



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

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

RE: Notice of Exempt Modification for AT&T Crown Site BU: 881535
AT&T Site ID: CTL02093
425 Indian Ledge Park Rd, Trumbull, CT 06611
Latitude: 41°16'23.81" / Longitude: -73°12'47.18"

Dear Ms. Bachman:

AT&T currently maintains 9 antennas at the 187 foot level of the existing 195 foot self-support tower at 425 Indian Ledge Park Road. The tower is owned by Crown Castle. The property is owned by Crown Castle. AT&T intends to replace 3 antennas, add 3 antennas and replace 3 RRU's with 6 RRU's. AT&T also is proposing to add 1 DC6 and add 2 DC trunks.

Please be advised I have included an email from Gail Andreyka with the zoning department at the Town of Trumbull indicating they no longer have the original zoning approval on file. Please use the email to replace the zoning approval requirement.

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.S.C.A. § 16-50j-73, a copy of this letter is being sent Mr. Timothy Herbst, First Selectman, and the Town of Trumbull, as well as the property owner, and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification 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 Communication 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-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Nesmet Badawi.

Sincerely,



Nesmet Badawi

Real Estate Specialist

1200 MacArthur Blvd Suite 200 Mahwah NJ 07430

201-514-774

Nesmet.Badawi.Contractor@crowncastle.com

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

Tab 2: Exhibit-2: Structural Modification Report

Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: Mr. Timothy Herbst
Town of Trumbull
5866 Main Street
Trumbull, CT 06611

Town of Trumbull
5866 Main Street
Trumbull, CT 06611

Hanlon, Dashanna

From: Myl, Kimberly
Sent: Friday, March 11, 2016 9:34 AM
To: siting.council@ct.gov
Subject: Existing Telecommunications Tower - 425 Indian Ledge Park Road, Trumbull (Crown: 881535 / T-Mobile CT11961A)

Good Morning,
Please be advised per the below email from the Town of Trumbull and on behalf of Crown Castle the Tower Owner, neither party have the original zoning approval on file. Please use this email notification to replace that requirement. Please let me know if you have any questions or need additional information. Thank you in advance.

KIMBERLY MYL
Real Estate Specialist
T: (201) 236-9069 | M: (201) 993-3697

CROWN CASTLE
1200 MacArthur Blvd, Suite 200
Mahwah, NJ 07430

From: Gail Andreyka [<mailto:gandreyka@trumbull-ct.gov>]
Sent: Tuesday, March 08, 2016 9:48 AM
To: Myl, Kimberly
Cc: Douglas Wenz
Subject: RE: Zoning Approval - Telecommunications Tower 425 Indian Ledge Park Road

Hi Kim,

We cannot locate the zoning approval. They never came to Planning & Zoning with an application as far as we know. If you have any further questions, please contact Doug Wenz 203-452-5052.

Thank you,

Gail Andreyka

From: Myl, Kimberly [<mailto:Kimberly.Myl@crowncastle.com>]
Sent: Monday, February 29, 2016 12:45 PM
To: Gail Andreyka
Subject: Zoning Approval - Telecommunications Tower 425 Indian Ledge Park Road

Good Afternoon Gail,
I have another existing telecommunications facility that I will need a copy of the original zoning resolution to submit into the CSC. Can you kindly forward this over to me so I can submit on behalf of T-Mobile, one of our tenants. If you do not have this document, kindly reply stating that the township does not have this on record and I can use your email in place of this requirement. Please call or email me if you have any questions or need additional information. Thank you in advance.

KIMBERLY MYL
Real Estate Specialist
T: (201) 236-9069 | M: (201) 993-3697

CROWN CASTLE
1200 MacArthur Blvd, Suite 200
Mahwah, NJ 07430

425 INDIAN LEDGE PARK ROAD

Location 425 INDIAN LEDGE PARK ROAD

Mblu F/05 / 00096/ 000/

Acct#

Owner TRUMBULL TOWN OF

Assessment \$1,320,620

Appraisal \$1,886,600

PID 12730

Building Count 1

Fire District T

Current Value

Appraisal	
Valuation Year	Total
2015	\$1,886,600

Assessment	
Valuation Year	Total
2015	\$1,320,620

Owner of Record

Owner TRUMBULL TOWN OF
Co-Owner
Address 5866 MAIN STREET
 TRUMBULL, CT 06611

Sale Price \$0
Book & Page 1/ 466
Sale Date 06/15/1989
Instrument

Ownership History

Ownership History				
Owner	Sale Price	Book & Page	Instrument	Sale Date
TRUMBULL TOWN OF	\$0	1/ 466		06/15/1989

Building Information

Building 1 : Section 1

Year Built:

Living Area: 0

Building Photo

Building Attributes	
Field	Description
Style	Outbuildings
Stories:	
Occupancy	
Exterior Wall 1	

Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Floor Covering	
Alt. Floor Cover	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Total Kitchens	
Total Elec Meters	



F05-96 05/04/2015

(http://images.vgsi.com/photos2/TrumbullCTPhotos/\00\02\19\51.JPG)

Building Layout



(http://images.vgsi.com/photos2/TrumbullCTPhotos//Sketches/1:

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



Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 921
 Description Mun Lnd Res
 Zone AA
 Neighborhood 320
 Alt Land Appr No
 Category

Land Line Valuation

Size (Acres) 46.5
 Frontage
 Depth

Outbuildings

Outbuildings					Legend
Code	Description	Sub Code	Sub Description	Size	Bldg #
BHS1	Comm Bth Hse	CB	CindBk/Frame	200 S.F.	1

Valuation History

Appraisal	
Valuation Year	Total
2016	\$1,886,600

2015	\$1,886,600
2014	\$1,972,000

Assessment	
Valuation Year	Total
2016	\$1,320,620
2015	\$1,320,620
2014	\$1,380,400

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Badawi, Nesmet (Contractor)

From: TrackingUpdates@fedex.com
Sent: Thursday, February 14, 2019 10:33 AM
To: Badawi, Nesmet (Contractor)
Subject: FedEx Shipment 774460557813 Delivered

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Your package has been delivered

Tracking # 774460557813

Ship date:
Wed, 2/13/2019

Nesmet Badawi
Crown Castle
MAHWAH, NJ 07430
US



Delivery date:
Thu, 2/14/2019 10:25
am

Zoning department
Town of Trumbull
5866 Main Street
TRUMBULL, CT 06611
US



Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number: [774460557813](#)

Status: Delivered: 02/14/2019 10:25
AM Signed for By:
G.MURPHY

Reference: 1766.6680

Signed for by: G.MURPHY

Delivery location: TRUMBULL, CT

Delivered to: Receptionist/Front Desk

Service type: FedEx Priority Overnight®

Packaging type: FedEx® Envelope


Number of pieces: 1

Weight: 1.00 lb.

Special handling/Services: Adult Signature Required

Deliver Weekday

Standard transit: 2/14/2019 by 10:30 am

 Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 9:32 AM CST on 02/14/2019.

All weights are estimated.

To track the latest status of your shipment, click on the tracking number above.

Standard transit is the date and time the package is scheduled to be delivered by, based on the selected service, destination and ship date. Limitations and exceptions may apply. Please see the FedEx Service Guide for terms and conditions of service, including the FedEx Money-Back Guarantee, or contact your FedEx Customer Support representative.

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Thank you for your business.


Badawi, Nesmet (Contractor)

From: TrackingUpdates@fedex.com
Sent: Thursday, February 14, 2019 10:32 AM
To: Badawi, Nesmet (Contractor)
Subject: FedEx Shipment 774460545533 Delivered

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Your package has been delivered

Tracking # 774460545533

Ship date: Wed, 2/13/2019		Delivery date: Thu, 2/14/2019 10:25 am
Nesmet Badawi Crown Castle MAHWAH, NJ 07430 US		Mr. Timothy Herbst Town of Trumbull 5866 Main Street TRUMBULL, CT 06611 US

Shipment Facts

Our records indicate that the following package has been delivered.


Tracking number:	774460545533
Status:	Delivered: 02/14/2019 10:25 AM Signed for By: G.MURPHY
Reference:	1766.6680
Signed for by:	G.MURPHY
Delivery location:	TRUMBULL, CT
Delivered to:	Receptionist/Front Desk
Service type:	FedEx Priority Overnight®
Packaging type:	FedEx® Envelope
Number of pieces:	1
Weight:	1.00 lb.



Special handling/Services: Adult Signature Required

Deliver Weekday

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Thank you for your business.

PROJECT INFORMATION

SCOPE OF WORK: **ITEMS TO BE MOUNTED ON THE EXISTING MONOPOLE:**

- NEW AT&T ANTENNAS: (800-10965) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- NEW AT&T RRUS: B5/B12 4449 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: RRUS-32 (WCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW SURGE ARRESTOR (DC6-48-60-18-8F) (TOTAL OF 1) WITH (2) DC POWER, (1) FIBER IN 2"Ø FLEX CONDUIT.
- ANTENNA MODIFICATION/4TR ANTENNA RETROFIT
- MOVE RET TO UMS ANTENNA

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:

- ADD (1) 6630
- SWAP BB WITH 5216

ITEMS TO REMAIN:

- (6) ANTENNAS (3) RRUS, (6) TMAS, (1) SURGE ARRESTOR (12) 1-1/4" COAX, (2) DC POWER & (1) FIBER.

SQUID ALARMING (NOT TO BE DAISY CHAINED).

- THE 1ST SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED RRH/RRU ON THE ALPHA SECTOR, IN THE EVENT THE ALARM CABLE CANNOT BE CONNECTED TO ALPHA IT WILL BE ACCEPTABLE TO ALARM TO THE CLOSEST PHYSICAL SECTOR ON AN EXCEPTION BASIS.
- 2ND SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED) RRH/RRU ON THE BETA SECTOR.
- 3RD SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED) RRH/RRU ON THE GAMMA SECTOR.

SITE ADDRESS: 425 INDIAN LEDGE PARK RD.
TRUMBULL, CT 06611

LATITUDE: 41.273298 N, 41° 16' 23.87" N
LONGITUDE: 73.213110 W, 73° 12' 47.20" W
TYPE OF SITE: MONOPOLE/INDOOR EQUIPMENT
STRUCTURE HEIGHT: 190'±
RAD CENTER: 187'±
CURRENT USE: TELECOMMUNICATIONS FACILITY
PROPOSED USE: TELECOMMUNICATIONS FACILITY



SITE NUMBER: CT2093

SITE NAME: TRUMBULL INDIAN LEDGE

FA CODE: 10035413

PACE ID: MTCTB033575, MRCTB033604, MRCTB033720

PROJECT: LTE 3C/4C/4TX4RX 2019 UPGRADE

DRAWING INDEX

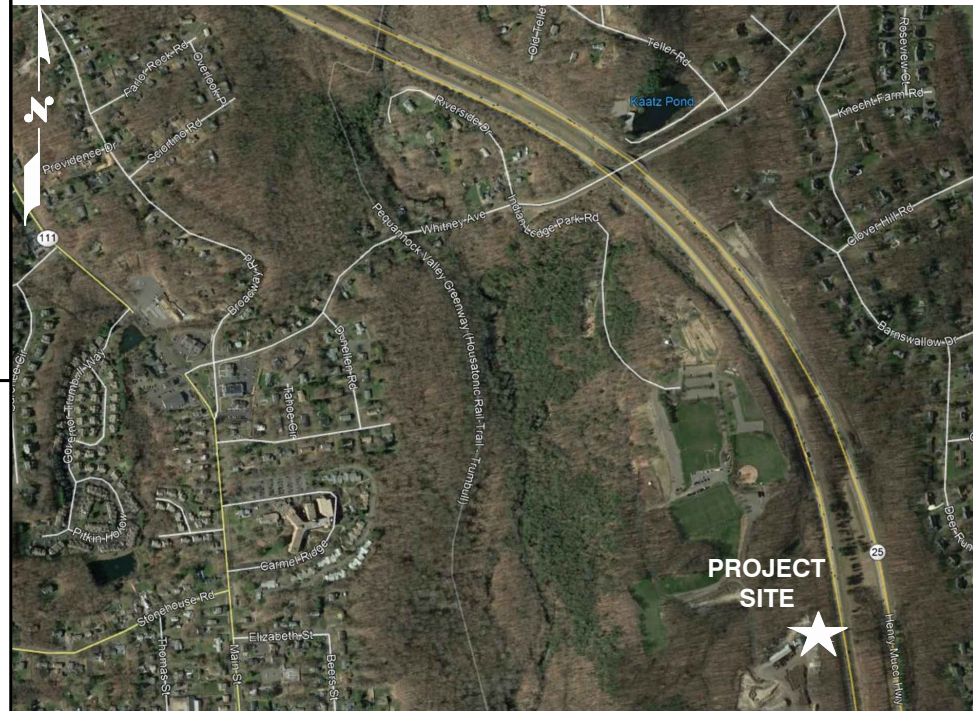
SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
GN-1	GENERAL NOTES	0
A-1	COMPOUND & EQUIPMENT PLANS	0
A-2	ANTENNA LAYOUTS & ELEVATION	0
A-3	DETAILS	0
SN-1	STRUCTURAL NOTES	0
S-1	MOUNT MODIFICATION DESIGN	0
S-2	MOUNT MODIFICATION DESIGN	0
RF-1	RF PLUMBING DIAGRAM	0
G-1	GROUNDING DETAILS	0

CCI SITE NAME: TRUMBULL TOWER
CCI SITE #: 881535

VICINITY MAP

DIRECTIONS TO SITE:

MERRITT PARKWAY NORTH. GET OFF EXIT 49N (RT 25) FOLLOW TO RT 111 TAKE A LEFT. CONTINUE DOWN RT 111 MAKE LEFT ONTO WHITNEY AVE, TURNS INTO INDIAN LEDGE ROAD. TURN RIGHT INTO INDIAN LEDGE PARK. FOLLOW PAVED ROAD TO COMPOSTING AREA SITE. MONO POLE BY GARAGE. DEMARC IS IN GRAY BOX OUTSIDE SITE. INDIAN LEDGE PARK GATE COMBO 1305



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.

UNDERGROUND SERVICE ALERT



WWW.DIGSAFE.COM
72 HOURS PRIOR

 45 BEECHWOOD DRIVE NORTH ANDOVER, MA 01845 TEL: (978) 557-5553 FAX: (978) 336-5586	 500 CUMMINGS PARK DR. #360 WOBURN, MA 01801	SITE NUMBER: CT2093 SITE NAME: TRUMBULL INDIAN LEDGE 425 INDIAN LEDGE PARK RD. TRUMBULL, CT 06611 FAIRFIELD COUNTY	 550 COCHITUATE ROAD FRAMINGHAM, MA 01701	NO. DATE REVISIONS BY CHK APP'D		AT&T TITLE SHEET (LTE 3C/4C/4TX4RX)
				0 02/07/19 ISSUED FOR REVIEW DJM BB		

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
 CONTRACTOR – CROWN CASTLE
 SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
 OWNER – AT&T MOBILITY
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
20. APPLICABLE BUILDING CODES:
 SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

BUILDING CODE: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS
 ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS

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

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

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

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

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

ABBREVIATIONS

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

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

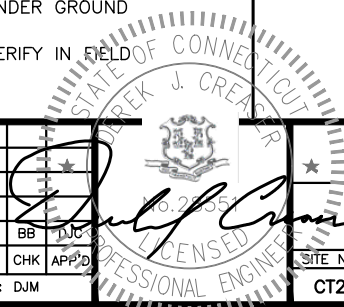
500 CUMMINGS PARK DR. #3600
WOBURN, MA 01801

SITE NUMBER: CT2093
SITE NAME: TRUMBULL INDIAN LEDGE

425 INDIAN LEDGE PARK RD.
TRUMBULL, CT 06611
FAIRFIELD COUNTY

550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/07/19	ISSUED FOR REVIEW	DJM	BB	JLC
SCALE: AS SHOWN		DESIGNED BY: BB	DRAWN BY: DJM		



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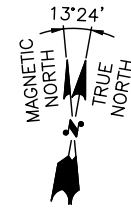
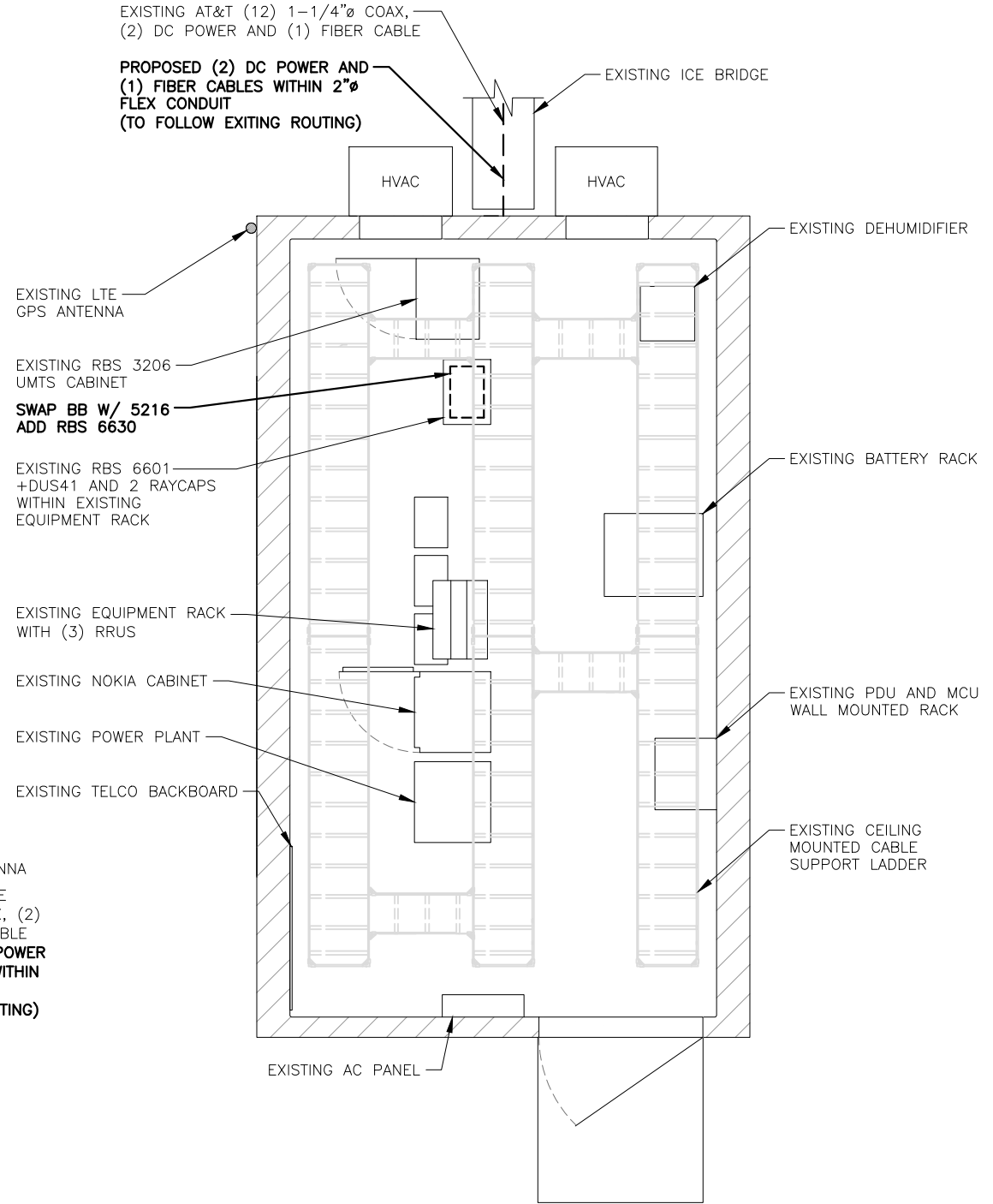
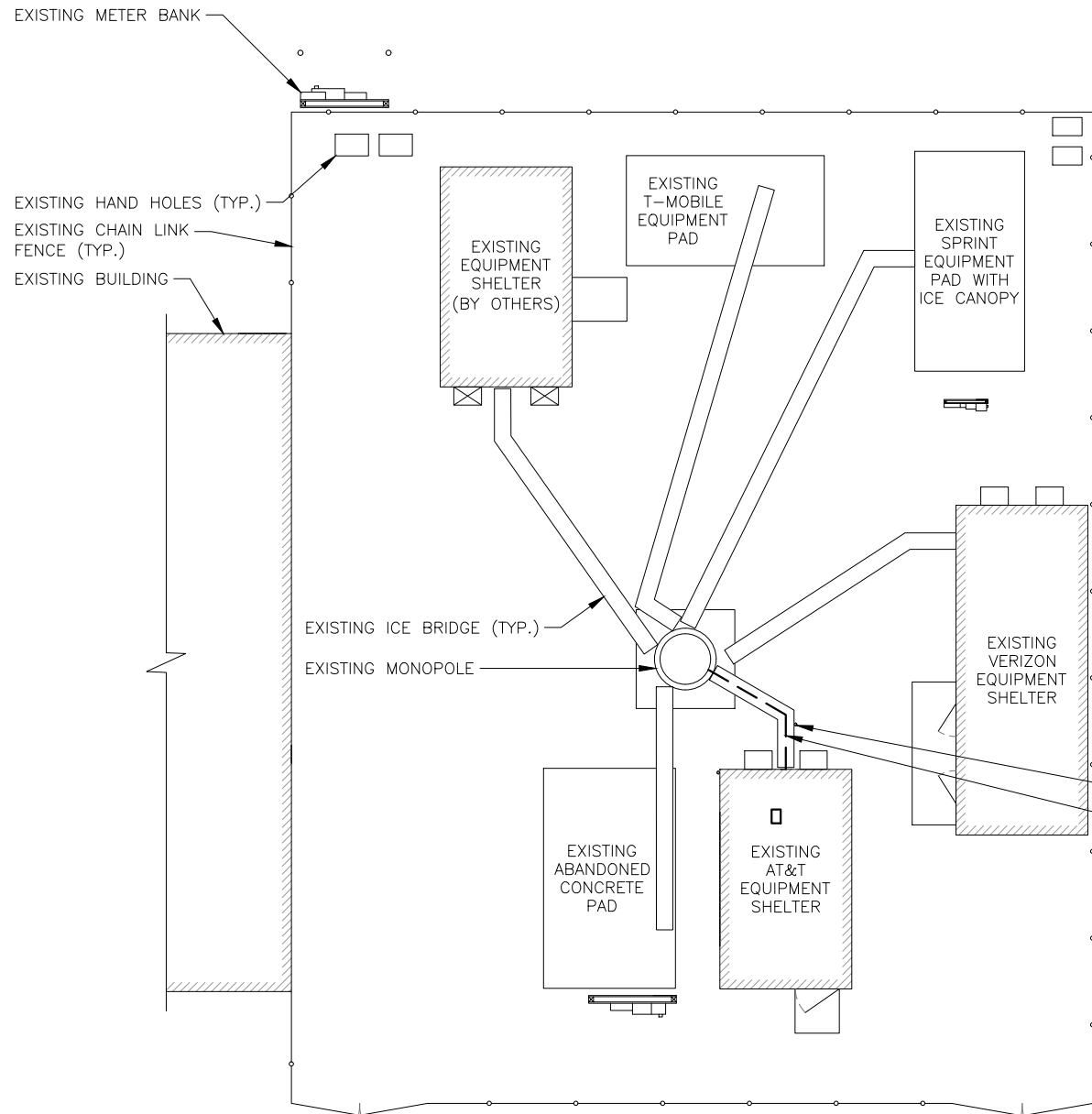
GENERAL NOTES
(LTE 3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
CT2093	GN-1	0

NOTE:
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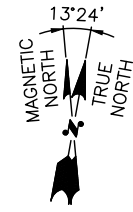
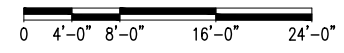
NOTE:
ALL ANTENNAS AND LINES TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS COMPLETED BY JACOBS ENGINEERING DATED 12/25/18 AND FINAL AT&T RF DATA SHEET.

NOTE:
AN ASSESSMENT FOR THE CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: JANUARY 28, 2019 (REV. 1)



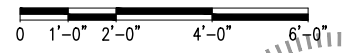
COMPOUND PLAN
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

1
A-1



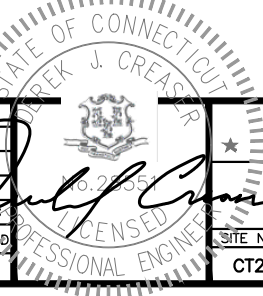
EQUIPMENT PLAN
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

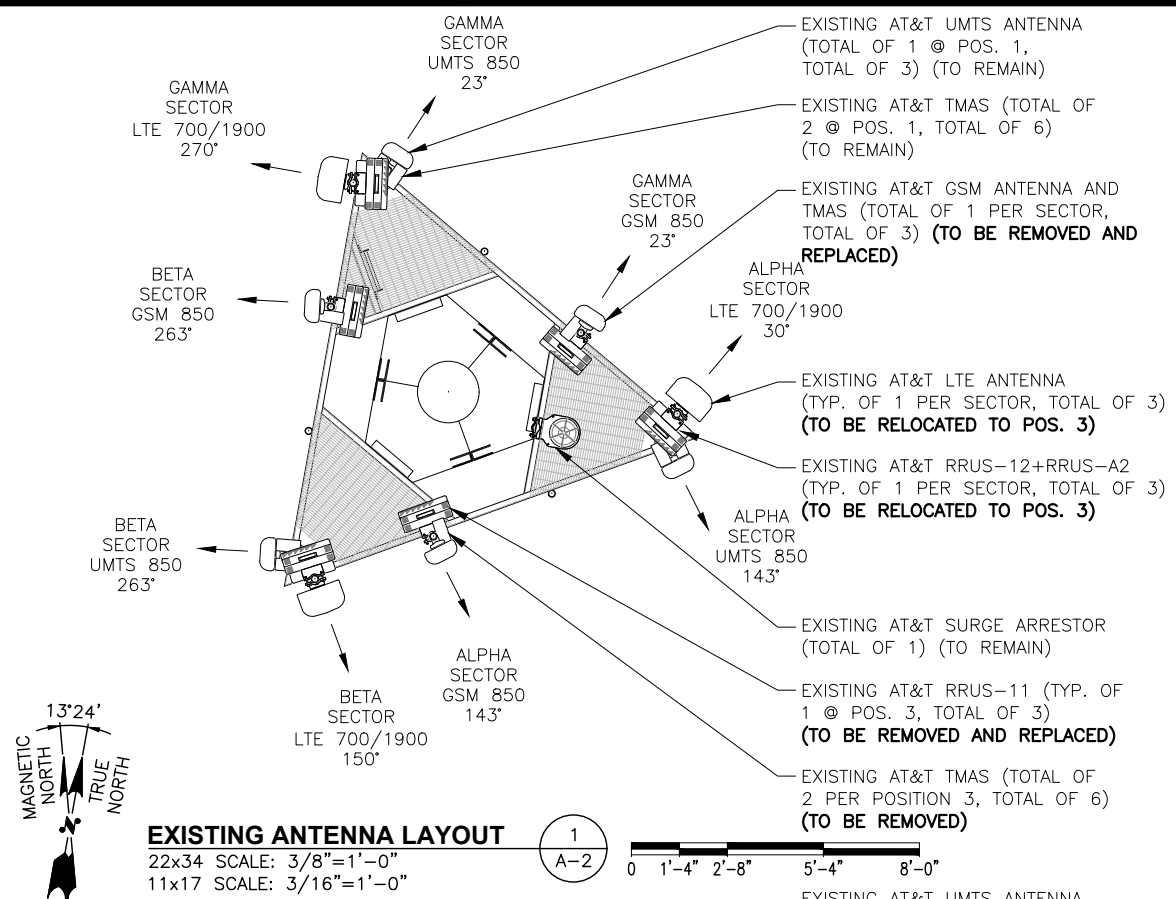
2
A-1



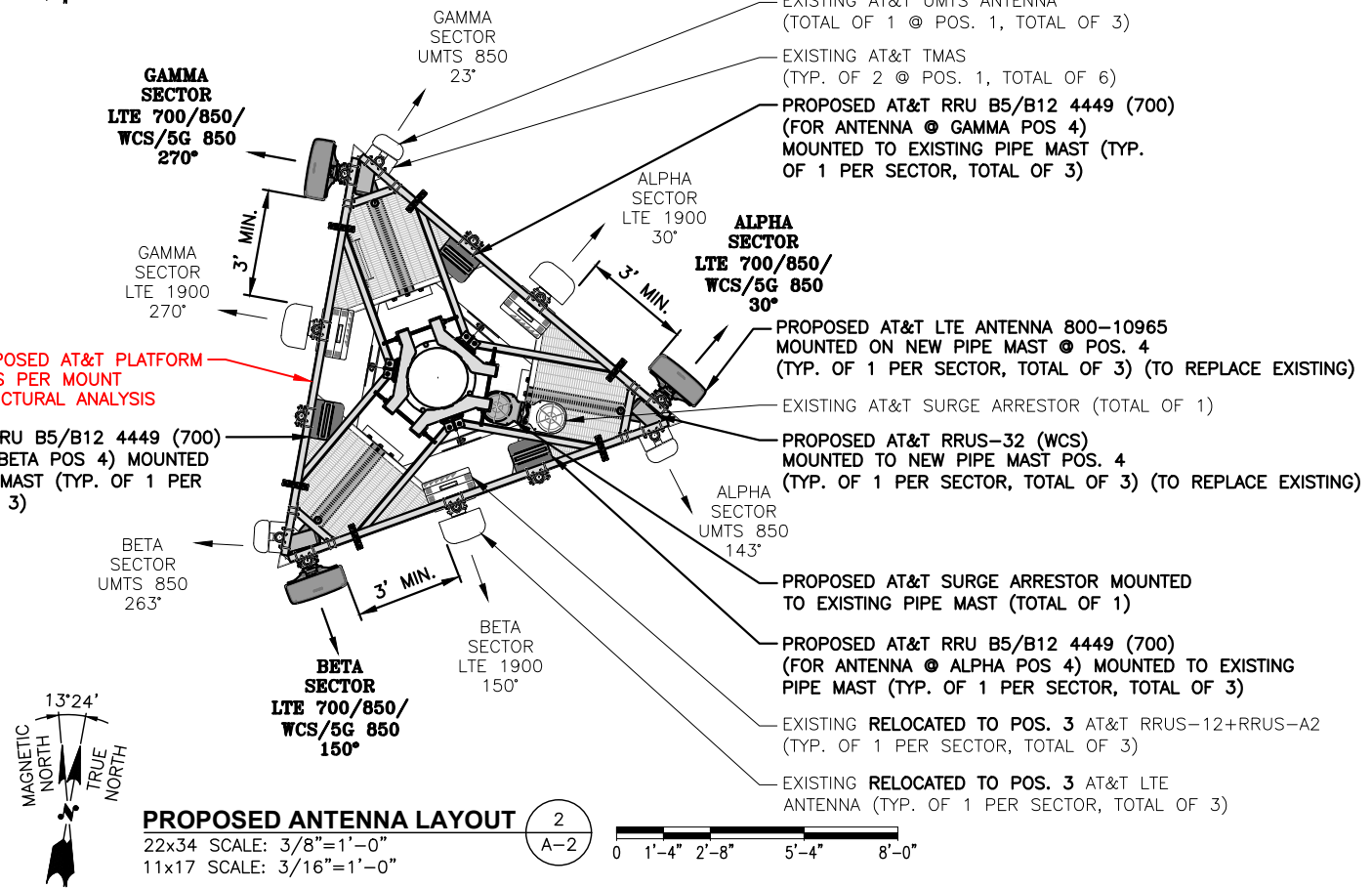
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SCALE: AS SHOWN DESIGNED BY: BB DRAWN BY: DJM

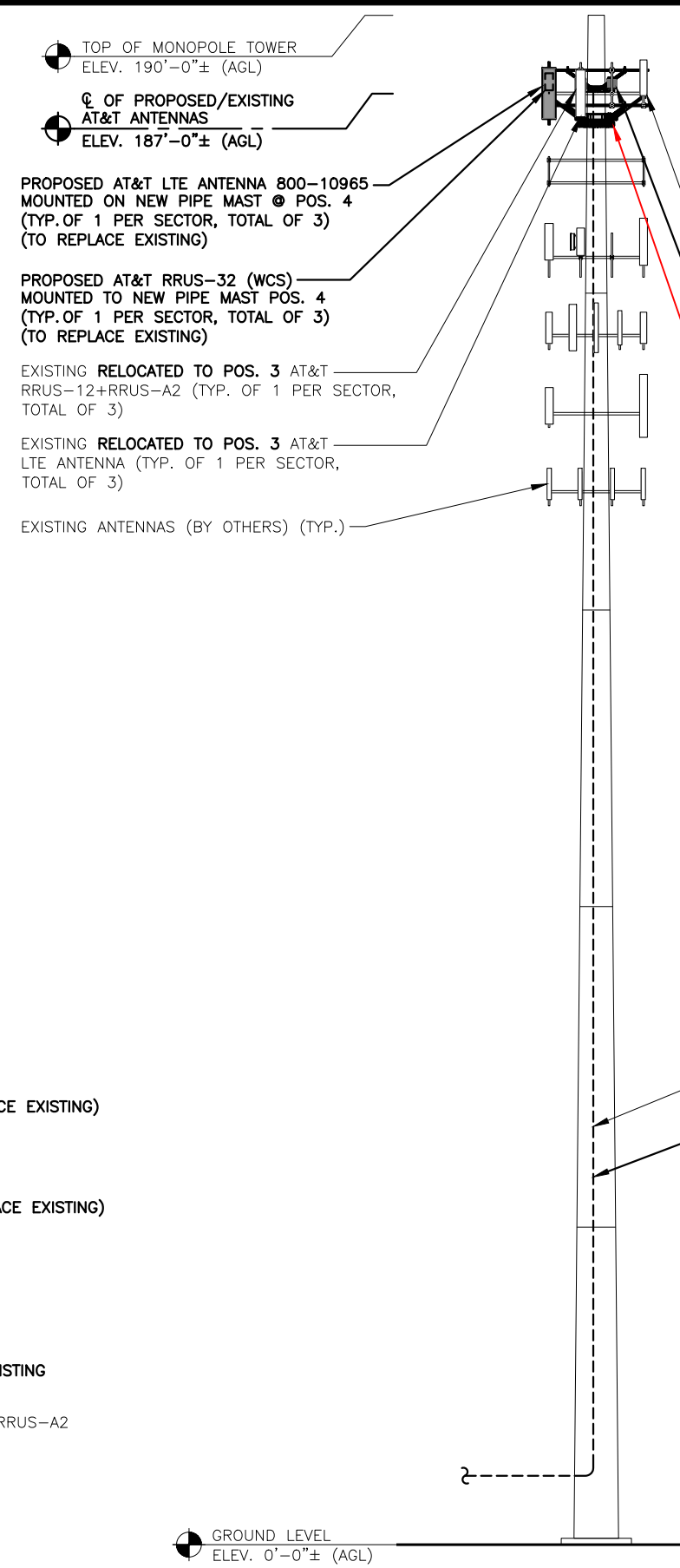




EXISTING ANTENNA LAYOUT (1)
 22x34 SCALE: 3/8"=1'-0"
 11x17 SCALE: 3/16"=1'-0"



PROPOSED ANTENNA LAYOUT (2)
 22x34 SCALE: 3/8"=1'-0"
 11x17 SCALE: 3/16"=1'-0"



NOTE:
 GROUND EQUIPMENT NOT SHOWN FOR CLARITY

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

NOTE:
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ALL S-1 ALL S-2

ALL S-1 ALL S-2

PROPOSED AT&T PLATFORM MODS PER MOUNT STRUCTURAL ANALYSIS

PROPOSED AT&T RRU B5/B12 4449 (700) (FOR ANTENNA @ BETA POS 4) MOUNTED TO EXISTING PIPE MAST (TYP. OF 1 PER SECTOR, TOTAL OF 3)



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

CROWN CASTLE
 500 CUMMINGS PARK DR. #3600 WOBURN, MA 01801

SITE NUMBER: CT2093
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at&t
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SCALE: AS SHOWN DESIGNED BY: BB DRAWN BY: DJM

AT&T
ANTENNA LAYOUTS & ELEVATION
 (LTE 3C/4C/4TX4RX)
 SITE NUMBER: CT2093 DRAWING NUMBER: A-2 REV: 0

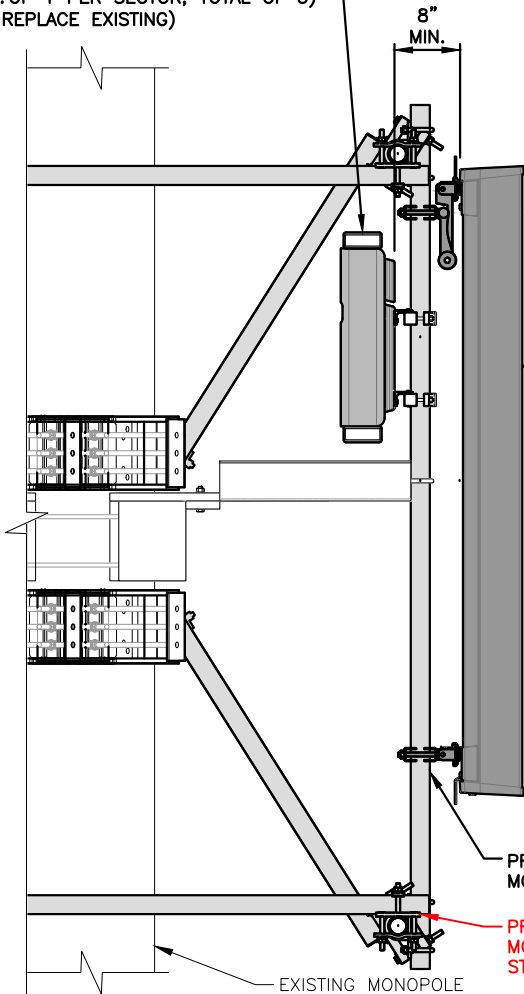
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ANTENNA SCHEDULE											
SECTOR	EXISTING/PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ϕ HEIGHT	AZIMUTH	TMA/DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	UMTS 850	7770	55X11X5	$\pm 187'$	143°	(2)(E) LGP21401 (2)(G)(E) LGP21901	-	-	(2)1-5/8 COAX	--
A2	-	-	-	-	-	-	-	-	-	-	(E) (1) RAYCAP DC6-48-60-18-8F
A3	RELOCATED	LTE 700 PCS	HPA-65R-BUU-H6	59x20x6.9	$\pm 187'$	30°	-	(E)(1) RRUS-12+RRUS-A2 (700)	20.4X18.5X10.8	(2)1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
A4	PROPOSED	LTE 700BC /WCS/850	800-10965	78.7X20X6.9	$\pm 187'$	30°	-	(P)(1) B5/B12 4449 (700) (P)(1) RRUS-32 (WCS)	15X13.2X10.4 26.7x12.1x6.7	-	(P) (1) RAYCAP DC6-48-60-18-8F
B1	EXISTING	UMTS 850	7770	55X11X5	$\pm 187'$	263°	(2)(E) LGP21401 (2)(G)(E) LGP21901	-	-	(2)1-5/8 COAX	--
B2	-	-	-	-	-	-	-	-	-	-	(E) (1) RAYCAP DC6-48-60-18-8F
B3	RELOCATED	LTE 700 PCS	HPA-65R-BUU-H6	59x20x6.9	$\pm 187'$	150°	-	(E)(1) RRUS-12+RRUS-A2 (700)	20.4X18.5X10.8	(2)1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
B4	PROPOSED	LTE 700BC /WCS/850	800-10965	78.7X20X6.9	$\pm 187'$	150°	-	(P)(1) B5/B12 4449 (700) (P)(1) RRUS-32 (WCS)	15X13.2X10.4 26.7x12.1x6.7	-	(P) (1) RAYCAP DC6-48-60-18-8F
C1	EXISTING	UMTS 850	7770	55X11X5	$\pm 187'$	23°	(2)(E) LGP21401 (2)(G)(E) LGP21901	-	-	(2)1-5/8 COAX	--
C2	-	-	-	-	-	-	-	-	-	-	(E) (1) RAYCAP DC6-48-60-18-8F
C3	RELOCATED	LTE 700 PCS	HPA-65R-BUU-H6	59x20x6.9	$\pm 187'$	270°	-	(E)(1) RRUS-12+RRUS-A2 (700)	20.4X18.5X10.8	(2)1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
C4	PROPOSED	LTE 700BC /WCS/850	800-10965	78.7X20X6.9	$\pm 187'$	270°	-	(P)(1) B5/B12 4449 (700) (P)(1) RRUS-32 (WCS)	15X13.2X10.4 26.7x12.1x6.7	-	(P) (1) RAYCAP DC6-48-60-18-8F

PROPOSED AT&T RRUS-32 (WCS) MOUNTED TO NEW PIPE MAST (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO REPLACE EXISTING)



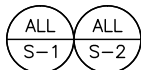
PROPOSED LTE ANTENNA & RRH MOUNTING DETAILS 1
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"
A-3

PROPOSED AT&T LTE ANTENNA MOUNTED ON NEW PIPE MAST (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO REPLACE EXISTING)

ϕ OF PROPOSED/EXISTING AT&T ANTENNAS
ELEV. = 187'± A.G.L.

PROPOSED 2" STD (2.38" O.D.)x8' LONG MOUNTING PIPE SECURED TO EXISTING PLATFORM

PROPOSED AT&T PLATFORM MODS PER MOUNT STRUCTURAL ANALYSIS



FINAL ANTENNA CONFIGURATION TABLE 3
A-3

RRU CHART				
QUANTITY	MODEL	L	W	D
3(E)	RRUS-12-RRUS-A2	20.4"	18.5"	10.8"
3(P)	RRUS-32	26.7"	12.1"	6.7"
3(P)	B5/B12 4449	15.0"	13.2"	10.4"

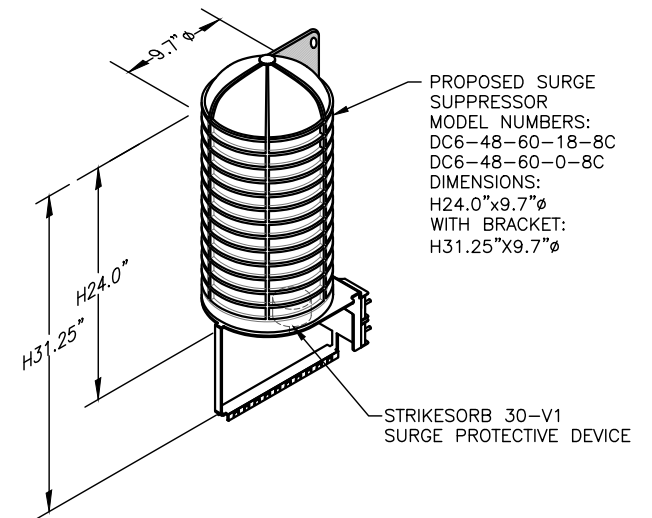
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

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

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRU'S DETAIL 2
SCALE: N.T.S.
A-3



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.
DC SURGE SUPPRESSOR DETAIL 3
SCALE: N.T.S.
A-3

STRUCTURAL NOTES:

- DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
- 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.
- 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".
- STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
- 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.
- 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.
- 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.
- 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.
- 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 LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
- 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 D.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
- SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

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

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

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

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

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

NOTES:

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

NOTES:

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

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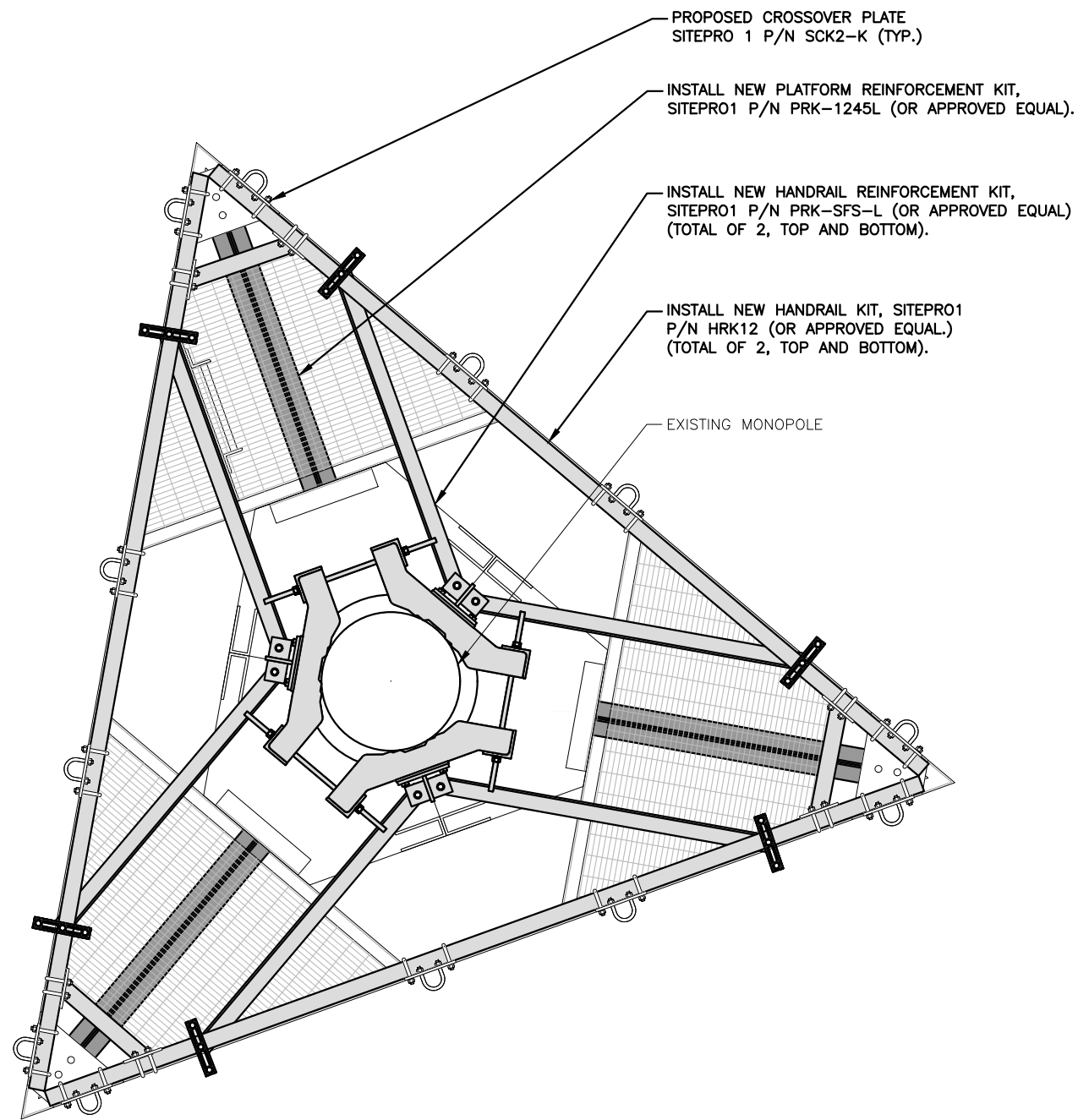
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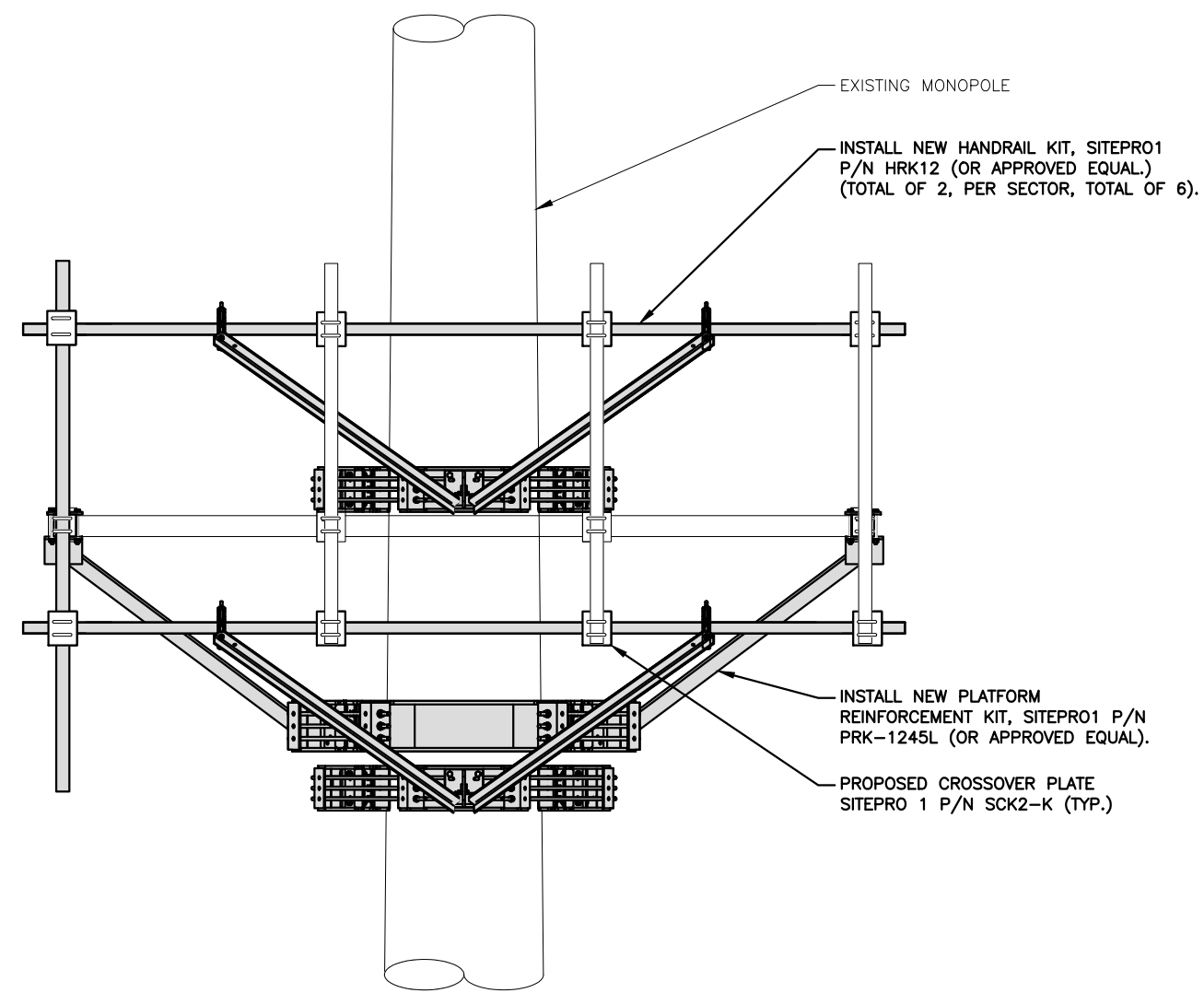
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HUDSON DESIGN GROUP, LLC.
DATED: JANUARY 28, 2019 (REV. 1)



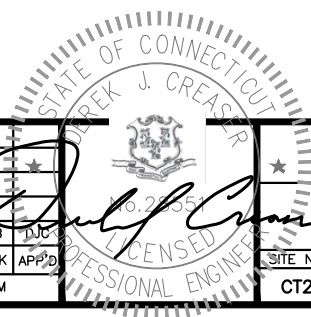
PROPOSED MOUNT MOD PLAN 1
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0" S-1



PROPOSED MOUNT MOD ELEVATION 2
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0" S-1

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/07/19	ISSUED FOR REVIEW	DJM	BB	JJC

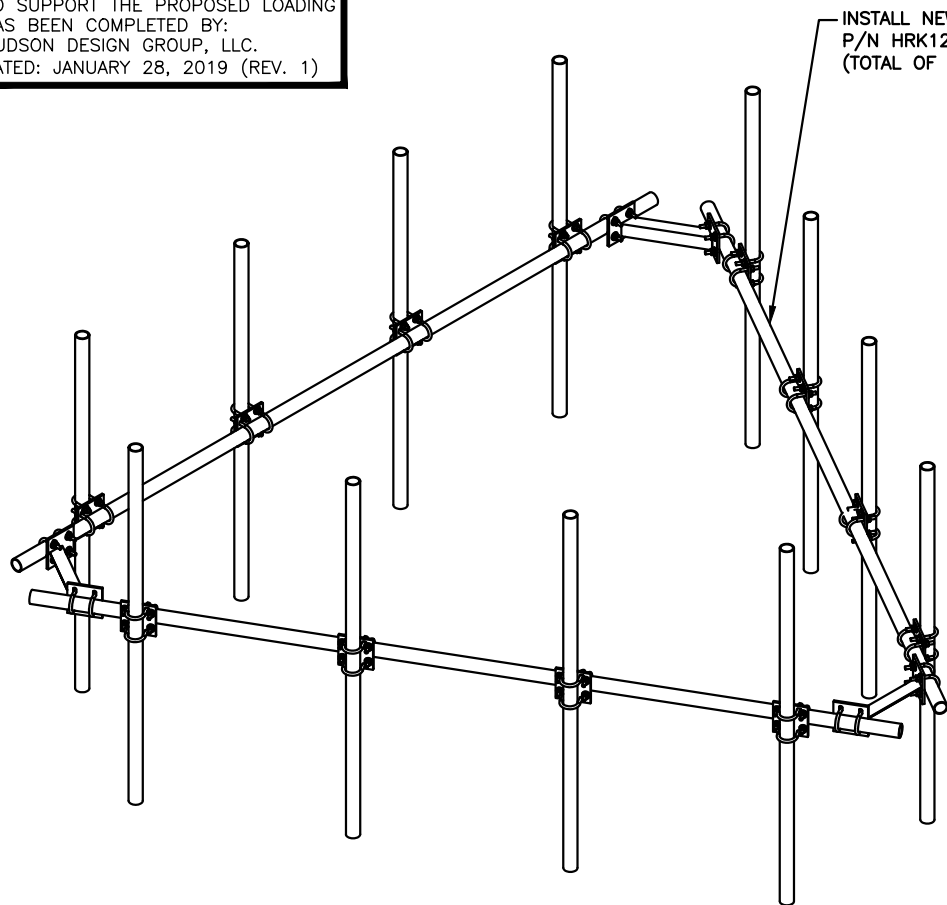
SCALE: AS SHOWN DESIGNED BY: BB DRAWN BY: DJM



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

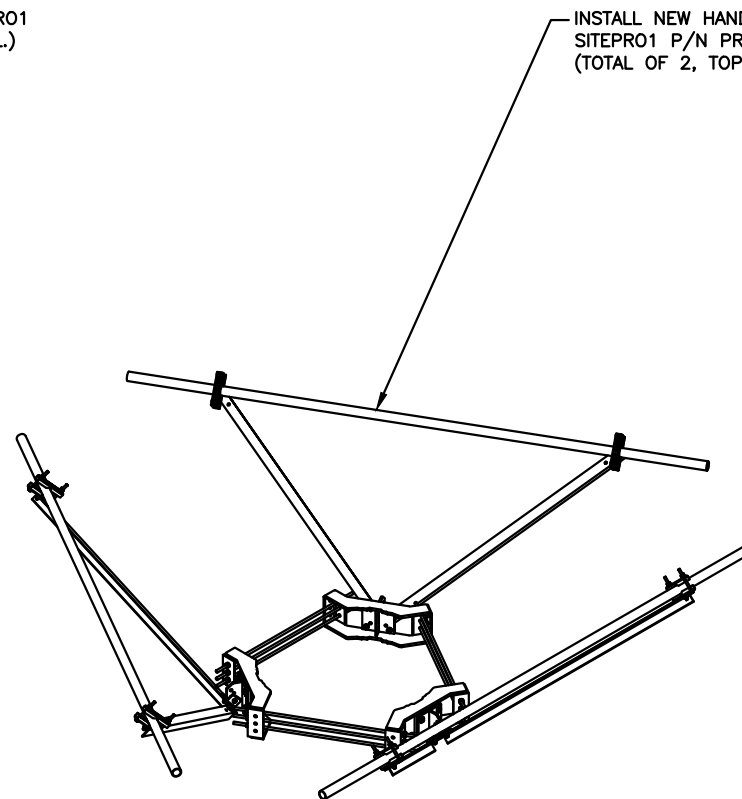
NOTE:
ALL ANTENNAS AND LINES TO BE
INSTALLED IN ACCORDANCE WITH
STRUCTURAL ANALYSIS COMPLETED
BY JACOBS ENGINEERING DATED
12/25/18 AND FINAL AT&T RF
DATA SHEET.

NOTE:
AN ASSESSMENT FOR THE CAPACITY
OF THE EXISTING ANTENNA MOUNT
TO SUPPORT THE PROPOSED LOADING
HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: JANUARY 28, 2019 (REV. 1)



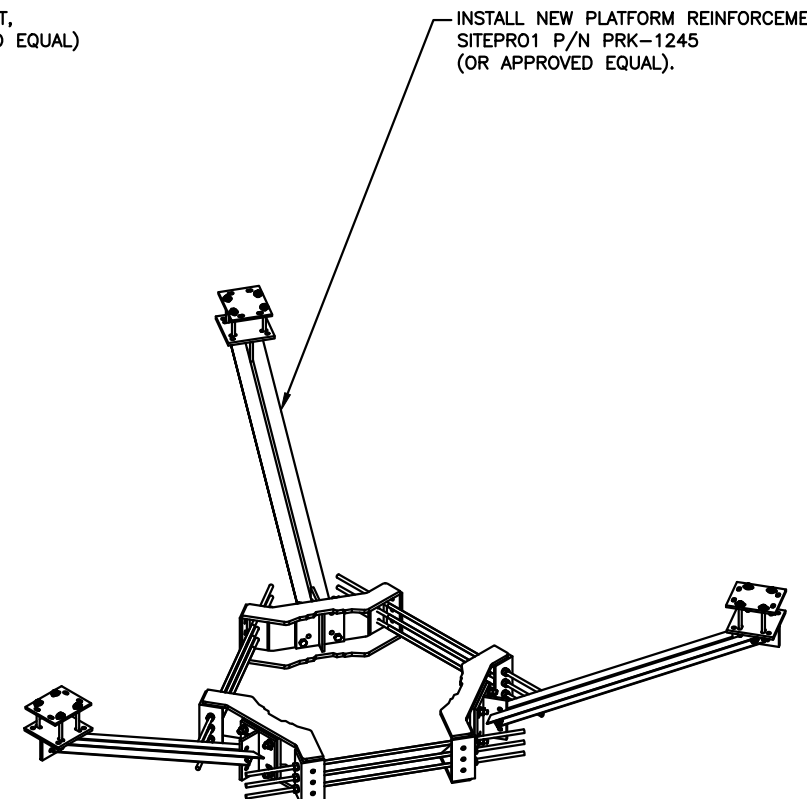
PROPOSED HANDRAIL DETAIL (1)
SCALE: N.T.S. S-2

INSTALL NEW HANDRAIL KIT, SITEPRO1
P/N HRK12 (OR APPROVED EQUAL.)
(TOTAL OF 2, TOP AND BOTTOM).



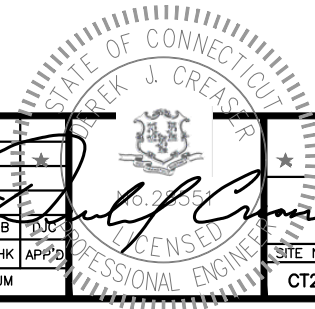
**PROPOSED HANDRAIL
SUPPORT MOUNTING DETAIL** (2)
SCALE: N.T.S. S-2

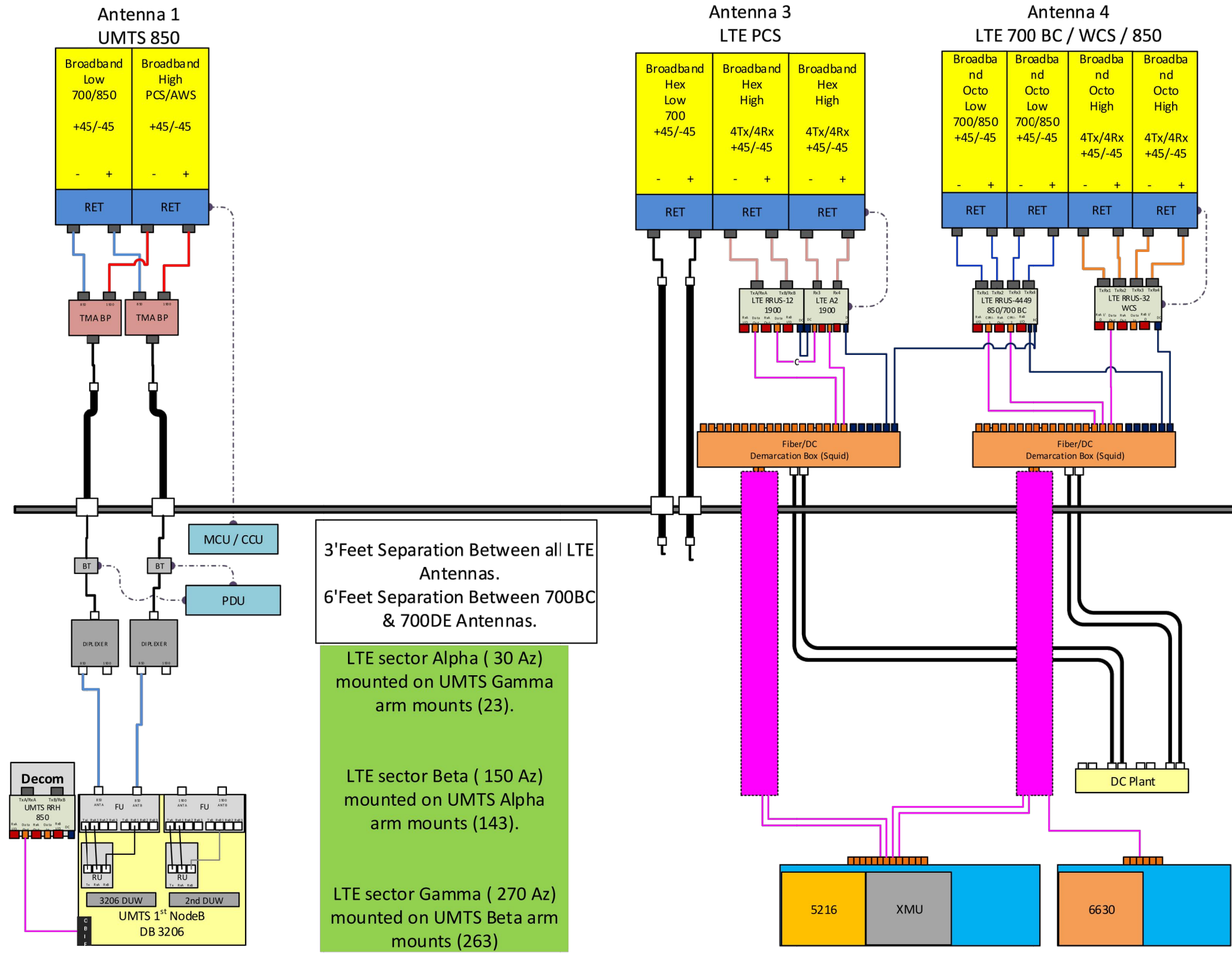
INSTALL NEW HANDRAIL REINFORCEMENT KIT,
SITEPRO1 P/N PRK-SFS-L (OR APPROVED EQUAL)
(TOTAL OF 2, TOP AND BOTTOM).



**PROPOSED PLATFORM
MOUNT REINFORCEMENT DETAIL** (3)
SCALE: N.T.S. S-2

INSTALL NEW PLATFORM REINFORCEMENT KIT,
SITEPRO1 P/N PRK-1245
(OR APPROVED EQUAL).





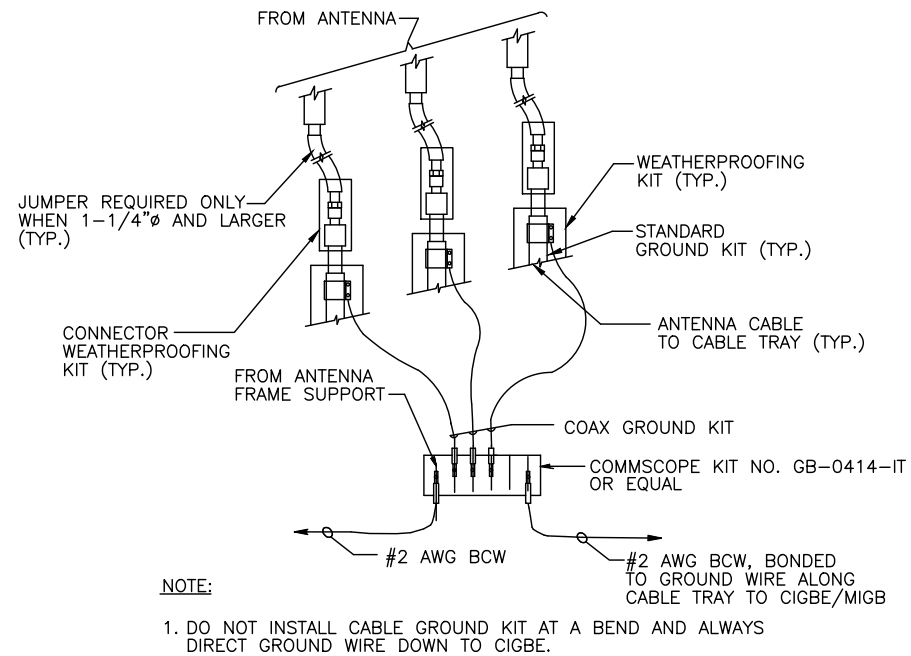
3' Feet Separation Between all LTE Antennas.
6' Feet Separation Between 700BC & 700DE Antennas.

LTE sector Alpha (30 Az) mounted on UMTS Gamma arm mounts (23).
LTE sector Beta (150 Az) mounted on UMTS Alpha arm mounts (143).
LTE sector Gamma (270 Az) mounted on UMTS Beta arm mounts (263).

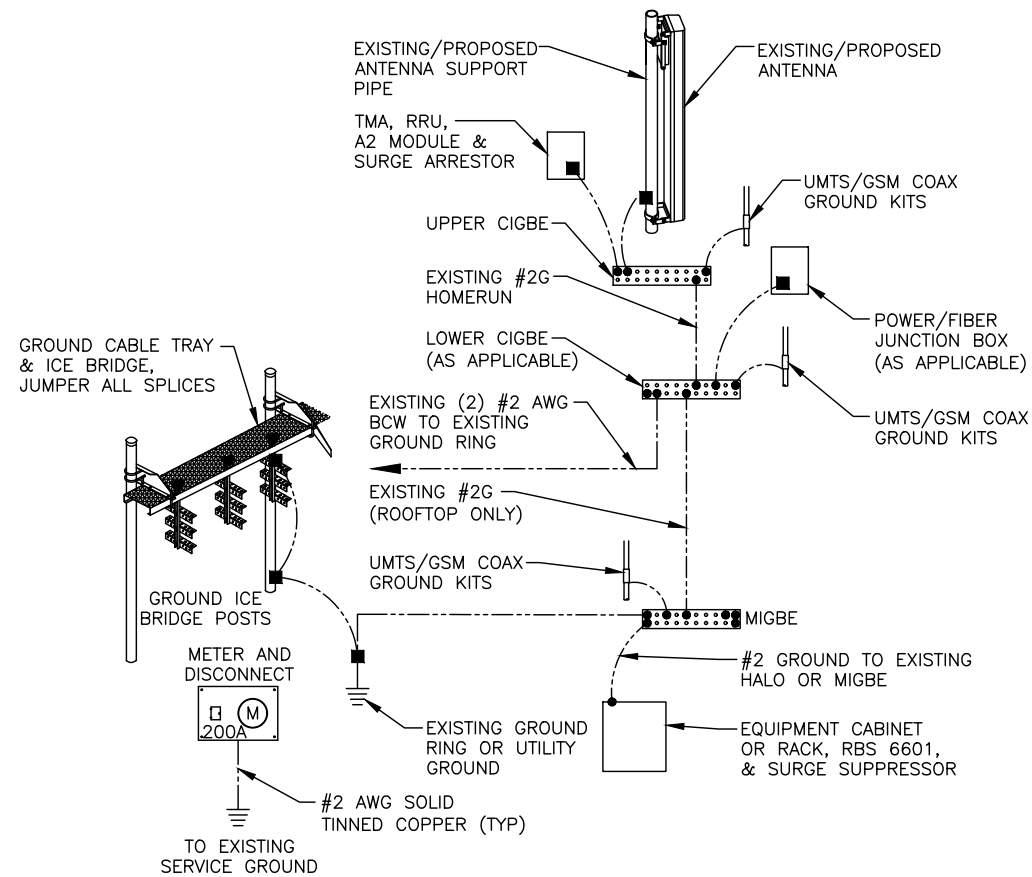
RF PLUMBING DIAGRAM 1
SCALE: N.T.S. RF-1

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

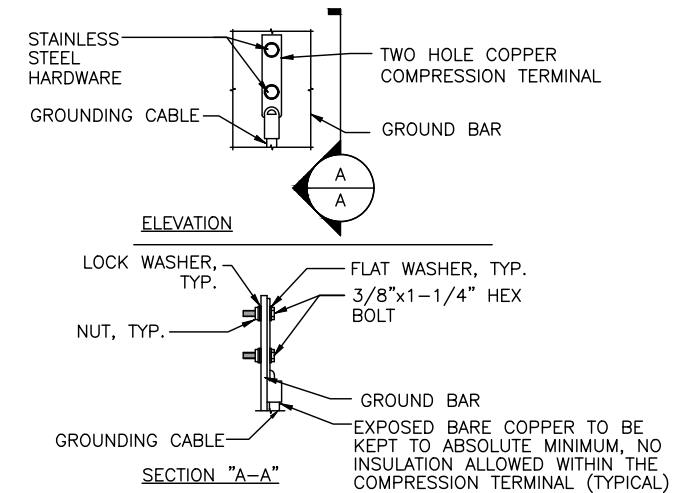
NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



GROUND WIRE TO GROUND BAR CONNECTION DETAIL 1
SCALE: N.T.S. G-1



GROUNDING RISER DIAGRAM 2
SCALE: N.T.S. G-1



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

TYPICAL GROUND BAR CONNECTION DETAIL 3
SCALE: N.T.S. G-1

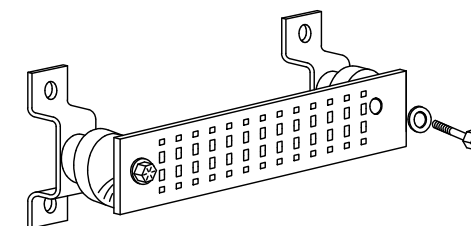
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" - SURGE PRODUCERS

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

SECTION "A" - SURGE ABSORBERS

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



GROUND BAR - DETAIL 4
SCALE: N.T.S. G-1

Date: 08/01/2018

Heather Simeone
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

JACOBS
Jacobs Engineering Group, Inc.
5449 Bells Ferry Road
Acworth, GA 30102
(770) 701-2500

Subject: AT&T Mobility Tower

Carrier Designation: AT&T Mobility
10035413
TRUMBULL INDIAN LEDGE

Crown Castle Designation:
881535
TRUMBULL TOWER
550490
1689989
473057 Rev. 1

Engineering Firm Designation: Jacobs Engineering Group, Inc. 1689989

Site Data:
Coordinates: 41° 16' 23.81" N, 73° 12' 47.18" W
Magnetic Declination: 10.5° E

Dear Heather Simeone,

Jacobs Engineering Group, Inc. is pleased to submit this report to determine the structural integrity of the above-mentioned tower.

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

LC7: Proposed Equipment Configuration

This analysis utilizes an ultimate 3-second gust wind speed of 121 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Questions regarding this analysis can be directed to CCISites@jacobs.com

Structural analysis prepared by:

Ankit Biratia
Engineering Associate

Engineer of Record:



Paul L. Mucci, P. E.
Senior Project Engineer
CT PE No. 24103

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Table 1 - Proposed Equipment Configuration
Table 2 - Other Considered Equipment

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Table 3 - Documents Provided
3.1) Analysis Method
3.2) Assumptions

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Table 4 - Section Capacity (Summary)
Table 5 - Tower Component Stresses vs. Capacity
4.1) Recommendations

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tnxTower Output

□ □□□□□□□□□□□

Base Level Drawing

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Additional Calculations

M	r	d	r	d	M	d	b	r	d
175.0	175.0	1	tower mounts	Platform Mount [LP 601-1]	-	-			
164.0	166.0	3	alcatel lucent	TD-RRH8x20-25	2 6 4	7983A 5/16 1-1/4			
		3	argus technologies	LLPX310R w/ Mount Pipe					
		3	dragonwave	A-ANT-23G-2-C					
		3	rfs celwave	APXVSP18-C-A20 w/ Mount Pipe					
		3	rfs celwave	APXVTM14-ALU-I20 w/ Mount Pipe					
	164.0	164.0	3	alcatel lucent			1900MHz RRH (65MHz)		
			3	alcatel lucent			800 EXTERNAL NOTCH FILTER		
			3	alcatel lucent			800MHZ RRH		
			9	rfs celwave			ACU-A20-N		
			3	samsung telecommunications			FDD_R6_RRH		
		1	tower mounts	Platform Mount [LP 602-1]					
154.0	155.0	3	alcatel lucent	RRH2X60-PCS	20	1-5/8			
		3	alcatel lucent	RRH2x60-700					
		3	alcatel lucent	RRH4X45-AWS4 B66					
		9	andrew	SBNHH-1D65B w/ Mount Pipe					
		2	antel	LPA-4016 w/ Mount Pipe					
		4	decibel	DB844G65ZAXY w/ Mount Pipe					
	2	rfs celwave	DB-B1-6C-8AB-0Z						
	154.0	1	tower mounts	Platform Mount [LP 601-1]					
144.0	145.0	3	commscope	SBNH-1D65C-SR w/ Mount Pipe	1 12	1-1/4 1-5/8			
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe					
		3	ericsson	KRY 112 144/1					
		3	ericsson	RRUS 11 B12					
	3	ericsson	RRUS 11 B2						
	144.0	1	tower mounts	Platform Mount [LP 601-1]					
134.0	135.0	12	decibel	DB844H90E-XY w/ Mount Pipe	9	1-1/4			
	134.0	1	tower mounts	Platform Mount [LP 303-1]	6	1-5/8			

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□ **b** □□□□□□□□□□ □□□□□□□□□□ □□□□□□□□□□

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4-GEOTECHNICAL REPORTS	Clarence Welti Assoc., Inc.	1406210	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Engineered Endeavors Inc.	1405798	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Engineered Endeavors Inc.	1405789	CCISITES
4-MOUNT ANALYSIS REPORT	Hudson Design Group, LLC	-	TSA Email

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tnxTower (version 8.0.5.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

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- 1) Tower and structures were built and maintained in accordance with the manufacturer's specifications.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 3) The existing base plate grout was not considered in this analysis.

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

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□ **b** □□□□□□□□□□□□□□□□□□□□□□□□ □□□□□□ □□□□

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L1	195 - 157.648	Pole	TP33.875x25x0.25	1	-12.51	1584.08	22.1	Pass
L2	157.648 - 117.083	Pole	TP42.9063x32.2501x0.3125	2	-27.97	2511.01	55.2	Pass
L3	117.083 - 81.0937	Pole	TP50.75x40.9017x0.375	3	-39.72	3565.24	62.8	Pass
L4	81.0937 - 40.0391	Pole	TP59.6563x48.3897x0.5	4	-58.67	5584.34	52.7	Pass
L5	40.0391 - 0	Pole	TP68x56.7861x0.5	5	-85.49	6580.00	60.1	Pass
							Summary	
						Pole (L3)	62.8	Pass
				□	□	□□□□□□□□□□	□□□□□	□□□□□

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Item No.	Description	Capacity Utilized (%)	Capacity (%)	Result
1	Anchor Rods	0	64.1	Pass
1	Base Plate	0	54.1	Pass
1	Base Foundation Structural	0	65.0	Pass
1	Base Foundation Soil Interaction	0	61.5	Pass

Overall Tower Capacity Utilization				0%
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Notes:

- See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

The tower and its foundation have sufficient capacity to carry the proposed load configuration.

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

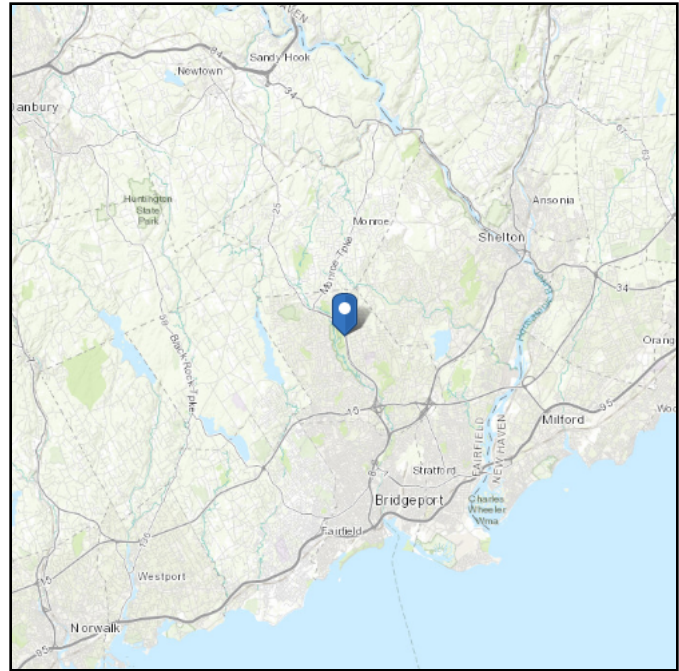
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ASCE 7 Hazards Report

Address:
No Address at This
Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 322.51 ft (NAVD 88)
Latitude: 41.273281
Longitude: -73.213106



Wind

Results:

Wind Speed:	121 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	92 Vmph
100-year MRI	99 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Wed Jan 30 2019

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

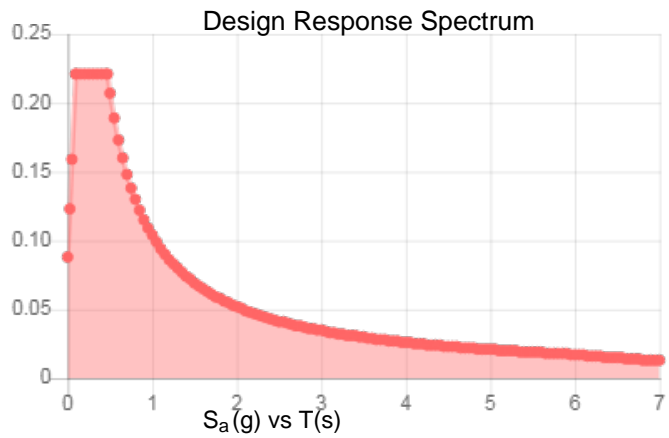
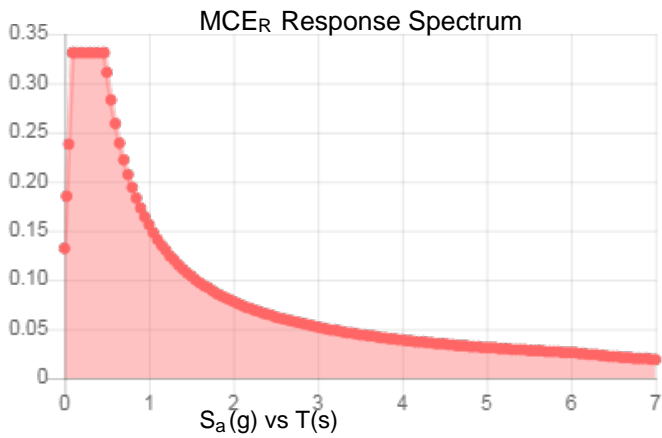
Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

Site Soil Class: D - Stiff Soil

Results:

S_s :	0.207	S_{DS} :	0.221
S_1 :	0.065	S_{D1} :	0.104
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.112
S_{MS} :	0.331	PGA _M :	0.176
S_{M1} :	0.156	F _{PGA} :	1.577
		I_e :	1

Seismic Design Category B



Data Accessed:

Wed Jan 30 2019

Date Source:

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

Ice

Results:

Ice Thickness: 0.75 in.
Concurrent Temperature: 15 F
Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Wed Jan 30 2019

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

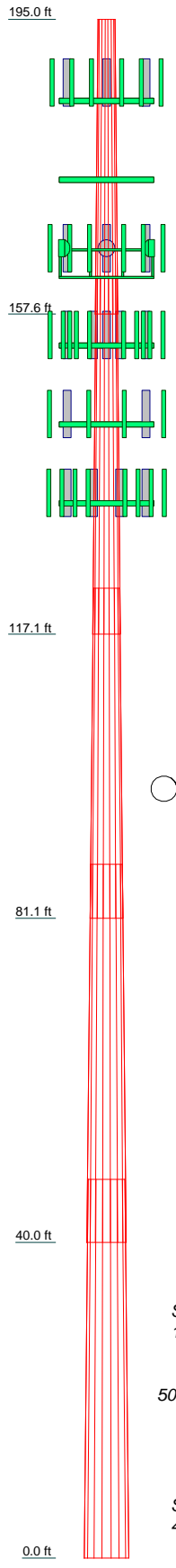
Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from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

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

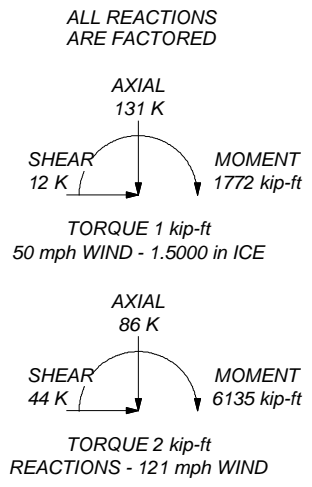
In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

Section	1	2	3	4	5
Length (ft)	37.35	45.30	41.85	47.90	47.99
Number of Sides	18	18	18	18	18
Thickness (in)	0.2500	0.3125	0.3750	0.5000	0.5000
Socket Length (ft)	4.73	5.86	6.84	7.95	8.61
Top Dia (in)	25.0000	32.2501	40.9017	48.3897	56.7861
Bot Dia (in)	33.8750	42.9063	50.7500	59.6563	68.0000
Grade			A572-65		
Weight (K)	2.9	5.7	7.7	13.8	16.0



M				
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A572-65	65 ksi	80 ksi		

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 121 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TIA-222-H Annex S
9. TOWER RATING: 62.8%



JACOBS		Jacobs Engineering Group Inc		TRUMBULL TOWER	
5449 Bells Ferry Road Acworth, GA		Project: BU881535_WO1689989		Job: TRUMBULL TOWER	
Phone: (770) 701-2500 FAX: (770) 701-2501		Client: Crown Castle Code: TIA-222-H Path:		Drawn by: Andrew McKelvey Date: 02/05/19 Scale: NTS	
Jacobs Engineering Group Inc		Date: 02/05/19		Dwg No. E-1	



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

- 1) Tower is located in Fairfield County, Connecticut.
- 2) Tower base elevation above sea level: 322.51 ft.
- 3) Basic wind speed of 121 mph.
- 4) Risk Category II.
- 5) Exposure Category B.
- 6) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- 7) Topographic Category: 1.
- 8) Crest Height: 0.00 ft.
- 9) Nominal ice thickness of 1.5000 in.
- 10) Ice thickness is considered to increase with height.
- 11) Ice density of 56 pcf.
- 12) A wind speed of 50 mph is used in combination with ice.
- 13) Temperature drop of 50 °F.
- 14) Deflections calculated using a wind speed of 60 mph.
- 15) TIA-222-H Annex S.
- 16) A non-linear (P-delta) analysis was used.
- 17) Pressures are calculated at each section.
- 18) Stress ratio used in pole design is 1.05.
- 19) Tower analysis based on target reliabilities in accordance with Annex S.
- 20) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- 21) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.



Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <div style="background-color: #cccccc; text-align: center; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
--	---	--



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	195.00-157.65	37.35	4.73	18	25.0000	33.8750	0.2500	1.0000	A572-65 (65 ksi)
L2	157.65-117.08	45.30	5.86	18	32.2501	42.9063	0.3125	1.2500	A572-65 (65 ksi)
L3	117.08-81.09	41.85	6.84	18	40.9017	50.7500	0.3750	1.5000	A572-65 (65 ksi)
L4	81.09-40.04	47.90	7.95	18	48.3897	59.6563	0.5000	2.0000	A572-65 (65 ksi)
L5	40.04-0.00	47.99		18	56.7861	68.0000	0.5000	2.0000	A572-65 (65 ksi)

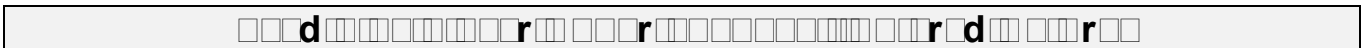


Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	25.3471	19.6391	1519.8824	8.7863	12.7000	119.6758	3041.7647	9.8214	3.9600	15.84
	34.3590	26.6814	3811.2835	11.9369	17.2085	221.4768	7627.5821	13.3433	5.5220	22.088
L2	33.8303	31.6781	4082.2570	11.3378	16.3830	249.1758	8169.8856	15.8421	5.1260	16.403
	43.5199	42.2477	9683.4926	15.1208	21.7964	444.2708	19379.727	21.1279	7.0015	22.405
L3	42.8760	48.2369	10009.181	14.3870	20.7781	481.7190	20031.534	24.1230	6.5387	17.437
	51.4751	59.9588	19222.984	17.8831	25.7810	745.6260	38471.263	29.9851	8.2720	22.059
L4	50.6936	76.0009	22021.130	17.0008	24.5819	895.8253	44071.237	38.0077	7.6366	15.273
	60.4994	93.8810	41506.516	21.0005	30.3054	1369.6091	83067.647	46.9494	9.6195	19.239
L5	59.4715	89.3261	35753.520	19.9816	28.8474	1239.4036	71554.087	44.6715	9.1144	18.229
	68.9719	107.1225	61663.148	23.9625	34.5440	1785.0610	123407.43	53.5714	11.0880	22.176

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
L1 195.00-157.65				1	1	1			
L2 157.65-117.08				1	1	1			
L3 117.08-81.09				1	1	1			
L4 81.09-40.04				1	1	1			
L5 40.04-0.00				1	1	1			



Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter r in	Perimeter r in	Weight plf
** Safety Line ** Safety Line 3/8	A	No	Surface Ar (CaAa)	195.00 - 0.00	1	1	0.000 0.000	0.3750		0.22
HJ7-50A(1-5/8")	B	No	Surface Ar (CaAa)	154.00 - 0.00	8	8	-0.100 0.050	1.9800		1.04



Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight plf
** 185 **									
LDF6-50A(1-1/4")	C	No	No	Inside Pole	185.00 - 0.00	12	No Ice	0.00	0.66
							1/2" Ice	0.00	0.66
							1" Ice	0.00	0.66
							2" Ice	0.00	0.66
FB-L98B-002-75000(3/8")	C	No	No	Inside Pole	185.00 - 0.00	2	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06
WR-VG82ST-BRDA(5/8)	C	No	No	Inside Pole	185.00 - 0.00	2	No Ice	0.00	0.31
							1/2" Ice	0.00	0.31
							1" Ice	0.00	0.31
							2" Ice	0.00	0.31
WR-VG82ST-BRDA(5/8)	C	No	No	Inside Pole	185.00 - 0.00	2	No Ice	0.00	0.31
							1/2" Ice	0.00	0.31
							1" Ice	0.00	0.31
							2" Ice	0.00	0.31
** 164 **									
* Sprint PCS *									
HB114-1-0813U4-M5J(1-1/4")	B	No	No	Inside Pole	164.00 - 0.00	4	No Ice	0.00	1.20
							1/2" Ice	0.00	1.20
							1" Ice	0.00	1.20
							2" Ice	0.00	1.20
* Clearwire Corp *									
7983A(ELLIPTICAL)	B	No	No	Inside Pole	164.00 - 0.00	2	No Ice	0.00	0.08
							1/2" Ice	0.00	0.08
							1" Ice	0.00	0.08
							2" Ice	0.00	0.08
2" Rigid Conduit	B	No	No	Inside Pole	164.00 - 0.00	1	No Ice	0.00	2.80
							1/2" Ice	0.00	2.80
							1" Ice	0.00	2.80
							2" Ice	0.00	2.80
9207(5/16")	B	No	No	Inside Pole	164.00 - 0.00	6	No Ice	0.00	0.60
							1/2" Ice	0.00	0.60
							1" Ice	0.00	0.60
							2" Ice	0.00	0.60
* As per TIA *									
FSJ4-50B(1/2")	B	No	No	Inside Pole	164.00 - 0.00	2	No Ice	0.00	0.14
							1/2" Ice	0.00	0.14
							1" Ice	0.00	0.14
							2" Ice	0.00	0.14
HJ7-50A(1-5/8")	B	No	No	Inside Pole	154.00 - 0.00	12	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04
							2" Ice	0.00	1.04
** 144 **									
LDF7-50A(1-5/8")	A	No	No	Inside Pole	144.00 - 0.00	12	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
MLE Hybrid 3Power/6Fiber RL 2(1-1/4")	A	No	No	Inside Pole	144.00 - 0.00	1	No Ice	0.00	0.68
							1/2" Ice	0.00	0.68
							1" Ice	0.00	0.68
							2" Ice	0.00	0.68
** 134 **									
LDF6-50A(1-1/4")	A	No	No	Inside Pole	134.00 - 0.00	9	No Ice	0.00	0.66
							1/2" Ice	0.00	0.66
							1" Ice	0.00	0.66
							2" Ice	0.00	0.66
LDF7-50A(1-5/8")	A	No	No	Inside Pole	134.00 - 0.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82



Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} _A In Face ft ²	C _{AA} _A Out Face ft ²	Weight K
L1	195.00-157.65	A	0.000	0.000	1.401	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.07
		C	0.000	0.000	0.000	0.000	0.25
L2	157.65-117.08	A	0.000	0.000	1.521	0.000	0.48
		B	0.000	0.000	58.476	0.000	1.24
		C	0.000	0.000	0.000	0.000	0.38
L3	117.08-81.09	A	0.000	0.000	1.350	0.000	0.78
		B	0.000	0.000	57.008	0.000	1.17
		C	0.000	0.000	0.000	0.000	0.33
L4	81.09-40.04	A	0.000	0.000	1.540	0.000	0.89
		B	0.000	0.000	65.031	0.000	1.33
		C	0.000	0.000	0.000	0.000	0.38
L5	40.04-0.00	A	0.000	0.000	1.501	0.000	0.86
		B	0.000	0.000	63.422	0.000	1.30
		C	0.000	0.000	0.000	0.000	0.37



Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} _A In Face ft ²	C _{AA} _A Out Face ft ²	Weight K
L1	195.00-157.65	A	1.507	0.000	0.000	12.658	0.000	0.14
		B		0.000	0.000	0.000	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.25
L2	157.65-117.08	A	1.470	0.000	0.000	13.747	0.000	0.62
		B		0.000	0.000	87.003	0.000	2.16
		C		0.000	0.000	0.000	0.000	0.38
L3	117.08-81.09	A	1.423	0.000	0.000	11.929	0.000	0.90
		B		0.000	0.000	84.483	0.000	2.04
		C		0.000	0.000	0.000	0.000	0.33
L4	81.09-40.04	A	1.355	0.000	0.000	13.222	0.000	1.02
		B		0.000	0.000	95.891	0.000	2.30
		C		0.000	0.000	0.000	0.000	0.38
L5	40.04-0.00	A	1.210	0.000	0.000	12.349	0.000	0.98
		B		0.000	0.000	92.837	0.000	2.20
		C		0.000	0.000	0.000	0.000	0.37



Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	195.00-157.65	-0.2612	-0.1508	-1.2066	-0.6966
L2	157.65-117.08	6.2329	-4.2479	4.2674	-3.7314
L3	117.08-81.09	7.0025	-4.7555	4.9375	-4.2005
L4	81.09-40.04	7.3621	-5.0007	5.2653	-4.4565
L5	40.04-0.00	7.6589	-5.2033	5.5506	-4.6580



Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment t	Placement ft	C _{AA} _A Front ft ²	C _{AA} _A Side ft ²	Weight K
** Climbing Ladders **									
6' Climbing Ladder (Flat)	C	From Leg	2.00	0.0000	183.00	No Ice	5.84	5.84	0.05
						1/2" Ice	10.30	10.30	0.07
						1" Ice	14.76	14.76	0.09
						2" Ice	23.67	23.67	0.14
6' Climbing Ladder (Flat)	C	From Leg	2.00	0.0000	172.00	No Ice	5.84	5.84	0.05

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft ²	ft ²	K	
			0.00			1/2"	10.30	10.30	0.07	
			0.00			Ice	14.76	14.76	0.09	
						1" Ice	23.67	23.67	0.14	
						2" Ice				
6' Climbing Ladder (Flat)	C	From Leg	2.00		0.0000	162.00	No Ice	5.84	5.84	0.05
			0.00				1/2"	10.30	10.30	0.07
			0.00				Ice	14.76	14.76	0.09
							1" Ice	23.67	23.67	0.14
							2" Ice			
6' Climbing Ladder (Flat)	A	From Leg	2.00		0.0000	152.00	No Ice	5.84	5.84	0.05
			0.00				1/2"	10.30	10.30	0.07
			0.00				Ice	14.76	14.76	0.09
							1" Ice	23.67	23.67	0.14
							2" Ice			
6' Climbing Ladder (Flat)	A	From Leg	2.00		0.0000	142.00	No Ice	5.84	5.84	0.05
			0.00				1/2"	10.30	10.30	0.07
			0.00				Ice	14.76	14.76	0.09
							1" Ice	23.67	23.67	0.14
							2" Ice			
** 185 **										
7770.00 w/ Mount Pipe	A	From Leg	4.00		0.0000	185.00	No Ice	5.75	4.25	0.06
			0.00				1/2"	6.18	5.01	0.10
			2.00				Ice	6.61	5.71	0.16
							1" Ice	7.49	7.16	0.29
							2" Ice			
7770.00 w/ Mount Pipe	B	From Leg	4.00		0.0000	185.00	No Ice	5.75	4.25	0.06
			0.00				1/2"	6.18	5.01	0.10
			2.00				Ice	6.61	5.71	0.16
							1" Ice	7.49	7.16	0.29
							2" Ice			
7770.00 w/ Mount Pipe	C	From Leg	4.00		0.0000	185.00	No Ice	5.75	4.25	0.06
			0.00				1/2"	6.18	5.01	0.10
			2.00				Ice	6.61	5.71	0.16
							1" Ice	7.49	7.16	0.29
							2" Ice			
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	4.00		0.0000	185.00	No Ice	9.90	8.11	0.08
			0.00				1/2"	10.47	9.30	0.16
			2.00				Ice	11.01	10.21	0.25
							1" Ice	12.11	12.01	0.46
							2" Ice			
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Leg	4.00		0.0000	185.00	No Ice	9.90	8.11	0.08
			0.00				1/2"	10.47	9.30	0.16
			2.00				Ice	11.01	10.21	0.25
							1" Ice	12.11	12.01	0.46
							2" Ice			
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Leg	4.00		0.0000	185.00	No Ice	9.90	8.11	0.08
			0.00				1/2"	10.47	9.30	0.16
			2.00				Ice	11.01	10.21	0.25
							1" Ice	12.11	12.01	0.46
							2" Ice			
80010965 w/ Mount Pipe	A	From Leg	4.00		0.0000	185.00	No Ice	14.05	7.63	0.13
			0.00				1/2"	14.69	8.90	0.22
			2.00				Ice	15.30	9.96	0.33
							1" Ice	16.53	11.92	0.57
							2" Ice			
80010965 w/ Mount Pipe	B	From Leg	4.00		0.0000	185.00	No Ice	14.05	7.63	0.13
			0.00				1/2"	14.69	8.90	0.22
			2.00				Ice	15.30	9.96	0.33
							1" Ice	16.53	11.92	0.57
							2" Ice			
80010965 w/ Mount Pipe	C	From Leg	4.00		0.0000	185.00	No Ice	14.05	7.63	0.13
			0.00				1/2"	14.69	8.90	0.22
			2.00				Ice	15.30	9.96	0.33
							1" Ice	16.53	11.92	0.57
							2" Ice			

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft ²	ft ²	K	
RRUS12/RRUS A2	A	From Leg	4.00		0.0000	185.00	No Ice	3.14	1.84	0.07
			0.00				1/2"	3.36	2.01	0.10
			2.00				Ice	3.59	2.20	0.13
							1" Ice	4.07	2.59	0.20
							2" Ice			
RRUS12/RRUS A2	B	From Leg	4.00		0.0000	185.00	No Ice	3.14	1.84	0.07
			0.00				1/2"	3.36	2.01	0.10
			2.00				Ice	3.59	2.20	0.13
							1" Ice	4.07	2.59	0.20
							2" Ice			
RRUS12/RRUS A2	C	From Leg	4.00		0.0000	185.00	No Ice	3.14	1.84	0.07
			0.00				1/2"	3.36	2.01	0.10
			2.00				Ice	3.59	2.20	0.13
							1" Ice	4.07	2.59	0.20
							2" Ice			
(2) LGP21401	A	From Leg	4.00		0.0000	185.00	No Ice	1.10	0.21	0.01
			0.00				1/2"	1.24	0.27	0.02
			0.00				Ice	1.38	0.35	0.03
							1" Ice	1.69	0.52	0.05
							2" Ice			
(2) LGP21401	B	From Leg	4.00		0.0000	185.00	No Ice	1.10	0.21	0.01
			0.00				1/2"	1.24	0.27	0.02
			0.00				Ice	1.38	0.35	0.03
							1" Ice	1.69	0.52	0.05
							2" Ice			
(2) LGP21401	C	From Leg	4.00		0.0000	185.00	No Ice	1.10	0.21	0.01
			0.00				1/2"	1.24	0.27	0.02
			0.00				Ice	1.38	0.35	0.03
							1" Ice	1.69	0.52	0.05
							2" Ice			
DC6-48-60-18-8F	A	From Leg	4.00		0.0000	185.00	No Ice	0.92	0.92	0.03
			0.00				1/2"	1.46	1.46	0.05
			0.00				Ice	1.64	1.64	0.07
							1" Ice	2.04	2.04	0.12
							2" Ice			
RRUS 4449 B5/B12	A	From Leg	4.00		0.0000	185.00	No Ice	1.97	1.41	0.07
			0.00				1/2"	2.14	1.56	0.09
			2.00				Ice	2.33	1.73	0.11
							1" Ice	2.72	2.07	0.16
							2" Ice			
RRUS 4449 B5/B12	B	From Leg	4.00		0.0000	185.00	No Ice	1.97	1.41	0.07
			0.00				1/2"	2.14	1.56	0.09
			2.00				Ice	2.33	1.73	0.11
							1" Ice	2.72	2.07	0.16
							2" Ice			
RRUS 4449 B5/B12	C	From Leg	4.00		0.0000	185.00	No Ice	1.97	1.41	0.07
			0.00				1/2"	2.14	1.56	0.09
			2.00				Ice	2.33	1.73	0.11
							1" Ice	2.72	2.07	0.16
							2" Ice			
RRUS 32	A	From Leg	4.00		0.0000	185.00	No Ice	2.86	1.78	0.06
			0.00				1/2"	3.08	1.97	0.08
			2.00				Ice	3.32	2.17	0.10
							1" Ice	3.81	2.58	0.16
							2" Ice			
RRUS 32	B	From Leg	4.00		0.0000	185.00	No Ice	2.86	1.78	0.06
			0.00				1/2"	3.08	1.97	0.08
			2.00				Ice	3.32	2.17	0.10
							1" Ice	3.81	2.58	0.16
							2" Ice			
RRUS 32	C	From Leg	4.00		0.0000	185.00	No Ice	2.86	1.78	0.06
			0.00				1/2"	3.08	1.97	0.08
			2.00				Ice	3.32	2.17	0.10
							1" Ice	3.81	2.58	0.16
							2" Ice			

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA}		Weight
			Horz	Lateral	Vert			Front	Side	
			ft	ft	ft	°	ft	ft ²	ft ²	K
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	185.00	No Ice	0.92	0.92	0.03	
			0.00			1/2"	1.46	1.46	0.05	
			0.00			Ice	1.64	1.64	0.07	
						1" Ice	2.04	2.04	0.12	
						2" Ice				
8'x2" Antenna Mount Pipe	A	From Leg	4.00	0.0000	185.00	No Ice	1.90	1.90	0.03	
			0.00			1/2"	2.73	2.73	0.04	
			0.00			Ice	3.40	3.40	0.06	
						1" Ice	4.40	4.40	0.12	
						2" Ice				
8'x2" Antenna Mount Pipe	B	From Leg	4.00	0.0000	185.00	No Ice	1.90	1.90	0.03	
			0.00			1/2"	2.73	2.73	0.04	
			0.00			Ice	3.40	3.40	0.06	
						1" Ice	4.40	4.40	0.12	
						2" Ice				
8'x2" Antenna Mount Pipe	C	From Leg	4.00	0.0000	185.00	No Ice	1.90	1.90	0.03	
			0.00			1/2"	2.73	2.73	0.04	
			0.00			Ice	3.40	3.40	0.06	
						1" Ice	4.40	4.40	0.12	
						2" Ice				
Platform Mount [LP 601-1]	C	None		0.0000	185.00	No Ice	28.47	28.47	1.12	
						1/2"	33.59	33.59	1.51	
						Ice	38.71	38.71	1.91	
						1" Ice	48.95	48.95	2.69	
						2" Ice				
(2) 5' Hor x 4" x 4" Angle Mount	A	None		0.0000	187.00	No Ice	2.00	2.00	0.09	
						1/2"	2.36	2.36	0.11	
						Ice	2.73	2.73	0.13	
						1" Ice	3.48	3.48	0.19	
						2" Ice				
(2) 5' Hor x 4" x 4" Angle Mount	A	None		0.0000	183.00	No Ice	2.00	2.00	0.09	
						1/2"	2.36	2.36	0.11	
						Ice	2.73	2.73	0.13	
						1" Ice	3.48	3.48	0.19	
						2" Ice				
(2) 5' Hor x 4" x 4" Angle Mount	B	None		0.0000	187.00	No Ice	2.00	2.00	0.09	
						1/2"	2.36	2.36	0.11	
						Ice	2.73	2.73	0.13	
						1" Ice	3.48	3.48	0.19	
						2" Ice				
(2) 5' Hor x 4" x 4" Angle Mount	B	None		0.0000	183.00	No Ice	2.00	2.00	0.09	
						1/2"	2.36	2.36	0.11	
						Ice	2.73	2.73	0.13	
						1" Ice	3.48	3.48	0.19	
						2" Ice				
(2) 5' Hor x 4" x 4" Angle Mount	C	None		0.0000	187.00	No Ice	2.00	2.00	0.09	
						1/2"	2.36	2.36	0.11	
						Ice	2.73	2.73	0.13	
						1" Ice	3.48	3.48	0.19	
						2" Ice				
(2) 5' Hor x 4" x 4" Angle Mount	C	None		0.0000	183.00	No Ice	2.00	2.00	0.09	
						1/2"	2.36	2.36	0.11	
						Ice	2.73	2.73	0.13	
						1" Ice	3.48	3.48	0.19	
						2" Ice				
Miscellaneous [NA 509-3]	C	None		0.0000	185.00	No Ice	11.84	11.84	0.28	
						1/2"	16.96	16.96	0.30	
						Ice	22.08	22.08	0.32	
						1" Ice	32.32	32.32	0.36	
						2" Ice				
(2) Miscellaneous [NA 507-1]	C	None		0.0000	185.00	No Ice	4.80	4.80	0.25	
						1/2"	6.70	6.70	0.29	
						Ice	8.60	8.60	0.34	
						1" Ice	12.40	12.40	0.44	
						2" Ice				

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _A A _A		Weight
			Horz	Lateral	Vert			Front	Side	
			ft	ft	ft		ft	ft ²	ft ²	K
** 175 **										
(4) 8"x2" Antenna Mount Pipe	A	From Leg	4.00	0.0000	175.00	No Ice	1.90	1.90	0.03	
			0.00			1/2"	2.73	2.73	0.04	
			0.00			Ice	3.40	3.40	0.06	
						1" Ice	4.40	4.40	0.12	
						2" Ice				
(4) 8"x2" Antenna Mount Pipe	B	From Leg	4.00	0.0000	175.00	No Ice	1.90	1.90	0.03	
			0.00			1/2"	2.73	2.73	0.04	
			0.00			Ice	3.40	3.40	0.06	
						1" Ice	4.40	4.40	0.12	
						2" Ice				
(4) 8"x2" Antenna Mount Pipe	C	From Leg	4.00	0.0000	175.00	No Ice	1.90	1.90	0.03	
			0.00			1/2"	2.73	2.73	0.04	
			0.00			Ice	3.40	3.40	0.06	
						1" Ice	4.40	4.40	0.12	
						2" Ice				
Platform Mount [LP 601-1]	C	None		0.0000	175.00	No Ice	28.47	28.47	1.12	
						1/2"	33.59	33.59	1.51	
						Ice	38.71	38.71	1.91	
						1" Ice	48.95	48.95	2.69	
						2" Ice				
** 164 **										
* Sprint PCS *										
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00	0.0000	164.00	No Ice	8.26	6.95	0.08	
			0.00			1/2"	8.82	8.13	0.15	
			2.00			Ice	9.35	9.02	0.23	
						1" Ice	10.42	10.84	0.41	
						2" Ice				
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00	0.0000	164.00	No Ice	8.26	6.95	0.08	
			0.00			1/2"	8.82	8.13	0.15	
			2.00			Ice	9.35	9.02	0.23	
						1" Ice	10.42	10.84	0.41	
						2" Ice				
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00	0.0000	164.00	No Ice	8.26	6.95	0.08	
			0.00			1/2"	8.82	8.13	0.15	
			2.00			Ice	9.35	9.02	0.23	
						1" Ice	10.42	10.84	0.41	
						2" Ice				
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Leg	4.00	0.0000	164.00	No Ice	6.58	4.96	0.08	
			0.00			1/2"	7.03	5.75	0.13	
			2.00			Ice	7.47	6.47	0.19	
						1" Ice	8.38	7.94	0.34	
						2" Ice				
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Leg	4.00	0.0000	164.00	No Ice	6.58	4.96	0.08	
			0.00			1/2"	7.03	5.75	0.13	
			2.00			Ice	7.47	6.47	0.19	
						1" Ice	8.38	7.94	0.34	
						2" Ice				
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Leg	4.00	0.0000	164.00	No Ice	6.58	4.96	0.08	
			0.00			1/2"	7.03	5.75	0.13	
			2.00			Ice	7.47	6.47	0.19	
						1" Ice	8.38	7.94	0.34	
						2" Ice				
800 EXTERNAL NOTCH FILTER	A	From Leg	4.00	0.0000	164.00	No Ice	0.66	0.32	0.01	
			0.00			1/2"	0.76	0.40	0.02	
			0.00			Ice	0.87	0.48	0.02	
						1" Ice	1.11	0.67	0.04	
						2" Ice				
800 EXTERNAL NOTCH FILTER	B	From Leg	4.00	0.0000	164.00	No Ice	0.66	0.32	0.01	
			0.00			1/2"	0.76	0.40	0.02	
			0.00			Ice	0.87	0.48	0.02	
						1" Ice	1.11	0.67	0.04	
						2" Ice				
800 EXTERNAL NOTCH FILTER	C	From Leg	4.00	0.0000	164.00	No Ice	0.66	0.32	0.01	
			0.00				0.76	0.40	0.02	

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight
			Horz	Lateral	Vert					
			ft	ft	ft	ft	ft ²	ft ²	K	
			0.00				1/2"	0.87	0.48	0.02
							Ice	1.11	0.67	0.04
1900MHz RRH (65MHz)	A	From Leg	4.00	0.0000	164.00		1" Ice			
			0.00				2" Ice			
			0.00				No Ice	2.31	2.38	0.06
			0.00				1/2"	2.52	2.58	0.08
			0.00				Ice	2.73	2.79	0.11
1900MHz RRH (65MHz)	B	From Leg	4.00	0.0000	164.00		1" Ice	3.17	3.24	0.18
			0.00				2" Ice			
			0.00				No Ice	2.31	2.38	0.06
			0.00				1/2"	2.52	2.58	0.08
			0.00				Ice	2.73	2.79	0.11
1900MHz RRH (65MHz)	C	From Leg	4.00	0.0000	164.00		1" Ice	3.17	3.24	0.18
			0.00				2" Ice			
			0.00				No Ice	2.31	2.38	0.06
			0.00				1/2"	2.52	2.58	0.08
			0.00				Ice	2.73	2.79	0.11
800MHz RRH	A	From Leg	4.00	0.0000	164.00		1" Ice	2.92	2.51	0.16
			0.00				2" Ice			
			0.00				No Ice	2.13	1.77	0.05
			0.00				1/2"	2.32	1.95	0.07
			0.00				Ice	2.51	2.13	0.10
800MHz RRH	B	From Leg	4.00	0.0000	164.00		1" Ice	2.92	2.51	0.16
			0.00				2" Ice			
			0.00				No Ice	2.13	1.77	0.05
			0.00				1/2"	2.32	1.95	0.07
			0.00				Ice	2.51	2.13	0.10
800MHz RRH	C	From Leg	4.00	0.0000	164.00		1" Ice	2.92	2.51	0.16
			0.00				2" Ice			
			0.00				No Ice	2.13	1.77	0.05
			0.00				1/2"	2.32	1.95	0.07
			0.00				Ice	2.51	2.13	0.10
(3) ACU-A20-N	A	From Leg	4.00	0.0000	164.00		1" Ice	0.26	0.34	0.01
			0.00				2" Ice			
			0.00				No Ice	0.07	0.12	0.00
			0.00				1/2"	0.10	0.16	0.00
			0.00				Ice	0.15	0.21	0.00
(3) ACU-A20-N	B	From Leg	4.00	0.0000	164.00		1" Ice	0.26	0.34	0.01
			0.00				2" Ice			
			0.00				No Ice	0.07	0.12	0.00
			0.00				1/2"	0.10	0.16	0.00
			0.00				Ice	0.15	0.21	0.00
(3) ACU-A20-N	C	From Leg	4.00	0.0000	164.00		1" Ice	0.26	0.34	0.01
			0.00				2" Ice			
			0.00				No Ice	0.07	0.12	0.00
			0.00				1/2"	0.10	0.16	0.00
			0.00				Ice	0.15	0.21	0.00
(2) TD-RRH8x20-25	B	From Leg	4.00	0.0000	164.00		1" Ice	5.10	2.29	0.20
			0.00				2" Ice			
			2.00				No Ice	4.05	1.53	0.07
							1/2"	4.30	1.71	0.10
							Ice	4.56	1.90	0.13
TD-RRH8x20-25	C	From Leg	4.00	0.0000	164.00		1" Ice	5.10	2.29	0.20
			0.00				2" Ice			
			2.00				No Ice	4.05	1.53	0.07
							1/2"	4.30	1.71	0.10
							Ice	4.56	1.90	0.13
* Clearwire Corp * LLPX310R w/ Mount Pipe	A	From Leg	4.00	0.0000	164.00		1" Ice	6.01	5.24	0.23
			0.00				2" Ice			
			2.00				No Ice	4.54	2.98	0.05
							1/2"	4.89	3.53	0.08
							Ice	5.25	4.09	0.13

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft ²	ft ²	K	
LLPX310R w/ Mount Pipe	B	From Leg	4.00		0.0000	164.00	No Ice	4.54	2.98	0.05
			0.00				1/2"	4.89	3.53	0.08
			2.00				Ice	5.25	4.09	0.13
							1" Ice	6.01	5.24	0.23
							2" Ice			
LLPX310R w/ Mount Pipe	C	From Leg	4.00		0.0000	164.00	No Ice	4.54	2.98	0.05
			0.00				1/2"	4.89	3.53	0.08
			2.00				Ice	5.25	4.09	0.13
							1" Ice	6.01	5.24	0.23
							2" Ice			
FDD_R6_RRH	A	From Leg	4.00		0.0000	164.00	No Ice	1.53	0.68	0.03
			0.00				1/2"	1.69	0.80	0.04
			0.00				Ice	1.85	0.92	0.06
							1" Ice	2.20	1.19	0.09
							2" Ice			
FDD_R6_RRH	B	From Leg	4.00		0.0000	164.00	No Ice	1.53	0.68	0.03
			0.00				1/2"	1.69	0.80	0.04
			0.00				Ice	1.85	0.92	0.06
							1" Ice	2.20	1.19	0.09
							2" Ice			
FDD_R6_RRH	C	From Leg	4.00		0.0000	164.00	No Ice	1.53	0.68	0.03
			0.00				1/2"	1.69	0.80	0.04
			0.00				Ice	1.85	0.92	0.06
							1" Ice	2.20	1.19	0.09
							2" Ice			
Platform Mount [LP 602-1]	C	None			0.0000	164.00	No Ice	32.03	32.03	1.34
							1/2"	38.71	38.71	1.80
							Ice	45.39	45.39	2.26
							1" Ice	58.75	58.75	3.17
							2" Ice			
154 (2) DB844G65ZAXY w/ Mount Pipe	A	From Leg	4.00		0.0000	154.00	No Ice	4.58	4.80	0.03
			0.00				1/2"	4.96	5.42	0.08
			1.00				Ice	5.34	6.04	0.13
							1" Ice	6.14	7.34	0.26
							2" Ice			
(2) LPA-4016 w/ Mount Pipe	B	From Leg	4.00		0.0000	154.00	No Ice	8.62	6.75	0.04
			0.00				1/2"	9.06	7.38	0.12
			1.00				Ice	9.51	8.02	0.21
							1" Ice	10.45	9.36	0.40
							2" Ice			
(2) DB844G65ZAXY w/ Mount Pipe	C	From Leg	4.00		0.0000	154.00	No Ice	4.58	4.80	0.03
			0.00				1/2"	4.96	5.42	0.08
			1.00				Ice	5.34	6.04	0.13
							1" Ice	6.14	7.34	0.26
							2" Ice			
(3) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00		0.0000	154.00	No Ice	8.62	7.30	0.07
			0.00				1/2"	9.28	8.58	0.14
			1.00				Ice	9.91	9.72	0.22
							1" Ice	11.11	11.66	0.41
							2" Ice			
(3) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00		0.0000	154.00	No Ice	8.62	7.30	0.07
			0.00				1/2"	9.28	8.58	0.14
			1.00				Ice	9.91	9.72	0.22
							1" Ice	11.11	11.66	0.41
							2" Ice			
(3) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00		0.0000	154.00	No Ice	8.62	7.30	0.07
			0.00				1/2"	9.28	8.58	0.14
			1.00				Ice	9.91	9.72	0.22
							1" Ice	11.11	11.66	0.41
							2" Ice			
RRH4X45-AWS4 B66	A	From Leg	4.00		0.0000	154.00	No Ice	2.66	1.59	0.06
			0.00				1/2"	2.88	1.77	0.08
			1.00				Ice	3.10	1.96	0.11
							1" Ice	3.58	2.36	0.17
							2" Ice			

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight
			Horz	Lateral	Vert					
			ft	ft	ft	°	ft	ft ²	ft ²	K
RRH4X45-AWS4 B66	B	From Leg	4.00	0.0000	154.00	2" Ice				
			0.00			No Ice	2.66	1.59	0.06	
			1.00			1/2"	2.88	1.77	0.08	
						Ice	3.10	1.96	0.11	
						1" Ice	3.58	2.36	0.17	
RRH4X45-AWS4 B66	C	From Leg	4.00	0.0000	154.00	2" Ice				
			0.00			No Ice	2.66	1.59	0.06	
			1.00			1/2"	2.88	1.77	0.08	
						Ice	3.10	1.96	0.11	
						1" Ice	3.58	2.36	0.17	
RRH2X60-PCS	A	From Leg	4.00	0.0000	154.00	2" Ice				
			0.00			No Ice	2.20	1.72	0.06	
			1.00			1/2"	2.39	1.90	0.08	
						Ice	2.59	2.09	0.10	
						1" Ice	3.01	2.48	0.16	
RRH2X60-PCS	B	From Leg	4.00	0.0000	154.00	2" Ice				
			0.00			No Ice	2.20	1.72	0.06	
			1.00			1/2"	2.39	1.90	0.08	
						Ice	2.59	2.09	0.10	
						1" Ice	3.01	2.48	0.16	
RRH2X60-PCS	C	From Leg	4.00	0.0000	154.00	2" Ice				
			0.00			No Ice	2.20	1.72	0.06	
			1.00			1/2"	2.39	1.90	0.08	
						Ice	2.59	2.09	0.10	
						1" Ice	3.01	2.48	0.16	
RRH2x60-700	A	From Leg	4.00	0.0000	154.00	2" Ice				
			0.00			No Ice	3.50	1.82	0.06	
			1.00			1/2"	3.76	2.05	0.08	
						Ice	4.03	2.29	0.11	
						1" Ice	4.58	2.79	0.17	
RRH2x60-700	B	From Leg	4.00	0.0000	154.00	2" Ice				
			0.00			No Ice	3.50	1.82	0.06	
			1.00			1/2"	3.76	2.05	0.08	
						Ice	4.03	2.29	0.11	
						1" Ice	4.58	2.79	0.17	
RRH2x60-700	C	From Leg	4.00	0.0000	154.00	2" Ice				
			0.00			No Ice	3.50	1.82	0.06	
			1.00			1/2"	3.76	2.05	0.08	
						Ice	4.03	2.29	0.11	
						1" Ice	4.58	2.79	0.17	
(2) DB-B1-6C-8AB-0Z	C	From Leg	4.00	0.0000	154.00	2" Ice				
			0.00			No Ice	4.80	2.00	0.04	
			1.00			1/2"	5.07	2.19	0.08	
						Ice	5.35	2.39	0.12	
						1" Ice	5.93	2.81	0.21	
Platform Mount [LP 601-1]	C	None		0.0000	154.00	2" Ice				
						No Ice	28.47	28.47	1.12	
						1/2"	33.59	33.59	1.51	
						Ice	38.71	38.71	1.91	
						1" Ice	48.95	48.95	2.69	
144 SBNH-1D65C-SR w/ Mount Pipe	A	From Leg	4.00	0.0000	144.00	2" Ice				
			0.00			No Ice	11.68	9.84	0.08	
			1.00			1/2"	12.40	11.37	0.17	
						Ice	13.14	12.91	0.27	
						1" Ice	14.51	15.27	0.51	
SBNH-1D65C-SR w/ Mount Pipe	B	From Leg	4.00	0.0000	144.00	2" Ice				
			0.00			No Ice	11.68	9.84	0.08	
			1.00			1/2"	12.40	11.37	0.17	
						Ice	13.14	12.91	0.27	
						1" Ice	14.51	15.27	0.51	
SBNH-1D65C-SR w/ Mount Pipe	C	From Leg	4.00	0.0000	144.00	2" Ice				
			0.00			No Ice	11.68	9.84	0.08	
			1.00			1/2"	12.40	11.37	0.17	
						Ice	13.14	12.91	0.27	

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight
			Horz	Lateral	Vert					
			ft	ft	ft	°	ft	ft ²	ft ²	K
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	144.00		1" Ice	14.51	15.27	0.51
							2" Ice			
							No Ice	6.33	5.64	0.11
							1/2" Ice	6.78	6.43	0.17
							Ice	7.21	7.13	0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	144.00		1" Ice	8.12	8.59	0.38
							2" Ice			
							No Ice	6.33	5.64	0.11
							1/2" Ice	6.78	6.43	0.17
							Ice	7.21	7.13	0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	144.00		1" Ice	8.12	8.59	0.38
							2" Ice			
							No Ice	6.33	5.64	0.11
							1/2" Ice	6.78	6.43	0.17
							Ice	7.21	7.13	0.23
RRUS 11 B2	A	From Leg	4.00 0.00 1.00	0.0000	144.00		1" Ice	3.71	1.83	0.15
							2" Ice			
							No Ice	2.83	1.18	0.05
							1/2" Ice	3.04	1.33	0.07
							Ice	3.26	1.48	0.10
RRUS 11 B2	B	From Leg	4.00 0.00 1.00	0.0000	144.00		1" Ice	3.71	1.83	0.15
							2" Ice			
							No Ice	2.83	1.18	0.05
							1/2" Ice	3.04	1.33	0.07
							Ice	3.26	1.48	0.10
RRUS 11 B2	C	From Leg	4.00 0.00 1.00	0.0000	144.00		1" Ice	3.71	1.83	0.15
							2" Ice			
							No Ice	2.83	1.18	0.05
							1/2" Ice	3.04	1.33	0.07
							Ice	3.26	1.48	0.10
RRUS 11 B12	A	From Leg	4.00 0.00 1.00	0.0000	144.00		1" Ice	3.71	1.83	0.15
							2" Ice			
							No Ice	2.83	1.18	0.05
							1/2" Ice	3.04	1.33	0.07
							Ice	3.26	1.48	0.10
RRUS 11 B12	B	From Leg	4.00 0.00 1.00	0.0000	144.00		1" Ice	3.71	1.83	0.15
							2" Ice			
							No Ice	2.83	1.18	0.05
							1/2" Ice	3.04	1.33	0.07
							Ice	3.26	1.48	0.10
RRUS 11 B12	C	From Leg	4.00 0.00 1.00	0.0000	144.00		1" Ice	3.71	1.83	0.15
							2" Ice			
							No Ice	2.83	1.18	0.05
							1/2" Ice	3.04	1.33	0.07
							Ice	3.26	1.48	0.10
KRY 112 144/1	A	From Leg	4.00 0.00 1.00	0.0000	144.00		1" Ice	0.70	0.44	0.03
							2" Ice			
							No Ice	0.35	0.16	0.01
							1/2" Ice	0.43	0.22	0.01
							Ice	0.51	0.28	0.02
KRY 112 144/1	B	From Leg	4.00 0.00 1.00	0.0000	144.00		1" Ice	0.70	0.44	0.03
							2" Ice			
							No Ice	0.35	0.16	0.01
							1/2" Ice	0.43	0.22	0.01
							Ice	0.51	0.28	0.02
KRY 112 144/1	C	From Leg	4.00 0.00 1.00	0.0000	144.00		1" Ice	0.70	0.44	0.03
							2" Ice			
							No Ice	0.35	0.16	0.01
							1/2" Ice	0.43	0.22	0.01
							Ice	0.51	0.28	0.02
Platform Mount [LP 601-1]	C	None		0.0000	144.00		2" Ice			
							No Ice	28.47	28.47	1.12
							1/2" Ice	33.59	33.59	1.51
							Ice	38.71	38.71	1.91

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
						1" Ice 2" Ice	48.95 48.95	2.69	
134									
(4) DB844H90E-XY w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	134.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice	3.30 3.67 4.03 4.80 4.80	4.80 5.42 6.04 7.34 7.34	0.03 0.07 0.12 0.23 0.23
(4) DB844H90E-XY w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	134.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice	3.30 3.67 4.03 4.80 4.80	4.80 5.42 6.04 7.34 7.34	0.03 0.07 0.12 0.23 0.23
(4) DB844H90E-XY w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	134.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice	3.30 3.67 4.03 4.80 4.80	4.80 5.42 6.04 7.34 7.34	0.03 0.07 0.12 0.23 0.23
Platform Mount [LP 303-1]	C	None		0.0000	134.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice	14.66 18.87 23.08 31.50 31.50	14.66 18.87 23.08 31.50 31.50	1.25 1.48 1.71 2.18 2.18



Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft ²	Weight K	
** 164 **											
* Clearwire Corp *											
A-ANT-23G-2-C	A	Paraboloid w/Shroud (HP)	From Leg	4.00 0.00 2.00	0.0000		164.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice	3.72 4.01 4.30 4.88	0.01 0.03 0.05 0.09
A-ANT-23G-2-C	B	Paraboloid w/Shroud (HP)	From Leg	4.00 0.00 2.00	40.0000		164.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice	3.72 4.01 4.30 4.88	0.01 0.03 0.05 0.09
A-ANT-23G-2-C	C	Paraboloid w/Shroud (HP)	From Leg	4.00 0.00 2.00	20.0000		164.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice	3.72 4.01 4.30 4.88	0.01 0.03 0.05 0.09



Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice

Comb. No.	Description
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

M **M** **b**

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	195 - 157.648	Pole	Max Tension	8	0.00	0.00	0.00
			Max. Compression	26	-28.24	0.01	-0.72
			Max. Mx	8	-12.51	-258.83	-0.62
			Max. My	14	-12.53	-0.23	-258.87
			Max. Vy	8	17.24	-258.83	-0.62
			Max. Vx	14	17.16	-0.23	-258.87
			Max. Torque	12			-1.45
L2	157.648 - 117.083	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.56	-0.43	-0.54
			Max. Mx	8	-27.97	-1322.26	-1.86
			Max. My	14	-28.00	-0.76	-1313.45
			Max. Vy	8	33.29	-1322.26	-1.86
			Max. Vx	14	33.04	-0.76	-1313.45
			Max. Torque	10			-2.62
L3	117.083 - 81.0937	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.06	-2.25	0.75
			Max. Mx	8	-39.72	-2550.03	-2.66
			Max. My	2	-39.75	2.18	2531.61
			Max. Vy	8	36.72	-2550.03	-2.66
			Max. Vx	14	36.47	-1.70	-2531.46

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L4	81.0937 - 40.0391	Pole	Max. Torque	12			-1.74
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-98.76	-4.67	2.45
			Max. Mx	8	-58.67	-4097.70	-3.47
			Max. My	2	-58.68	2.69	4068.92
			Max. Vy	8	40.56	-4097.70	-3.47
			Max. Vx	14	40.31	-2.91	-4067.85
			Max. Torque	12			-1.74
L5	40.0391 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-131.25	-7.93	4.73
			Max. Mx	8	-85.49	-6134.55	-4.33
			Max. My	2	-85.49	3.13	6093.54
			Max. Vy	8	44.08	-6134.55	-4.33
			Max. Vx	14	43.84	-4.49	-6091.21
			Max. Torque	12			-1.73

M

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	30	131.25	-12.28	-0.01
	Max. H _x	20	85.51	43.99	0.09
	Max. H _z	3	64.13	0.03	43.79
	Max. M _x	2	6093.54	0.03	43.79
	Max. M _z	8	6134.55	-44.03	-0.03
	Max. Torsion	24	1.64	22.04	37.94
	Min. Vert	17	64.13	21.96	-37.93
	Min. H _x	8	85.51	-44.03	-0.03
	Min. H _z	15	64.13	-0.01	-43.79
	Min. M _x	14	-6091.21	-0.01	-43.79
	Min. M _z	20	-6122.30	43.99	0.09
	Min. Torsion	12	-1.73	-22.05	-37.93

rM **r**

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturing Moment, M _x kip-ft	Overturing Moment, M _z kip-ft	Torque kip-ft
Dead Only	71.26	0.00	0.00	-1.04	-2.02	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	85.51	-0.03	-43.79	-6093.54	3.13	-1.51
0.9 Dead+1.0 Wind 0 deg - No Ice	64.13	-0.03	-43.79	-6024.16	3.70	-1.51
1.2 Dead+1.0 Wind 30 deg - No Ice	85.51	21.97	-37.93	-5278.05	-3061.11	-0.75
0.9 Dead+1.0 Wind 30 deg - No Ice	64.13	21.97	-37.93	-5217.92	-3025.80	-0.75
1.2 Dead+1.0 Wind 60 deg - No Ice	85.51	38.10	-21.90	-3048.00	-5307.93	-0.22
0.9 Dead+1.0 Wind 60 deg - No Ice	64.13	38.10	-21.90	-3013.15	-5247.15	-0.23
1.2 Dead+1.0 Wind 90 deg - No Ice	85.51	44.03	0.03	4.33	-6134.55	0.35
0.9 Dead+1.0 Wind 90 deg - No Ice	64.13	44.03	0.03	4.58	-6064.42	0.34
1.2 Dead+1.0 Wind 120 deg - No Ice	85.51	38.12	21.97	3057.93	-5310.98	1.16
0.9 Dead+1.0 Wind 120 deg - No Ice	64.13	38.12	21.97	3023.57	-5250.16	1.16
1.2 Dead+1.0 Wind 150 deg - No Ice	85.51	22.05	37.93	5275.75	-3074.73	1.73

Load Combination	Vertical	Shear _x	Shear _z	Overturing Moment, M _x	Overturing Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead+1.0 Wind 150 deg - No Ice	64.13	22.05	37.93	5216.26	-3039.24	1.73
1.2 Dead+1.0 Wind 180 deg - No Ice	85.51	0.01	43.79	6091.21	-4.49	1.65
0.9 Dead+1.0 Wind 180 deg - No Ice	64.13	0.01	43.79	6022.46	-3.82	1.65
1.2 Dead+1.0 Wind 210 deg - No Ice	85.51	-21.96	37.93	5275.85	3053.90	0.95
0.9 Dead+1.0 Wind 210 deg - No Ice	64.13	-21.96	37.93	5216.36	3019.90	0.96
1.2 Dead+1.0 Wind 240 deg - No Ice	85.51	-38.05	21.94	3051.78	5293.58	0.17
0.9 Dead+1.0 Wind 240 deg - No Ice	64.13	-38.05	21.94	3017.50	5234.19	0.17
1.2 Dead+1.0 Wind 270 deg - No Ice	85.51	-43.99	-0.09	-17.98	6122.30	-0.15
0.9 Dead+1.0 Wind 270 deg - No Ice	64.13	-43.99	-0.09	-17.45	6053.54	-0.14
1.2 Dead+1.0 Wind 300 deg - No Ice	85.51	-38.11	-21.96	-3059.04	5305.05	-0.89
0.9 Dead+1.0 Wind 300 deg - No Ice	64.13	-38.11	-21.96	-3024.04	5245.52	-0.88
1.2 Dead+1.0 Wind 330 deg - No Ice	85.51	-22.04	-37.94	-5280.28	3067.27	-1.64
0.9 Dead+1.0 Wind 330 deg - No Ice	64.13	-22.04	-37.94	-5220.12	3033.11	-1.63
1.2 Dead+1.0 Ice+1.0 Temp	131.25	0.00	0.00	-4.73	-7.93	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	131.25	-0.01	-12.24	-1761.02	-7.34	-1.08
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	131.25	6.13	-10.60	-1525.96	-888.68	-0.90
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	131.25	10.63	-6.12	-883.21	-1534.66	-0.57
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	131.25	12.28	0.01	-3.82	-1772.01	-0.09
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	131.25	10.64	6.14	875.87	-1535.24	0.49
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	131.25	6.15	10.60	1515.99	-891.52	0.95
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	131.25	0.00	12.24	1751.14	-8.83	1.11
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	131.25	-6.13	10.60	1516.11	871.23	0.94
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	131.25	-10.62	6.13	874.68	1515.63	0.56
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	131.25	-12.27	-0.02	-8.55	1753.45	0.13
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	131.25	-10.63	-6.13	-885.48	1518.07	-0.43
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	131.25	-6.15	-10.60	-1526.36	874.02	-0.93
Dead+Wind 0 deg - Service	71.26	-0.01	-10.14	-1402.77	-0.78	-0.35
Dead+Wind 30 deg - Service	71.26	5.09	-8.78	-1215.15	-705.80	-0.18
Dead+Wind 60 deg - Service	71.26	8.82	-5.07	-702.06	-1222.76	-0.05
Dead+Wind 90 deg - Service	71.26	10.20	0.01	0.23	-1412.97	0.08
Dead+Wind 120 deg - Service	71.26	8.83	5.09	702.82	-1223.47	0.27
Dead+Wind 150 deg - Service	71.26	5.11	8.78	1213.09	-708.93	0.41
Dead+Wind 180 deg - Service	71.26	0.00	10.14	1400.71	-2.53	0.39
Dead+Wind 210 deg - Service	71.26	-5.09	8.78	1213.11	701.15	0.22
Dead+Wind 240 deg - Service	71.26	-8.81	5.08	701.40	1216.46	0.04
Dead+Wind 270 deg - Service	71.26	-10.19	-0.02	-4.90	1407.15	-0.03
Dead+Wind 300 deg - Service	71.26	-8.83	-5.09	-704.59	1219.11	-0.21

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturing Moment, M _x kip-ft	Overturing Moment, M _z kip-ft	Torque kip-ft
Dead+Wind 330 deg - Service	71.26	-5.10	-8.79	-1215.66	704.23	-0.38



Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-71.26	0.00	0.00	71.26	0.00	0.000%
2	-0.03	-85.51	-43.79	0.03	85.51	43.79	0.000%
3	-0.03	-64.13	-43.79	0.03	64.13	43.79	0.000%
4	21.97	-85.51	-37.93	-21.97	85.51	37.93	0.000%
5	21.97	-64.13	-37.93	-21.97	64.13	37.93	0.000%
6	38.10	-85.51	-21.90	-38.10	85.51	21.90	0.000%
7	38.10	-64.13	-21.90	-38.10	64.13	21.90	0.000%
8	44.03	-85.51	0.03	-44.03	85.51	-0.03	0.000%
9	44.03	-64.13	0.03	-44.03	64.13	-0.03	0.000%
10	38.12	-85.51	21.97	-38.12	85.51	-21.97	0.000%
11	38.12	-64.13	21.97	-38.12	64.13	-21.97	0.000%
12	22.05	-85.51	37.93	-22.05	85.51	-37.93	0.000%
13	22.05	-64.13	37.93	-22.05	64.13	-37.93	0.000%
14	0.01	-85.51	43.79	-0.01	85.51	-43.79	0.000%
15	0.01	-64.13	43.79	-0.01	64.13	-43.79	0.000%
16	-21.96	-85.51	37.93	21.96	85.51	-37.93	0.000%
17	-21.96	-64.13	37.93	21.96	64.13	-37.93	0.000%
18	-38.05	-85.51	21.94	38.05	85.51	-21.94	0.000%
19	-38.05	-64.13	21.94	38.05	64.13	-21.94	0.000%
20	-43.99	-85.51	-0.09	43.99	85.51	0.09	0.000%
21	-43.99	-64.13	-0.09	43.99	64.13	0.09	0.000%
22	-38.11	-85.51	-21.96	38.11	85.51	21.96	0.000%
23	-38.11	-64.13	-21.96	38.11	64.13	21.96	0.000%
24	-22.04	-85.51	-37.94	22.04	85.51	37.94	0.000%
25	-22.04	-64.13	-37.94	22.04	64.13	37.94	0.000%
26	0.00	-131.25	0.00	0.00	131.25	0.00	0.000%
27	-0.01	-131.25	-12.24	0.01	131.25	12.24	0.000%
28	6.13	-131.25	-10.60	-6.13	131.25	10.60	0.000%
29	10.63	-131.25	-6.12	-10.63	131.25	6.12	0.000%
30	12.28	-131.25	0.01	-12.28	131.25	-0.01	0.000%
31	10.63	-131.25	6.14	-10.64	131.25	-6.14	0.000%
32	6.15	-131.25	10.60	-6.15	131.25	-10.60	0.000%
33	0.00	-131.25	12.24	-0.00	131.25	-12.24	0.000%
34	-6.13	-131.25	10.60	6.13	131.25	-10.60	0.000%
35	-10.62	-131.25	6.13	10.62	131.25	-6.13	0.000%
36	-12.27	-131.25	-0.02	12.27	131.25	0.02	0.000%
37	-10.63	-131.25	-6.13	10.63	131.25	6.13	0.000%
38	-6.15	-131.25	-10.60	6.15	131.25	10.60	0.000%
39	-0.01	-71.26	-10.14	0.01	71.26	10.14	0.000%
40	5.09	-71.26	-8.78	-5.09	71.26	8.78	0.000%
41	8.82	-71.26	-5.07	-8.82	71.26	5.07	0.000%
42	10.20	-71.26	0.01	-10.20	71.26	-0.01	0.000%
43	8.83	-71.26	5.09	-8.83	71.26	-5.09	0.000%
44	5.11	-71.26	8.78	-5.11	71.26	-8.78	0.000%
45	0.00	-71.26	10.14	-0.00	71.26	-10.14	0.000%
46	-5.09	-71.26	8.78	5.09	71.26	-8.78	0.000%
47	-8.81	-71.26	5.08	8.81	71.26	-5.08	0.000%
48	-10.19	-71.26	-0.02	10.19	71.26	0.02	0.000%
49	-8.83	-71.26	-5.09	8.83	71.26	5.09	0.000%
50	-5.10	-71.26	-8.79	5.10	71.26	8.79	0.000%



Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00005322
3	Yes	4	0.00000001	0.00064939
4	Yes	6	0.00000001	0.00007819
5	Yes	5	0.00000001	0.00069684
6	Yes	6	0.00000001	0.00007912
7	Yes	5	0.00000001	0.00070516
8	Yes	4	0.00000001	0.00060902
9	Yes	4	0.00000001	0.00031573
10	Yes	6	0.00000001	0.00008050
11	Yes	5	0.00000001	0.00071757
12	Yes	6	0.00000001	0.00007766
13	Yes	5	0.00000001	0.00069192
14	Yes	5	0.00000001	0.00005218
15	Yes	4	0.00000001	0.00063816
16	Yes	6	0.00000001	0.00007947
17	Yes	5	0.00000001	0.00070878
18	Yes	6	0.00000001	0.00007884
19	Yes	5	0.00000001	0.00070271
20	Yes	4	0.00000001	0.00051268
21	Yes	4	0.00000001	0.00023240
22	Yes	6	0.00000001	0.00007841
23	Yes	5	0.00000001	0.00069867
24	Yes	6	0.00000001	0.00008056
25	Yes	5	0.00000001	0.00071860
26	Yes	4	0.00000001	0.00000001
27	Yes	5	0.00000001	0.00061904
28	Yes	5	0.00000001	0.00078028
29	Yes	5	0.00000001	0.00078942
30	Yes	5	0.00000001	0.00062116
31	Yes	5	0.00000001	0.00078963
32	Yes	5	0.00000001	0.00077946
33	Yes	5	0.00000001	0.00061766
34	Yes	5	0.00000001	0.00078307
35	Yes	5	0.00000001	0.00077524
36	Yes	5	0.00000001	0.00061632
37	Yes	5	0.00000001	0.00077905
38	Yes	5	0.00000001	0.00078749
39	Yes	4	0.00000001	0.00010051
40	Yes	4	0.00000001	0.00045575
41	Yes	4	0.00000001	0.00046920
42	Yes	4	0.00000001	0.00008912
43	Yes	4	0.00000001	0.00048957
44	Yes	4	0.00000001	0.00044597
45	Yes	4	0.00000001	0.00010217
46	Yes	4	0.00000001	0.00047660
47	Yes	4	0.00000001	0.00046397
48	Yes	4	0.00000001	0.00008757
49	Yes	4	0.00000001	0.00045501
50	Yes	4	0.00000001	0.00049285

M r d

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	195 - 157.648	27.662	42	1.2187	0.0023
L2	162.383 - 117.083	19.444	42	1.1577	0.0017
L3	122.948 - 81.0937	10.835	42	0.8796	0.0007
L4	87.9375 - 40.0391	5.396	42	0.5786	0.0003
L5	47.9896 - 0	1.628	42	0.3063	0.0001

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Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
187.00	(2) 5' Hor x 4" x 4" Angle Mount	42	25.611	1.2123	0.0022	55952
185.00	7770.00 w/ Mount Pipe	42	25.100	1.2103	0.0022	44762
183.00	6' Climbing Ladder (Flat)	42	24.590	1.2080	0.0021	37301
175.00	(4) 8'x2" Antenna Mount Pipe	42	22.564	1.1955	0.0020	22380
172.00	6' Climbing Ladder (Flat)	42	21.813	1.1888	0.0019	19461
166.00	A-ANT-23G-2-C	42	20.327	1.1714	0.0018	15434
164.00	APXVSPP18-C-A20 w/ Mount Pipe	42	19.838	1.1641	0.0018	14437
162.00	6' Climbing Ladder (Flat)	42	19.351	1.1561	0.0017	13559
154.00	(2) DB844G65ZAXY w/ Mount Pipe	42	17.444	1.1161	0.0015	10894
152.00	6' Climbing Ladder (Flat)	42	16.978	1.1043	0.0014	10383
144.00	SBNH-1D65C-SR w/ Mount Pipe	42	15.161	1.0511	0.0012	8744
142.00	6' Climbing Ladder (Flat)	42	14.720	1.0365	0.0012	8412
134.00	(4) DB844H90E-XY w/ Mount Pipe	42	13.015	0.9738	0.0009	7299

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	195 - 157.648	120.244	8	5.3056	0.0099
L2	162.383 - 117.083	84.517	8	5.0387	0.0074
L3	122.948 - 81.0937	47.094	8	3.8266	0.0029
L4	87.9375 - 40.0391	23.450	8	2.5159	0.0014
L5	47.9896 - 0	7.071	8	1.3312	0.0006

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Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
187.00	(2) 5' Hor x 4" x 4" Angle Mount	8	111.327	5.2773	0.0094	13090
185.00	7770.00 w/ Mount Pipe	8	109.104	5.2685	0.0093	10471
183.00	6' Climbing Ladder (Flat)	8	106.887	5.2587	0.0091	8726
175.00	(4) 8'x2" Antenna Mount Pipe	8	98.080	5.2036	0.0085	5234
172.00	6' Climbing Ladder (Flat)	8	94.813	5.1746	0.0083	4550
166.00	A-ANT-23G-2-C	8	88.354	5.0983	0.0077	3607
164.00	APXVSPP18-C-A20 w/ Mount Pipe	8	86.226	5.0668	0.0075	3374
162.00	6' Climbing Ladder (Flat)	8	84.113	5.0317	0.0073	3167
154.00	(2) DB844G65ZAXY w/ Mount Pipe	8	75.823	4.8573	0.0064	2539
152.00	6' Climbing Ladder (Flat)	8	73.796	4.8059	0.0062	2419
144.00	SBNH-1D65C-SR w/ Mount Pipe	8	65.898	4.5739	0.0052	2032
142.00	6' Climbing Ladder (Flat)	8	63.980	4.5102	0.0050	1954
134.00	(4) DB844H90E-XY w/ Mount Pipe	8	56.568	4.2370	0.0040	1693

Compression Checks

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Section No.	Elevation ft	Size	L ft	L_u ft	KI/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	195 - 157.648 (1)	TP33.875x25x0.25	37.35	0.00	0.0	25.788 8	-12.51	1508.65	0.008
L2	157.648 - 117.083 (2)	TP42.9063x32.2501x0.31 25	45.30	0.00	0.0	40.879 3	-27.97	2391.44	0.012
L3	117.083 - 81.0937 (3)	TP50.75x40.9017x0.375	41.85	0.00	0.0	58.042 1	-39.72	3395.47	0.012
L4	81.0937 - 40.0391 (4)	TP59.6563x48.3897x0.5	47.90	0.00	0.0	90.913 1	-58.67	5318.42	0.011
L5	40.0391 - 0 (5)	TP68x56.7861x0.5	47.99	0.00	0.0	107.12 20	-85.49	6266.67	0.014

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Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	195 - 157.648 (1)	TP33.875x25x0.25	259.14	1168.47	0.222	0.00	1168.47	0.000
L2	157.648 - 117.083 (2)	TP42.9063x32.2501x0.31 25	1322.27	2336.93	0.566	0.00	2336.93	0.000
L3	117.083 - 81.0937 (3)	TP50.75x40.9017x0.375	2550.03	3945.55	0.646	0.00	3945.55	0.000
L4	81.0937 - 40.0391 (4)	TP59.6563x48.3897x0.5	4097.70	7560.82	0.542	0.00	7560.82	0.000
L5	40.0391 - 0 (5)	TP68x56.7861x0.5	6134.55	9944.92	0.617	0.00	9944.92	0.000

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Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	195 - 157.648 (1)	TP33.875x25x0.25	17.27	452.59	0.038	1.27	1288.17	0.001
L2	157.648 - 117.083 (2)	TP42.9063x32.2501x0.31 25	33.29	717.43	0.046	0.35	2589.45	0.000
L3	117.083 - 81.0937 (3)	TP50.75x40.9017x0.375	36.72	1018.64	0.036	0.35	4350.17	0.000
L4	81.0937 - 40.0391 (4)	TP59.6563x48.3897x0.5	40.56	1595.53	0.025	0.35	8004.48	0.000
L5	40.0391 - 0 (5)	TP68x56.7861x0.5	44.08	1880.00	0.023	0.35	11113.25	0.000

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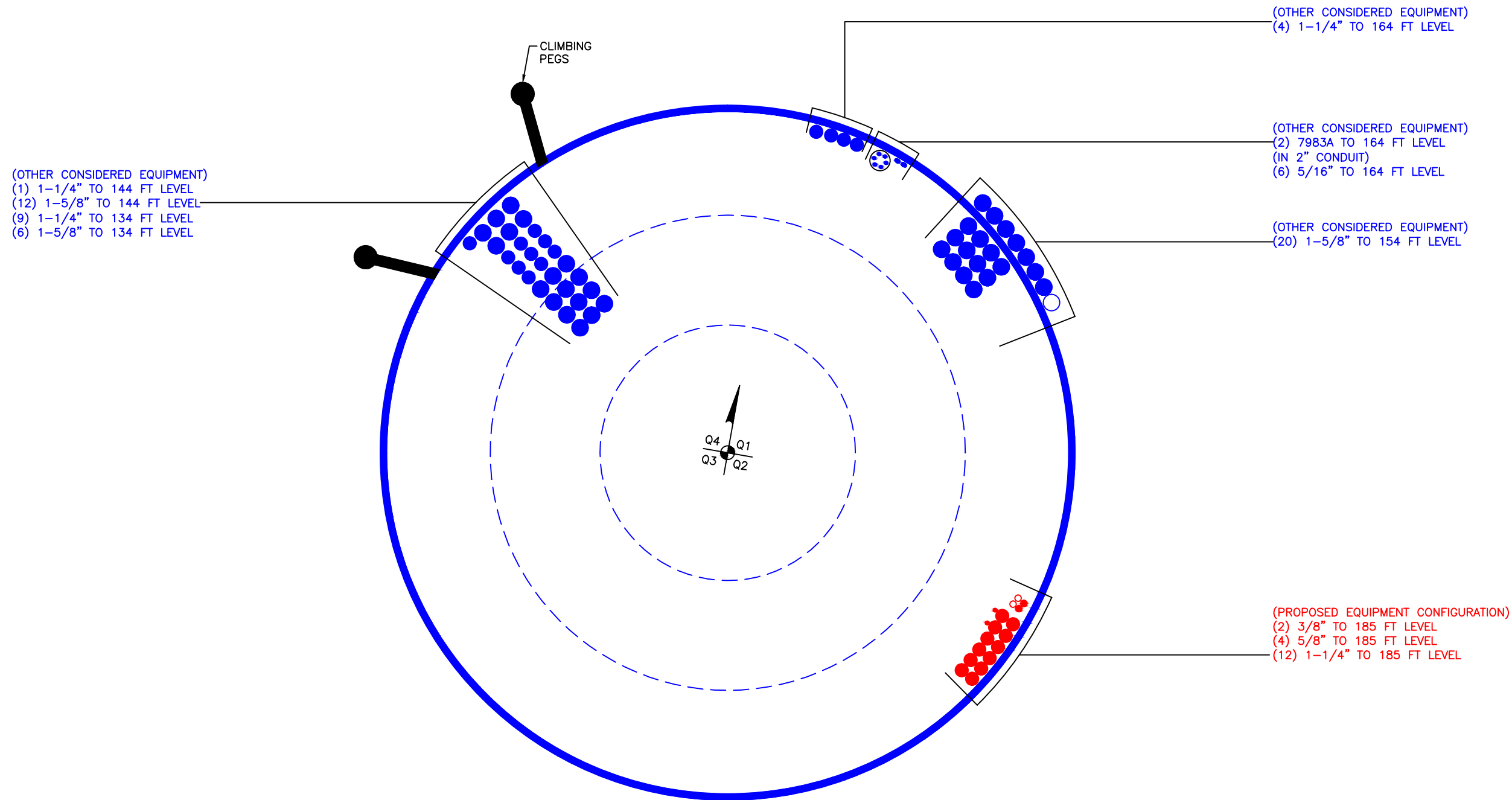
Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	195 - 157.648 (1)	0.008	0.222	0.000	0.038	0.001	0.232	1.050	4.8.2
L2	157.648 - 117.083 (2)	0.012	0.566	0.000	0.046	0.000	0.580	1.050	4.8.2
L3	117.083 - 81.0937 (3)	0.012	0.646	0.000	0.036	0.000	0.659	1.050	4.8.2
L4	81.0937 - 40.0391 (4)	0.011	0.542	0.000	0.025	0.000	0.554	1.050	4.8.2
L5	40.0391 - 0 (5)	0.014	0.617	0.000	0.023	0.000	0.631	1.050	4.8.2



Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
L1	195 - 157.648	Pole	TP33.875x25x0.25	1	-12.51	1584.08	22.1	Pass	
L2	157.648 - 117.083	Pole	TP42.9063x32.2501x0.3125	2	-27.97	2511.01	55.2	Pass	
L3	117.083 - 81.0937	Pole	TP50.75x40.9017x0.375	3	-39.72	3565.24	62.8	Pass	
L4	81.0937 - 40.0391	Pole	TP59.6563x48.3897x0.5	4	-58.67	5584.34	52.7	Pass	
L5	40.0391 - 0	Pole	TP68x56.7861x0.5	5	-85.49	6580.00	60.1	Pass	
							Summary		
							Pole (L3)	62.8	Pass

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Monopole Base Plate Connection

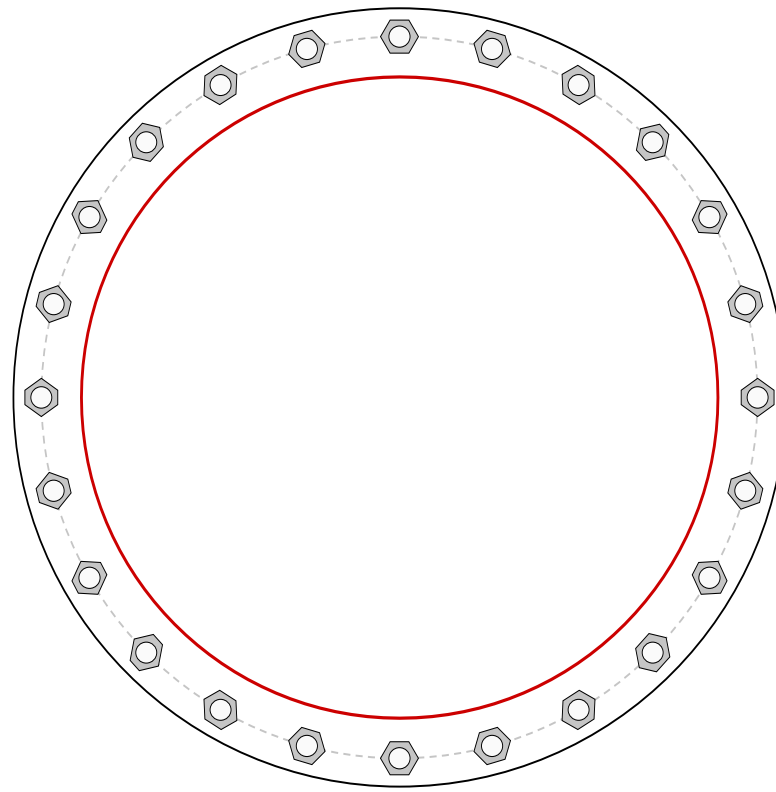


Site Info	
BU #	881535
Site Name	TRUMBULL TOWER
Order #	473057 Rev#1

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1

Applied Loads	
Moment (kip-ft)	6134.55
Axial Force (kips)	85.49
Shear Force (kips)	44.08

*TIA-222-H Section 15.5 Applied



Connection Properties	Analysis Results	
Anchor Rod Data	Anchor Rod Summary <i>(units of kips, kip-in)</i>	
(24) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 76.5" BC	$P_{u_c} = 163.89$	$\phi P_{n_c} = 243.75$ Stress Rating
Base Plate Data	$V_u = 1.84$	$\phi V_n = 73.13$ 64.1%
82.5" OD x 2.5" Plate (A572-60; $F_y=60$ ksi, $F_u=75$ ksi)	$M_u = n/a$	$\phi M_n = n/a$ Pass
Stiffener Data	Base Plate Summary	
N/A	Max Stress (ksi):	30.7 (Flexural)
Pole Data	Allowable Stress (ksi):	54
68" x 0.5" 18-sided pole (A572-65; $F_y=65$ ksi, $F_u=80$ ksi)	Stress Rating:	54.1% Pass

FOUNDATION DATA



881535
 TRUMBULL TOWER
 473057 Rev#1

TIA-222 Revision: H
 Tower Type: Monopole

Top & Bot. Pad Rein. Different?:
 Block Foundation?:

Compression, P_{comp} :	86	klps
Base Shear, V_{u_comp} :	44	klps
Moment, M :	6135	ft-klps
Tower Height, H :	195	ft
BP Dist. Above Fdn, b_{d_top} :	4	in

	Ultimate Gross Bearing	Ultimate Net Bearing	Soil Rating	Structural Rating
Lateral (Sliding) (klps)	415.40	44.00	4	4
Bearing Pressure (ksf)	9.00	3.59	4	4
Overtuning (kip*ft)	10567.66	6501.67	4	4
Pier Flexure (Comp.) (kip*ft)	9308.65	6355.00	4	4
Pier Compression (kip)	51554.88	158.90	4	4
Pad Flexure (kip*ft)	5943.63	2215.05	4	4
Pad Shear - 1-way (klps)	1039.95	315.33	4	4
Pad Shear - 2-way (Comp) (ksi)	0.190	0.045	4	4
Flexural 2-way (Comp) (kip*ft)	5714.52	3813.00	4	4

Pier Shape:	Square	
Pier Diameter, d :	9	ft
Ext. Above Grade, H_{ext} :	1	ft
Pier Rebar Size, ϕ :	8	
Pier Rebar Quantity, N :	54	
Pier Tie/Spiral Size, ϕ :	4	
Pier Tie/Spiral Quantity, N :	10	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, c :	3	in

*Rating per TIA-222-H Section 15.5

Soil Rating*: 4
 Structural Rating*: 4

Depth, D :	7	ft
Pad Width, B :	29	ft
Pad Thickness, t :	3	ft
Pad Rebar Size (Top), ϕ :	8	
Pad Top Rebar Quantity (Top), N :	30	
Pad Rebar Size (Bottom), ϕ :	8	
Pad Rebar Quantity (Bottom), N :	55	
Pad Clear Cover, c :	3	in

Rebar Grade, f_y :	60000	psi
Concrete Compressive Strength, f_c :	4000	psi
Dry Concrete Density, δ :	150	pcf

Total Soil Unit Weight, γ :	125	pcf
Ultimate Gross Bearing, Q_{ult} :	12.000	ksf
Cohesion, c :	0.000	ksf
Friction Angle, ϕ :	34	degrees
SPT Blow Count, N_{60} :	60	
Base Friction, μ :		
Neglected Depth, H_{neg} :	3.50	ft
Foundation Bearing on Rock?	Yes	

--Toggle between Gross and Net

Groundwater Depth, □□:	15	ft
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RF EMISSIONS COMPLIANCE REPORT

Crown Castle on behalf of AT&T Mobility, LLC

Site: TRUMBULL TOWER
425 Indian Ledge Park Rd
Trumbull, CT
1/11/2019

Report Status:

AT&T Mobility, LLC Is Compliant

Prepared By:

Sitesafe, LLC

8618 Westwood Center Drive, Suite 315

Vienna, VA 22182

Voice 703-276-1100

Fax 703-276-1169

Engineering Statement in Re:
Electromagnetic Energy Analysis
AT&T Mobility, LLC
Trumbull, CT

My signature on the cover of this document indicates:

That I am registered as a Professional Engineer in the jurisdiction indicated; and

That I have extensive professional experience in the wireless communications engineering industry; and

That I am an employee of Sitesafe, LLC in Arlington, Virginia; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission ("the FCC" and "the FCC Rules") both in general and specifically as they apply to the FCC's Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; and

That the technical information serving as the basis for this report was supplied by AT&T Mobility, LLC (See attached Site Summary and Carrier documents), and that AT&T Mobility, LLC's installations involve communications equipment, antennas and associated technical equipment at a location referred to as the "TRUMBULL TOWER" ("the site"); and

That AT&T Mobility, LLC proposes to operate at the site with transmit antennas listed in the carrier summary and with a maximum effective radiated power as specified by AT&T Mobility, LLC and shown on the worksheet, and that worst-case 100% duty cycle have been assumed; and

That in addition to the emitters specified in the worksheet, there are additional collocated point-to-point microwave facilities on this structure and, the antennas used are highly directional oriented at angles at or just below the horizontal and, that the energy present at ground level is typically so low as to be considered insignificant and have not been included in this analysis; and

That this analysis has been performed with the assumption that the ground immediately surrounding the tower is primarily flat or falling; and

That at this time, the FCC requires that certain licensees address specific levels of radio-frequency energy to which workers or members of the public might possibly be exposed (at §1.1307(b) of the FCC Rules); and

That such consideration of possible exposure of humans to radio-frequency radiation must utilize the standards set by the FCC, which is the Federal Agency having jurisdiction over communications facilities; and

That the FCC rules define two tiers of permissible exposure guidelines: 1) "uncontrolled environments," defined as situations in which persons may not be aware of (the "general public"), or may not be able to control their exposure to a transmission facility; and (2) "controlled environments," which defines situations in which persons are aware of their potential for exposure (industry personnel); and

That this statement specifically addresses the uncontrolled environment (which is more conservative than the controlled environment) and the limit set forth in the FCC rules for

licensees of AT&T Mobility, LLC's operating frequency as shown on the attached antenna worksheet; and

That when applying the uncontrolled environment standards, the predicted Maximum Power Density at two meters above ground level from the proposed AT&T Mobility, LLC operation is no more than 0.765% of the maximum in any accessible area on the ground and

That it is understood per FCC Guidelines and OET65 Appendix A, that regardless of the existent radio-frequency environment, only those licenses whose contributions exceed five percent of the exposure limit pertinent to their operation(s) bear any responsibility for bringing any non-compliant area(s) into compliance; and

That when applying the uncontrolled environment standards, the cumulative predicted energy density from the proposed operation is no more than 3.22% of the maximum in any accessible area up to two meters above the ground per OET-65; and

That the calculations provided in this report are based on data provided by the client and antenna pattern data supplied by the antenna manufacturer, in accordance with FCC guidelines listed in OET-65. Horizontal and vertical antenna patterns are combined for modeling purposes to accurately reflect the energy two meters above ground level where on-axis energy refers to maximum energy two meters above the ground along the azimuth of the antenna and where area energy refers to the maximum energy anywhere two meters above the ground regardless of the antenna azimuth, accounting for cumulative energy from multiple antennas for the carrier and frequency range indicated; and

That the Occupational Safety and Health Administration has policies in place which address worker safety in and around communications sites, thus individual companies will be responsible for their employees' training regarding Radio Frequency Safety.

In summary, it is stated here that the proposed operation at the site would not result in exposure of the Public to excessive levels of radio-frequency energy as defined in the FCC Rules and Regulations, specifically 47 CFR 1.1307 and that AT&T Mobility, LLC's proposed operation is completely compliant.

Finally, it is stated that access to the tower should be restricted to communication industry professionals, and approved contractor personnel trained in radio-frequency safety; and that the instant analysis addresses exposure levels at two meters above ground level and does not address exposure levels on the tower, or in the immediate proximity of the antennas.

**AT&T Mobility, LLC
TRUMBULL TOWER
Site Summary**

Carrier	Area Maximum Percentage MPE
AT&T Mobility, LLC (Proposed)	0.222 %
AT&T Mobility, LLC (Proposed)	0.164 %
AT&T Mobility, LLC	0.213 %
AT&T Mobility, LLC	0.166 %
Clearwire	0.088 %
Sprint	0.236 %
Sprint	0.216 %
Sprint	0.158 %
T-Mobile	0.088 %
T-Mobile	0.181 %
Verizon Wireless	0.291 %
Verizon Wireless	0.523 %
Verizon Wireless	0.673 %
 Composite Site MPE:	 3.22 %

**AT&T Mobility, LLC (Proposed)
TRUMBULL TOWER
Carrier Summary**

Frequency: 2110 MHz
 Maximum Permissible Exposure (MPE): 1000 $\mu\text{W}/\text{cm}^2$
 Maximum power density at ground level: 2.21867 $\mu\text{W}/\text{cm}^2$
 Highest percentage of Maximum Permissible Exposure: 0.22187 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
Kathrein-Scala	800-10965	187	23	7114	0.847234	0.084723	2.056563	0.205656
Kathrein-Scala	800-10965	187	150	7114	0.847234	0.084723	2.056563	0.205656
Kathrein-Scala	800-10965	187	270	7114	0.868219	0.086822	2.056563	0.205656

**AT&T Mobility, LLC (Proposed)
TRUMBULL TOWER
Carrier Summary**

Frequency: 869 MHz
 Maximum Permissible Exposure (MPE): 579.33 $\mu\text{W}/\text{cm}^2$
 Maximum power density at ground level: 0.94913 $\mu\text{W}/\text{cm}^2$
 Highest percentage of Maximum Permissible Exposure: 0.16383 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
Kathrein-Scala	800-10965	187	23	3607	0.632236	0.109132	0.644719	0.111286
Kathrein-Scala	800-10965	187	150	3607	0.632236	0.109132	0.644719	0.111286
Kathrein-Scala	800-10965	187	270	3607	0.629743	0.108701	0.644719	0.111286

AT&T Mobility, LLC TRUMBULL TOWER Carrier Summary

Frequency: 734 MHz
Maximum Permissible Exposure (MPE): 489.33 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 1.04438 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.21343 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
CCI Antennas	HPA-65R-BUU-H6	187	30	2350	0.653194	0.133487	0.9965	0.203644
CCI Antennas	HPA-65R-BUU-H6	187	150	2350	0.650702	0.132977	0.9965	0.203644
CCI Antennas	HPA-65R-BUU-H6	187	270	2350	0.650702	0.132977	0.9965	0.203644

AT&T Mobility, LLC TRUMBULL TOWER Carrier Summary

Frequency: 1930 MHz
Maximum Permissible Exposure (MPE): 1000 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 1.65628 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.16563 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
Powerwave	7770	187	23	4679	0.705461	0.070546	1.459431	0.145943
Powerwave	7770	187	143	4679	0.705461	0.070546	1.459431	0.145943
Powerwave	7770	187	263	4679	0.705461	0.070546	1.459431	0.145943

Clearwire TRUMBULL TOWER Carrier Summary

Frequency: 2500 MHz
Maximum Permissible Exposure (MPE): 1000 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 0.8799 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.08799 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
ARGUS	LLPX310R	166	0	1542	0.433226	0.043323	0.786379	0.078638
ARGUS	LLPX310R	166	160	1542	0.433226	0.043323	0.786379	0.078638
ARGUS	LLPX310R	166	260	1542	0.433226	0.043323	0.786379	0.078638

Sprint TRUMBULL TOWER Carrier Summary

Frequency: 2500 MHz
Maximum Permissible Exposure (MPE): 1000 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 2.35741 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.23574 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
RFS	APXVTM14-C-I20	166	20	6168	0.809222	0.080922	1.52244	0.152244
RFS	APXVTM14-C-I20	166	150	6168	0.809222	0.080922	1.52244	0.152244
RFS	APXVTM14-C-I20	166	285	6168	0.809222	0.080922	1.52244	0.152244

Sprint TRUMBULL TOWER Carrier Summary

Frequency: 1900 MHz
Maximum Permissible Exposure (MPE): 1000 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 2.15648 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.21565 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
RFS	APXVSP18-C-A20	166	20	3804	0.686257	0.068626	1.228932	0.122893
RFS	APXVSP18-C-A20	166	180	3804	0.683496	0.06835	1.228932	0.122893
RFS	APXVSP18-C-A20	166	260	3804	0.686257	0.068626	1.228932	0.122893

Sprint TRUMBULL TOWER Carrier Summary

Frequency: 862 MHz
Maximum Permissible Exposure (MPE): 574.67 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 0.9095 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.15827 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
RFS	APXVSP18-C-A20	166	20	2168	0.546781	0.095148	0.556382	0.096818
RFS	APXVSP18-C-A20	166	180	2168	0.546781	0.095148	0.556382	0.096818
RFS	APXVSP18-C-A20	166	260	2168	0.548276	0.095408	0.556382	0.096818

T-Mobile TRUMBULL TOWER Carrier Summary

Frequency: 1900 MHz
Maximum Permissible Exposure (MPE): 1000 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 0.88304 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.0883 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
Ericsson	AIR 21 B2A B4P	145	40	2061	0.474572	0.047457	0.542939	0.054294
Ericsson	AIR 21 B2A B4P	145	160	2061	0.474735	0.047474	0.542939	0.054294
Ericsson	AIR 21 B2A B4P	145	300	2061	0.474572	0.047457	0.542939	0.054294

T-Mobile TRUMBULL TOWER Carrier Summary

Frequency: 2100 MHz
Maximum Permissible Exposure (MPE): 1000 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 1.81435 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.18143 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
ANDREW	SBNH-1D65C	145	40	2473	0.94022	0.094022	1.729708	0.172971
ANDREW	SBNH-1D65C	145	160	2473	0.909992	0.090999	1.729708	0.172971
ANDREW	SBNH-1D65C	145	300	2473	0.909992	0.090999	1.729708	0.172971

Verizon Wireless TRUMBULL TOWER Carrier Summary

Frequency: 737 MHz
Maximum Permissible Exposure (MPE): 491.33 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 1.4299 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.29103 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
Antel	BXA-70063-6CF	155	20	2010	0.693988	0.141246	0.82207	0.167314
Antel	BXA-70063-6CF	155	180	2010	0.693988	0.141246	0.82207	0.167314
Antel	BXA-70063-6CF	155	310	2010	0.693988	0.141246	0.82207	0.167314

Verizon Wireless TRUMBULL TOWER Carrier Summary

Frequency: 1900 MHz
Maximum Permissible Exposure (MPE): 1000 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 5.2294 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.52294 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
RYMSA	MG D3-800TV	155	20	4268	0.872942	0.087294	1.786871	0.178687
Kathrein-Scala	742213	155	20	6519	0.938869	0.093887	2.031312	0.203131
RYMSA	MG D3-800TV	155	180	4268	0.872942	0.087294	1.786871	0.178687
Kathrein-Scala	742213	155	180	6519	0.938869	0.093887	2.031312	0.203131
RYMSA	MG D3-800TV	155	310	4268	0.872942	0.087294	1.786871	0.178687
Kathrein-Scala	742213	155	310	6519	0.938869	0.093887	2.031312	0.203131

Verizon Wireless TRUMBULL TOWER Carrier Summary

Frequency: 850 MHz
Maximum Permissible Exposure (MPE): 566.67 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 3.81621 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.67345 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
ANDREW	844G65VTZASX	155	20	1596	1.183825	0.20891	1.5793	0.2787
ANDREW	844G65VTZASX	155	20	1596	1.183825	0.20891	1.5793	0.2787
Antel	LPA-4016	155	180	3185	1.43378	0.25302	1.460858	0.257798
Antel	LPA-4016	155	180	3185	1.43378	0.25302	1.460858	0.257798
ANDREW	844G65VTZASX	155	310	1596	1.186438	0.209371	1.5793	0.2787
ANDREW	844G65VTZASX	155	310	1596	1.186438	0.209371	1.5793	0.2787

Date: January 22, 2019
January 28, 2019 (Rev.1)



HUDSON
Design Group LLC

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Crown Castle
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45 Beechwood Drive
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Subject: Mount Analysis Report

Carrier Designation: AT&T Equipment Change-Out
Carrier Site Number: 10035413
Carrier Site Name: Trumbull Indian Ledge

Crown Castle Designation: **Crown Castle BU Number:** 881535
Crown Castle Site Name: Trumbull Tower
Crown Castle JDE Job Number: 550490
Crown Castle Order Number: 473057 Rev.1

Engineering Firm Designation: Hudson Design Group LLC **Report Designation:** 4451849

Site Data: 425 Indian Ledge Park Road, Trumbull, Fairfield County, CT, 06611
Latitude 41°16'23.81" Longitude -73°12'47.18"

Structure Information: **Tower Height & Type:** 195 ft Monopole
Mount Elevation: 185 ft
Mount Type: 12 ft Platform

Dear Charles R. McGuirt,

Hudson Design Group LLC (HDG) is pleased to submit this "Mount Analysis Report" to determine the structural integrity of AT&T's antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Platform (typical) ***Sufficient**
***Sufficient upon completion of the changes listed in the 'Recommendations' section of this report.**

The analysis has been performed in accordance with the TIA-222-H Standard. This analysis utilizes an ultimate 3-second gust wind speed of 125 mph from the 2018 Connecticut State Building Code. Exposure Category B with a maximum topographic factor, Kzt, of 1.0 and Risk Category II was/were used in this analysis.

Mount analysis prepared by: HDG
Respectfully Submitted by:

Michael Cabral
Structural Dept. Head

Daniel P Hamm, P.E.
Principal

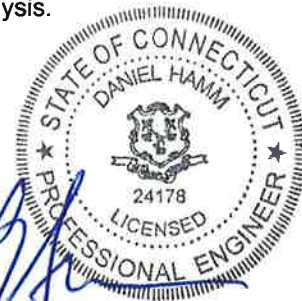


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1) INTRODUCTION

This mount is an existing 12 ft Platform. This mount is installed at the 185 ft elevation on 3 sector(s) of the 195 ft Monopole.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC, 2018 CSBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	B
Topographic Factor at Base:	0.99
Topographic Factor at Mount:	1.00
Ice Thickness:	1.19 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.207
Seismic S_1:	0.065
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
185	187	3	Kathrein	80010965 Antennas	12' Platform
		3	Ericsson	RRUS 32 RRH's	
		3	Ericsson	RRUS 4449 B5/B12 RRH's	
		1	Raycap	Squid Surge Arrestor	

Table 2 - Existing Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
185	187	3	CCI Antennas	HPA-65R-BUU-H6 Antennas	12' Platform
		3	Powerwave	7770.00 Antennas	
		3	Ericsson	RRUS 12/RRUS A2 RRH's	
		6	Powerwave	LRP21401 TMA's	
		1	Raycap	Squid Surge Arrestor	

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
RFDS	AT&T	-	ON FILE

3.1) Analysis Method

RAM Elements (Version 14.0.1), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

3.2) Assumptions

- 1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
- 2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
- 3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
- 4) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM 500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

This analysis may be affected if any assumptions are not valid or have been made in error. Hudson Design Group LLC should be notified to determine the effect on the structural integrity of the antenna mounting system.

4) ANALYSIS RESULTS

Table 4(a) - Mount Component Stresses vs. Capacity (Platform, Alpha Sector)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1	Face Members	2	185	78	Pass
1	Standoff Members	5	185	62	Pass
	Mount-to-Tower Connection	-	185	26	Pass

Table 4(b) - Mount Component Stresses vs. Capacity (Platform, Beta Sector)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1	Face Members	70	185	92	Pass
1	Standoff Members	6	185	64	Pass
	Mount-to-Tower Connection	-	185	33	Pass

Table 4(c) - Mount Component Stresses vs. Capacity (Platform, Gamma Sector)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1	Face Members	69	185	91	Pass
1	Standoff Members	4	185	62	Pass
	Mount-to-Tower Connection	-	185	23	Pass

Structure Rating (max from all components) =	92%
---	------------

Notes:

- 1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
- 2) All sectors are typical

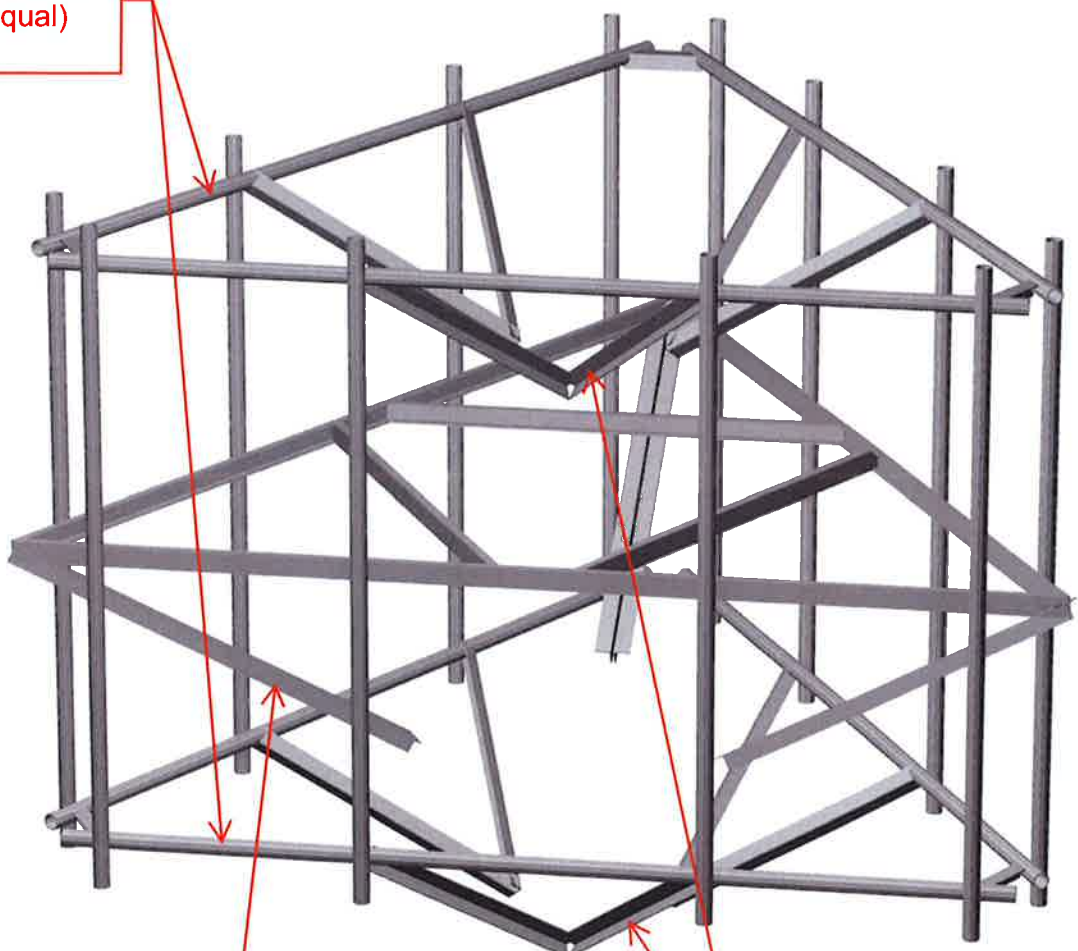
4.1) Recommendations

The mount has sufficient capacity to support the existing and proposed loading with the following modifications:

- **Install new handrail kit, SitePro1 P/N HRK12 (or approved equal) (total of 2).**
- **Install new handrail reinforcement kit, SitePro1 P/N PRK-SFS-L (or approved equal) (total of 2).**
- **Install new platform reinforcement kit, SitePro1 P/N PRK-1245 (or approved equal).**

APPENDIX A
WIRE FRAME AND RENDERED MODELS

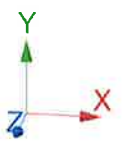
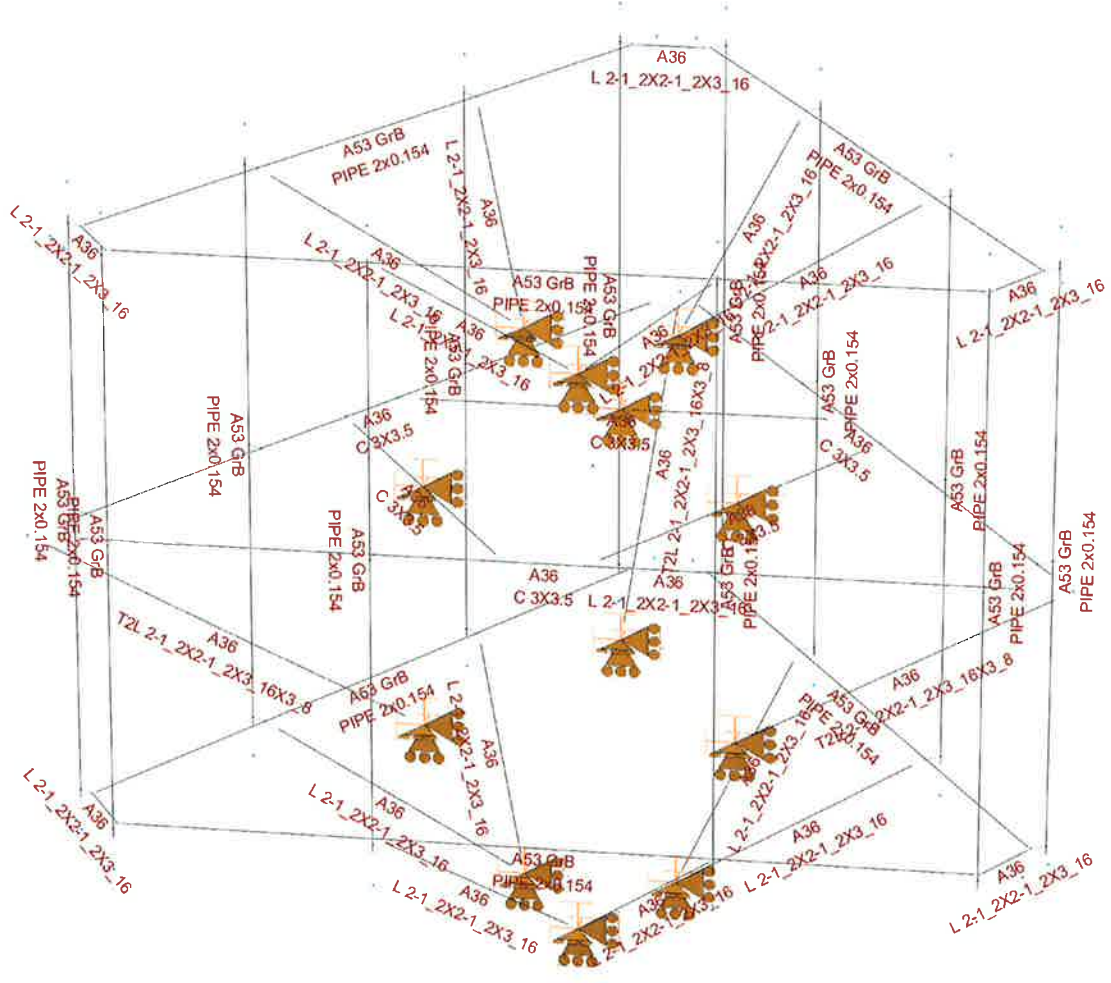
Install new handrail kit,
SitePro1 P/N HRK12
(or approved equal)
(total of 2).

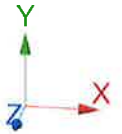
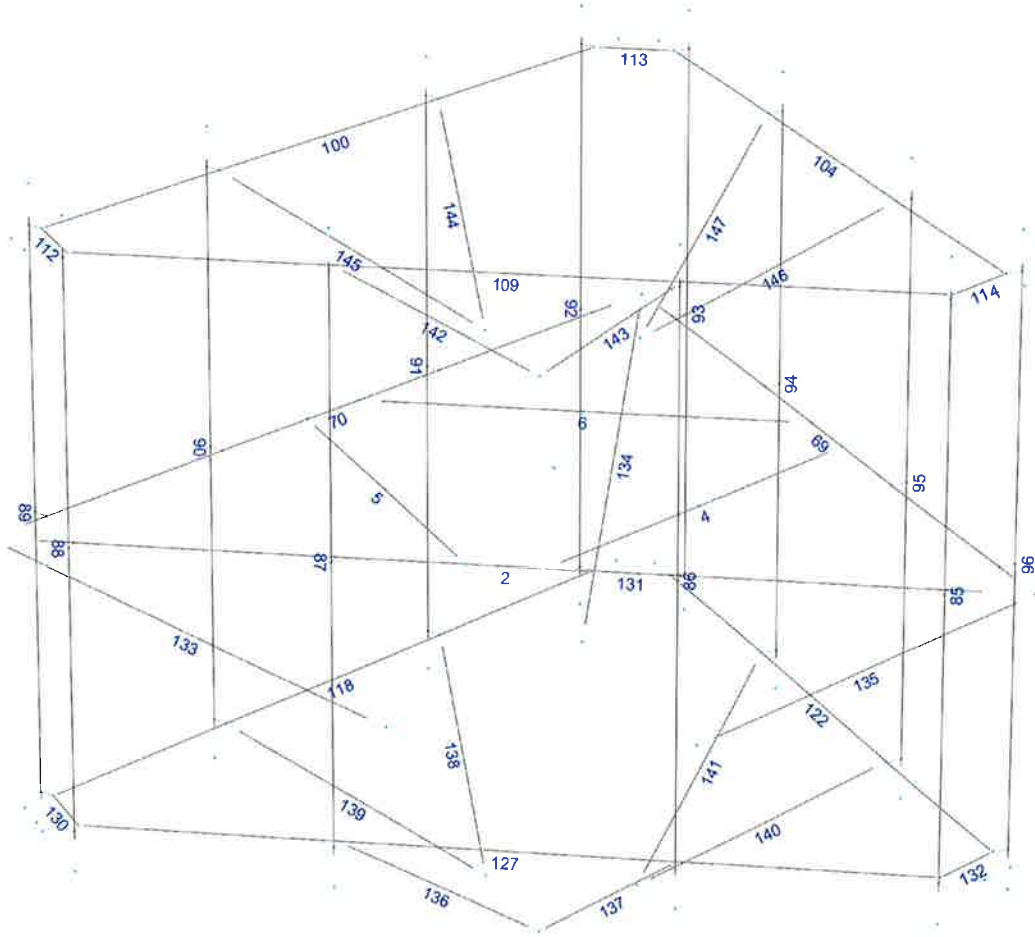


Install new platform
reinforcement kit,
SitePro1 P/N PRK-1245
(or approved equal).

Install new handrail
reinforcement kit,
SitePro P/N PRK-SFS-L
(or approved equal)
(total of 2).







APPENDIX B
SOFTWARE INPUT CALCULATIONS

Date: 01/28/2019
 Project Name: Trumbull Tower
 Project No.: 881535
 Designed By: JN Checked By: MSC



2.6.5.2 Velocity Pressure Coeff:

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

$K_z =$ **1.178** $z =$ 185 (ft)
 $z_g =$ 1200 (ft)
 $\alpha =$ 7.0

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

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

$$K_{zt} = [1 + (K_c K_t / K_h)]^2$$

$$K_h = e^{(fz/H)}$$

$K_{zt} =$ #DIV/0!

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

Category = **1**

$K_h =$ #DIV/0!
 $K_c =$ 0 (from Table 2-4)
 $K_t =$ 0 (from Table 2-5)
 $f =$ 0 (from Table 2-5)
 $z =$ 185
 $z_s =$ 320 (Mean elevation of base of structure above se
 $H =$ 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 =
 Importance Factor =
 $t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$

$t_i =$ 1.00 in
 $I =$ 1.0 (from Table 2-3)
 $K_{iz} =$ 1.19 (from Sec. 2.6.10)
 $t_{iz} =$ 1.19 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

$h =$ 195

$G_h =$ 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

$G_h =$ 1.00

2.6.11.2 Design Wind Force on Appurtenances

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

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

$q_z =$ 44.25

$q_z (ice) =$ 7.08

$q_z (30) =$ 2.55

$K_z =$ 1.178 (from 2.6.5.2)

$K_{zt} =$ 1.0 (from 2.6.6.2.1)

$K_s =$ 1.0 (from 2.6.7)

$K_e =$ 0.99 (from 2.6.8)

$K_d =$ 0.95 (from Table 2-2)

$V_{max} =$ 125 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		$1.2 - 2.8(r_s) \geq 0.85$	$1.4 - 4.0(r_s) \geq 0.90$	$2.0 - 6.0(r_s) \geq 1.25$
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 = **1.19 in** **Angle = 0 (deg)** **Equivalent Angle = 180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
7770 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	244	49	14
800-10965 Antenna	78.7	20.0	6.9	10.93	3.94	1.26	611	113	35
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	4.86	1.31	427	82	25
RRUS-32 RRH	27.2	7.0	12.1	1.32	3.89	1.26	74	17	4
RRUS-32 RRH (Shielded)	27.2	3.5	12.1	0.66	7.77	1.43	42	12	2
4449 B5/B12 RRH	18.0	9.5	13.2	1.19	1.89	1.20	63	14	4
4449 B5/B12 RRH (Shielded)	18.0	4.8	13.2	0.59	3.79	1.26	33	9	2
RRUS-12 + A2 RRH	20.4	18.5	10.9	2.62	1.10	1.20	139	28	8
RRUS-12 + A2 RRH (Shielded)	20.4	0.0	10.9	0.00	0.00	1.20	0	0	0
LGP21401 TMA	14.4	2.7	9.0	0.27	5.33	1.33	16	6	1
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	50	11	3

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WIND LOADS

Angle = 30 (deg)

Ice Thickness = 1.19 in.

Equivalent Angle = 210 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	244	130	215
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	611	258	523
HPA-65R-BUU-H6 Ant	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	427	244	382
RRUS-32 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	74	121	86
RRUS-32 RRH (Shielder)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	42	121	62
4449 B5/B12 RRH	18.0	9.5	13.2	1.19	1.65	1.89	1.36	1.20	1.20	63	88	69
4449 B5/B12 RRH (Shi)	18.0	4.8	13.2	0.59	1.65	3.79	1.36	1.26	1.20	33	88	47
RRUS-12 + A2 RRH	20.4	18.5	10.9	2.62	1.54	1.10	1.87	1.20	1.20	139	82	125
RRUS-12 + A2 RRH (Shi)	20.4	9.3	10.9	1.31	1.54	2.21	1.87	1.20	1.20	70	82	73
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	16	48	24

WIND LOADS WITH ICE:

7770 Antenna	57.4	13.4	7.4	5.33	2.94	4.29	7.78	1.28	1.43	48	30	44
800-10965 Antenna	81.1	22.4	9.3	12.60	5.22	3.62	8.74	1.25	1.46	111	54	97
HPA-65R-BUU-H6 Ant	74.4	17.2	9.8	8.87	5.05	4.33	7.61	1.28	1.42	80	51	73
RRUS-32 RRH	29.6	9.4	14.5	1.93	2.97	3.15	2.04	1.23	1.20	17	25	19
RRUS-32 RRH (Shielder)	29.6	4.7	14.5	0.96	2.97	6.31	2.04	1.37	1.20	9	25	13
4449 B5/B12 RRH	20.4	11.9	15.6	1.68	2.20	1.72	1.31	1.20	1.20	14	19	15
4449 B5/B12 RRH (Shi)	20.4	5.9	15.6	0.84	2.20	3.43	1.31	1.24	1.20	7	19	10
RRUS-12 + A2 RRH	22.8	20.9	13.3	3.30	2.10	1.09	1.72	1.20	1.20	28	18	26
RRUS-12 + A2 RRH (Shi)	22.8	10.4	13.3	1.65	2.10	2.18	1.72	1.20	1.20	14	18	15
LGP21401 TMA	16.8	5.1	11.4	0.59	1.33	3.30	1.47	1.24	1.20	5	11	7

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	14	7	12
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	35	15	30
HPA-65R-BUU-H6 Ant	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	25	14	22
RRUS-32 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	7	5
RRUS-32 RRH (Shielder)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	7	4
4449 B5/B12 RRH	18.0	9.5	13.2	1.19	1.65	1.89	1.36	1.20	1.20	4	5	4
4449 B5/B12 RRH (Shi)	18.0	4.8	13.2	0.59	1.65	3.79	1.36	1.26	1.20	2	5	3
RRUS-12 + A2 RRH	20.4	18.5	10.9	2.62	1.54	1.10	1.87	1.20	1.20	8	5	7
RRUS-12 + A2 RRH (Shi)	20.4	9.3	10.9	1.31	1.54	2.21	1.87	1.20	1.20	4	5	4
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	1

Date: 01/28/2019
 Project Name: Trumbull Tower
 Project No.: 081535
 Designed By: JN Checked By: MSC



WIND LOADS

Angle = 60 (deg)

Ice Thickness = 1.19 in.

Equivalent Angle = 240 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	244	130	158
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	611	258	346
HPA-65R-BUU-H6 Ant	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	427	244	290
RRUS-32 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	74	121	109
RRUS-32 RRH (Shielded)	27.2	5.3	12.1	0.99	2.29	5.18	2.25	1.32	1.20	58	121	106
4449 B5/B12 RRH	18.0	9.5	13.2	1.19	1.65	1.89	1.36	1.20	1.20	63	88	81
4449 B5/B12 RRH (Shielded)	18.0	7.1	13.2	0.89	1.65	2.53	1.36	1.20	1.20	47	88	78
RRUS-12 + A2 RRH	20.4	18.5	10.9	2.62	1.54	1.10	1.87	1.20	1.20	199	82	96
RRUS-12 + A2 RRH (Shielded)	20.4	13.9	10.9	1.97	1.54	1.47	1.87	1.20	1.20	104	82	88
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	16	48	40

WIND LOADS WITH ICE:

7770 Antenna	57.4	13.4	7.4	5.33	2.94	4.29	7.78	1.28	1.43	48	30	34
800-10965 Antenna	81.1	22.4	9.3	12.60	5.22	3.62	8.74	1.25	1.46	111	54	68
HPA-65R-BUU-H6 Ant	74.4	17.2	9.8	8.87	5.05	4.33	7.61	1.28	1.42	80	51	58
RRUS-32 RRH	29.6	9.4	14.5	1.93	2.97	3.15	2.04	1.23	1.20	17	25	23
RRUS-32 RRH (Shielded)	29.6	7.0	14.5	1.44	2.97	4.21	2.04	1.28	1.20	13	25	22
4449 B5/B12 RRH	20.4	11.9	15.6	1.68	2.20	1.72	1.31	1.20	1.20	14	19	18
4449 B5/B12 RRH (Shielded)	20.4	8.9	15.6	1.26	2.20	2.29	1.31	1.20	1.20	11	19	17
RRUS-12 + A2 RRH	22.8	20.9	13.3	3.30	2.10	1.09	1.72	1.20	1.20	28	18	20
RRUS-12 + A2 RRH (Shielded)	22.8	15.7	13.3	2.48	2.10	1.45	1.72	1.20	1.20	21	18	19
LGP21401 TMA	16.8	5.1	11.4	0.59	1.33	3.30	1.47	1.24	1.20	5	11	10

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	14	7	9
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	35	15	20
HPA-65R-BUU-H6 Ant	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	25	14	17
RRUS-32 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	7	6
RRUS-32 RRH (Shielded)	27.2	5.3	12.1	0.99	2.29	5.18	2.25	1.32	1.20	3	7	6
4449 B5/B12 RRH	18.0	9.5	13.2	1.19	1.65	1.89	1.36	1.20	1.20	4	5	5
4449 B5/B12 RRH (Shielded)	18.0	7.1	13.2	0.89	1.65	2.53	1.36	1.20	1.20	3	5	4
RRUS-12 + A2 RRH	20.4	18.5	10.9	2.62	1.54	1.10	1.87	1.20	1.20	8	5	6
RRUS-12 + A2 RRH (Shielded)	20.4	13.9	10.9	1.97	1.54	1.47	1.87	1.20	1.20	6	5	5
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	2

Date: 01/28/2019
 Project Name: Trumbull Tower
 Project No.: 881535
 Designed By: JN Checked By: MSC



WIND LOADS

Angle = 90 (deg)

Ice Thickness = 1.19 in.

Equivalent Angle = 270 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	244	130	130
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	611	258	258
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	427	244	244
RRUS-32 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	74	121	121
RRUS-32 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	42	121	121
4449 B5/B12 RRH	18.0	9.5	13.2	1.19	1.65	1.89	1.36	1.20	1.20	63	88	88
4449 B5/B12 RRH (Shielded)	18.0	4.8	13.2	0.59	1.65	3.79	1.36	1.26	1.20	33	88	88
RRUS-12 + A2 RRH	20.4	18.5	10.9	2.62	1.54	1.10	1.87	1.20	1.20	139	82	82
RRUS-12 + A2 RRH (Shielded)	20.4	0.0	10.9	0.00	1.54	0.00	1.87	1.20	1.20	0	82	82
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	16	48	48

WIND LOADS WITH ICE:

7770 Antenna	57.4	13.4	7.4	5.33	2.94	4.29	7.78	1.28	1.43	48	30	30
800-10965 Antenna	81.1	22.4	9.3	12.60	5.22	3.62	8.74	1.25	1.46	111	54	54
HPA-65R-BUU-H6 Antenna	74.4	17.2	9.8	8.87	5.05	4.33	7.61	1.28	1.42	80	51	51
RRUS-32 RRH	29.6	9.4	14.5	1.93	2.97	3.15	2.04	1.23	1.20	17	25	25
RRUS-32 RRH (Shielded)	29.6	5.9	14.5	1.21	2.97	5.03	2.04	1.31	1.20	11	25	25
4449 B5/B12 RRH	20.4	11.9	15.6	1.68	2.20	1.72	1.31	1.20	1.20	14	19	19
4449 B5/B12 RRH (Shielded)	20.4	7.1	15.6	1.01	2.20	2.86	1.31	1.22	1.20	9	19	19
RRUS-12 + A2 RRH	22.8	20.9	13.3	3.30	2.10	1.09	1.72	1.20	1.20	28	18	18
RRUS-12 + A2 RRH (Shielded)	22.8	2.4	13.3	0.38	2.10	9.58	1.72	1.49	1.20	4	18	18
LGP21401 TMA	16.8	5.1	11.4	0.59	1.33	3.30	1.47	1.24	1.20	5	11	11

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	14	7	7
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	35	15	15
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	25	14	14
RRUS-32 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	7	7
RRUS-32 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	7	7
4449 B5/B12 RRH	18.0	9.5	13.2	1.19	1.65	1.89	1.36	1.20	1.20	4	5	5
4449 B5/B12 RRH (Shielded)	18.0	4.8	13.2	0.59	1.65	3.79	1.36	1.26	1.20	2	5	5
RRUS-12 + A2 RRH	20.4	18.5	10.9	2.62	1.54	1.10	1.87	1.20	1.20	8	5	5
RRUS-12 + A2 RRH (Shielded)	20.4	0.0	10.9	0.00	1.54	0.00	1.87	1.20	1.20	0	5	5
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	3

Date: 01/28/2019
 Project Name: Trumbull Tower
 Project No.: 881535
 Designed By: JN Checked By: MSC



WIND LOADS

Angle = 120 (deg)

Ice Thickness = 1.19 in.

Equivalent Angle = 300 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	244	130	158
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	611	258	346
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	427	244	290
RRUS-32 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	74	121	109
RRUS-32 RRH (Shielded)	27.2	5.3	12.1	0.99	2.29	5.18	2.25	1.32	1.20	58	121	106
4449 B5/B12 RRH	18.0	9.5	13.2	1.19	1.65	1.89	1.36	1.20	1.20	63	88	81
4449 B5/B12 RRH (Shielded)	18.0	7.1	13.2	0.89	1.65	2.53	1.36	1.20	1.20	47	88	78
RRUS-12 + A2 RRH	20.4	18.5	10.9	2.62	1.54	1.10	1.87	1.20	1.20	139	82	96
RRUS-12 + A2 RRH (Shielded)	20.4	13.9	10.9	1.97	1.54	1.47	1.87	1.20	1.20	104	82	88
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	16	48	40

WIND LOADS WITH ICE:

7770 Antenna	57.4	13.4	7.4	5.33	2.94	4.29	7.78	1.28	1.43	48	30	34
800-10965 Antenna	81.1	22.4	9.3	12.60	5.22	3.62	8.74	1.25	1.46	111	54	68
HPA-65R-BUU-H6 Antenna	74.4	17.2	9.8	8.87	5.05	4.33	7.61	1.28	1.42	80	51	58
RRUS-32 RRH	29.6	9.4	14.5	1.93	2.97	3.15	2.04	1.23	1.20	17	25	23
RRUS-32 RRH (Shielded)	29.6	7.0	14.5	1.44	2.97	4.21	2.04	1.28	1.20	13	25	22
4449 B5/B12 RRH	20.4	11.9	15.6	1.68	2.20	1.72	1.31	1.20	1.20	14	19	18
4449 B5/B12 RRH (Shielded)	20.4	8.9	15.6	1.26	2.20	2.29	1.31	1.20	1.20	11	19	17
RRUS-12 + A2 RRH	22.8	20.9	13.3	3.30	2.10	1.09	1.72	1.20	1.20	28	18	20
RRUS-12 + A2 RRH (Shielded)	22.8	15.7	13.3	2.48	2.10	1.45	1.72	1.20	1.20	21	18	19
LGP21401 TMA	16.8	5.1	11.4	0.59	1.33	3.30	1.47	1.24	1.20	5	11	10

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	14	7	9
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	35	15	20
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	25	14	17
RRUS-32 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	7	6
RRUS-32 RRH (Shielded)	27.2	5.3	12.1	0.99	2.29	5.18	2.25	1.32	1.20	3	7	6
4449 B5/B12 RRH	18.0	9.5	13.2	1.19	1.65	1.89	1.36	1.20	1.20	4	5	5
4449 B5/B12 RRH (Shielded)	18.0	7.1	13.2	0.89	1.65	2.53	1.36	1.20	1.20	3	5	4
RRUS-12 + A2 RRH	20.4	18.5	10.9	2.62	1.54	1.10	1.87	1.20	1.20	8	5	6
RRUS-12 + A2 RRH (Shielded)	20.4	13.9	10.9	1.97	1.54	1.47	1.87	1.20	1.20	6	5	5
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	2

Date: 01/28/2019
 Project Name: Trumbull Tower
 Project No.: 881535
 Designed By: JN Checked By: MSC



WIND LOADS

Angle = 150 (deg) Ice Thickness = 1.19 in. Equivalent Angle = 330 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	244	130	215
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	611	258	523
HPA-65R-BUU-H6 Ante	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	427	244	382
RRUS-32 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	74	121	86
RRUS-32 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	42	121	62
4449 B5/B12 RRH	18.0	9.5	13.2	1.19	1.65	1.89	1.36	1.20	1.20	63	88	69
4449 B5/B12 RRH (Shielded)	18.0	4.8	13.2	0.59	1.65	3.79	1.36	1.26	1.20	33	88	47
RRUS-12 + A2 RRH	20.4	18.5	10.9	2.62	1.54	1.10	1.87	1.20	1.20	139	82	125
RRUS-12 + A2 RRH (Shielded)	20.4	9.3	10.9	1.31	1.54	2.21	1.87	1.20	1.20	70	82	73
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	16	48	24

WIND LOADS WITH ICE:

7770 Antenna	57.4	13.4	7.4	5.33	2.94	4.29	7.78	1.28	1.43	48	30	44
800-10965 Antenna	81.1	22.4	9.3	12.60	5.22	3.62	8.74	1.25	1.46	111	54	97
HPA-65R-BUU-H6 Ante	74.4	17.2	9.8	8.87	5.05	4.33	7.61	1.28	1.42	80	51	73
RRUS-32 RRH	29.6	9.4	14.5	1.93	2.97	3.15	2.04	1.23	1.20	17	25	19
RRUS-32 RRH (Shielded)	29.6	4.7	14.5	0.96	2.97	6.31	2.04	1.37	1.20	9	25	13
4449 B5/B12 RRH	20.4	11.9	15.6	1.68	2.20	1.72	1.31	1.20	1.20	14	19	15
4449 B5/B12 RRH (Shielded)	20.4	5.9	15.6	0.84	2.20	3.43	1.31	1.24	1.20	7	19	10
RRUS-12 + A2 RRH	22.8	20.9	13.3	3.30	2.10	1.09	1.72	1.20	1.20	28	18	26
RRUS-12 + A2 RRH (Shielded)	22.8	10.4	13.3	1.65	2.10	2.18	1.72	1.20	1.20	14	18	15
LGP21401 TMA	16.8	5.1	11.4	0.59	1.33	3.30	1.47	1.24	1.20	5	11	7

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	14	7	12
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	35	15	30
HPA-65R-BUU-H6 Ante	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	25	14	22
RRUS-32 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	7	5
RRUS-32 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	7	4
4449 B5/B12 RRH	18.0	9.5	13.2	1.19	1.65	1.89	1.36	1.20	1.20	4	5	4
4449 B5/B12 RRH (Shielded)	18.0	4.8	13.2	0.59	1.65	3.79	1.36	1.26	1.20	2	5	3
RRUS-12 + A2 RRH	20.4	18.5	10.9	2.62	1.54	1.10	1.87	1.20	1.20	8	5	7
RRUS-12 + A2 RRH (Shielded)	20.4	9.3	10.9	1.31	1.54	2.21	1.87	1.20	1.20	4	5	4
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	1

Date: 01/28/2019
Project Name: Trumbull Tower
Project No.: 881535
Designed By: JN **Checked By:** MSC



ICE WEIGHT CALCULATIONS

Thickness of ice: 1.19 in.
Density of ice: 56 pcf

7770 Antenna

Weight of ice based on total radial SF area:
Height (in): 55.0
Width (in): 11.0
Depth (in): 5.0
Total weight of ice on object: 88 lbs
Weight of object: 35.0 lbs

Combined weight of ice and object:	123 lbs
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800-10965 Antenna

Weight of ice based on total radial SF area:
Height (in): 78.7
Width (in): 20.0
Depth (in): 6.9
Total weight of ice on object: 213 lbs
Weight of object: 109.0 lbs

Combined weight of ice and object:	322 lbs
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HPA-65R-BUU-H6 Antenna

Weight of ice based on total radial SF area:
Height (in): 72.0
Width (in): 14.8
Depth (in): 7.4
Total weight of ice on object: 155 lbs
Weight of object: 51.0 lbs

Combined weight of ice and object:	206 lbs
------------------------------------	---------

RRUS-32 RRH

Weight of ice based on total radial SF area:
Height (in): 27.2
Width (in): 12.1
Depth (in): 7.0
Total weight of ice on object: 50 lbs
Weight of object: 60.0 lbs

Combined weight of ice and object:	110 lbs
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4449 B5/B12 RRH

Weight of ice based on total radial SF area:
Height (in): 18.0
Width (in): 13.2
Depth (in): 9.5
Total weight of ice on object: 38 lbs
Weight of object: 71.0 lbs

Combined weight of ice and object:	109 lbs
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RRUS-12 + A2 RRH

Weight of ice based on total radial SF area:
Height (in): 20.4
Width (in): 18.5
Depth (in): 10.9
Total weight of ice on object: 56 lbs
Weight of object: 80.0 lbs

Combined weight of ice and object:	136 lbs
------------------------------------	---------

LGP21401 TMA

Weight of ice based on total radial SF area:
Height (in): 14.4
Width (in): 2.7
Depth (in): 9.0
Total weight of ice on object: 18 lbs
Weight of object: 19.0 lbs

Combined weight of ice and object:	37 lbs
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Squid Surge Arrestor

Weight of ice based on total radial SF area:
Depth (in): 24.0
Diameter (in): 9.7
Total weight of ice on object: 32 lbs
Weight of object: 33 lbs

Combined weight of ice and object:	65 lbs
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C3x3.5

Weight of ice based on total radial SF area:
Height (in): 3
Width (in): 1.375

Per foot weight of ice on object:	7 plf
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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:	7 plf
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2" pipe

Per foot weight of ice:
diameter (in): 2.38

Per foot weight of ice on object:	5 plf
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Current Date: 1/28/2019 3:44 PM

Units system: English

File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\CROWN CASTLE\881535\Rev.1\881535 (MOD) (Rev.1).etx

Load data

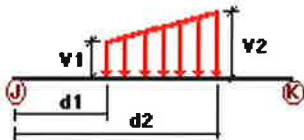
GLOSSARY

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

Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	2	Y	-0.01	0.00	0.00	No	0.00	No
	4	Y	-0.01	0.00	0.00	No	0.00	No
	5	Y	-0.01	0.00	0.00	No	0.00	No
	6	Y	-0.01	0.00	0.00	No	0.00	No
	69	Y	-0.01	0.00	0.00	No	0.00	No
	70	Y	-0.01	0.00	0.00	No	0.00	No
W0	2	z	-0.022	0.00	0.00	No	0.00	No
	69	z	-0.022	0.00	0.00	No	0.00	No
	70	z	-0.022	0.00	0.00	No	0.00	No
	86	z	-0.011	0.00	0.00	No	0.00	No
	89	z	-0.011	0.00	0.00	No	0.00	No
	90	z	-0.011	0.00	0.00	No	0.00	No
	91	z	-0.011	0.00	0.00	No	0.00	No
	92	z	-0.011	0.00	0.00	No	0.00	No
93	z	-0.011	0.00	0.00	No	0.00	No	

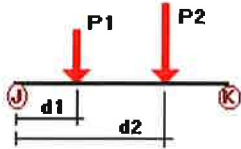
W30

94	z	-0.011	0.00	0.00	No	0.00	No
95	z	-0.011	0.00	0.00	No	0.00	No
96	z	-0.011	0.00	0.00	No	0.00	No
100	z	-0.011	0.00	0.00	No	0.00	No
104	z	-0.011	0.00	0.00	No	0.00	No
109	z	-0.011	0.00	0.00	No	0.00	No
112	z	-0.018	0.00	0.00	No	0.00	No
113	z	-0.018	0.00	0.00	No	0.00	No
114	z	-0.018	0.00	0.00	No	0.00	No
118	z	-0.011	0.00	0.00	No	0.00	No
122	z	-0.011	0.00	0.00	No	0.00	No
127	z	-0.011	0.00	0.00	No	0.00	No
130	z	-0.018	0.00	0.00	No	0.00	No
131	z	-0.018	0.00	0.00	No	0.00	No
132	z	-0.018	0.00	0.00	No	0.00	No
133	z	-0.018	0.00	0.00	No	0.00	No
134	z	-0.018	0.00	0.00	No	0.00	No
135	z	-0.018	0.00	0.00	No	0.00	No
136	z	-0.018	0.00	0.00	No	0.00	No
137	z	-0.018	0.00	0.00	No	0.00	No
138	z	-0.018	0.00	0.00	No	0.00	No
139	z	-0.018	0.00	0.00	No	0.00	No
140	z	-0.018	0.00	0.00	No	0.00	No
141	z	-0.018	0.00	0.00	No	0.00	No
142	z	-0.018	0.00	0.00	No	0.00	No
143	z	-0.018	0.00	0.00	No	0.00	No
144	z	-0.018	0.00	0.00	No	0.00	No
145	z	-0.018	0.00	0.00	No	0.00	No
146	z	-0.018	0.00	0.00	No	0.00	No
147	z	-0.018	0.00	0.00	No	0.00	No
69	X	-0.022	0.00	0.00	No	0.00	No
70	X	-0.022	0.00	0.00	No	0.00	No
85	x	-0.011	0.00	0.00	No	0.00	No
86	x	-0.011	0.00	0.00	No	0.00	No
87	x	-0.011	0.00	0.00	No	0.00	No
88	x	-0.011	0.00	0.00	No	0.00	No
89	x	-0.011	0.00	0.00	No	0.00	No
90	x	-0.011	0.00	0.00	No	0.00	No
91	x	-0.011	0.00	0.00	No	0.00	No
92	x	-0.011	0.00	0.00	No	0.00	No
93	x	-0.011	0.00	0.00	No	0.00	No
94	x	-0.011	0.00	0.00	No	0.00	No
95	x	-0.011	0.00	0.00	No	0.00	No
96	x	-0.011	0.00	0.00	No	0.00	No
100	X	-0.011	0.00	0.00	No	0.00	No
104	X	-0.011	0.00	0.00	No	0.00	No
112	x	-0.018	0.00	0.00	No	0.00	No
114	x	-0.018	0.00	0.00	No	0.00	No
118	X	-0.011	0.00	0.00	No	0.00	No
122	X	-0.011	0.00	0.00	No	0.00	No
130	x	-0.018	0.00	0.00	No	0.00	No
132	x	-0.018	0.00	0.00	No	0.00	No
133	x	-0.018	0.00	0.00	No	0.00	No
134	x	-0.018	0.00	0.00	No	0.00	No
135	x	-0.018	0.00	0.00	No	0.00	No
136	x	-0.018	0.00	0.00	No	0.00	No
137	x	-0.018	0.00	0.00	No	0.00	No
138	x	-0.018	0.00	0.00	No	0.00	No
139	x	-0.018	0.00	0.00	No	0.00	No
140	x	-0.018	0.00	0.00	No	0.00	No

	141	x	-0.018	0.00	0.00	No	0.00	No
	142	x	-0.018	0.00	0.00	No	0.00	No
	143	x	-0.018	0.00	0.00	No	0.00	No
	144	x	-0.018	0.00	0.00	No	0.00	No
	145	x	-0.018	0.00	0.00	No	0.00	No
	146	x	-0.018	0.00	0.00	No	0.00	No
	147	x	-0.018	0.00	0.00	No	0.00	No
Di	2	Y	-0.007	0.00	0.00	No	0.00	No
	4	Y	-0.007	0.00	0.00	No	0.00	No
	5	Y	-0.007	0.00	0.00	No	0.00	No
	6	Y	-0.007	0.00	0.00	No	0.00	No
	69	Y	-0.007	0.00	0.00	No	0.00	No
	70	Y	-0.007	0.00	0.00	No	0.00	No
	85	y	-0.005	0.00	0.00	No	0.00	No
	86	y	-0.005	0.00	0.00	No	0.00	No
	87	y	-0.005	0.00	0.00	No	0.00	No
	88	y	-0.005	0.00	0.00	No	0.00	No
	89	y	-0.005	0.00	0.00	No	0.00	No
	90	y	-0.005	0.00	0.00	No	0.00	No
	91	y	-0.005	0.00	0.00	No	0.00	No
	92	y	-0.005	0.00	0.00	No	0.00	No
	93	y	-0.005	0.00	0.00	No	0.00	No
	94	y	-0.005	0.00	0.00	No	0.00	No
	95	y	-0.005	0.00	0.00	No	0.00	No
	96	y	-0.005	0.00	0.00	No	0.00	No
	100	Y	-0.005	0.00	0.00	No	0.00	No
	104	Y	-0.005	0.00	0.00	No	0.00	No
	109	Y	-0.005	0.00	0.00	No	0.00	No
	112	y	-0.007	0.00	0.00	No	0.00	No
	113	y	-0.007	0.00	0.00	No	0.00	No
	114	y	-0.007	0.00	0.00	No	0.00	No
	118	Y	-0.005	0.00	0.00	No	0.00	No
	122	Y	-0.005	0.00	0.00	No	0.00	No
	127	Y	-0.005	0.00	0.00	No	0.00	No
	130	y	-0.007	0.00	0.00	No	0.00	No
	131	y	-0.007	0.00	0.00	No	0.00	No
	132	y	-0.007	0.00	0.00	No	0.00	No
	133	y	-0.007	0.00	0.00	No	0.00	No
	134	y	-0.007	0.00	0.00	No	0.00	No
	135	y	-0.007	0.00	0.00	No	0.00	No
	136	y	-0.007	0.00	0.00	No	0.00	No
	137	y	-0.007	0.00	0.00	No	0.00	No
	138	y	-0.007	0.00	0.00	No	0.00	No
	139	y	-0.007	0.00	0.00	No	0.00	No
	140	y	-0.007	0.00	0.00	No	0.00	No
	141	y	-0.007	0.00	0.00	No	0.00	No
	142	y	-0.007	0.00	0.00	No	0.00	No
	143	y	-0.007	0.00	0.00	No	0.00	No
	144	y	-0.007	0.00	0.00	No	0.00	No
	145	y	-0.007	0.00	0.00	No	0.00	No
	146	y	-0.007	0.00	0.00	No	0.00	No
	147	y	-0.007	0.00	0.00	No	0.00	No
Wi0	2	Z	-0.012	-0.012	0.00	Yes	100.00	Yes
	69	Z	-0.012	-0.012	0.00	Yes	100.00	Yes
	70	Z	-0.012	-0.012	0.00	Yes	100.00	Yes
	100	Z	-0.012	-0.012	0.00	Yes	100.00	Yes
	104	Z	-0.012	-0.012	0.00	Yes	100.00	Yes
	109	Z	-0.012	-0.012	0.00	Yes	100.00	Yes
	118	Z	-0.012	-0.012	0.00	Yes	100.00	Yes
	122	Z	-0.012	-0.012	0.00	Yes	100.00	Yes

WI30	127	Z	-0.012	-0.012	0.00	Yes	100.00	Yes
	69	X	-0.012	-0.012	0.00	Yes	100.00	Yes
	70	X	-0.012	-0.012	0.00	Yes	100.00	Yes
	100	X	-0.012	-0.012	0.00	Yes	100.00	Yes
	104	X	-0.012	-0.012	0.00	Yes	100.00	Yes
	118	X	-0.012	-0.012	0.00	Yes	100.00	Yes
	122	X	-0.012	-0.012	0.00	Yes	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%		
DL	85	y	-0.018	0.50	No		
		y	-0.018	4.50	No		
		y	-0.038	2.50	No		
	86	y	-0.033	3.00	No		
		87	y	-0.055	0.50	No	
			y	-0.055	5.50	No	
	y		-0.06	2.25	No		
	88	y	-0.071	2.75	No		
		y	-0.026	0.50	No		
		y	-0.026	5.50	No		
	89	y	-0.08	2.50	No		
		90	y	-0.018	0.50	No	
			y	-0.018	4.50	No	
	y		-0.038	2.50	No		
	91	y	-0.033	3.00	No		
		92	y	-0.055	0.50	No	
			y	-0.055	5.50	No	
	y		-0.06	2.25	No		
	93	y	-0.071	2.75	No		
		94	y	-0.026	0.50	No	
			y	-0.026	5.50	No	
	y		-0.08	2.50	No		
	95	96	y	-0.018	0.50	No	
			y	-0.018	4.50	No	
			y	-0.038	2.50	No	
	97	98	y	-0.055	0.50	No	
			y	-0.055	5.50	No	
y			-0.06	2.25	No		
99	100	y	-0.071	2.75	No		
		101	y	-0.026	0.50	No	
			y	-0.026	5.50	No	
102	103		y	-0.08	2.50	No	
		104	105	z	-0.122	0.50	No
				z	-0.122	4.50	No
z	-0.05			3.00	No		
W0	106	z	-0.306	0.50	No		
		z	-0.306	5.50	No		
		z	-0.042	2.25	No		

		z	-0.033	2.75	No
	88	z	-0.214	0.50	No
		z	-0.214	5.50	No
	89	z	-0.08	0.50	No
		z	-0.08	4.50	No
		z	-0.04	2.50	No
	90	z	-0.05	3.00	No
	91	z	-0.174	0.50	No
		z	-0.174	5.50	No
		z	-0.106	2.25	No
	92	z	-0.145	0.50	No
		z	-0.145	5.50	No
		z	-0.088	2.50	No
	93	z	-0.08	0.50	No
		z	-0.08	4.50	No
		z	-0.04	2.50	No
	95	z	-0.174	0.50	No
		z	-0.174	5.50	No
		z	-0.106	2.25	No
	96	z	-0.145	0.50	No
		z	-0.145	5.50	No
		z	-0.088	2.50	No
W30	85	x	-0.065	0.50	No
		x	-0.065	4.50	No
		x	-0.048	2.50	No
	86	x	-0.05	3.00	No
	87	x	-0.13	0.50	No
		x	-0.13	5.50	No
		x	-0.121	2.25	No
	88	x	-0.123	0.50	No
		x	-0.123	5.50	No
		x	-0.082	2.50	No
	89	x	-0.108	0.50	No
		x	-0.108	4.50	No
		x	-0.024	2.50	No
	90	x	-0.05	3.00	No
	91	x	-0.262	0.50	No
		x	-0.262	5.50	No
		x	-0.062	2.25	No
	92	x	-0.191	0.50	No
		x	-0.191	5.50	No
		x	-0.073	2.50	No
	93	x	-0.108	0.50	No
		x	-0.108	4.50	No
		x	-0.024	2.50	No
	95	x	-0.262	0.50	No
		x	-0.262	5.50	No
		x	-0.062	2.25	No
	96	x	-0.191	0.50	No
		x	-0.191	5.50	No
		x	-0.073	2.50	No
Di	85	y	-0.044	0.50	No
		y	-0.044	4.50	No
		y	-0.036	2.50	No
	86	y	-0.032	3.00	No
	87	y	-0.107	0.50	No
		y	-0.107	5.50	No
		y	-0.05	2.25	No
		y	-0.038	2.75	No
	88	y	-0.078	0.50	No

		y	-0.078	5.50	No
		y	-0.056	2.50	No
89		y	-0.044	0.50	No
		y	-0.044	4.50	No
		y	-0.036	2.50	No
90		y	-0.032	3.00	No
91		y	-0.107	0.50	No
		y	-0.107	5.50	No
		y	-0.05	2.25	No
		y	-0.038	2.75	No
92		y	-0.078	0.50	No
		y	-0.078	5.50	No
		y	-0.056	2.50	No
93		y	-0.044	0.50	No
		y	-0.044	4.50	No
		y	-0.036	2.50	No
95		y	-0.107	0.50	No
		y	-0.107	5.50	No
		y	-0.05	2.25	No
		y	-0.038	2.75	No
96		y	-0.078	0.50	No
		y	-0.078	5.50	No
		y	-0.056	2.50	No
Wi0	85	z	-0.025	0.50	No
		z	-0.025	4.50	No
		z	-0.006	2.50	No
86		z	-0.011	3.00	No
87		z	-0.057	0.50	No
		z	-0.057	5.50	No
		z	-0.012	2.25	No
		z	-0.009	2.75	No
88		z	-0.041	0.50	No
		z	-0.041	5.50	No
89		z	-0.018	0.50	No
		z	-0.018	4.50	No
		z	-0.01	2.50	No
90		z	-0.011	3.00	No
91		z	-0.035	0.50	No
		z	-0.035	5.50	No
		z	-0.022	2.25	No
92		z	-0.03	0.50	No
		z	-0.03	5.50	No
		z	-0.019	2.50	No
93		z	-0.018	0.50	No
		z	-0.018	4.50	No
		z	-0.01	2.50	No
95		z	-0.035	0.50	No
		z	-0.035	5.50	No
		z	-0.022	2.25	No
96		z	-0.03	0.50	No
		z	-0.03	5.50	No
		z	-0.019	2.50	No
Wi30	85	x	-0.015	0.50	No
		x	-0.015	4.50	No
		x	-0.011	2.50	No
86		x	-0.011	3.00	No
87		x	-0.027	0.50	No
		x	-0.027	5.50	No
		x	-0.025	2.25	No
88		x	-0.026	0.50	No

		x	-0.026	5.50	No
		x	-0.018	2.50	No
89		x	-0.022	0.50	No
		x	-0.022	4.50	No
		x	-0.007	2.50	No
90		x	-0.011	3.00	No
91		x	-0.049	0.50	No
		x	-0.049	5.50	No
		x	-0.013	2.25	No
92		x	-0.037	0.50	No
		x	-0.037	5.50	No
		x	-0.015	2.50	No
93		x	-0.022	0.50	No
		x	-0.022	4.50	No
		x	-0.007	2.50	No
95		x	-0.049	0.50	No
		x	-0.049	5.50	No
		x	-0.013	2.25	No
96		x	-0.037	0.50	No
		x	-0.037	5.50	No
		x	-0.015	2.50	No
WLO	85	z	-0.008	0.50	No
		z	-0.008	4.50	No
		z	-0.001	2.50	No
86		z	-0.003	3.00	No
87		z	-0.018	0.50	No
		z	-0.018	5.50	No
		z	-0.002	2.25	No
		z	-0.002	2.75	No
88		z	-0.013	0.50	No
		z	-0.013	5.50	No
89		z	-0.005	0.50	No
		z	-0.005	4.50	No
		z	-0.002	2.50	No
90		z	-0.003	3.00	No
91		z	-0.01	0.50	No
		z	-0.01	5.50	No
		z	-0.006	2.25	No
92		z	-0.009	0.50	No
		z	-0.009	5.50	No
		z	-0.005	2.50	No
93		z	-0.005	0.50	No
		z	-0.005	4.50	No
		z	-0.002	2.50	No
95		z	-0.01	0.50	No
		z	-0.01	5.50	No
		z	-0.006	2.25	No
96		z	-0.009	0.50	No
		z	-0.009	5.50	No
		z	-0.005	2.50	No
WLO	85	x	-0.004	0.50	No
		x	-0.004	4.50	No
		x	-0.003	2.50	No
86		x	-0.003	3.00	No
87		x	-0.008	0.50	No
		x	-0.008	5.50	No
		x	-0.007	2.25	No
88		x	-0.008	0.50	No
		x	-0.008	5.50	No
		x	-0.005	2.50	No

	89	x	-0.007	0.50	No
		x	-0.007	4.50	No
		x	-0.001	2.50	No
	90	x	-0.003	3.00	No
	91	x	-0.016	0.50	No
		x	-0.016	5.50	No
		x	-0.004	2.25	No
	92	x	-0.011	0.50	No
		x	-0.011	5.50	No
		x	-0.004	2.50	No
	93	x	-0.007	0.50	No
		x	-0.007	4.50	No
		x	-0.001	2.50	No
	95	x	-0.016	0.50	No
		x	-0.016	5.50	No
		x	-0.004	2.25	No
	96	x	-0.011	0.50	No
		x	-0.011	5.50	No
		x	-0.004	2.50	No
LL1	2	y	-0.25	6.10	No
	109	y	-0.25	6.10	No
	127	y	-0.25	6.10	No
LL2	2	y	-0.25	0.00	No
	109	y	-0.25	0.00	No
	127	y	-0.25	0.00	No
LLa1	85	y	-0.50	50.00	Yes
LLa2	87	y	-0.50	50.00	Yes
LLa3	88	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

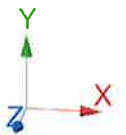
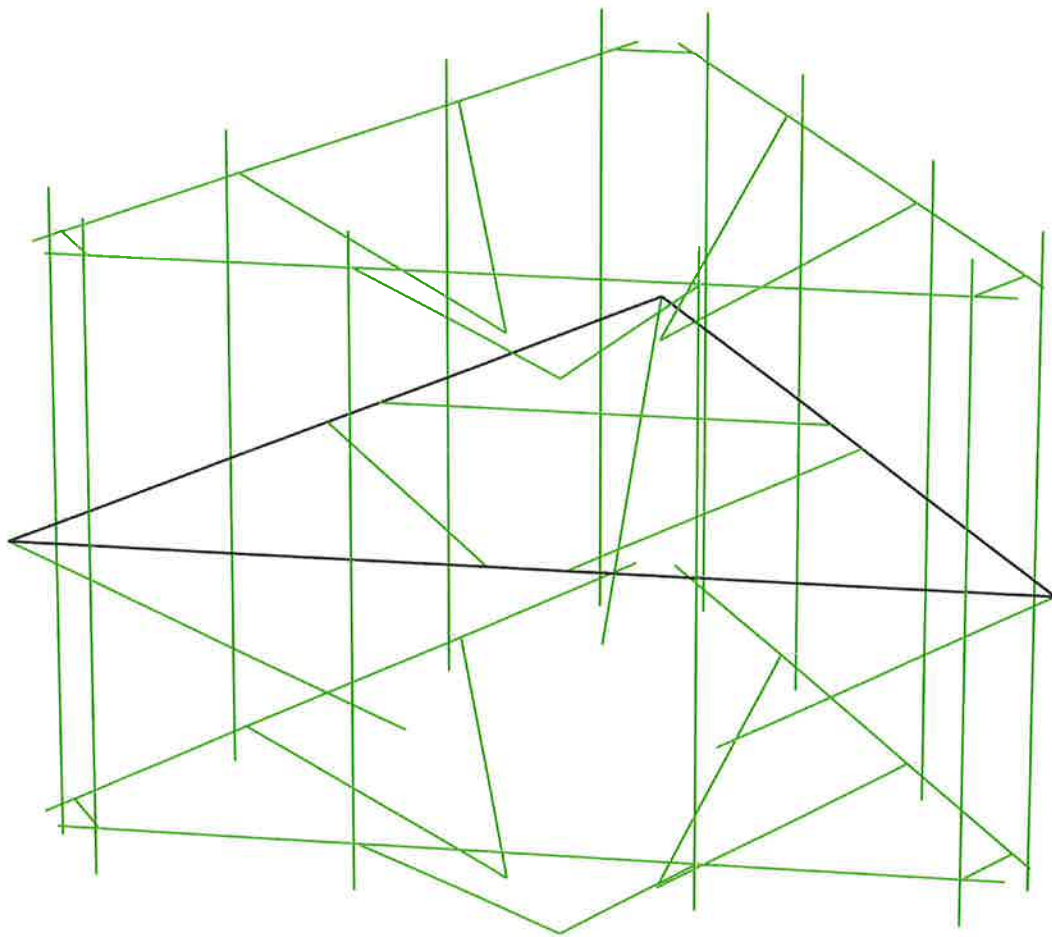
Earthquake (Dynamic analysis only)

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

APPENDIX C
SOFTWARE ANALYSIS OUTPUT

Design status

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



Current Date: 1/28/2019 3:44 PM

Units system: English

File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\CROWN CASTLE\881535\Rev.1\881535 (MOD) (Rev.1).etx

Steel Code Check

Report: Summary - Group by member

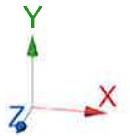
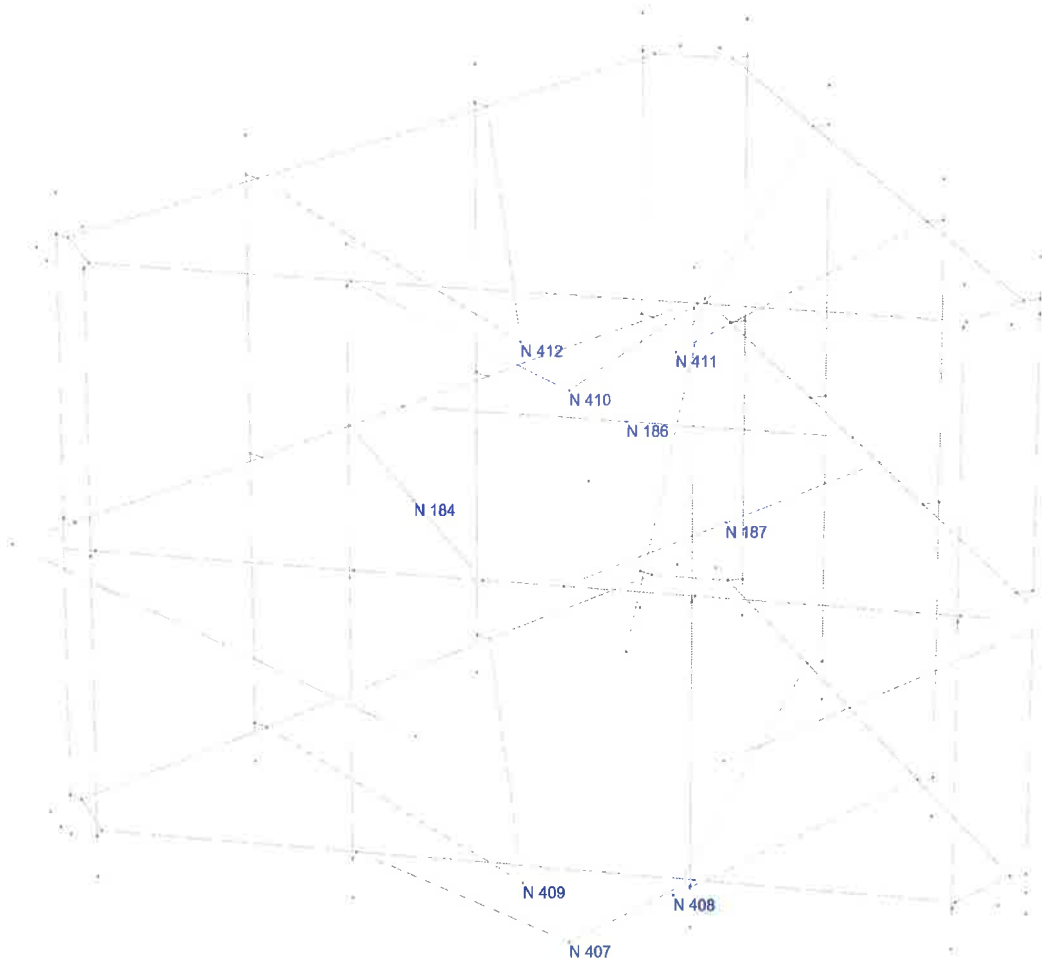
Load conditions to be included in design :

- 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+W30
- LC11=1.2DL+Di-Wi0
- LC12=1.2DL+Di-W30
- LC13=1.2DL
- LC15=1.2DL+1.5LL1
- LC16=1.2DL+1.5LL2
- LC17=1.2DL+W0+1.5LLa1
- LC18=1.2DL+W30+1.5LLa1
- LC19=1.2DL-W0+1.5LLa1
- LC20=1.2DL-W30+1.5LLa1
- LC21=1.2DL+W0+1.5LLa2
- LC22=1.2DL+W30+1.5LLa2
- LC23=1.2DL-W0+1.5LLa2
- LC24=1.2DL-W30+1.5LLa2
- LC25=1.2DL+W0+1.5LLa3
- LC26=1.2DL+W30+1.5LLa3
- LC27=1.2DL-W0+1.5LLa3
- LC28=1.2DL-W30+1.5LLa3

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	C 3X3.5	2	LC2 at 53.57%	0.78	With warnings	Eq. H1-1b
		4	LC4 at 50.00%	0.62	OK	Eq. H1-1a
		5	LC2 at 0.00%	0.62	OK	Eq. H1-1a
		6	LC1 at 46.88%	0.64	OK	Eq. H1-1b
		69	LC5 at 54.46%	0.91	With warnings	Eq. H1-1a
		70	LC6 at 54.46%	0.92	With warnings	Eq. H1-1a
	L 2-1_2X2-1_2X3_16	112	LC4 at 0.00%	0.48	OK	Eq. H2-1
		113	LC3 at 93.75%	0.38	OK	Sec. F1
		114	LC1 at 0.00%	0.44	OK	Eq. H2-1
		130	LC16 at 0.00%	0.21	OK	Eq. H3-8
		131	LC2 at 0.00%	0.19	OK	Eq. H2-1
		132	LC9 at 0.00%	0.19	OK	Eq. H2-1
		136	LC3 at 100.00%	0.47	OK	Sec. F1
		137	LC15 at 0.00%	0.45	OK	Sec. F1
		138	LC1 at 100.00%	0.44	OK	Sec. F1
		139	LC2 at 0.00%	0.40	OK	Sec. F1
		140	LC4 at 100.00%	0.46	OK	Sec. F1
		141	LC1 at 0.00%	0.35	OK	Sec. F1
		142	LC3 at 100.00%	0.57	OK	Sec. F1
		143	LC4 at 0.00%	0.47	OK	Sec. F1

	144	LC1 at 100.00%	0.63	OK	Sec. F1
	145	LC2 at 0.00%	0.56	OK	Sec. F1
	146	LC4 at 100.00%	0.63	OK	Sec. F1
	147	LC1 at 0.00%	0.53	OK	Sec. F1
<hr/>					
PIPE 2x0.154	85	LC2 at 50.00%	0.13	OK	Eq. H1-1b
	86	LC2 at 50.00%	0.24	OK	Eq. H1-1b
	87	LC4 at 50.00%	0.28	OK	Eq. H1-1b
	88	LC4 at 50.00%	0.17	OK	Eq. H1-1b
	89	LC1 at 50.00%	0.14	OK	Eq. H1-1b
	90	LC1 at 50.00%	0.24	OK	Eq. H1-1b
	91	LC1 at 6.25%	0.27	OK	Eq. H1-1b
	92	LC2 at 50.00%	0.24	OK	Eq. H1-1b
	93	LC4 at 50.00%	0.15	OK	Eq. H1-1b
	94	LC3 at 48.44%	0.21	OK	Eq. H1-1b
	95	LC1 at 50.00%	0.27	OK	Eq. H1-1b
	96	LC1 at 50.00%	0.20	OK	Eq. H1-1b
	100	LC3 at 68.75%	0.39	OK	Eq. H1-1b
	104	LC3 at 31.25%	0.37	OK	Eq. H1-1b
	109	LC4 at 31.25%	0.37	OK	Eq. H1-1b
	118	LC11 at 68.75%	0.18	OK	Eq. H1-1b
	122	LC9 at 68.75%	0.18	OK	Eq. H1-1b
	127	LC23 at 31.25%	0.22	OK	Eq. H1-1b
<hr/>					
T2L 2-1_2X2-1_2X3_16X3_8	133	LC2 at 0.00%	0.42	OK	Eq. H2-1
	134	LC1 at 0.00%	0.40	OK	Eq. H2-1
	135	LC4 at 0.00%	0.44	OK	Eq. H2-1

APPENDIX D
ADDITIONAL CALCUATIONS



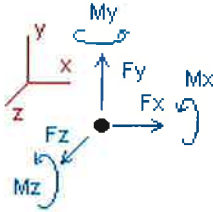
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Units system: English

File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\CROWN CASTLE\881535\Rev.1\881535 (MOD) (Rev.1).etz

Analysis result

Reactions



Direction of positive forces and moments

Node	Forces [Kip]			Moments [Kip*ft]		
	FX	FY	FZ	MX	MY	MZ
Condition LC1=1.2DL+W0						
184	0.65334	0.10256	1.45540	0.47051	0.11227	-0.27035
186	0.04240	0.42253	0.30290	0.00376	0.03042	-0.09500
187	-0.56418	0.10839	1.21863	0.46330	-0.10644	0.26700
407	-0.08323	0.32939	0.47773	0.12892	0.01356	-0.02538
408	0.10214	0.24704	0.19787	0.30156	-0.08064	0.23148
409	-0.09595	0.24954	0.22272	0.38366	0.10097	-0.21810
410	-0.14770	0.53908	0.91603	0.26601	0.02212	0.00513
411	0.10157	0.04929	0.68390	0.44652	-0.21510	0.15417
412	-0.05105	-0.00334	0.78501	0.53909	0.18416	-0.14245
SUM	-0.04266	2.04448	6.26017	3.00332	0.06131	-0.09348
Condition LC2=1.2DL+W30						
184	0.44892	0.41819	0.24678	0.22100	0.04503	-0.13145
186	2.03404	0.22834	0.03546	0.00119	-0.16314	-0.70372
187	0.56134	0.02945	-0.44169	-0.31332	0.01826	-0.18331
407	0.21519	0.26519	0.11623	-0.22857	0.09645	-0.24447
408	0.49969	0.31376	-0.00865	0.02075	-0.05892	-0.12916
409	0.20441	0.21765	-0.01820	0.18767	-0.06662	-0.48115
410	0.73221	0.14052	0.01182	-0.19519	0.20506	-0.41935
411	0.98168	0.48996	0.08707	0.09563	-0.12451	-0.30629
412	0.72995	-0.11385	0.01347	0.12154	-0.17289	-0.58245
SUM	6.40742	1.98920	0.04229	-0.08929	-0.22129	-3.18135
Condition LC3=1.2DL-W0						
184	-0.63140	0.35638	-1.46477	-0.52738	-0.09998	0.30125
186	-0.05314	0.02375	-0.28518	-0.00223	-0.01519	0.00076
187	0.56031	0.34308	-1.25898	-0.42810	0.12237	-0.24473
407	0.04672	0.21023	-0.21765	-0.56256	0.00199	-0.03950
408	0.13300	0.26675	-0.28762	-0.16239	0.09747	0.16155
409	-0.11117	0.28815	-0.38356	-0.11330	-0.08586	-0.12363
410	0.10971	-0.19071	-0.78912	-0.62946	-0.03751	-0.05054
411	0.02847	0.28669	-0.71242	-0.32354	0.19997	0.17100
412	-0.03753	0.34986	-0.88401	-0.32203	-0.20115	-0.14944
SUM	0.04498	1.93418	-6.28331	-3.07100	-0.01789	0.02672

Condition **LC4=1.2DL-W30**

184	-0.42697	0.04075	-0.25614	-0.27787	-0.03274	0.16235
186	-2.04478	0.21794	-0.01774	0.00033	0.17837	0.60949
187	-0.56521	0.42202	0.40134	0.34852	-0.00233	0.20558
407	-0.25170	0.27443	0.14385	-0.20508	-0.08090	0.17959
408	-0.26454	0.20002	-0.08110	0.11842	0.07575	0.52219
409	-0.41153	0.32004	-0.14264	0.08269	0.08173	0.13942
410	-0.77020	0.20785	0.11509	-0.16826	-0.22046	0.37394
411	-0.85163	-0.15397	-0.11559	0.02735	0.10938	0.63146
412	-0.81852	0.46038	-0.11247	0.09551	0.15590	0.29056

SUM -6.40509 1.98946 -0.06542 0.02161 0.26471 3.11459

Condition **LC5=0.9DL+W0**

184	0.65060	0.04519	1.45657	0.47762	0.11073	-0.27421
186	0.04374	0.36674	0.30068	0.00357	0.02852	-0.08322
187	-0.56370	0.05196	1.22368	0.45890	-0.10843	0.26422
407	-0.07866	0.26194	0.44522	0.18312	0.01162	-0.01727
408	0.07275	0.18282	0.20909	0.28417	-0.08274	0.18235
409	-0.07006	0.18233	0.24282	0.34986	0.09908	-0.17539
410	-0.14295	0.49553	0.90016	0.31144	0.02404	0.01081
411	0.08532	0.00729	0.68746	0.43115	-0.21321	0.11353
412	-0.03998	-0.04665	0.79738	0.51196	0.18629	-0.10596

SUM -0.04295 1.54714 6.26307 3.01178 0.05588 -0.08514

Condition **LC6=0.9DL+W30**

184	0.44617	0.36082	0.24795	0.22811	0.04350	-0.13531
186	2.03538	0.17255	0.03324	0.00100	-0.16505	-0.69194
187	0.56183	-0.02698	-0.43664	-0.31772	0.01627	-0.18609
407	0.21975	0.19773	0.08372	-0.17436	0.09450	-0.23636
408	0.47029	0.24954	0.00257	0.00335	-0.06102	-0.17829
409	0.23030	0.15044	0.00191	0.15388	-0.06851	-0.43844
410	0.73696	0.09698	-0.00405	-0.14976	0.20699	-0.41367
411	0.96542	0.44796	0.09064	0.08026	-0.12262	-0.34693
412	0.74102	-0.15717	0.02584	0.09441	-0.17077	-0.54596

SUM 6.40713 1.49187 0.04518 -0.08083 -0.22671 -3.17300

Condition **LC7=0.9DL-W0**

184	-0.63414	0.29901	-1.46359	-0.52027	-0.10151	0.29739
186	-0.05180	-0.03203	-0.28739	-0.00243	-0.01710	0.01254
187	0.56079	0.28664	-1.25394	-0.43250	0.12038	-0.24752
407	0.05128	0.14278	-0.25016	-0.50836	0.00005	-0.03139
408	0.10361	0.20252	-0.27640	-0.17979	0.09537	0.11243
409	-0.08528	0.22094	-0.36345	-0.14709	-0.08775	-0.08091
410	0.11446	-0.23425	-0.80499	-0.58403	-0.03559	-0.04487
411	0.01222	0.24470	-0.70886	-0.33891	0.20186	0.13035
412	-0.02645	0.30654	-0.87163	-0.34917	-0.19903	-0.11295

SUM 0.04469 1.43685 -6.28042 -3.06254 -0.02332 0.03507

Condition **LC8=0.9DL-W30**

184	-0.42971	-0.01661	-0.25497	-0.27076	-0.03428	0.15849
186	-2.04344	0.16216	-0.01995	0.00014	0.17647	0.62127
187	-0.56473	0.36558	0.40638	0.34412	-0.00432	0.20279
407	-0.24713	0.20698	0.11134	-0.15087	-0.08284	0.18770
408	-0.29393	0.13580	-0.06988	0.10103	0.07365	0.47306
409	-0.38564	0.25283	-0.12254	0.04889	0.07984	0.18214
410	-0.76546	0.16430	0.09922	-0.12283	-0.21853	0.37962
411	-0.86789	-0.19597	-0.11203	0.01198	0.11127	0.59081
412	-0.80745	0.41706	-0.10010	0.06838	0.15803	0.32705

SUM -6.40538 1.49213 -0.06253 0.03007 0.25928 3.12293

Condition **LC9=1.2DL+Di+Wi0**

184	0.22871	0.35109	0.45886	0.10611	0.04797	-0.06234
186	0.00055	0.44987	0.11078	0.00244	0.02008	-0.10368
187	-0.19404	0.34648	0.38036	0.19456	-0.02184	0.11359
407	-0.05285	0.54106	0.36400	-0.28667	0.01789	-0.06662
408	0.20984	0.47185	0.01766	0.20471	-0.01228	0.38528
409	-0.18043	0.49112	-0.04357	0.34289	0.04691	-0.33165
410	-0.06772	0.44684	0.36833	-0.20092	-0.01028	-0.04017
411	0.12385	0.27503	0.19450	0.23574	-0.07457	0.30596
412	-0.07450	0.27320	0.14716	0.34036	0.03694	-0.27059

SUM -0.00659 3.64653 1.99809 0.93923 0.05082 -0.07021

Condition **LC10=1.2DL+Di+Wi30**

184	0.07725	0.44278	-0.02951	0.02224	0.00776	-0.01534
186	0.60157	0.38030	0.02125	0.00148	-0.03432	-0.28916
187	0.07694	0.33062	-0.04781	-0.05701	0.00585	-0.03194
407	-0.01171	0.50718	0.23666	-0.40534	0.02512	-0.10870
408	0.33701	0.51535	-0.07750	0.10636	-0.00422	0.27714
409	-0.08385	0.47670	-0.13467	0.27569	-0.00701	-0.40353
410	0.10286	0.32615	0.10673	-0.34165	0.02161	-0.12615
411	0.35944	0.41632	-0.01121	0.11622	-0.04723	0.18283
412	0.13297	0.24189	-0.07479	0.21061	-0.05792	-0.38756

SUM 1.59248 3.63729 -0.01086 -0.07141 -0.09037 -0.90241

Condition **LC11=1.2DL+Di-Wi0**

184	-0.18668	0.43039	-0.47276	-0.22481	-0.02175	0.12732
186	-0.02378	0.30871	-0.07822	0.00037	0.01146	-0.08502
187	0.18849	0.42148	-0.45687	-0.11510	0.05464	-0.06413
407	-0.02303	0.47508	0.11451	-0.51964	0.01511	-0.06953
408	0.22743	0.49759	-0.17554	0.04171	0.04760	0.35404
409	-0.19629	0.52154	-0.25993	0.17338	-0.01470	-0.29605
410	-0.01228	0.21797	-0.13559	-0.47731	-0.02244	-0.05460
411	0.11979	0.36737	-0.23792	-0.01381	0.04233	0.30656
412	-0.08285	0.38826	-0.33760	0.07360	-0.07253	-0.26908

SUM 0.01080 3.62840 -2.03992 -1.06161 0.03970 -0.05049

Condition **LC12=1.2DL+Di-Wi30**

184	-0.03522	0.33870	0.01561	-0.14094	0.01846	0.08032
186	-0.62481	0.37829	0.01131	0.00132	0.06586	0.10047
187	-0.08249	0.43734	-0.02870	0.13648	0.02696	0.08141
407	-0.06417	0.50896	0.24185	-0.40096	0.00789	-0.02746
408	0.10026	0.45409	-0.08037	0.14007	0.03954	0.46218
409	-0.29287	0.53596	-0.16883	0.24058	0.03922	-0.22418
410	-0.18287	0.33866	0.12601	-0.33657	-0.05433	0.03138

411	-0.11581	0.22609	-0.03222	0.10571	0.01498	0.42969
412	-0.29031	0.41957	-0.11566	0.20335	0.02232	-0.15210
SUM	-1.58828	3.63764	-0.03098	-0.05096	0.18090	0.78171
Condition LC13=1.2DL						
184	0.01097	0.22947	-0.00468	-0.02843	0.00615	0.01545
186	-0.00537	0.22314	0.00886	0.00076	0.00761	-0.04712
187	-0.00194	0.22573	-0.02017	0.01760	0.00797	0.01114
407	-0.01825	0.26981	0.13004	-0.21682	0.00778	-0.03244
408	0.11757	0.25689	-0.04488	0.06959	0.00842	0.19652
409	-0.10356	0.26885	-0.08042	0.13518	0.00755	-0.17087
410	-0.01900	0.17419	0.06345	-0.18173	-0.00770	-0.02270
411	0.06502	0.16799	-0.01426	0.06149	-0.00757	0.16259
412	-0.04429	0.17326	-0.04950	0.10853	-0.00849	-0.14594
SUM	0.00116	1.98933	-0.01157	-0.03384	0.02171	-0.03338
Condition LC15=1.2DL+1.5LL1						
184	-0.05469	0.37516	-0.13379	-0.40008	0.00038	0.22963
186	-0.03548	0.21211	-0.00722	0.00063	0.01140	-0.04473
187	0.03162	0.38711	-0.12492	-0.37855	0.00355	-0.21660
407	-0.00673	0.65413	0.28407	-0.55849	0.00124	0.01144
408	0.12882	0.26444	-0.04679	0.05946	0.01048	0.19789
409	-0.11675	0.27180	-0.07873	0.12552	0.00462	-0.16433
410	-0.00864	0.40187	0.09647	-0.47430	-0.00842	0.01775
411	0.07483	0.18501	-0.04468	0.04040	0.00443	0.16888
412	-0.05540	0.18448	-0.07161	0.09309	-0.01476	-0.14261
SUM	-0.04242	2.93611	-0.12721	-1.49232	0.01291	0.05733
Condition LC16=1.2DL+1.5LL2						
184	0.12239	0.28756	-0.08061	-0.03935	0.00705	0.02033
186	0.52785	0.20652	-0.05702	0.00027	-0.06615	-0.09637
187	0.32014	0.21125	-0.44802	-0.02848	0.08212	-0.01604
407	-0.01110	0.33198	0.16696	-0.27067	0.02180	-0.09896
408	0.10795	0.21808	-0.03586	0.04485	0.00995	0.15570
409	-0.11986	0.31827	-0.09480	0.10787	0.00284	-0.24243
410	0.08899	0.19466	0.05818	-0.22991	0.02115	-0.13859
411	0.08842	0.16643	-0.03071	0.03885	-0.00897	0.12327
412	0.00225	0.20681	-0.15200	0.02777	-0.04419	-0.24103
SUM	1.12701	2.14155	-0.67389	-0.34882	0.02560	-0.53414
Condition LC17=1.2DL+WLO+1.5LLa1						
184	-0.15988	0.22481	-0.20883	-0.05964	-0.03547	0.03398
186	-0.31770	0.21900	-0.01959	0.00058	0.05200	-0.02177
187	-0.08448	0.27129	-0.03233	-0.01683	-0.00055	-0.00771
407	-0.02364	0.34322	0.17761	-0.27067	-0.00615	0.02954
408	0.12609	0.28510	-0.04382	0.06229	0.00408	0.23916
409	-0.10166	0.24683	-0.06547	0.12690	0.00594	-0.14807
410	-0.07253	0.21762	0.09305	-0.22244	-0.01608	0.06116
411	0.04274	0.19015	-0.06090	0.02276	0.01249	0.21965
412	-0.05873	0.16475	-0.02879	0.11134	0.00171	-0.12084
SUM	-0.64980	2.16277	-0.18907	-0.24572	0.01798	0.28509

Condition LC18=1.2DL+WL30+1.5LLa1

184	-0.16767	0.23690	-0.25560	-0.07110	-0.03674	0.04039
186	-0.24978	0.21205	-0.02901	0.00049	0.04454	-0.04324
187	-0.04036	0.26839	-0.09602	-0.04632	0.00469	-0.02483
407	-0.01545	0.34343	0.17020	-0.28294	-0.00501	0.02255
408	0.13384	0.28262	-0.04310	0.05361	0.00452	0.22729
409	-0.09771	0.24729	-0.06869	0.12095	0.00257	-0.15604
410	-0.03390	0.19948	0.05692	-0.23961	-0.00966	0.04396
411	0.07627	0.20896	-0.08005	0.01148	0.01689	0.20353
412	-0.02984	0.16059	-0.05925	0.09563	-0.01201	-0.13655

SUM	-0.42459	2.15970	-0.40459	-0.35781	0.00976	0.17708
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Condition LC19=1.2DL-WL0+1.5LLa1

184	-0.20927	0.23510	-0.32319	-0.09914	-0.04278	0.05659
186	-0.32375	0.20442	-0.04166	0.00036	0.04944	-0.01611
187	-0.04550	0.28029	-0.11783	-0.04964	0.00861	-0.02657
407	-0.01435	0.34424	0.16443	-0.29388	-0.00715	0.02877
408	0.12556	0.28199	-0.04885	0.04843	0.00715	0.23683
409	-0.10088	0.24519	-0.07733	0.11103	0.00223	-0.14433
410	-0.05590	0.18533	0.02687	-0.25525	-0.01965	0.05710
411	0.03685	0.19931	-0.11286	-0.00456	0.02870	0.22150
412	-0.05690	0.18077	-0.09596	0.07895	-0.01244	-0.12196

SUM	-0.64413	2.15665	-0.62638	-0.46371	0.01411	0.29183
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Condition LC20=1.2DL-WL30+1.5LLa1

184	-0.20148	0.22302	-0.27642	-0.08768	-0.04150	0.05017
186	-0.39167	0.21137	-0.03224	0.00044	0.05690	0.00536
187	-0.08962	0.28319	-0.05415	-0.02016	0.00338	-0.00946
407	-0.02253	0.34403	0.17184	-0.28161	-0.00828	0.03575
408	0.11782	0.28447	-0.04957	0.05711	0.00672	0.24870
409	-0.10483	0.24473	-0.07411	0.11699	0.00561	-0.13636
410	-0.09453	0.20347	0.06299	-0.23807	-0.02606	0.07431
411	0.00332	0.18050	-0.09371	0.00672	0.02430	0.23762
412	-0.08579	0.18494	-0.06550	0.09466	0.00128	-0.10625

SUM	-0.86934	2.15972	-0.41086	-0.35161	0.02233	0.39984
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Condition LC21=1.2DL+WL0+1.5LLa2

184	0.05201	0.33554	-0.00030	-0.25990	0.02321	0.14773
186	0.10959	0.22155	0.00396	0.00074	-0.00551	-0.05906
187	0.07766	0.28321	-0.12025	-0.14744	0.02342	-0.08456
407	-0.06404	0.50943	0.25257	-0.41316	0.02350	-0.13727
408	0.12819	0.25374	-0.03744	0.06849	0.00993	0.18313
409	-0.11082	0.28318	-0.08088	0.13326	0.00826	-0.18681
410	-0.04740	0.30929	0.11001	-0.34171	-0.00492	-0.12015
411	0.07866	0.16564	0.00361	0.06821	-0.01711	0.14778
412	-0.04692	0.18502	-0.05273	0.09866	-0.01792	-0.16603

SUM	0.17694	2.54659	0.07853	-0.79285	0.04285	-0.27524
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Condition LC22=1.2DL+WL30+1.5LLa2

184	0.04423	0.34762	-0.04707	-0.27135	0.02193	0.15415
186	0.17751	0.21459	-0.00546	0.00066	-0.01297	-0.08053
187	0.12178	0.28031	-0.18394	-0.17693	0.02865	-0.10167
407	-0.05585	0.50964	0.24517	-0.42543	0.02463	-0.14426
408	0.13593	0.25126	-0.03673	0.05981	0.01037	0.17126
409	-0.10686	0.28364	-0.08410	0.12730	0.00489	-0.19478
410	-0.00877	0.29115	0.07388	-0.35888	0.00149	-0.13736

411	0.11219	0.18444	-0.01554	0.05693	-0.01272	0.13167
412	-0.01802	0.18086	-0.08319	0.08295	-0.03164	-0.18173
SUM	0.40214	2.54352	-0.13698	-0.90494	0.03463	-0.38325
Condition LC23=1.2DL-WL0+1.5LLa2						
184	0.00263	0.34583	-0.11466	-0.29939	0.01589	0.17034
186	0.10355	0.20696	-0.01810	0.00052	-0.00808	-0.05340
187	0.11664	0.29221	-0.20576	-0.18025	0.03257	-0.10341
407	-0.05475	0.51045	0.23940	-0.43637	0.02250	-0.13804
408	0.12766	0.25063	-0.04247	0.05463	0.01301	0.18079
409	-0.11003	0.28154	-0.09274	0.11739	0.00455	-0.18307
410	-0.03078	0.27701	0.04382	-0.37452	-0.00849	-0.12421
411	0.07277	0.17480	-0.04835	0.04089	-0.00091	0.14964
412	-0.04509	0.20104	-0.11991	0.06627	-0.03207	-0.16714
SUM	0.18261	2.54047	-0.35877	-1.01084	0.03897	-0.26850
Condition LC24=1.2DL-WL30+1.5LLa2						
184	0.01041	0.33374	-0.06789	-0.28793	0.01717	0.16392
186	0.03563	0.21392	-0.00869	0.00061	-0.00061	-0.03193
187	0.07252	0.29511	-0.14207	-0.15077	0.02734	-0.08630
407	-0.06293	0.51024	0.24681	-0.42410	0.02136	-0.13106
408	0.11991	0.25311	-0.04319	0.06331	0.01257	0.19267
409	-0.11399	0.28108	-0.08952	0.12334	0.00792	-0.17510
410	-0.06941	0.29515	0.07995	-0.35734	-0.01491	-0.10701
411	0.03924	0.15599	-0.02921	0.05217	-0.00531	0.16576
412	-0.07398	0.20521	-0.08945	0.08198	-0.01835	-0.15144
SUM	-0.04260	2.54354	-0.14326	-0.89875	0.04719	-0.16049
Condition LC25=1.2DL+WL0+1.5LLa3						
184	0.09872	0.27438	-0.00241	-0.05952	0.01374	0.03242
186	0.31301	0.21900	-0.01959	0.00058	-0.03421	-0.07813
187	0.17412	0.22172	-0.23875	-0.01696	0.04866	-0.00927
407	-0.02216	0.34322	0.17761	-0.27067	0.02270	-0.09365
408	0.11555	0.23561	-0.03334	0.06031	0.01035	0.17302
409	-0.11221	0.29631	-0.07595	0.12889	0.01221	-0.21422
410	0.01791	0.21762	0.09305	-0.22244	0.00425	-0.10251
411	0.08150	0.16292	-0.00115	0.06177	-0.01880	0.13712
412	-0.01997	0.19199	-0.08853	0.07233	-0.02958	-0.20338
SUM	0.64645	2.16277	-0.18907	-0.24572	0.02932	-0.35859
Condition LC26=1.2DL+WL30+1.5LLa3						
184	0.09093	0.28647	-0.04918	-0.07098	0.01246	0.03884
186	0.38093	0.21205	-0.02901	0.00049	-0.04167	-0.09960
187	0.21824	0.21882	-0.30244	-0.04644	0.05389	-0.02638
407	-0.01398	0.34343	0.17020	-0.28294	0.02384	-0.10063
408	0.12330	0.23314	-0.03262	0.05163	0.01078	0.16115
409	-0.10825	0.29677	-0.07917	0.12293	0.00883	-0.22218
410	0.05654	0.19948	0.05692	-0.23961	0.01067	-0.11972
411	0.11503	0.18172	-0.02030	0.05049	-0.01440	0.12100
412	0.00892	0.18782	-0.11900	0.05662	-0.04330	-0.21908
SUM	0.87166	2.15970	-0.40459	-0.35781	0.02110	-0.46660

Condition LC27=1.2DL-WL0+1.5LLa3

184	0.04933	0.28467	-0.11677	-0.09902	0.00642	0.05503
186	0.30696	0.20442	-0.04166	0.00036	-0.03677	-0.07247
187	0.21310	0.23072	-0.32426	-0.04977	0.05781	-0.02812
407	-0.01287	0.34424	0.16443	-0.29388	0.02170	-0.09441
408	0.11502	0.23251	-0.03837	0.04644	0.01342	0.17069
409	-0.11142	0.29467	-0.08781	0.11302	0.00850	-0.21047
410	0.03453	0.18533	0.02687	-0.25525	0.00068	-0.10657
411	0.07561	0.17207	-0.05311	0.03445	-0.00259	0.13897
412	-0.01815	0.20801	-0.15571	0.03994	-0.04373	-0.20449

SUM	0.65212	2.15665	-0.62638	-0.46371	0.02544	-0.35185
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Condition LC28=1.2DL-WL30+1.5LLa3

184	0.05712	0.27259	-0.07000	-0.08756	0.00770	0.04862
186	0.23904	0.21137	-0.03224	0.00044	-0.02931	-0.05100
187	0.16898	0.23362	-0.26057	-0.02028	0.05258	-0.01101
407	-0.02106	0.34403	0.17184	-0.28161	0.02056	-0.08743
408	0.10728	0.23498	-0.03909	0.05512	0.01299	0.18256
409	-0.11538	0.29422	-0.08459	0.11897	0.01187	-0.20251
410	-0.00410	0.20347	0.06299	-0.23807	-0.00573	-0.08937
411	0.04207	0.15327	-0.03397	0.04573	-0.00699	0.15509
412	-0.04704	0.21217	-0.12525	0.05565	-0.03001	-0.18879

SUM	0.42692	2.15972	-0.41086	-0.35161	0.03366	-0.24384
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Condition LC29=1.2DL+WL0+1.5LLa4

184	0.03566	0.22432	0.05250	-0.00869	0.00980	0.00415
186	-0.00235	0.23043	0.01989	0.00087	0.00890	-0.04995
187	-0.02143	0.22123	0.02258	0.03400	0.00339	0.02056
407	-0.02290	0.26930	0.13662	-0.20522	0.00827	-0.03206
408	0.11784	0.25845	-0.04236	0.07652	0.00688	0.19769
409	-0.10395	0.26967	-0.07449	0.14311	0.00941	-0.17274
410	-0.02731	0.19033	0.09654	-0.16532	-0.00591	-0.02068
411	0.06797	0.16341	0.01172	0.07515	-0.01567	0.16166
412	-0.04520	0.16525	-0.01591	0.12472	-0.00142	-0.14538

SUM	-0.00167	1.99239	0.20708	0.07515	0.02365	-0.03675
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Condition LC30=1.2DL+WL30+1.5LLa4

184	0.02788	0.23641	0.00573	-0.02014	0.00853	0.01056
186	0.06557	0.22348	0.01048	0.00079	0.00144	-0.07142
187	0.02270	0.21834	-0.04111	0.00452	0.00862	0.00345
407	-0.01471	0.26951	0.12922	-0.21749	0.00941	-0.03904
408	0.12558	0.25597	-0.04164	0.06784	0.00731	0.18581
409	-0.10000	0.27012	-0.07771	0.13716	0.00604	-0.18070
410	0.01132	0.17219	0.06041	-0.18250	0.00050	-0.03788
411	0.10150	0.18222	-0.00743	0.06387	-0.01127	0.14554
412	-0.01631	0.16109	-0.04638	0.10901	-0.01514	-0.16109

SUM	0.22353	1.98932	-0.00843	-0.03694	0.01543	-0.14476
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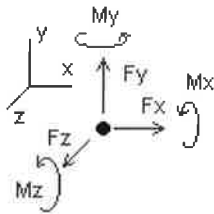
Condition LC31=1.2DL-WL0+1.5LLa4

184	-0.01372	0.23461	-0.06186	-0.04818	0.00249	0.02676
186	-0.00840	0.21585	-0.00217	0.00065	0.00633	-0.04429
187	0.01756	0.23023	-0.06293	0.00119	0.01254	0.00171
407	-0.01361	0.27032	0.12345	-0.22843	0.00728	-0.03282
408	0.11731	0.25534	-0.04739	0.06265	0.00995	0.19535
409	-0.10317	0.26803	-0.08635	0.12724	0.00570	-0.16899
410	-0.01068	0.15804	0.03036	-0.19813	-0.00948	-0.02473

411	0.06208	0.17257	-0.04024	0.04783	0.00053	0.16351
412	-0.04337	0.18127	-0.08309	0.09233	-0.01557	-0.14650
SUM	0.00400	1.98627	-0.23022	-0.14284	0.01978	-0.03001
Condition LC32=1.2DL-WL30+1.5LLa4						
184	-0.00594	0.22253	-0.01509	-0.03672	0.00377	0.02034
186	-0.07632	0.22280	0.00724	0.00074	0.01379	-0.02282
187	-0.02657	0.23313	0.00076	0.03068	0.00731	0.01882
407	-0.02179	0.27011	0.13086	-0.21616	0.00614	-0.02584
408	0.10956	0.25782	-0.04811	0.07133	0.00952	0.20722
409	-0.10712	0.26757	-0.08313	0.13320	0.00907	-0.16103
410	-0.04932	0.17618	0.06649	-0.18096	-0.01590	-0.00753
411	0.02855	0.15377	-0.02110	0.05911	-0.00386	0.17963
412	-0.07227	0.18544	-0.05263	0.10804	-0.00185	-0.13079
SUM	-0.22121	1.98934	-0.01471	-0.03074	0.02800	0.07800

Envelope for nodal reactions

Note.- I_c 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+W_{i0}
- LC10=1.2DL+Di+W_{i30}
- LC11=1.2DL+Di-W_{i0}
- LC12=1.2DL+Di-W_{i30}
- LC13=1.2DL
- LC15=1.2DL+1.5LL1
- LC16=1.2DL+1.5LL2
- LC17=1.2DL+W_{L0}+1.5LLa1
- LC18=1.2DL+W_{L30}+1.5LLa1
- LC19=1.2DL-W_{L0}+1.5LLa1
- LC20=1.2DL-W_{L30}+1.5LLa1
- LC21=1.2DL+W_{L0}+1.5LLa2
- LC22=1.2DL+W_{L30}+1.5LLa2
- LC23=1.2DL-W_{L0}+1.5LLa2
- LC24=1.2DL-W_{L30}+1.5LLa2
- LC25=1.2DL+W_{L0}+1.5LLa3

LC26=1.2DL+WL30+1.5LLa3
 LC27=1.2DL-WL0+1.5LLa3
 LC28=1.2DL-WL30+1.5LLa3
 LC29=1.2DL+WL0+1.5LLa4
 LC30=1.2DL+WL30+1.5LLa4
 LC31=1.2DL-WL0+1.5LLa4
 LC32=1.2DL-WL30+1.5LLa4

Node		Forces						Moments					
		Fx [Kip]	lc	Fy [Kip]	lc	Fz [Kip]	lc	Mx [Kip*ft]	lc	My [Kip*ft]	lc	Mz [Kip*ft]	lc
184	Max	0.653	LC1	0.443	LC10	1.457	LC5	0.47762	LC5	0.11227	LC1	0.30125	LC3
	Min	-0.634	LC7	-0.017	LC8	-1.465	LC3	-0.52738	LC3	-0.10151	LC7	-0.27421	LC5
186	Max	2.035	LC6	0.450	LC9	0.303	LC1	0.00376	LC1	0.17837	LC4	0.62127	LC8
	Min	-2.045	LC4	-0.032	LC7	-0.287	LC7	-0.00243	LC7	-0.16505	LC6	-0.70372	LC2
187	Max	0.562	LC6	0.437	LC12	1.224	LC5	0.46330	LC1	0.12237	LC3	0.26700	LC1
	Min	-0.565	LC4	-0.027	LC6	-1.259	LC3	-0.43250	LC7	-0.10843	LC5	-0.24752	LC7
407	Max	0.220	LC6	0.654	LC15	0.478	LC1	0.18312	LC5	0.09645	LC2	0.18770	LC8
	Min	-0.252	LC4	0.143	LC7	-0.250	LC7	-0.56256	LC3	-0.08284	LC8	-0.24447	LC2
408	Max	0.500	LC2	0.515	LC10	0.209	LC5	0.30156	LC1	0.09747	LC3	0.52219	LC4
	Min	-0.294	LC8	0.136	LC8	-0.288	LC3	-0.17979	LC7	-0.08274	LC5	-0.17829	LC6
409	Max	0.230	LC6	0.536	LC12	0.243	LC5	0.38366	LC1	0.10097	LC1	0.18214	LC8
	Min	-0.412	LC4	0.150	LC6	-0.384	LC3	-0.14709	LC7	-0.08775	LC7	-0.48115	LC2
410	Max	0.737	LC6	0.539	LC1	0.916	LC1	0.31144	LC5	0.20699	LC6	0.37962	LC8
	Min	-0.770	LC4	-0.234	LC7	-0.805	LC7	-0.62946	LC3	-0.22046	LC4	-0.41935	LC2
411	Max	0.982	LC2	0.490	LC2	0.687	LC5	0.44652	LC1	0.20186	LC7	0.63146	LC4
	Min	-0.868	LC8	-0.196	LC8	-0.712	LC3	-0.33891	LC7	-0.21510	LC1	-0.34693	LC6
412	Max	0.741	LC6	0.460	LC4	0.797	LC5	0.53909	LC1	0.18629	LC5	0.32705	LC8
	Min	-0.819	LC4	-0.157	LC6	-0.884	LC3	-0.34917	LC7	-0.20115	LC3	-0.58245	LC2

Date: 01/28/2019
Project Name: Trumbull Tower
Project No.: 881535
Designed By: JN **Checked By:** MSC



HUDSON
 Design Group LLC

CHECK CONNECTION CAPACITY (Worse Case)

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

Bolt Type = A36 1/2" Threaded Rod

Allowable Tensile Load =

$F_{Tall} =$ 4271 lbs.

Allowable Shear Load =

$F_{Vall} =$ 2562 lbs.

No. of Supports = 1

No. of Bolts / Support = 2

Node	Wind Load	Gravity Loads	Tension Design	Shear Design	Tension/Shear Ratio	PASS/FAIL
N184	1457	443	17.06%	8.64%	25.70%	PASS
N186	2035	450	23.83%	8.78%	32.61%	PASS
N187	1224	437	14.33%	8.53%	22.86%	PASS

Date: 01/28/2019
Project Name: Trumbull Tower
Project No.: 881535
Designed By: JN **Checked By:** MSC



HUDSON
 Design Group LLC

CHECK CONNECTION CAPACITY (Worse Case)

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

Bolt Type = A36 5/8" Threaded Rod

Allowable Tensile Load =

$F_{Tall} =$ 6673 lbs.

Allowable Shear Load =

$F_{Vall} =$ 4004 lbs.

No. of Supports = 1

No. of Bolts / Support = 3

Node	Wind Load	Gravity Loads	Tension Design	Shear Design	Tension/Shear Ratio	PASS/FAIL
N407	478	654	2.39%	5.44%	7.83%	PASS
N408	500	515	2.50%	4.29%	6.79%	PASS
N409	243	536	1.21%	4.46%	5.68%	PASS
N410	916	539	4.58%	4.49%	9.06%	PASS
N411	982	490	4.91%	4.08%	8.99%	PASS
N412	797	460	3.98%	3.83%	7.81%	PASS

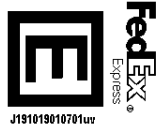
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 NESMET BADAMI
 CROWN CASTLE
 1200 MACARTHUR BLVD
 SUITE 200
 MAHWAH, NJ 07430
 UNITED STATES US

SHIP DATE: 15FEB19
 ACT/WGT: 6.50 LB
 CAD: 104924192/NET4100

BILL SENDER

TO EXECUTIVE DIRECTOR: MELANIE BACHAM
 CONNECTICUT SITTING COUNCIL
 10 FRANKLIN SQUARE

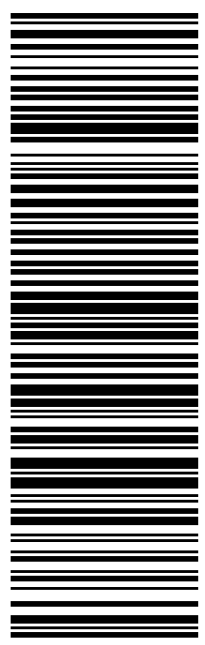
NEW BRITAIN CT 06051
 (860) 827-2935 REF: 1766 6690
 INV/ DEPT:
 PO:



TRK# 7744 7987 5234
 0201

MON - 18 FEB 10:30A
 PRIORITY OVERNIGHT

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