	0
174	-4.00	3.00	4.874	0
175	-2.221	3.00	-5.9011	0
176	4.00	3.00	4.874	0
177	-6.221	3.00	1.0271	0
178	2.221	3.00	-5.9011	0
182	6.00	5.00	5.074	0
183	6.00	-5.00	5.074	0
184	4.50	5.00	5.074	0
185	4.50	-5.00	5.074	0
186	0.00	5.00	5.074	0
187	0.00	-5.00	5.074	0
188	-4.50	5.00	5.074	0
189	-4.50	-5.00	5.074	0
198	-7.3942	5.00	2.6592	0
199	1.3942	5.00	-7.7332	0
200	-7.3942	-5.00	2.6592	0
201	1.3942	-5.00	-7.7332	0
210	-6.6442	5.00	1.3601	0
211	2.1442	5.00	-6.4341	0
212	-6.6442	-5.00	1.3601	0
213	2.1442	-5.00	-6.4341	0
222	-4.3942	5.00	-2.537	0
223	4.3942	5.00	-2.537	0
224	-4.3942	-5.00	-2.537	0
225	4.3942	-5.00	-2.537	0
234	-2.1442	5.00	-6.4341	0
235	6.6442	5.00	1.3601	0
236	-2.1442	-5.00	-6.4341	0
237	6.6442	-5.00	1.3601	0
244	-3.3707	-2.00	2.2531	0
245	-3.3707	-5.00	2.2531	0
250	-0.2658	-2.00	-4.0457	0
251	-0.2658	-5.00	-4.0457	0
254	3.6366	-2.00	1.7926	0
255	3.6366	-5.00	1.7926	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
15	1	1	1	1	1	1
19	1	1	1	1	1	1
21	1	1	1	1	1	1
114	1	1	1	1	1	1
115	1	1	1	1	1	1

116	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
2	9	10		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
3	3	4		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
4	18	19		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
5	20	21		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
6	14	15		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
7	28	27		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
8	26	22		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
9	23	29		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
10	13	9		PL 6x3/8	A36	0.00	0.00	0.00
11	10	3		PL 6x3/8	A36	0.00	0.00	0.00
12	12	4		PL 6x3/8	A36	0.00	0.00	0.00
13	34	18		L 2X2X1_4	A36	0.00	0.00	0.00
14	36	20		L 2X2X1_4	A36	0.00	0.00	0.00
15	30	14		L 2X2X1_4	A36	0.00	0.00	0.00
16	18	35		L 2X2X1_4	A36	0.00	0.00	0.00
17	20	37		L 2X2X1_4	A36	0.00	0.00	0.00
18	14	31		L 2X2X1_4	A36	0.00	0.00	0.00
35	12	13		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
40	112	108		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
41	108	109		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
42	109	110		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
43	110	111		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
44	111	113		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
45	112	113		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
74	115	175		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
75	115	178		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
76	116	173		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
77	114	177		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
78	114	174		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
79	116	176		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
80	182	183		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
81	184	185		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
82	186	187		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
83	188	189		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
86	198	200		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
89	210	212		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
92	222	224		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
95	234	236		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
98	199	201		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
101	211	213		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
104	223	225		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
107	235	237		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
110	244	245		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
113	250	251		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
115	254	255		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

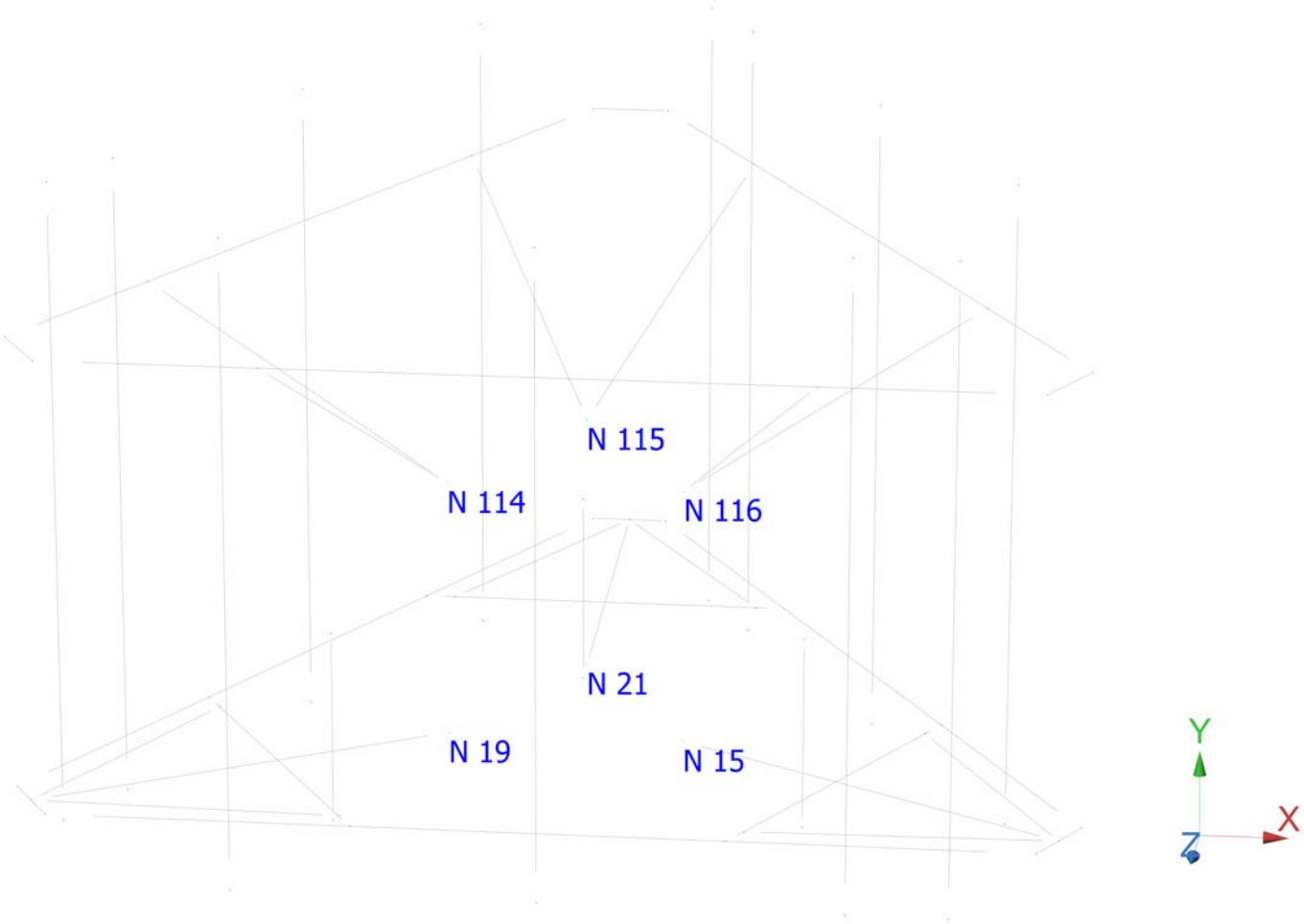
Member	Rotation [Deg]	Axes23	NX	NY	NZ
41	180.00	0	0.00	0.00	0.00
43	180.00	0	0.00	0.00	0.00
45	90.00	0	0.00	0.00	0.00

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
13	0.00	3.00	0.00	0.00	3.00	0.00
14	0.00	3.00	0.00	0.00	3.00	0.00
15	0.00	3.00	0.00	0.00	3.00	0.00
16	0.00	3.00	0.00	0.00	3.00	0.00
17	0.00	3.00	0.00	0.00	3.00	0.00
18	0.00	3.00	0.00	0.00	3.00	0.00

Hinges

	Node-J				Node-K						
Member	M33	M22	V3	V2	M33	M22	V3	V2	TOR	AXL	Axial rigidity
74	0	0	0	0	1	1	0	0	0	0	Full
75	0	0	0	0	1	1	0	0	0	0	Full
76	0	0	0	0	1	1	0	0	0	0	Full
77	0	0	0	0	1	1	0	0	0	0	Full
78	0	0	0	0	1	1	0	0	0	0	Full
79	0	0	0	0	1	1	0	0	0	0	Full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N 114
N 116
N 21
N 19
N 15
Y
X
Z

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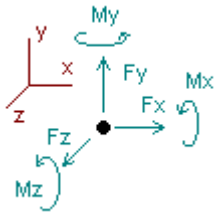
Analysis result

Envelope for nodal reactions

Note.- **Ic** is the controlling load condition



Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.2DL+W0
LC2=1.2DL+W30
LC3=1.2DL-W0
LC4=1.2DL-W30
LC5=0.9DL+W0
LC6=0.9DL+W30
LC7=0.9DL-W0
LC8=0.9DL-W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.4DL
LC14=1.2DL+1.6LL1
LC15=1.2DL+1.6LL2
LC16=1.2DL+WL0+1.6LLa1
LC17=1.2DL+WL30+1.6LLa1
LC18=1.2DL-WL0+1.6LLa1
LC19=1.2DL-WL30+1.6LLa1
LC20=1.2DL+WL0+1.6LLa2
LC21=1.2DL+WL30+1.6LLa2
LC22=1.2DL-WL0+1.6LLa2
LC23=1.2DL-WL30+1.6LLa2
LC24=1.2DL+WL0+1.6LLa3
LC25=1.2DL+WL30+1.6LLa3
LC26=1.2DL-WL0+1.6LLa3
LC27=1.2DL-WL30+1.6LLa3
LC28=1.2DL+WL0+1.6LLa4
LC29=1.2DL+WL30+1.6LLa4
LC30=1.2DL-WL0+1.6LLa4
LC31=1.2DL-WL30+1.6LLa4

		Forces						Moments					
Node		**Fx** [Kip]	**Ic**	**Fy** [Kip]	**Ic**	**Fz** [Kip]	**Ic**	**Mx** [Kip*ft]	**Ic**	**My** [Kip*ft]	**Ic**	**Mz** [Kip*ft]	**Ic**
15	Max	1.538	LC2	1.251	LC12	1.204	LC1	0.32405	LC5	1.10155	LC7	1.62247	LC12
	Min	-1.491	LC8	0.147	LC6	-1.164	LC7	-1.14883	LC3	-1.14071	LC1	-0.00827	LC6
19	Max	1.492	LC6	1.251	LC10	1.184	LC1	0.32362	LC5	1.10873	LC5	-0.02235	LC8
	Min	-1.551	LC4	0.156	LC8	-1.164	LC7	-1.17598	LC3	-1.14514	LC3	-1.59416	LC10

21	Max	1.167	LC2	1.256	LC9	1.830	LC5	1.83925	LC9	1.91035	LC8	0.74660	LC8
	Min	-1.156	LC8	0.128	LC7	-1.891	LC3	0.18573	LC7	-1.94814	LC2	-0.76288	LC2
114	Max	1.320	LC6	1.105	LC4	0.954	LC1	0.48211	LC5	0.50641	LC1	0.30877	LC8
	Min	-1.436	LC4	-0.855	LC6	-0.883	LC7	-0.58533	LC3	-0.45419	LC7	-0.55144	LC2
115	Max	0.725	LC6	1.198	LC3	1.495	LC5	0.61363	LC1	0.84024	LC4	0.69197	LC4
	Min	-0.729	LC4	-0.949	LC5	-1.629	LC3	-0.35142	LC7	-0.78657	LC6	-0.65980	LC6
116	Max	1.421	LC2	1.106	LC2	0.974	LC1	0.44509	LC5	0.51451	LC3	0.55110	LC4
	Min	-1.300	LC8	-0.856	LC8	-0.909	LC7	-0.60382	LC3	-0.45959	LC5	-0.34054	LC6

HUDSON
Design Group LLC

Connection Check

Date: 4/27/2022
Project Name: FAIRFIELD GREENFIELD HILL
Project No.: CT2128
Designed By: KSBM **Checked By:** MSC

HUDSON Design Group LLC

CHECK CONNECTION CAPACITY (Worst Case)

Reference: AISC Steel Construction Manual 14th Edition (ASD)

Bolt Type = A325 5/8" (Threaded Rod)

Allowable Tensile Load =

F_{Tall} = 13806 lbs.

Allowable Shear Load =

F_{Vall} = 8283 lbs.

TENSILE FORCES

Reaction **F =** 1891 lbs. (See Bentley Output)

SHEAR FORCES

Reactions in X direction: 1167 lbs. (See Bentley Output)
Reactions in Y direction: 1256 lbs. (See Bentley Output)

Resultant: 1714 lbs.

No. of Supports = 1
No. of Bolts / Support = 3

Tension Design Load /Bolts =

f_t = 630.33 lbs. < 13806 lbs. **Therefore, OK !**

Shear Design Load / Bolts=

f_v = 571.49 lbs. < 8283 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.046	+	0.069	=	0.115	<	1.0	**Therefore, OK !**

Exhibit F

Power Density/RF Emissions Report

C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
603-644-2800
support@csquaredsystems.com

Calculated Radio Frequency Exposure

CT2128

3965 Congress Street, Fairfield, CT

July 17, 2022

Table of Contents

List of Tables

List of Figures

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modification of AT&T antenna arrays on the existing monopole located at 3965 Congress Street in Fairfield, CT. The coordinates of the existing monopole are 41-11-18.17 N, 73-17-56.59 W

AT&T is proposing the following:

1) Install twelve (12) multi-band antennas (four (4) per sector) to support its commercial LTE network and the FirstNet National Public Safety Broadband Network ("NPSBN").

This report considers the planned antenna configuration for AT&T[1] to derive the resulting % Maximum Permissible Exposure of its proposed installation.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

[1] As referenced to AT&T's Radio Frequency Design Sheet dated 4/5/22.

3. RF Exposure Calculation Methods

The power density calculation results were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{1.6^2 \times 1.64 \times \text{ERP}}{4\pi \times R^2}\right) \text{X Off Beam Loss}$$

Where:

ERP = Effective Radiated Power

R = Radial Distance = $\sqrt{\left(H^2 + V^2\right)}$

H = Horizontal Distance from antenna

V = Vertical Distance from radiation center of antenna

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all antenna channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not consider actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final installations.

4. Calculation Results

Table 1 below outlines the cumulative power density information for the AT&T modification to the existing monopole facility at the site. The proposed antennas are directional in nature; therefore, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical pattern of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	% MPE
T-Mobile	116	2100	2	2308	0.1372	1.0000	1.37%
T-Mobile	116	1900	2	2057	0.1223	1.0000	1.22%
T-Mobile	116	1900	4	1028	0.1222	1.0000	1.22%
T-Mobile	116	700	2	649	0.0386	0.4667	0.83%
T-Mobile	116	600	2	592	0.0352	0.4000	0.88%
T-Mobile	116	600	1	1578	0.0469	0.4000	1.17%
T-Mobile	116	1900	2	2204	0.1310	1.0000	1.31%
T-Mobile	116	2100	2	1295	0.0770	1.0000	0.77%
T-Mobile	116	2500	2	6413	0.3812	1.0000	3.81%
T-Mobile	116	2500	2	6413	0.3812	1.0000	3.81%
Sprint	138	850	1	438	0.0090	0.5667	0.16%
Sprint	138	850	2	438	0.0181	0.5667	0.32%
Sprint	138	1900	5	623	0.0643	1.0000	0.64%
Sprint	138	1900	2	1556	0.0642	1.0000	0.64%
Sprint	138	2500	8	778	0.1285	1.0000	1.28%
Sprint	138	11500	2	795	0.0328	1.0000	0.33%
Sprint	150	19500	2	576	0.0200	1.0000	0.20%
Nextel	156	851	18	100	0.0288	0.5673	0.51%
Town	108	470.46	1	40	0.0014	0.3136	0.04%
Town	108	470.47	1	40	0.0014	0.3136	0.04%
Town	108	470.48	1	40	0.0014	0.3137	0.04%
Verizon	80	1970	1	1561	0.1025	1.0000	1.03%
Verizon	80	869	1	500	0.0328	0.5793	0.57%
Verizon	80	880	1	500	0.0328	0.5867	1.51%
Verizon	80	2145	1	1528	0.1003	1.0000	5.45%
Verizon	80	746	1	646	0.0424	0.4973	3.03%
Verizon	80	746	1	50	0.0033	0.4973	1.90%
AT&T	128	739	2	2749	0.0133	0.4927	2.70%
AT&T	128	763	2	2625	0.0127	0.5087	2.49%
AT&T	128	885	1	3229	0.0078	0.5900	1.32%
AT&T	128	1900	3	6297	0.0457	1.0000	4.57%
AT&T	128	2100	2	10121	0.0489	1.0000	4.89%
AT&T	128	2300	2	9665	0.0467	1.0000	4.67%
AT&T	129.6	3500	1	24286	0.0572	1.0000	5.72%
AT&T	126.1	3500	1	24286	0.0606	1.0000	6.06%
						Total	**66.52%**

Table 1: Carrier Information[2]

[2] The existing record in the CSC Power Density Table for AT&T should be removed and replaced with the updated AT&T technologies and values provided in Table 1. The power density information for T-Mobile, Sprint, Nextel, The Town of Fairlfield, Verizon and T-Mobile was taken directly from the CSC database dated 01/21/2022. Please note that % MPE values listed are rounded to two decimal points and the total % MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not identically match the total value reflected in the table.

5. Conclusion

The above analysis concludes that RF exposure at ground level from the proposed facility will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using conservative calculation methods, the highest expected percent of Maximum Permissible Exposure at ground level for AT&T's equipment is **66.52% of the FCC General Population/Uncontrolled limit**.

As noted previously, the calculated % MPE levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in FCC OET Bulletin 65 Edition 97-01, ANSI/IEEE Std. C95.1 and ANSI/IEEE Std. C95.3.

June 17, 2022
Date

Reviewed/Approved By: Martin J. Lavin
Senior RF Engineer
C Squared Systems, LLC

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2005, IEEE Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2002 (R2008), IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300 GHz IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure[3]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure[4]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

[3] Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure

[4] General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure

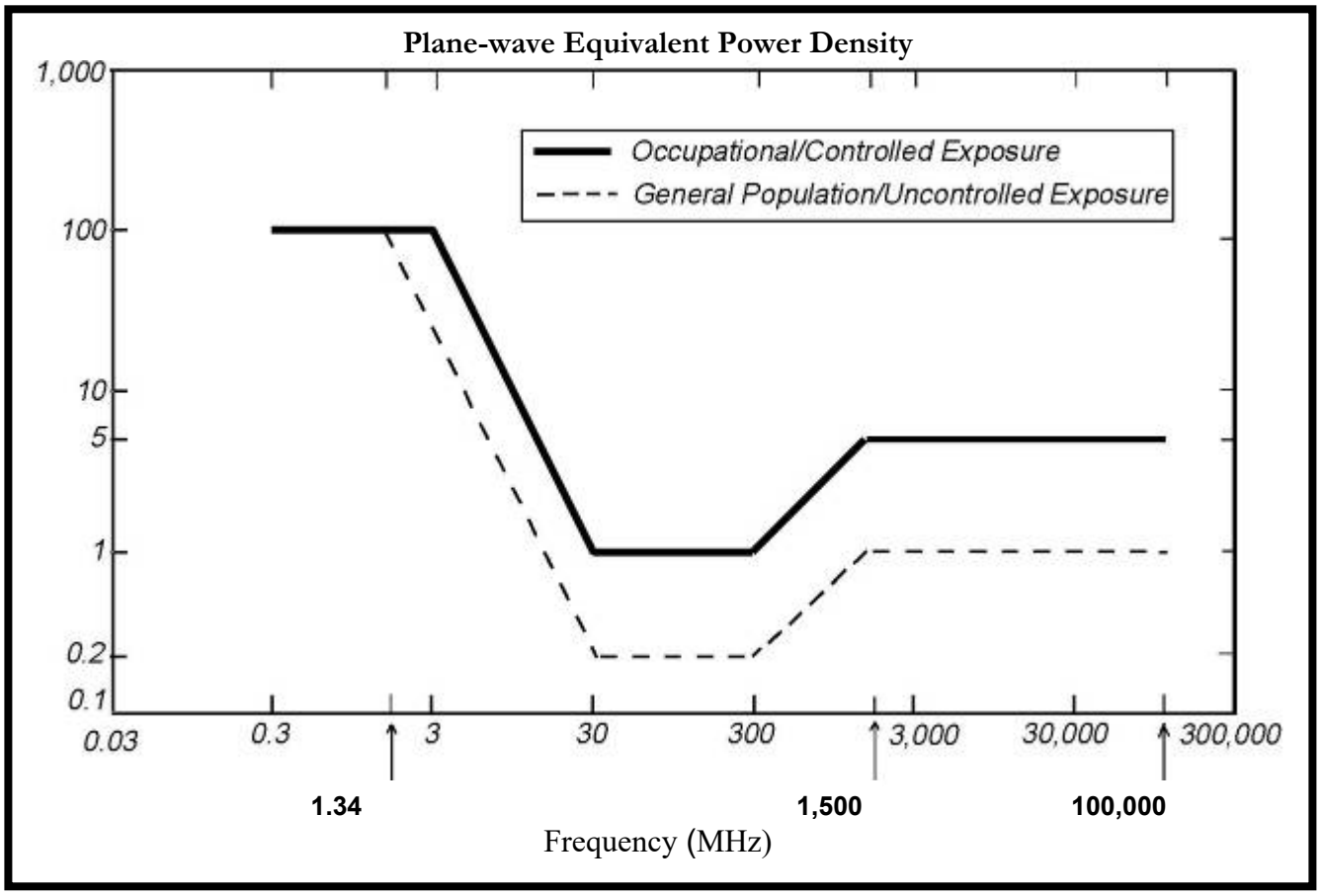
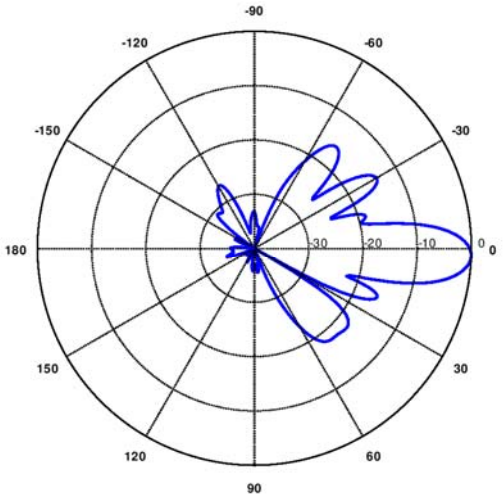
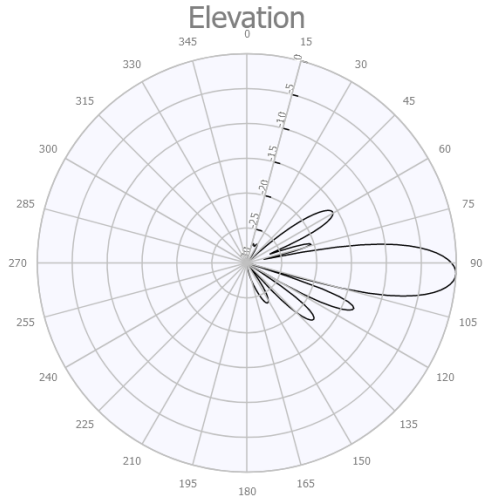
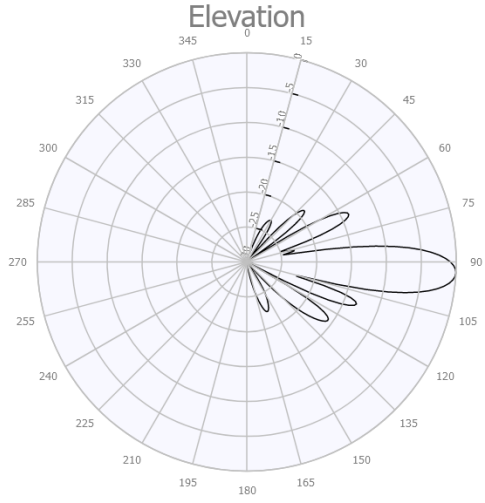


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T Antenna Data Sheets and Electrical Patterns

700 MHz Manufacturer: CCI Products Model #: TPA65R-BU6D Frequency Band: 698-798 MHz Gain: 14.5 dBi Vertical Beamwidth: 12.8° Horizontal Beamwidth: 73° Polarization: Dual Linear 45° Size L x W x D: 71.2” x 20.7” x 7.7”	
700 MHz Manufacturer: CCI Products Model #: OPA65R-BU6D Frequency Band: 698 - 806MHz Gain: 14.3 dBi Vertical Beamwidth: 12.9° Horizontal Beamwidth: 73° Polarization: Dual Linear 45° Size L x W x D: 71.2” x 20.7” x 7.7”	
885 MHz Manufacturer: CCI Products Model #: OPA65R-BU6D Frequency Band: 824 - 896 MHz Gain: 15.2 dBi Vertical Beamwidth: 11.1° Horizontal Beamwidth: 64° Polarization: Dual Linear 45° Size L x W x D: 71.2” x 20.7” x 7.7”	

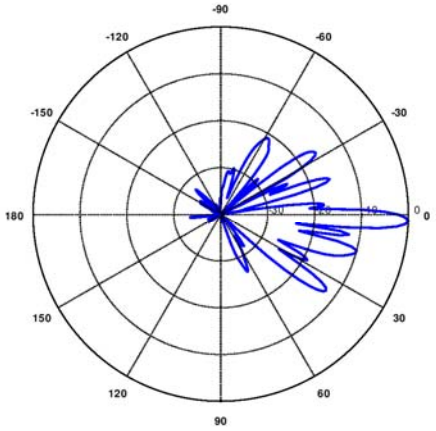
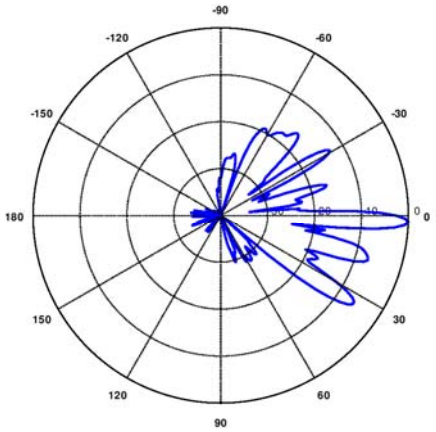
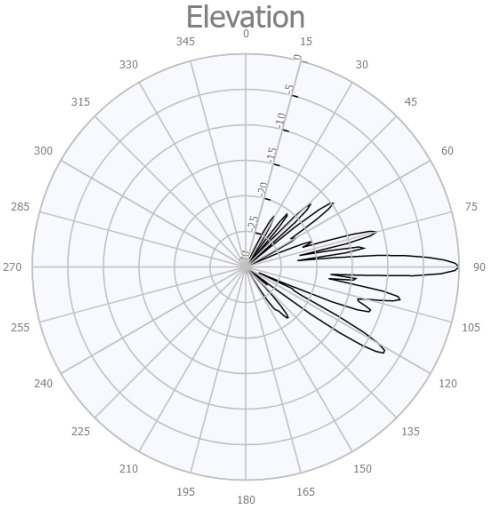
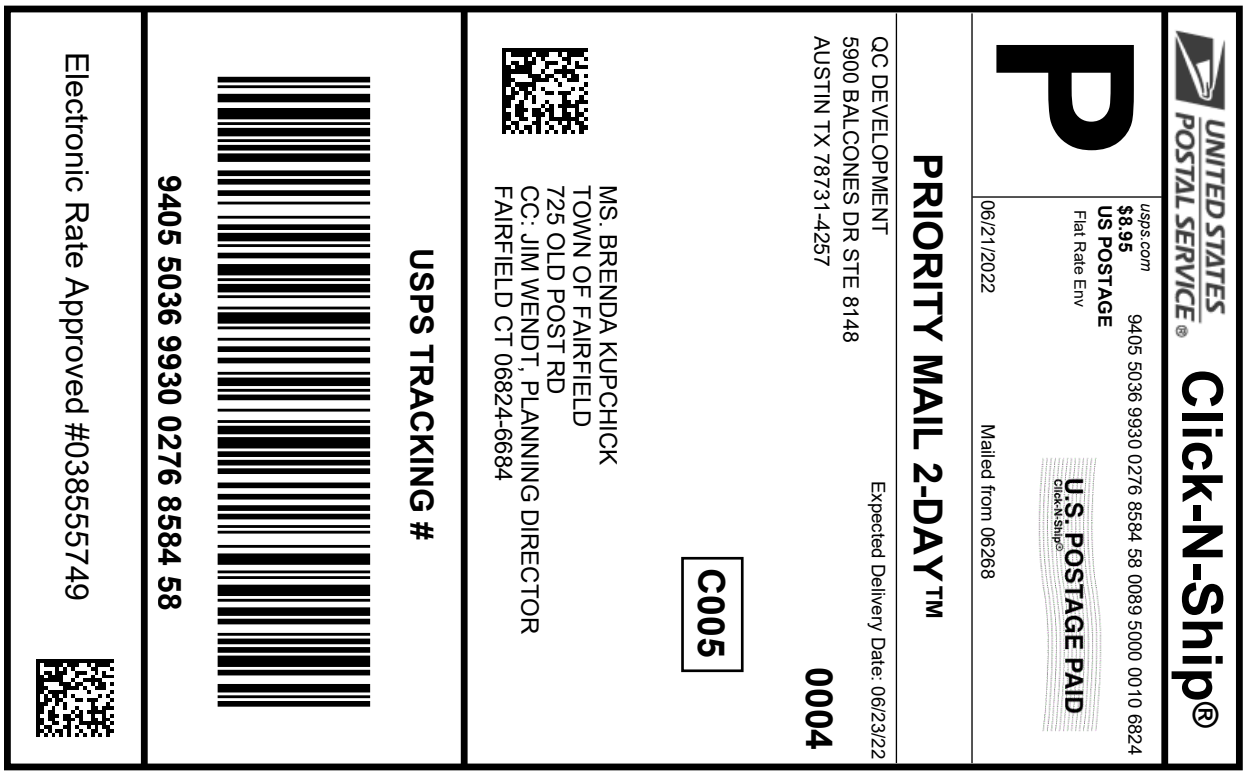
1900 MHz Manufacturer: CCI Products Model #: TPA65R-BU6D Frequency Band: 1850-1990 MHz Gain: 18.1 dBi Vertical Beamwidth: 5.2° Horizontal Beamwidth: 66° Polarization: Dual Linear 45° Size L x W x D: 71.2” x 20.7” x 7.7”	
2100 MHz Manufacturer: CCI Products Model #: TPA65R-BU6D Frequency Band: 1920-2180 MHz Gain: 18.4 dBi Vertical Beamwidth: 4.8° Horizontal Beamwidth: 66° Polarization: Dual Linear 45° Size L x W x D: 71.2” x 20.7” x 7.7”	
2300 MHz Manufacturer: CCI Products Model #: OPA65R-BU6D Frequency Band: 2300-2400 MHz Gain: 18.2 dBi Vertical Beamwidth: 4.1° Horizontal Beamwidth: 55° Polarization: Dual Linear 45° Size L x W x D: 71.2” x 20.7” x 7.7”	

Exhibit G

Recipient Mailings



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9405 5036 9930 0276 8584 58

Trans. #:	565906527
Print Date:	06/18/2022
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Expected Delivery Date:	06/23/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

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AUSTIN TX 78731-4257

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FAIRFIELD CT 06824-6684

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