STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

www.ct.gov/csc

VIA ELECTRONIC MAIL

May 29, 2019

Lucia Chiocchio, Esq.
Cuddy & Feder, LLP
445 Hamilton Avenue, 14th floor
White Plains, New York 10601

RE: **TS-CING-072-190430 –** New Cingular Wireless request for an order to approve tower sharing at an existing telecommunications facility located at 581 Colonel Ledyard Highway, Ledyard, Connecticut

Dear Attorney Chiocchio:

The Connecticut Siting Council (Council) is in receipt of your correspondence of May 24, 2019 submitted in response to the Council's May 2, 2019 notification of an incomplete request for tower sharing with regard to the above-referenced matter.

The submission renders the request for tower sharing complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/IN/emr

CUDDY +FEDER LLP

445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
T 914 761 1300
F 914 761 5372
cuddyfeder.com

Lucia Chiocchio
lchiocchio@cuddyfedder.com

May 24, 2019

VIA EMAIL AND OVERNIGHT DELIVERY
Members of the Connecticut Siting Council
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Re: Tower Sharing Request by New Cingular Wireless PCS, LLC
TS-CING-072-190430
Premises: 581 Colonel Ledyard Highway, Ledyard, CT 06339

Dear Members of the Siting Council:

This letter is respectfully submitted on behalf of our client, New Cingular Wireless PCS, LLC ("AT&T"), in connection with the request dated April 29, 2019 for an order from the Connecticut Siting Council (the "Council") to approve the proposed shared use of a communications tower and associated compound at the parcel identified as 581 Colonel Ledyard Highway in the Town of Ledyard.

The Council issued a notice of incompletion dated May 2, 2019 requesting clarification of the proposed generator fuel tank capacity as well as the applicable National Electrical Code and the International Building Code. The Council's May 2, 2019 notice also requests a structural analysis signed and stamped by a professional engineer registered in the State of Connecticut as well as proof of proper notice of this tower share request to the underlying property owner, the chief elected official of the host municipality, and the respective Planning and Zoning Department. With this letter, AT&T hereby submits an electronic version, original and fifteen hard copies of the following in response to the Council's request:

- Construction Drawings prepared by Fullerton Engineering Design last revised May 22, 2019 clarifying AT&T is proposing a 105-gallon diesel generator and referencing the applicable 2015 International Building Code and 2017 National Electrical Code;
- Structural Analysis Report prepared by Fullerton Engineering Design dated March 11,

2019 signed and sealed by Henry M. Bellagamba, P.E. (CT License No. PEN.25358)[1];
- Proof of proper notice of the tower share request to the underlying property owner, Frederic and Jeanne Allyn;
- Proof of proper notice of the tower share request to the Town of Ledyard Mayor Fred Allyn;
- Proof of proper notice of the tower share request to the Town of Ledyard Planning and Development Department; and
- Proof of proper notice of the tower share request to the Town of Ledyard Zoning and Wetland Department.

Thank you for your consideration of this request. Should the Council members or Staff have any questions regarding the foregoing, please do not hesitate to contact me.

Very truly yours,

DJP

Lucia Chiocchio

Attachments

cc: AT&T
Smartlink LLC
Mind Reader Research, Inc.
Fullerton Engineering Design
C Squared Systems, LLC
Daniel Patrick, Esq.
Julie Durkin

[1] Please note that the structural analysis was electronically certified by a professional engineer licensed in Connecticut. However, the electronic signature was not transmitted on the copies sent with the original filing.

FedEx Shipment Receipt

Address Information

Ship to:	**Ship from:**
Fred Allyn, III, Mayor	Daniel Patrick
Town of Ledyard	Cuddy & Feder LLP
741 Colonel Ledyard Highway	445 Hamilton Avenue
	Suite 1400
LEDYARD, CT	White Plains, NY
06339	10601
US	US
914-761-1300	9147611300

Shipment Information:
Tracking no.: 775305099838
Ship date: 05/24/2019
Estimated shipping charges: 15.31 USD

Package Information
Pricing option: FedEx Standard Rate
Service type: Priority Overnight
Package type: FedEx Pak
Number of packages: 1
Total weight: 1 LBS
Declared Value: 0.00 USD
Special Services:
Pickup/Drop-off: Use an already scheduled pickup at my location

Billing Information:
Bill transportation to: CuddyFeder-963
Your reference: 1844-3273
P.O. no.:
Invoice no.:
Department no.:

Thank you for shipping online with FedEx ShipManager at fedex.com.

Please Note

FedEx Shipment Receipt

Address Information

Ship to:	**Ship from:**
Frederic and Jeanne Allyn	Daniel Patrick Cuddy & Feder LLP
610 Colonel Ledyard Highway	445 Hamilton Avenue Suite 1400
LEDYARD, CT 06339 US 914-761-1300	White Plains, NY 10601 US 9147611300

Shipment Information:
Tracking no.: 775305035973
Ship date: 05/24/2019
Estimated shipping charges: 15.31 USD

Package Information
Pricing option: FedEx Standard Rate
Service type: Priority Overnight
Package type: FedEx Pak
Number of packages: 1
Total weight: 1 LBS
Declared Value: 0.00 USD
Special Services:
Pickup/Drop-off: Use an already scheduled pickup at my location

Billing Information:
Bill transportation to: CuddyFeder-963
Your reference: 1844-3273
P.O. no.:
Invoice no.:
Department no.:

Thank you for shipping online with FedEx ShipManager at fedex.com.

Please Note

FedEx Shipment Receipt

Address Information

Ship to:	**Ship from:**
Zoning & Wetlands Department	Daniel Patrick
Town of Ledyard	Cuddy & Feder LLP
741 Colonel Ledyard Highway	445 Hamilton Avenue
	Suite 1400
LEDYARD, CT	White Plains, NY
06339	10601
US	US
914-761-1300	9147611300

Shipment Information:
Tracking no.: 775305586360
Ship date: 05/24/2019
Estimated shipping charges: 15.31 USD

Package Information
Pricing option: FedEx Standard Rate
Service type: Priority Overnight
Package type: FedEx Pak
Number of packages: 1
Total weight: 1 LBS
Declared Value: 0.00 USD
Special Services:
Pickup/Drop-off: Use an already scheduled pickup at my location

Billing Information:
Bill transportation to: CuddyFeder-963
Your reference: 1844-3273
P.O. no.:
Invoice no.:
Department no.:

Thank you for shipping online with FedEx ShipManager at fedex.com.

Please Note

FedEx Shipment Receipt

Address Information

Ship to:	**Ship from:**
Planning & Development Deptartment	Daniel Patrick
Town of Ledyard	Cuddy & Feder LLP
741 Colonel Ledyard Highway	445 Hamilton Avenue
	Suite 1400
LEDYARD, CT	White Plains, NY
06339	10601
US	US
914-761-1300	9147611300

Shipment Information:
Tracking no.: 775305555523
Ship date: 05/24/2019
Estimated shipping charges: 15.31 USD

Package Information
Pricing option: FedEx Standard Rate
Service type: Priority Overnight
Package type: FedEx Pak
Number of packages: 1
Total weight: 1 LBS
Declared Value: 0.00 USD
Special Services:
Pickup/Drop-off: Use an already scheduled pickup at my location

Billing Information:
Bill transportation to: CuddyFeder-963
Your reference: 1844-3273
P.O. no.:
Invoice no.:
Department no.:

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Please Note

AT&T APPROVALS

	PRINT NAME	SIGNATURE	DATE
SA MANAGER			
SMARTLINK CM			
SMARTLINK SA PM			
SMARTLINK SA SPEC.			
SMARTLINK COMPLIANCE MGR.			
AT&T RF PM			
AT&T PM			

APPROVED FOR CONSTRUCTION

NETWORK DEVELOPMENT		
SA		
RF		
CONSTRUCTION		
PROPERTY OWNER		

SITE NAME: LEDYARD COLONEL LEDYARD HIGHWAY

SEARCH RING NUMBER: CT1837S
USID: 162156
FA NUMBER: 12685510
SITE ADDRESS: 581 COLONEL LEDYARD HIGHWAY
LEDYARD, CT 06339
SITE TYPE: GUYED TOWER

at&t
7150 STANDARD DRIVE
HANOVER, MD 21076

smartlink
1362 MELLON ROAD, SUITE 140
HANOVER, MD 21076

FULLERTON ENGINEERING · DESIGN
1100 E. WOODFIELD ROAD, SUITE 500
SCHAUMBURG, ILLINOIS 60173
TEL: 847-908-8400
COA# PEC.0001444
www.FullertonEngineering.com

REV	DATE	DESCRIPTION	BY
0	11/09/18	90% REVIEW	ASE
1	12/11/18	FOR PERMIT	KC
2	02/07/19	FOR CONSTRUCTION	KC
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I HEREBY CERTIFY THAT THESE DRAWINGS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CONTROL, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF COMPLY WITH THE REQUIREMENTS OF ALL APPLICABLE CODES.

STATE OF CONNECTICUT · HENRY M. BELLAGAMBA · 25358 · LICENSED PROFESSIONAL ENGINEER

PROJECT INFORMATION

SITE NAME:	LEDYARD COLONEL LEDYARD HIGHWAY
USID:	162156
SITE ADDRESS:	581 COLONEL LEDYARD HIGHWAY LEDYARD, CT 06339
SITE TYPE:	GUY TOWER
COUNTY:	NEW LONDON
JURISDICTION:	TOWN OF LEDYARD
APN:	–
ZONING CLASSIFICATION:	–
FA#:	12685510
APPLICANT:	AT&T WIRELESS 7150 STANDARD DRIVE HANOVER, MD 21076
SITE COORDINATES:	
LATITUDE:	41.4340500°
LONGITUDE:	–72.0016850°
GROUND ELEV. (A.M.S.L.):	306'
PROPERTY OWNER:	ALLYN FREDERIC B. JR & JEANNE S. 610 COLONEL LEDYARD HIGHWAY LEDYARD, CT 06339

SCOPE OF WORK

THE SCOPE OF WORK CONSISTS OF:

- (3) ANTENNA SECTOR FRAMES
- (9) NEW ANTENNAS
- (18) NEW RRH UNITS
- (4) NEW RAYCAP UNITS
- (2) NEW FIBER CABLES & (8) NEW DC POWER CABLES
- NEW 6'–8"x6'–8" WIC SHELTER
- NEW 8'x8' CONCRETE SLAB
- NEW 4'x6' CONCRETE SLAB
- NEW 20KW GENERATOR W/ FUEL TANK

- CONTRACTOR SHALL FURNISH ALL MATERIAL WITH THE EXCEPTION OF AT&T SUPPLIED MATERIAL.
- ALL MATERIAL SHALL BE INSTALLED BY THE CONTRACTOR, UNLESS STATED OTHERWISE.

APPLICABLE BUILDING CODES AND STANDARDS

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES.

BUILDING CODE: 2015 INTERNATIONAL BUILDING CODE
2018 CONNECTICUT STATE BUILDING CODE SUPPLEMENT

ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NEC)

- FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.
- ADA ACCESS REQUIREMENTS ARE NOT REQUIRED.
- THIS FACILITY DOES NOT REQUIRE POTABLE WATER AND WILL NOT PRODUCE ANY SEWAGE

SITE LOCATION MAP

DRAWING INDEX

PROJECT CONSULTANTS

	NAME	COMPANY	PHONE
A/E	RYAN O'SHAUGHNESSY	FULLERTON	(847) 908–8505
REAL ESTATE	MICHAEL PATTISON	SMARTLINK	(941) 979–2622
RF		AT&T	
PM	KRISTEN SMITH	SMARTLINK	(941) 979–2622
REGULATORY	DANIELLE KOVACH	SMARTLINK	(941) 979–2622
CM	ROBERT PICARD	SMARTLINK	(443) 858–2055

DIRECTIONS

SCAN QR CODE FOR LINK TO SITE LOCATION MAP

811 Know what's below. Call before you dig.

DRAWING SCALES ARE FOR 11"x17" SHEETS

SITE NUMBER: CT1837S

SITE NAME: LEDYARD COLONEL LEDYARD HIGHWAY

FA NUMBER: 12685510

USID: 162156

SITE ADDRESS: 581 COLONEL LEDYARD HIGHWAY LEDYARD, CT 06339

SHEET NAME: TITLE SHEET

SHEET NUMBER: T-1

FEC# 2018.0265.0002

GENERAL:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FOLLOWING ALL LAWS, REGULATIONS, AND RULES SET FORTH BY FEDERAL, STATE, AND LOCAL AUTHORITIES WITH JURISDICTION OVER THE PROJECT. THIS RESPONSIBILITY IS IN EFFECT REGARDLESS OF WHETHER THE LAW, ORDINANCE, REGULATION OR RULE IS MENTIONED IN THESE SPECIFICATIONS.
2. ALL WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS, PROJECT SPECIFICATIONS, AND THE CONSTRUCTION CONTRACT DOCUMENTS.
3. THE CONTRACTOR SHALL HAVE AND MAINTAIN A VALID CONTRACTOR'S LICENSE FOR THE LOCATION IN WHICH THE WORK IS TO BE PERFORMED. FOR JURISDICTIONS THAT LICENSE INDIVIDUAL TRADES, THE TRADESMAN OR SUBCONTRACTOR PERFORMING THOSE TRADES SHALL BE LICENSED.
4. FOLLOW ALL APPLICABLE RULES AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND STATE LAW AS DEFINED IN THE FEDERAL OCCUPATIONAL SAFETY AND HEALTH ACT.
5. PRIOR TO THE SUBMISSION OF THE BID, THE CONTRACTOR SHALL VISIT THE JOB SITE, VERIFY ALL DIMENSIONS AND BECOME FAMILIAR WITH THE FIELD CONDITIONS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE PROJECT MANAGER.
6. DRAWING PLANS SHALL NOT BE SCALED.
7. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK NOT CLEARLY IDENTIFIED ON THE DRAWINGS WITHOUT THE PRIOR WRITTEN APPROVAL OF THE PROJECT MANAGER.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS UNLESS SPECIFICALLY OTHERWISE NOTED.
9. ALL MEANS AND METHODS OF CONSTRUCTION DEALING WITH TOWER CONSTRUCTION AND SAFETY, STEEL ERECTION, EXCAVATIONS, TRENCHING, SCAFFOLDING, FORMWORK, ELECTRICAL, AND WORK IN CONFINED SPACES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
10. WHEN THE CONTRACTOR ACTIVITIES IMPEDE OR OBSTRUCT TRAFFIC FLOW, CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL DEVICES, SIGNS, AND FLAGMEN IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, DOT AND LOCAL REQUIREMENTS.
11. THE CONTRACTOR SHALL COORDINATE SITE ACCESS AND SECURITY WITH THE PROPERTY OWNER AND THE PROJECT MANAGER PRIOR TO CONSTRUCTION.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH UTILITIES.
13. THE CONTRACTOR SHALL CALL THE LOCAL PUBLIC UTILITY LOCATING PROVIDER (811) A MINIMUM OF THREE BUSINESS DAYS PRIOR TO EXCAVATING IN THE PUBLIC RIGHT OF WAY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING PRIVATE UTILITIES.
15. THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY UTILITIES OR FACILITIES IT DEEMS NECESSARY TO COMPLETE THE WORK. THIS INCLUDES, BUT IS NOT LIMITED TO WATER, SEWER, POWER, TELEPHONE, HEAT, LIGHTING OR SECURITY.
16. WHEN EXCAVATING IN THE AREA OF EXISTING UTILITIES, THE CONTRACTOR SHALL USE REASONABLE CARE IN PROTECTING SUCH UTILITIES. CONTRACTOR SHALL NOTIFY THE PROJECT MANAGER IMMEDIATELY OF ANY CONFLICTS BETWEEN EXISTING UTILITIES AND PROPOSED CONSTRUCTION.
17. DAMAGE TO PUBLIC OR PRIVATE UTILITIES SHALL BE REPORTED TO THE PROJECT MANAGER AND THE OWNER OF THE UTILITY IMMEDIATELY. ANY DAMAGE RESULTING FROM CONTRACTORS NEGLIGENCE OR FAILURE TO ACT WITH DUE REGARD SHALL BE REPAIRED AT CONTRACTORS EXPENSE.
18. UNLESS OTHERWISE NOTED ON THE PLANS, CONTRACTOR SHALL ASSUME ALL SURFACE FEATURES SUCH AS BUT NOT LIMITED TO BUILDINGS, PAVEMENTS, LANDSCAPING FEATURES, PLANTS, ETC. ARE TO BE SAVED AND PROTECTED FROM DAMAGE. CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SITE CONDITIONS AND UPON COMPLETION OF WORK REPAIR BACK TO ORIGINAL CONDITIONS ANY DAMAGE THAT OCCURRED DURING CONSTRUCTION.
19. KEEP THE CONSTRUCTION SITE CLEAN, HAZARD FREE, AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. LEAVE PREMISES IN CLEAN CONDITION AND SHALL BE SUBJECT TO APPROVAL BY THE PROPERTY OWNER AND THE PROJECT MANAGER.
20. THE CONTRACTOR SHALL PROVIDE ON-SITE TRASH RECEPTACLES FOR COLLECTION OF NON-TOXIC DEBRIS. ALL TRASH SHALL BE COLLECTED ON A DAILY BASIS.
21. ALL TOXIC AND ENVIRONMENTALLY HAZARDOUS SUBSTANCES SHALL BE USED AND DISPOSED OF IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS. UNDER NO CIRCUMSTANCES SHALL RINSING OR DUMPING OF THESE SUBSTANCES OCCUR ON-SITE.
22. UNLESS NOTED OTHERWISE, CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL PERMITS NECESSARY FOR CONSTRUCTION.
23. THE PROJECT MANAGER MAY RETAIN THE SERVICES OF A TESTING LABORATORY TO PERFORM QUALITY ASSURANCE TESTING ON VARIOUS PORTIONS OF THE CONTRACTORS WORK. WHEN REQUESTED, THE CONTRACTOR SHALL INFORM THE TESTING LABORATORY AND ASSIST THEM IN COMPLETING TESTS.
24. THE CONTRACTOR SHALL MAINTAIN AND SUPPLY THE PROJECT MANAGER WITH AS-BUILT PLANS UPON COMPLETION OF THE PROJECT.

ELECTRIC:

1. THE CONTRACTOR SHALL PERFORM WORK IN ACCORDANCE WITH ALL GOVERNING STATE, COUNTY AND LOCAL CODES AND OSHA REQUIREMENTS.
2. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES.
3. THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS AND TRANSPORTATION FOR A COMPLETE AND PROPERLY OPERATIVE SYSTEM ENERGIZED THROUGHOUT AND AS INDICATED ON DRAWINGS.
4. THE CONTRACTOR SHALL OBTAIN ALL PERMITS, PAY PERMIT AND INSPECTION FEES, AND BE RESPONSIBLE FOR SCHEDULING INSPECTIONS WITH THE AUTHORITY HAVING JURISDICTION.
5. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, IEEE, NEMA AND NFPA.
6. ALL MATERIALS SHALL BE U.L. LISTED.
7. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT.
8. MATERIALS SHALL MEET WITH APPROVAL OF THE AUTHORITY HAVING JURISDICTION.
9. THE CONTRACTOR SHALL PERFORM ALL VERIFICATION OBSERVATIONS TEST, AND EXAMINATION WORK PRIOR TO THE ORDERING OF THE ELECTRICAL EQUIPMENT AND STARTING CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE PROJECT MANAGER LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.
10. THE CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR CONNECTION OF THE TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL HOOKUP COSTS TO BE PAID BY CONTRACTOR.
11. UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL OF POTENTIAL GROUND TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO THE PROJECT MANAGER.
12. ALL BROCHURES, OPERATING MANUALS, CATALOGS, SHOP DRAWINGS, ETC. SHALL BE TURNED OVER TO THE PROJECT MANAGER AT JOB COMPLETION.
13. POST-INSTALLATION, ANY WORK, MATERIAL OR EQUIPMENT FOUND TO BE FAULTY SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE CONTRACTOR.
14. PROVIDE THE PROJECT MANAGER WITH ONE SET OF COMPLETE ELECTRICAL "AS-INSTALLED" DRAWINGS AT THE COMPLETION OF THE JOB, SHOWING ACTUAL DIMENSIONS, ROUTINGS AND CIRCUITS.
15. ALL ELECTRICAL EQUIPMENT SHALL BE LABELED WITH PERMANENT ENGRAVED PLASTIC LABELS NOTING USE FUNCTION.
16. EACH CONDUCTOR OF EVERY SYSTEM SHALL BE PERMANENTLY TAGGED IN EACH PANEL BOARD, PULL BOX, J-BOX, SWITCH BOX, ETC.
17. ALL CONDUIT INSTALLED SHALL BE SURFACE MOUNTED OR DIRECT BURIAL UNLESS OTHERWISE NOTED.
18. ALL CONDUIT SHALL HAVE A PULL WIRE OR ROPE.
19. ALL CONDUCTORS SHALL BE COPPER.
20. ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING SHORT CIRCUIT CURRENT TO WHICH THEY MAY BE SUBJECTED, AND A MINIMUM OF 10,000 A.I.C.
21. PATCH, REPAIR AND PAINT ANY AREA THAT HAS BEEN DAMAGED IN THE COURSE OF THE ELECTRICAL WORK.
22. PENETRATIONS IN FIRE RATED WALLS SHALL BE FIRE STOPPED TO MATCH ORIGINAL RATING.
23. BX OR ROMEX CABLE IS NOT PERMITTED.
24. ALL ELECTRICAL/FIBER ENCLOSURES, JUNCTION BOXES, CONDUIT KNOCKOUTS, RACEWAYS, ETC. SHALL BE RODENT-PROOF.
25. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNDAMAGED CONDITION.

at&t
7150 STANDARD DRIVE
HANOVER, MD 21076

smartlink
1362 MELLON ROAD, SUITE 140
HANOVER, MD 21076

FULLERTON ENGINEERING · DESIGN
1100 E. WOODFIELD ROAD, SUITE 500
SCHAUMBURG, ILLINOIS 60173
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COA# PEC.0001444
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0	11/09/18	90% REVIEW	ASE
1	12/11/18	FOR PERMIT	KC
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I HEREBY CERTIFY THAT THESE DRAWINGS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CONTROL, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF COMPLY WITH THE REQUIREMENTS OF ALL APPLICABLE CODES.

STATE OF CONNECTICUT · HENRY M. BELLAGAMBA · 25358 · LICENSED PROFESSIONAL ENGINEER

SITE NUMBER
CT1837S

SITE NAME
LEDYARD COLONEL LEDYARD HIGHWAY

FA NUMBER:
12685510

USID:
162156

SITE ADDRESS
581 COLONEL LEDYARD HIGHWAY
LEDYARD, CT 06339

SHEET NAME
GENERAL NOTES

SHEET NUMBER
T-2

FEC# 2018.0265.0002

GENERAL ABBREVIATIONS

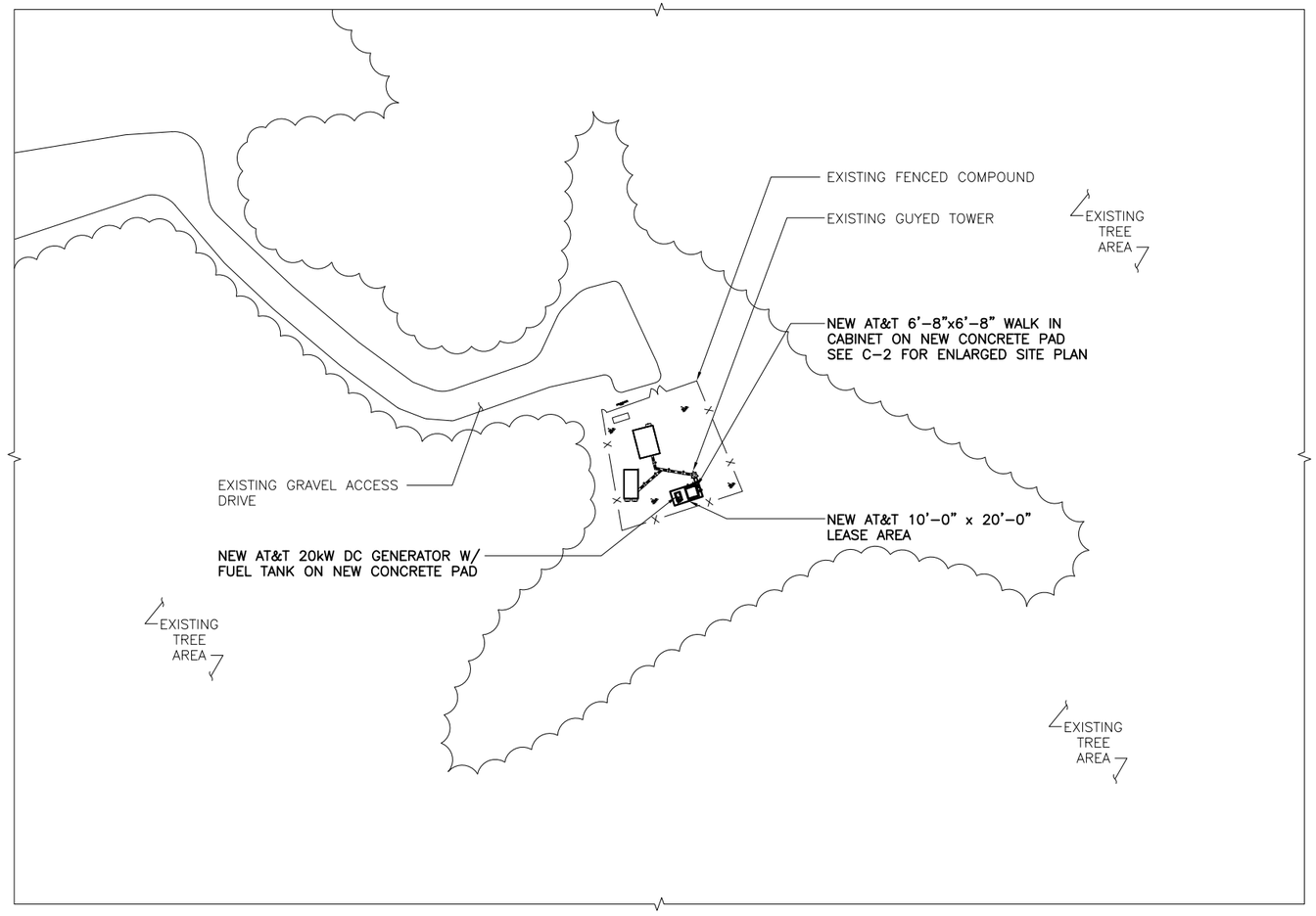
AFF	ABOVE FINISHED FLOOR
AGL	ABOVE GRADE LEVEL
AMSL	ABOVE MEAN SEA LEVEL
APPROX	APPROXIMATE
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BLDG	BUILDING
℄	CENTERLINE
CLR	CLEAR
COL	COLUMN
CONC	CONCRETE
CND	CONDUIT
DIA	DIAMETER
DWG	DRAWING
FT	FOOT(FEET)
EGB	EQUIPMENT GROUND BAR
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
ELEV	ELEVATION
EQUIP	EQUIPMENT
(E)	EXISTING
EXT	EXTERIOR
FND	FOUNDATION
F	FIBER
GA	GAUGE
GALV	GALVANIZED
GPS	GLOBAL POSITIONING SYSTEM
GND	GROUND
LP	LIQUID PROPANE
MAX	MAXIMUM
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MTS	MANUAL TRANSFER SWITCH
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
OE/OT	OVERHEAD ELECTRIC/TELCO
PPC	POWER PROTECTION CABINET
PL	PROPERTY LINE
RGS	RIGID GALVANIZED STEEL
IN	INCH(ES)
INT	INTERIOR
LB(S), #	POUND(S)
SF	SQUARE FOOT
STL	STEEL
TYP	TYPICAL
UE/UT	UNDERGROUND ELECTRIC/TELCO
UNO	UNLESS NOTED OTHERWISE
VIF	VERIFY IN FIELD
W/	WITH
XFMR	TRANSFORMER

TELECOM ABBREVIATIONS

FIF	FACILITY INTERFACE FRAME
GSM	GLOBAL SYSTEM FOR MOBILE COMMUNICATION
LTE	LONG TERM EVOLUTION
MW	MICROWAVE
MCPA	MULTI-CARRIER POWER AMPLIFIER
RBS	RADIO BASED STATION
RET	REMOTE ELECTRIC TILT
TMA	TOWER MOUNTED AMPLIFIER
UMTS	UNIVERSAL MOBILE TELECOMMUNICATION SYSTEM

SYMBOLS

- REVISION
- WORK POINT
- UTILITY POLE
- BRICK
- COMPRESSED STONE
- CONCRETE
- EARTH
- GRAVEL
- CENTERLINE
- PROPERTY LINE
- LEASE LINE
- EASEMENT LINE
- FENCE
  - CHAINLINK
  - WOOD
  - WROUGHT IRON
- ELECTRIC
  - OVERHEAD
  - UNDERGROUND
- FIBER
  - OVERHEAD
  - UNDERGROUND
- TELEPHONE
  - OVERHEAD
  - UNDERGROUND
- DCPOWER



SITE PLAN

SCALE: 1" = 20'-0" | 1

at&t
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CT1837S

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FA NUMBER:
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USID:
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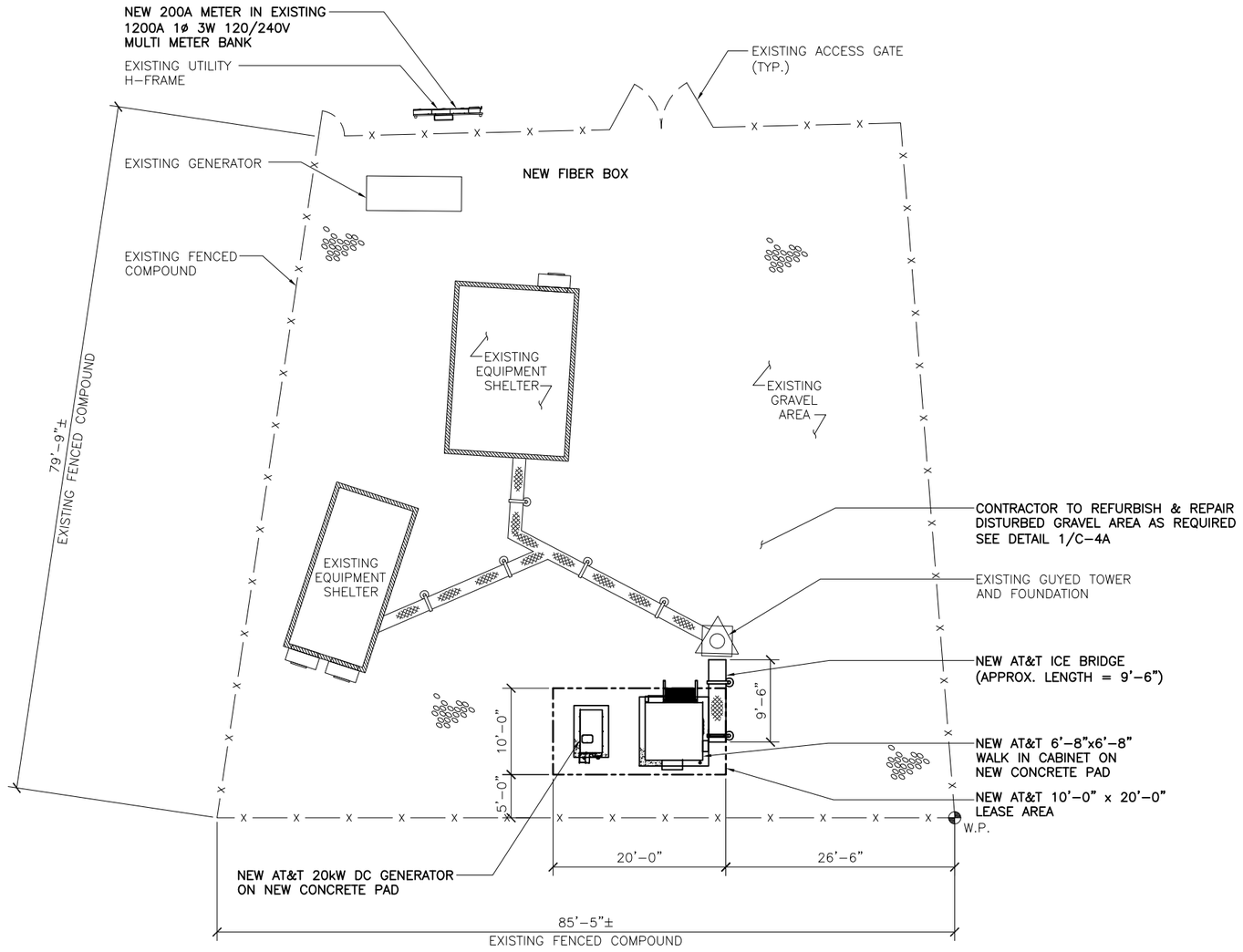
SITE ADDRESS
581 COLONEL LEDYARD HIGHWAY
LEDYARD, CT 06339

SHEET NAME
SITE PLAN

SHEET NUMBER
C-1

FEC# 2018.0265.0002



ENLARGED SITE PLAN

SCALE: 1/16" = 1'–0"

1

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HANOVER, MD 21076

smartlink
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REV	DATE	DESCRIPTION	BY
0	11/09/18	90% REVIEW	ASE
1	12/11/18	FOR PERMIT	KC
2	02/07/19	FOR CONSTRUCTION	KC
3	04/26/19	FOR CONSTRUCTION	EB
4	05/22/19	FOR CONSTRUCTION	EB

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STATE OF CONNECTICUT
HENRY M. BELLAGAMBA
25358
LICENSED PROFESSIONAL ENGINEER

SITE NUMBER
CT1837S

SITE NAME
LEDYARD COLONEL LEDYARD HIGHWAY

FA NUMBER:
12685510

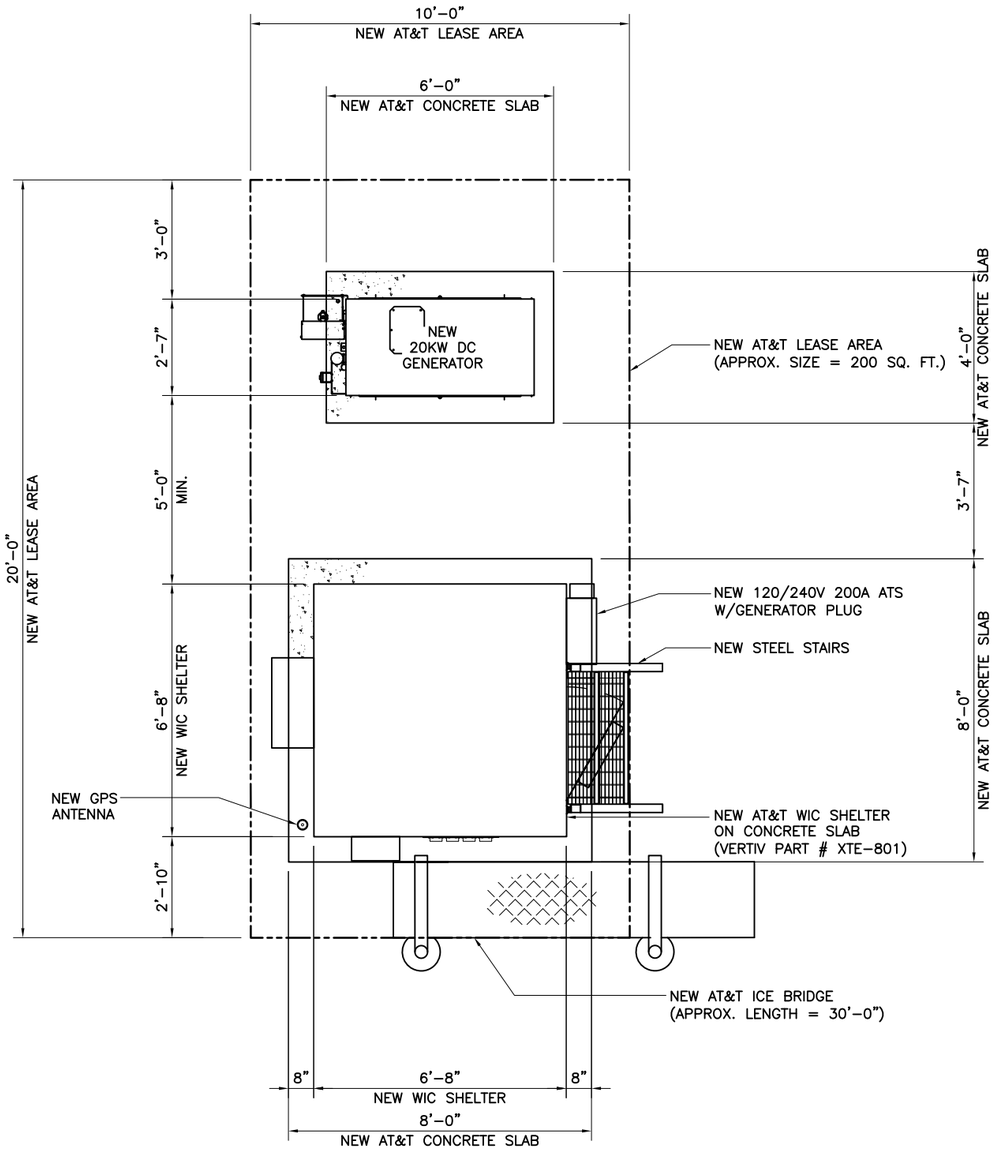
USID:
162156

SITE ADDRESS
581 COLONEL LEDYARD HIGHWAY
LEDYARD, CT 06339

SHEET NAME
ENLARGED SITE PLAN

SHEET NUMBER
C-2

FEC# 2018.0265.0002



EQUIPMENT LAYOUT

SCALE: 1/4" = 1'-0"

1

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LEDYARD, CT 06339

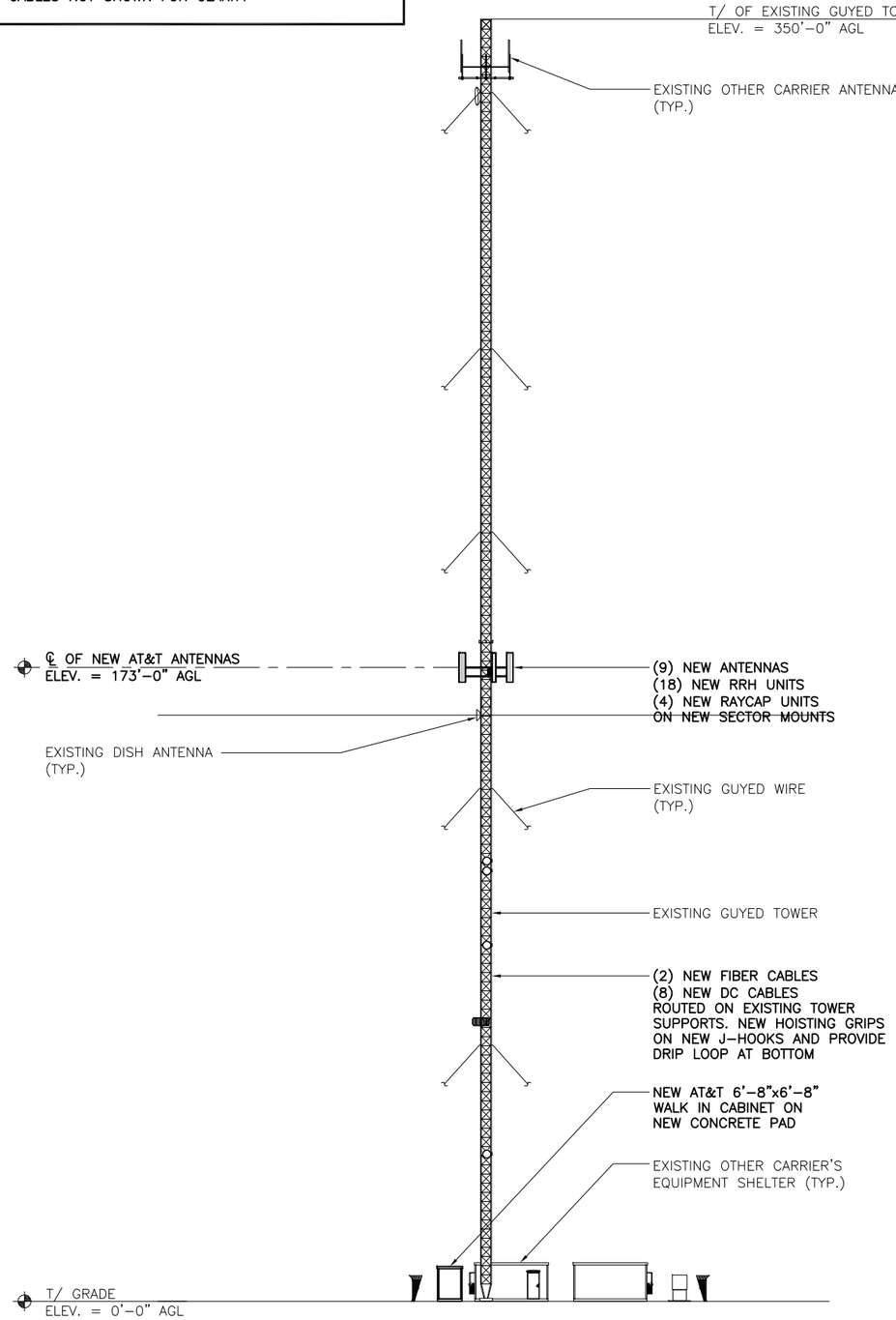
SHEET NAME
EQUIPMENT LAYOUT

SHEET NUMBER
C-2A

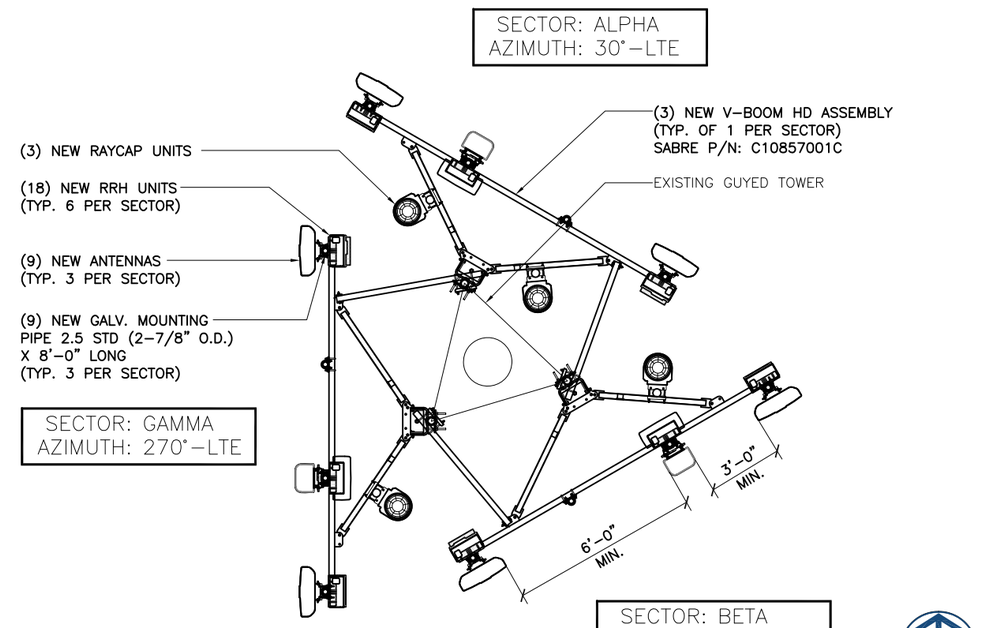
FEC# 2018.0265.0002

NOTES:

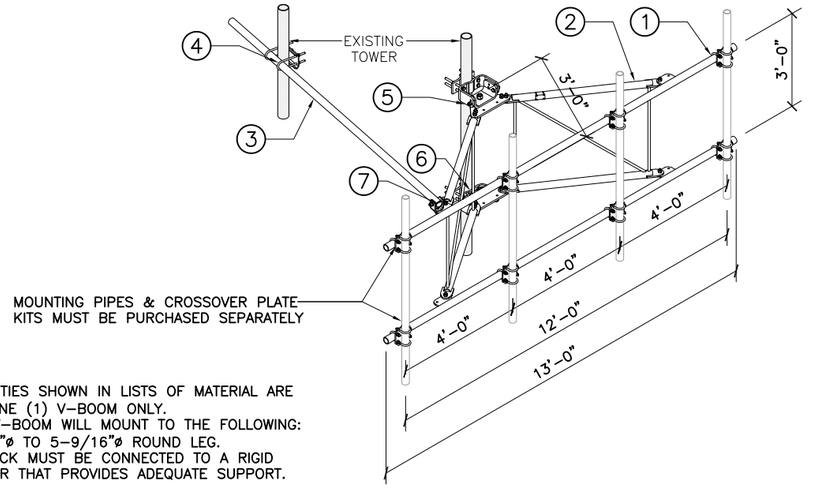
1. CALCULATIONS FOR THE STRUCTURE AND ANTENNA MOUNTS WERE PREPARED BY FULLERTON AND THOSE CALCULATIONS CERTIFY THE CAPACITY OF THE STRUCTURE TO SUPPORT THE NEW EQUIPMENT
2. CABLES NOT SHOWN FOR CLARITY



ELEVATION SCALE: 1" = 20'-0" | 1



ANTENNA PLAN SCALE: 3/16" = 1'-0" | 2



NOTES:

1. QUANTITIES SHOWN IN LISTS OF MATERIAL ARE FOR ONE (1) V-BOOM ONLY.
2. THIS V-BOOM WILL MOUNT TO THE FOLLOWING: 1-1/2"ø TO 5-9/16"ø ROUND LEG.
3. TIE BACK MUST BE CONNECTED TO A RIGID MEMBER THAT PROVIDES ADEQUATE SUPPORT.

ITEM	QTY	DESCRIPTION
1	2	WELDMENT, FACE PIPE
2	2	WELDMENT, STANDOFF ARM
3	1/2	PIPE, TIE BACK (DEPENDENT ON NEEDED SUPPORT)
4	1/2	TIE BACK CLAMP (ONE PER OF TIE BACK ARM)
5	1	UPPER LEG MOUNT
6	1	LOWER LEG MOUNT
7	1	TIE BACK SWIVEL

12' HD V-BOOM ASSEMBLY W/TIEBACK
(3' STANDOFF)
WITHOUT ANTENNA MOUNTING PIPES

MFR - SABRE
PART# - C10857001C

WEIGHT - 462 LBS

ANTENNA SECTOR FRAME SPEC SCALE: N.T.S. | 3

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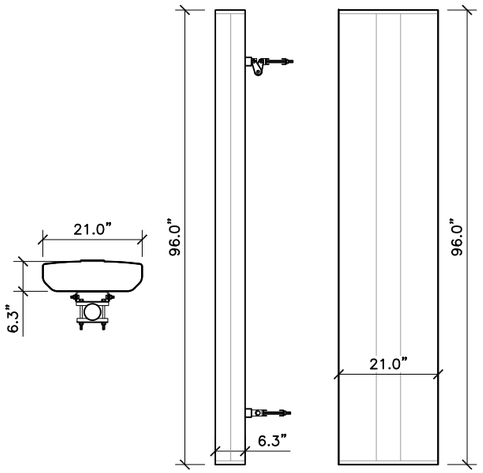
LEDYARD, CT 06339

SHEET NAME
ELEVATION AND ANTENNA PLAN

SHEET NUMBER
C-3

FEC# 2018.0265.0002



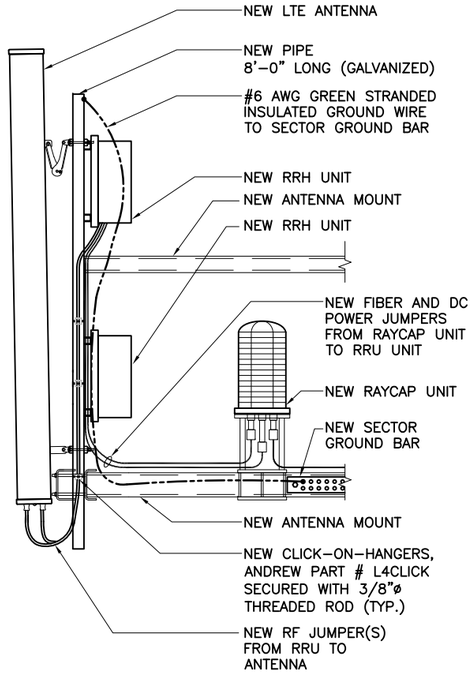
PLAN VIEW SIDE VIEW FRONT VIEW

KMW – EPBQ-654L8H8-L2

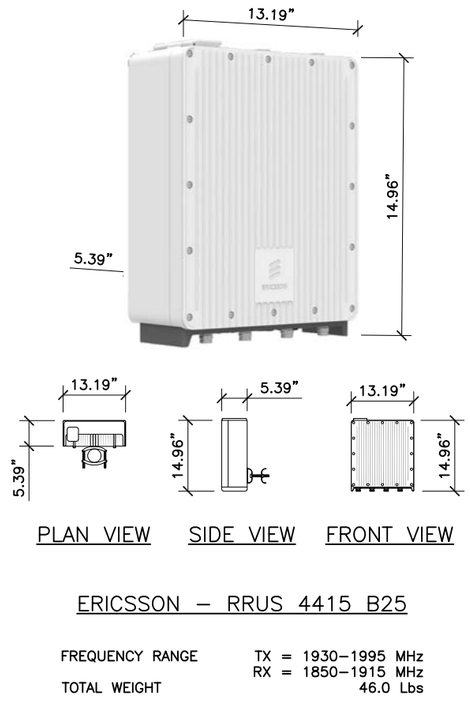
12-PORT MULTI-BAND ANTENNA

FREQUENCY RANGE	698–806 MHz
	806–894 MHz
	1695–1850 MHz
	1850–1910 MHz
	1910–2180 MHz
	2300–2400 MHz
ANTENNA	86.0 Lbs
BRACKET	7.5 Lbs
TOTAL WEIGHT	93.5 Lbs

ANTENNA SPECS SCALE: N.T.S. 1



ANTENNA SCHEMATIC SCALE: N.T.S. 2

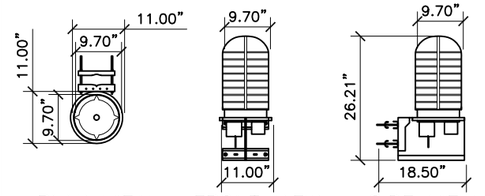


PLAN VIEW SIDE VIEW FRONT VIEW

ERICSSON – RRUS 4415 B25

FREQUENCY RANGE	TX = 1930–1995 MHz
	RX = 1850–1915 MHz
TOTAL WEIGHT	46.0 Lbs

RRU SPEC SCALE: N.T.S. 3



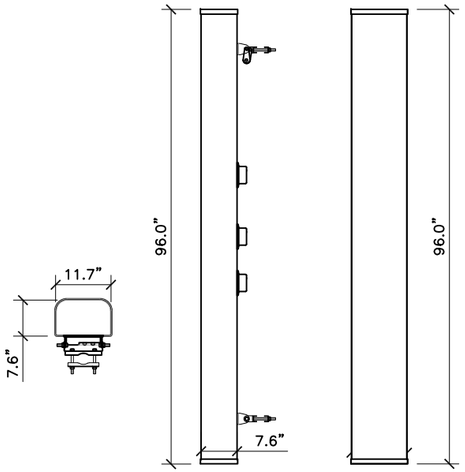
PLAN VIEW FRONT VIEW SIDE VIEW

RAYCAP – DC6-48-60-18-8F

TOWER DC OVER VOLTAGE PROTECTION POWER CONNECTION SOLUTION

UNIT WEIGHT 32.8 Lbs

RAYCAP DC6-48-60-18-8F SPECS SCALE: N.T.S. 4



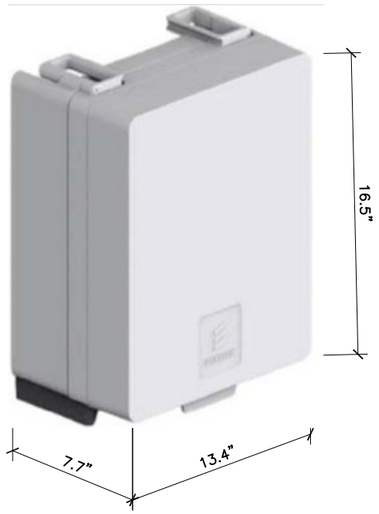
PLAN VIEW SIDE VIEW FRONT VIEW

CCI – HPA65R-BU8A

HEXPORT MULTI-BAND ANTENNA

FREQUENCY RANGE	2 x LOW BAND 698–896 MHz
	4 x HIGH BAND 1695–2400 MHz
ANTENNA	54.0 Lbs
(3) RETS	5.0 Lbs
BRACKET	16.6 Lbs
TOTAL WEIGHT	75.6 Lbs

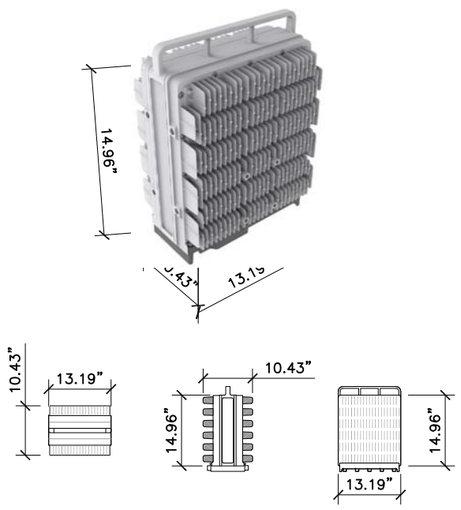
ANTENNA SPECS SCALE: N.T.S. 5



ERICSSON – RRUS 4478 B14

FREQUENCY RANGE	TX 758–768 MHz
	RX 788–798 MHz
TOTAL WEIGHT	59.9 Lbs

RRU SPEC SCALE: N.T.S. 6



PLAN VIEW SIDE VIEW FRONT VIEW

ERICSSON
RADIO 4449 DUAL B5 & B12

AISG TMA & RET SUPPORT

4TX/4RX PER BAND (B5 & B12)

WEIGHT ~73 Lbs

RRU SPEC SCALE: N.T.S. 7

NOT USED SCALE: N.T.S. 8

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LEDYARD HIGHWAY

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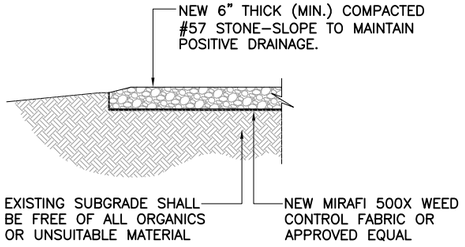
LEDYARD, CT 06339

SHEET NAME
SITE DETAILS

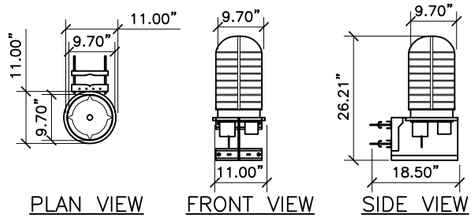
SHEET NUMBER
C-4

FEC# 2018.0265.0002



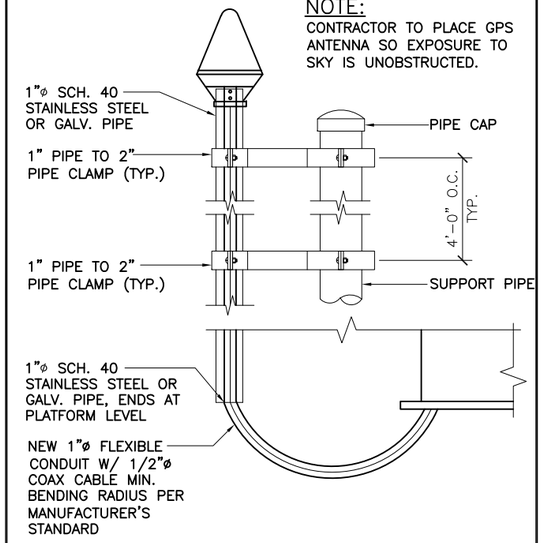
NOTE:
WEED CONTROL FABRIC SHALL BE USED UNDER ENTIRE PROPOSED GRAVELED AREA. CONTRACTOR SHALL INSTALL FABRIC PER MANUFACTURER'S RECOMMENDATIONS.

YARD DETAIL — SCALE: N.T.S. — 1

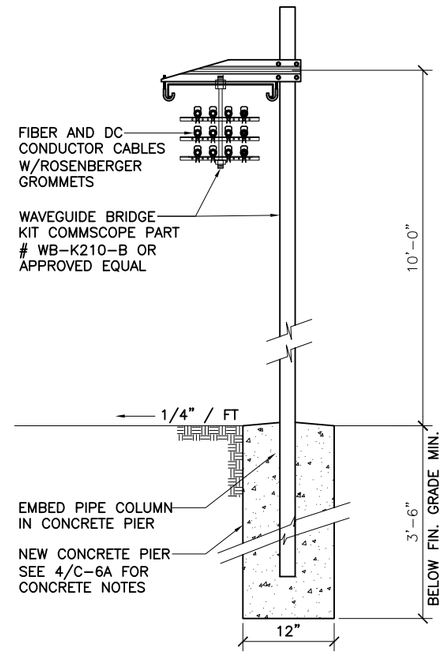


RAYCAP – DC6–48–60–18–8F
TOWER DC OVER VOLTAGE PROTECTION POWER CONNECTION SOLUTION
UNIT WEIGHT 32.8 Lbs

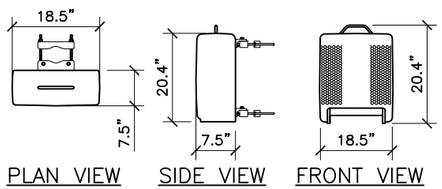
RAYCAP DC6-48-60-18-8F SPECS — SCALE: N.T.S. — 2



GPS ANTENNA — SCALE: N.T.S. — 3



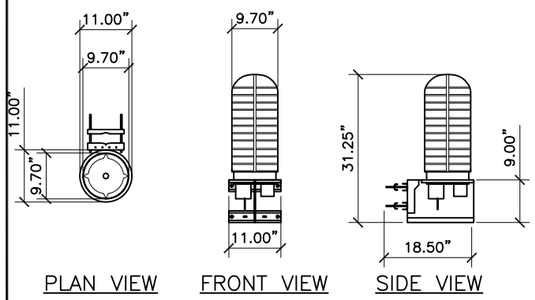
ICE BRIDGE DETAIL — SCALE: N.T.S. — 4



ERICSSON – RRUS E2
WITH SOLAR SHIELD
UNIT WEIGHT 52.9 Lbs

RRUS SPEC — SCALE: N.T.S. — 5

NOMINAL OPERATING VOLTAGE:	48 VDC
NOMINAL DISCHARGE CURRENT:	20 kA 8/20ms
MAXIMUM DISCHARGE CURRENT:	60 kA 8/20ms
MAXIMUM CONTINUOUS OPERATING VOLTAGE:	75 VDC
VOLTAGE PROTECTION RATING:	400 V
WIND LOADING:	150 MPH SUSTAINED (105.7 lbs) 195 MPH GUST (213.6 lbs)



RAYCAP – DC6–48–60–0–8F
TOWER DC OVER VOLTAGE PROTECTION POWER CONNECTION SOLUTION
UNIT WEIGHT 32.8 Lbs

CONTRACTOR TO USE "THREAD LUBRICANT" ON MOUNTING BOLTS DURING INSTALLATION ON EXISTING STRUCTURAL MEMBER

RAYCAP DC6-48-60-0-8F SPECS — SCALE: N.T.S. — 6

NOT USED — SCALE: N.T.S. — 7

NOT USED — SCALE: N.T.S. — 8

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SHEET NAME
SITE DETAILS

SHEET NUMBER
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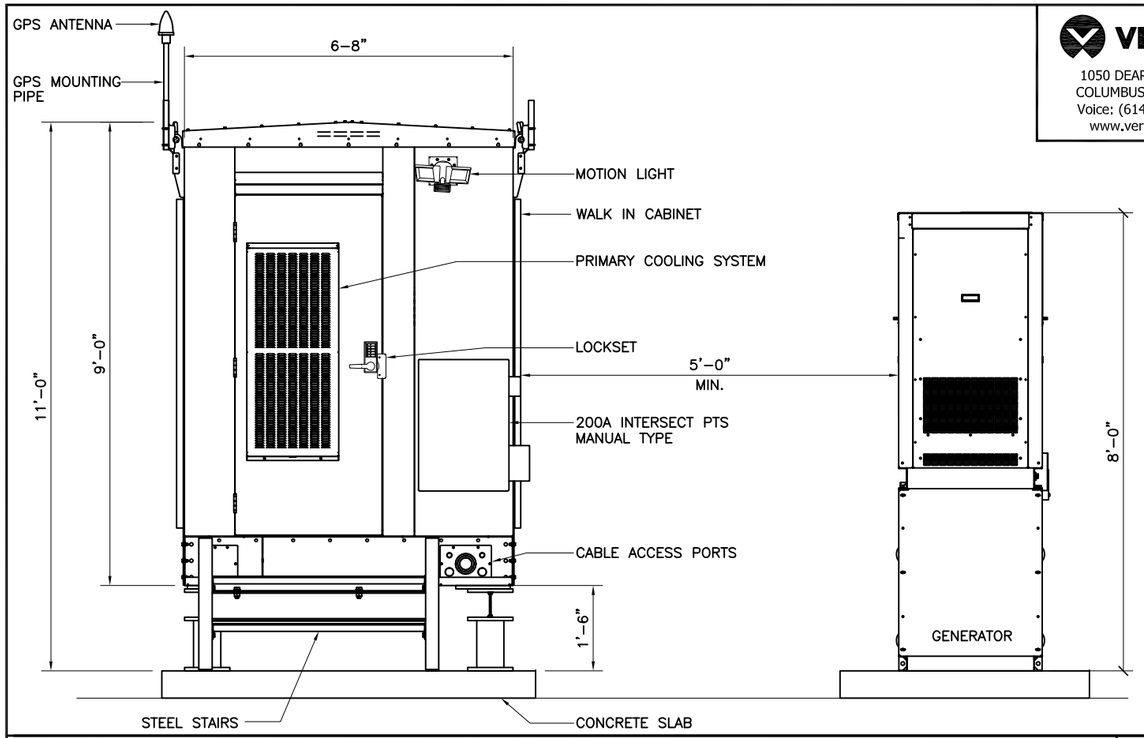
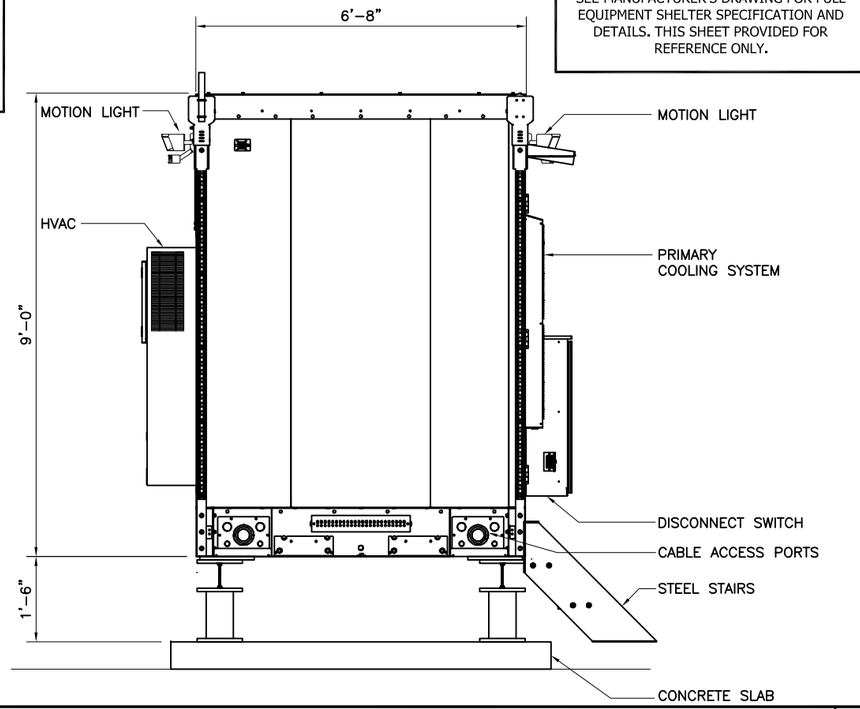
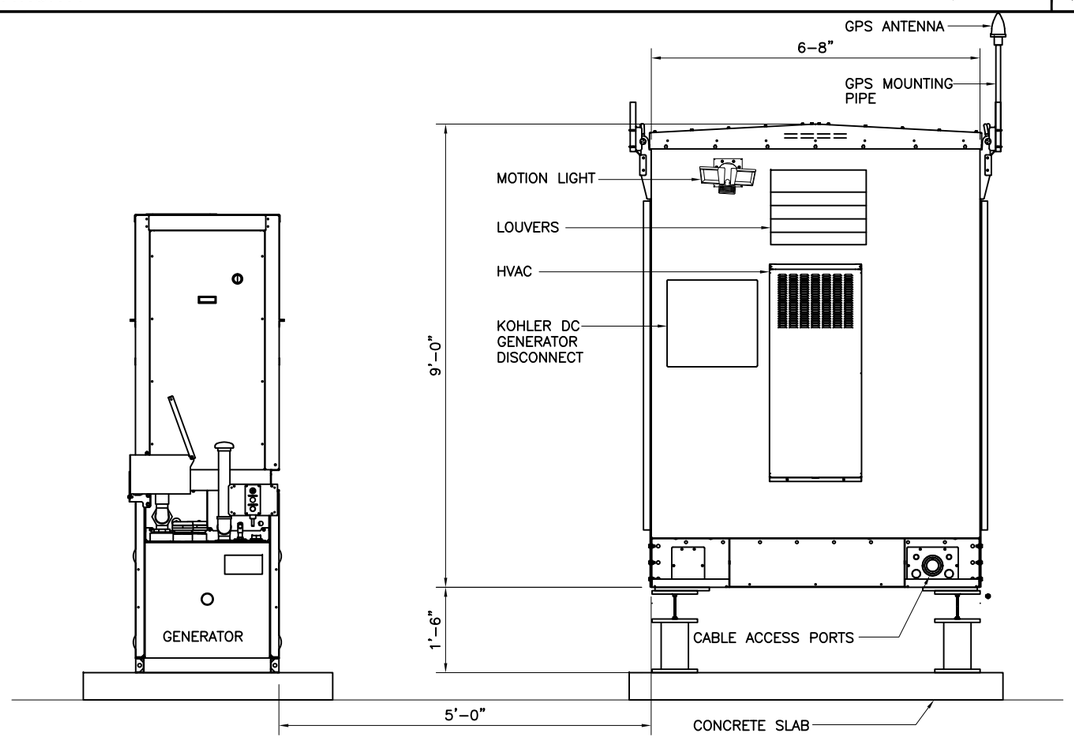
FEC# 2018.0265.0002



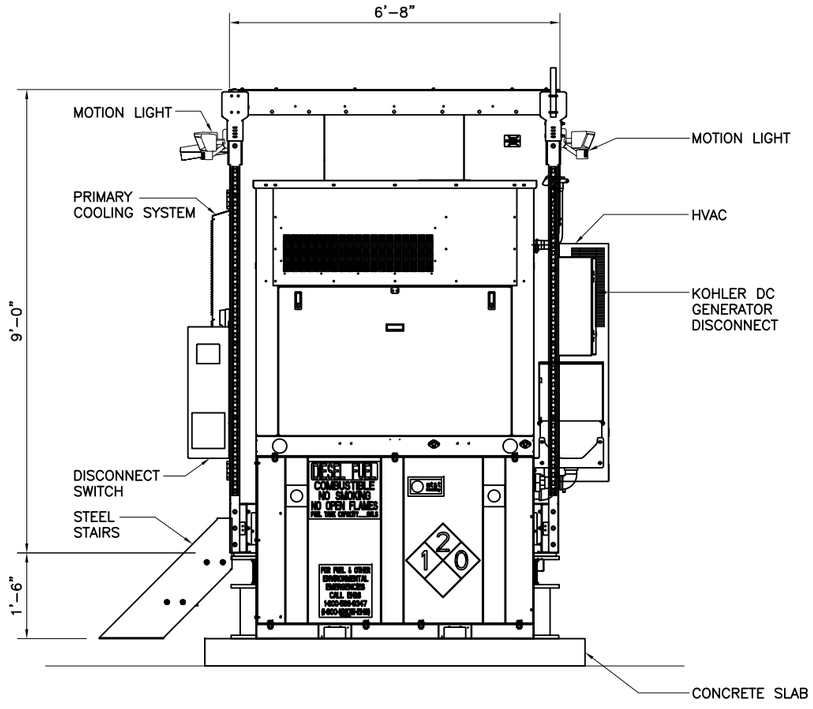
ELEVATION A — SCALE: 3/8" = 1'–0" | 1



ELEVATION B — SCALE: 3/8" = 1'–0" | 2



ELEVATION C — SCALE: 3/8" = 1'–0" | 3



ELEVATION D — SCALE: 3/8" = 1'–0" | 4

SEE MANUFACTURER'S DRAWING FOR FULL EQUIPMENT SHELTER SPECIFICATION AND DETAILS. THIS SHEET PROVIDED FOR REFERENCE ONLY.

VERTIV
1050 DEARBORN DR.
COLUMBUS, OH 43085
Voice: (614) 888-0246
www.vertivco.com

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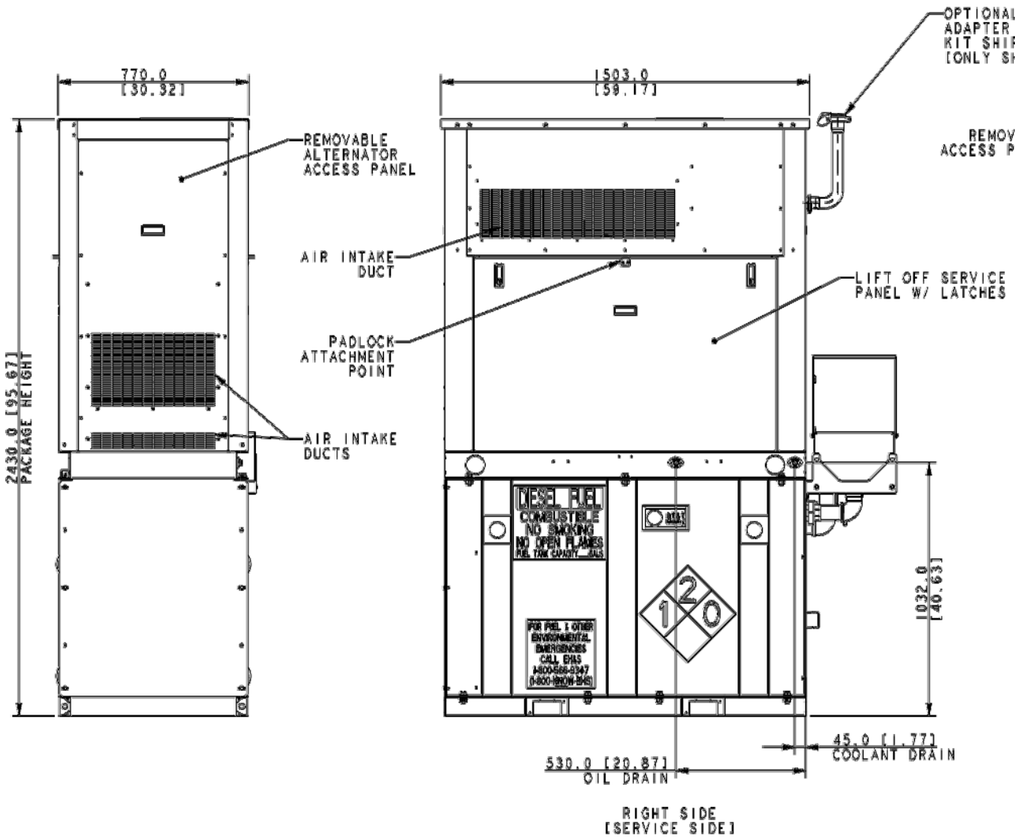
LEDYARD, CT 06339

SHEET NAME
WIC SHELTER ELEVATION

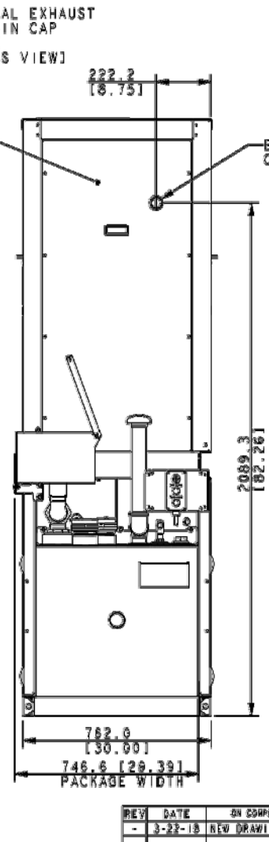
SHEET NUMBER
C-5

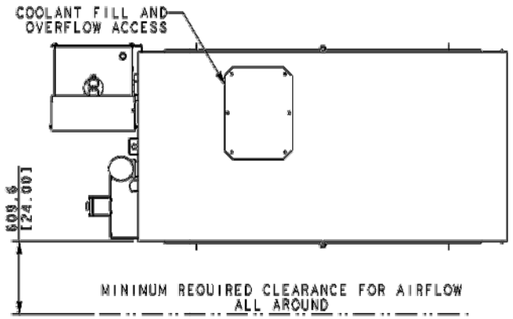
FEC# 2018.0265.0002

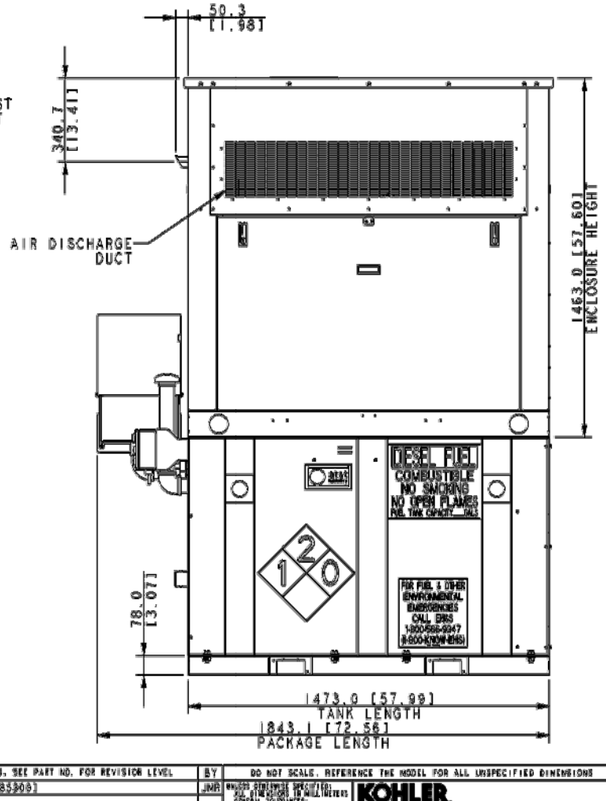
NOTES:
1. ALL SIDES OF THE GENERATOR ARE SERVICE ACCESSIBLE. RIGHT SIDE IS PRIMARY SERVICE SIDE.
2. 6 AMP BATTERY CHARGER.
3. 120VAC ENGINE BLOCK HEATER.
4. 120VAC 80W BATTERY HEATER.
5. GENERATOR MUST BE GROUNDED.
6. SOUND ATTENUATED ENCLOSURE STANDARD WITH GENERATOR.
7. MUST ALLOW FREE FLOW OF DISCHARGE AIR AND EXHAUST.
8. MUST ALLOW FREE FLOW OF INTAKE AIR.
9. BASE TANK REQUIRES ALL STUB-UPS TO BE IN THE REAR TANK STUB-UP AREA.
10. TANK EQUIPPED WITH FIRE SAFETY VALVE ON FUEL SUPPLY LINE.
11. IT IS THE RESPONSIBILITY OF THE INSTALLATION TECHNICIAN TO ENSURE THAT THE GENERATOR INSTALLATION COMPLIES WITH ALL APPLICABLE CODES, STANDARDS, AND REGULATIONS.
12. GENERATOR IS INSTALLED ON A UL-142 RATED DOUBLE WALL SUBBASE FUEL TANK.



RIGHT SIDE [SERVICE SIDE]







TOTAL PACKAGE WEIGHT: 982 KG [2164 LBS]

AT&T 20KW KOHLER DIESEL COMPACT SOUND ENCLOSURE W/ 105 GAL STATE TANK

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	3-22-18	NEW DRAWING (CT1835906)	JMR

DO NOT SCALE, REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS

KOHLER
KOHLER, WISCONSIN 53044

APPROVALS	DATE
DRAWN JMR	3-22-18
CHECKED JMR	3-22-18
APPROVED LBD	3-22-18

TITLE: DIMENSION PRINT, 20KW STATE TANK, ENCL
SCALE 0.40 | DWG NO. | SHEET 1 of 3
DWG NO. ADV-9064 | D

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STATE OF CONNECTICUT · HENRY M. BELLAGAMBA · 25358 · LICENSED PROFESSIONAL ENGINEER

SITE NUMBER
CT1837S

SITE NAME
LEDYARD COLONEL LEDYARD HIGHWAY

FA NUMBER:
12685510

USID:
162156

SITE ADDRESS
581 COLONEL LEDYARD HIGHWAY
LEDYARD, CT 06339

SHEET NAME
GENERATOR

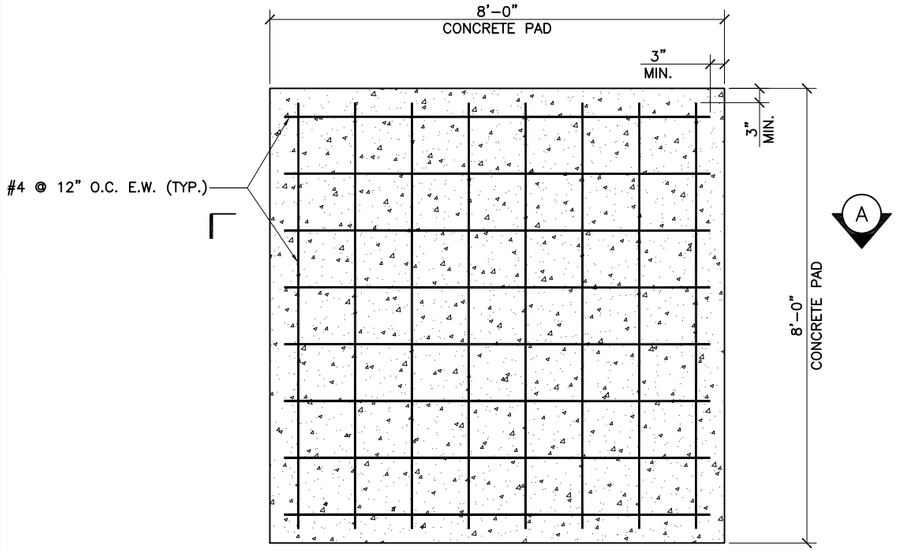
SHEET NUMBER
C-6

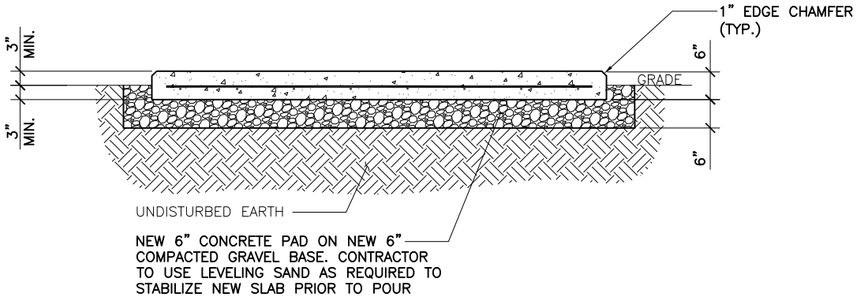
GENERATOR | SCALE: N.T.S. | 1

FEC# 2018.0265.0002

NOTES:

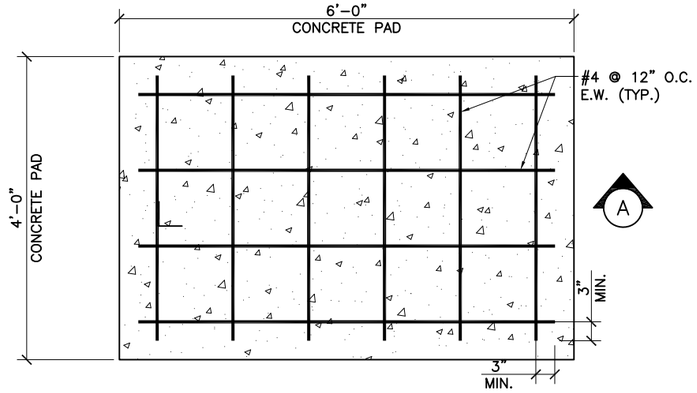
1. REFER TO SITE PLAN FOR EQUIPMENT SHELTER/PRECAST CONCRETE SLAB ORIENTATION.
2. SLAB TO BE LEVEL ±1/4".
3. USE SHIMS AS REQUIRED TO ASSURE EQUIPMENT SHELTER/PRECAST CONCRETE SLAB IS LEVEL.

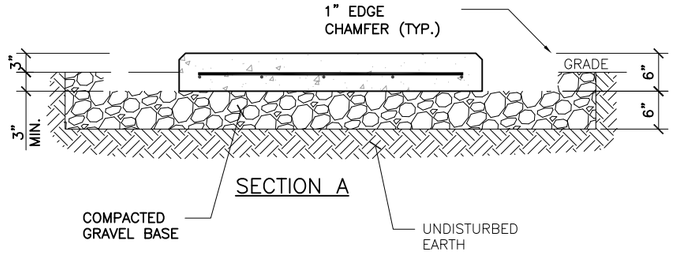




SECTION A

CONCRETE PAD SCALE: N.T.S. 2





SECTION A

CONCRETE PAD SCALE: N.T.S. 1

CONCRETE NOTES:

1. MEET OR EXCEED THE FOLLOWING CODES AND STANDARDS:

DESIGN	ACI 318
CONSTRUCTION	ACI 301
HOT WEATHER PLACEMENT	ACI 305
COLD WEATHER PLACEMENT	ACI 306
CEMENT	ASTM C-150 (TYPE I)
REINFORCING BARS	ASTM A-615
WIRE MESH	ASTM A-185
NORMAL WT AGGREGATE	ASTM C-33
MIXING	ASTM C-94
ADMIXTURES	ASTM C-494
AIR ENTRAINMENT	ASTM C-260
WATER	POTABLE
DETAILING	CRSI MANUAL OF STANDARD PRACTICE

2. CONCRETE SHALL BE NORMAL WEIGHT WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI.
3. PROVIDE AIR ENTRAINED CONCRETE WITH AIR CONTENT OF 4% TO 7%. FOR ALL CONCRETE EXPOSED TO EARTH OR WEATHER
4. ALL REINFORCING STEEL SHALL BE GRADE 60.
5. MINIMUM CONCRETE COVER FOR REINFORCING BARS:
   A. CAST AGAINST AND EXPOSED TO EARTH: 3"
   B. EXPOSED TO EARTH OR WEATHER (NO 5 AND SMALLER): 1 1/2"
   C. EXPOSED TO EARTH OR WEATHER (NO 6 AND LARGER): 2"
6. NO ADMIXTURE SHALL CONTAIN CALCIUM CHLORIDE.
7. PROVIDE ALL ACCESSORIES NECESSARY TO SUPPORT REINFORCEMENT.

NOTES SCALE: N.T.S. 3

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USID:
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SITE ADDRESS
581 COLONEL LEDYARD HIGHWAY
LEDYARD, CT 06339

SHEET NAME
GENERATOR

SHEET NUMBER
C-6A

FEC# 2018.0265.0002

RF DESIGN NOTE:
THIS ANTENNA AND COAX CABLE SCHEDULE HAS BEEN CREATED USING THE FOLLOWING RFDS
DATED: 02/20/19 V4.00
ALL ANTENNA DESIGN, ZONING, STRUCTURAL ANALYSIS PERMITS AND COMPLIANCE SUBMISSIONS ARE COORDINATED WITH THE AFOREMENTIONED DOCUMENT

SECTOR	ANTENNA NUMBER	ANTENNA STATUS & TYPE	ANTENNA MODEL NUMBER	ANTENNA VENDOR	ANTENNA SIZE (HxWxD)	ANTENNA WEIGHT (LBS.)	RRU MODEL NUMBER	ANTENNA PORTS	TECH.	AZIMUTH	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	ANTENNA ℄ FROM GROUND	ANTENNA TIP HEIGHT	CABLE FEEDER	
															TYPE	LENGTH
A	A–1	NEW LTE ANTENNA	EPBQ–654L8H8–L2	KMW	96"x21"x6.3"	86.0 LBS.	(1) NEW RRUS–4478 B14	1	700	30°	0°	4°/4°	173'–0"	177'–0"	(1) FIBER CABLE	250'–0"
							(1) NEW RRUS–4426 B66	5	AWS						(2) DC POWER CABLES	250'–0"
	A–2	NEW LTE ANTENNA	HPA65R–BU8A	CCI	96"x11.7"x7.6"	57.3 LBS.	(1) NEW RRUS–E2	1	700	30°	0°	4°	173'–0"	177'–0"	SEE ANTENNA A–1 FOR CABLE TYPE AND LENGTH	
							(1) NEW RRUS–4415 B30	5	WCS							
	A–3	NEW LTE ANTENNA	EPBQ–654L8H8–L2	KMW	96"x21"x6.3"	86.0 LBS.	(1) NEW RRUS–4449 B5/B12	1/3	700/850	30°	0°	4°/4°/2°	173'–0"	177'–0"	SEE ANTENNA A–1 FOR CABLE TYPE AND LENGTH	
							(1) NEW RRUS–4415 B25	9	PCS							
	A–4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
B	B–5	NEW LTE ANTENNA	EPBQ–654L8H8–L2	KMW	96"x21"x6.3"	86.0 LBS.	(1) NEW RRUS–4478 B14	1	700	150°	0°	4°/4°	173'–0"	177'–0"	SEE ANTENNA A–1 FOR FIBER CABLE	
							(1) NEW RRUS–4426 B66	5	AWS						(4) DC POWER CABLES	250'–0"
	B–6	NEW LTE ANTENNA	HPA65R–BU8A	CCI	96"x11.7"x7.6"	57.3 LBS.	(1) NEW RRUS–E2	1	700	150°	0°	4°	173'–0"	177'–0"	SEE ANTENNA B–1 FOR CABLE TYPE AND LENGTH	
							(1) NEW RRUS–4415 B30	5	WCS							
	B–7	NEW LTE ANTENNA	EPBQ–654L8H8–L2	KMW	96"x21"x6.3"	86.0 LBS.	(1) NEW RRUS–4449 B5/B12	1/3	700/850	150°	0°	4°/4°/2°	173'–0"	177'–0"	SEE ANTENNA B–1 FOR CABLE TYPE AND LENGTH	
							(1) NEW RRUS–4415 B25	9	PCS							
	B–8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
C	C–9	NEW LTE ANTENNA	EPBQ–654L8H8–L2	KMW	96"x21"x6.3"	86.0 LBS.	(1) NEW RRUS–4478 B14	1	700	270°	0°	4°/4°	173'–0"	177'–0"	(1) FIBER CABLE	250'–0"
							(1) NEW RRUS–4426 B66	5	AWS						(2) DC POWER CABLES	250'–0"
	C–10	NEW LTE ANTENNA	HPA65R–BU8A	CCI	96"x11.7"x7.6"	57.3 LBS.	(1) NEW RRUS–E2	1	700	270°	0°	4°	173'–0"	177'–0"	SEE ANTENNA C–1 FOR CABLE TYPE AND LENGTH	
							(1) NEW RRUS–4415 B30	5	WCS							
	C–11	NEW LTE ANTENNA	EPBQ–654L8H8–L2	KMW	96"x21"x6.3"	86.0 LBS.	(1) NEW RRUS–4449 B5/B12	1/3	700/850	270°	0°	4°/4°/2°	173'–0"	177'–0"	SEE ANTENNA C–1 FOR CABLE TYPE AND LENGTH	
							(1) NEW RRUS–4415 B25	9	PCS							
	C–12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
N/A	N/A															

ANTENNA INFORMATION CHART

SCALE: N.T.S. | 1

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FA NUMBER:
12685510

USID:
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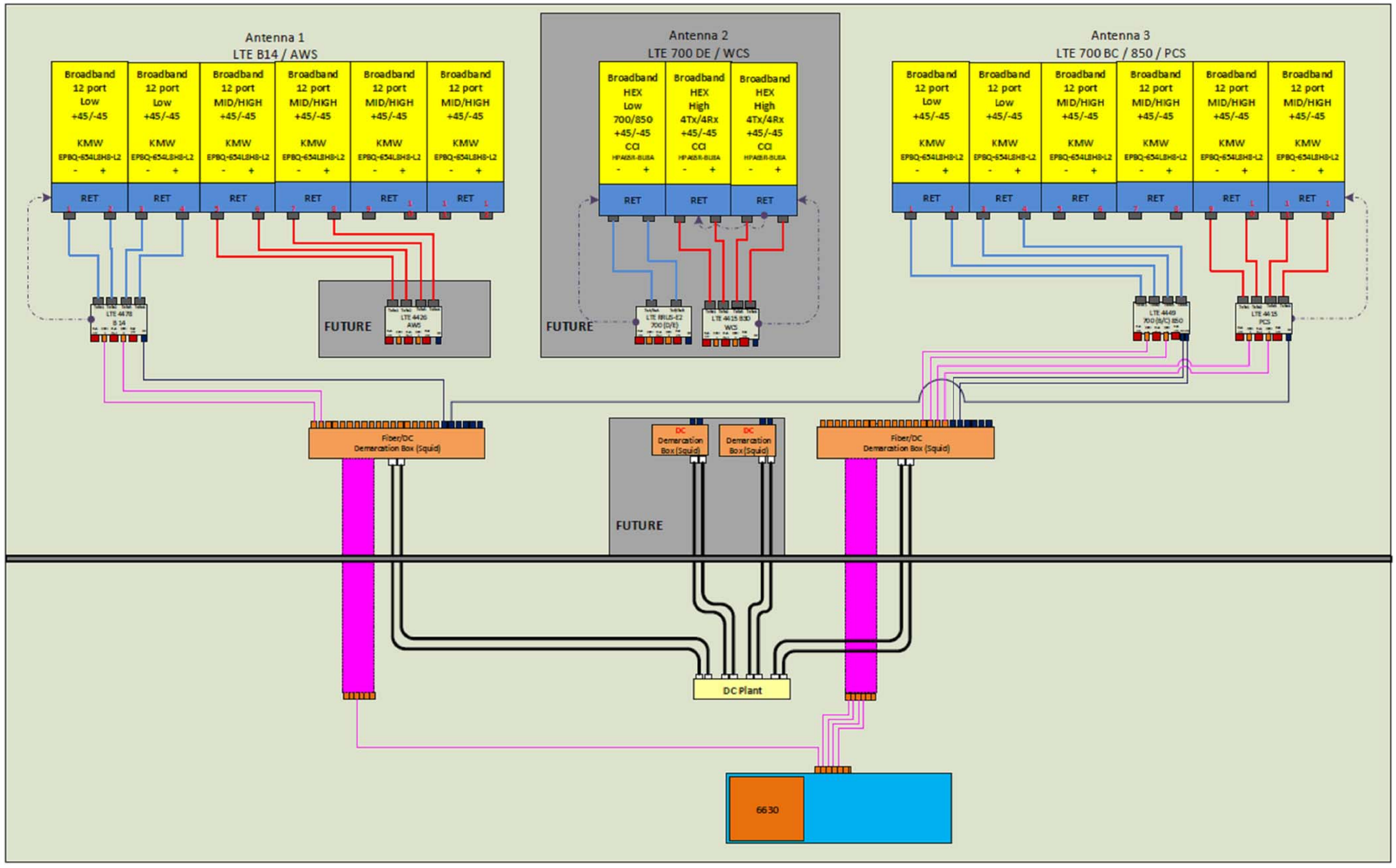
SITE ADDRESS
581 COLONEL LEDYARD HIGHWAY
LEDYARD, CT 06339

SHEET NAME
ANTENNA INFORMATION CHART

SHEET NUMBER
C-7

FEC# 2018.0265.0002

Diagram - Sector	A	Diagram File Name - CT1837_4C.vsd					
Atoll Site Name -	CT1837	Location Name -	LEDYARD COLONEL LEDYARD HIGHWAY	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments: pls maintain 3' separation between antennas and minimum 6' separation between antenna 2 and 3 of each sector							



*BASED ON RFDS V4.00, DATED (02/20/19)

PLUMBING DIAGRAM | SCALE: N.T.S. | 1

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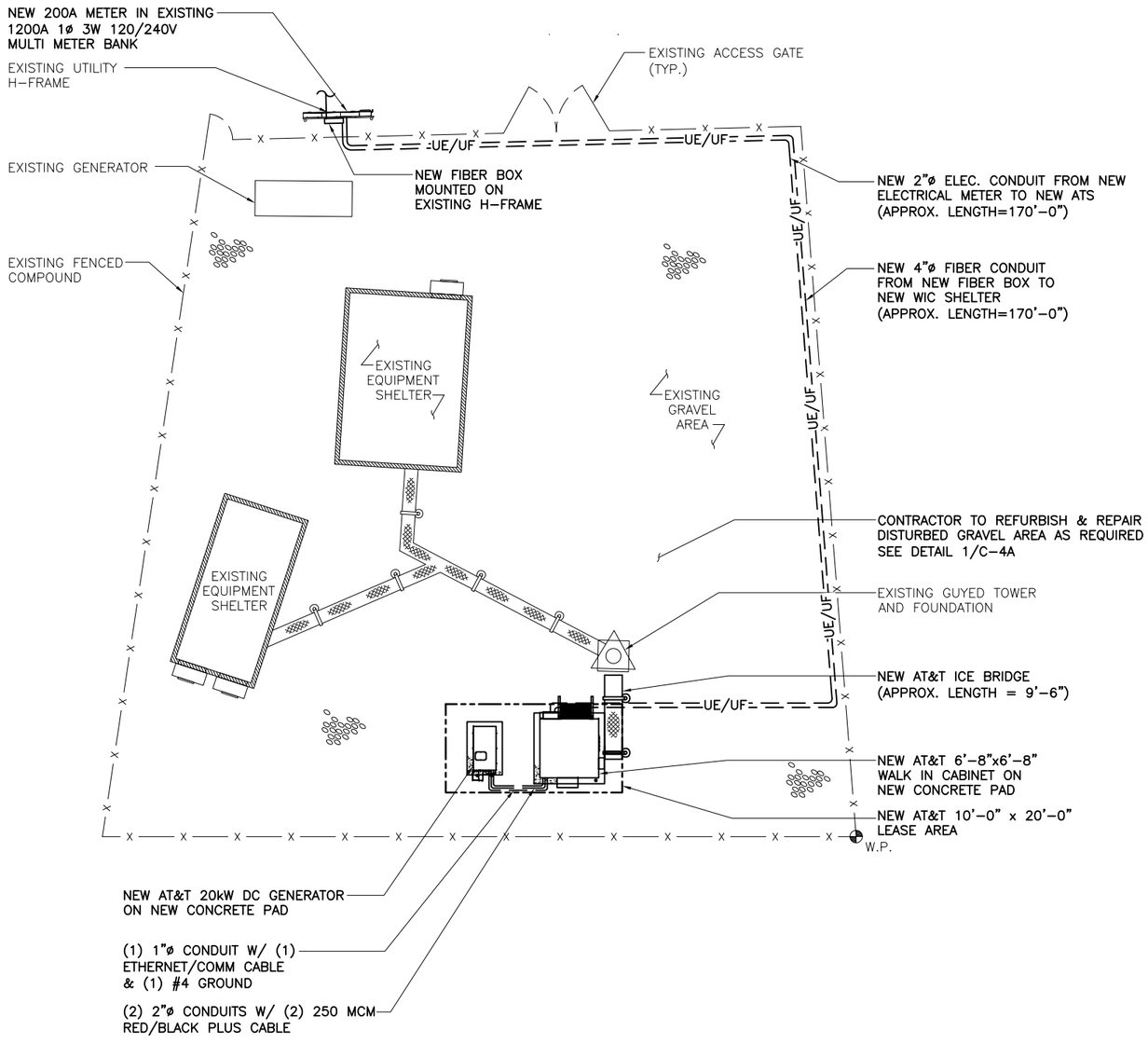
SHEET NAME
PLUMBING DIAGRAM

SHEET NUMBER
C-8

FEC# 2018.0265.0002



UTILITY SITE PLAN

SCALE: 1/16" = 1'-0"

1

KEY NOTES:

1. CONTRACTOR TO CALL 811, 48 HRS PRIOR TO EXCAVATING FOR UNDERGROUND UTILITY LOCATIONS. LOCATION SURROUNDING EXCAVATED AREA MUST BE PRIVATELY LOCATED FOR NON-PUBLIC UTILITIES.

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SHEET NAME
UTILITY PLAN

SHEET NUMBER
E-1

FEC# 2018.0265.0002

NOT USED

SCALE: N.T.S. | 1

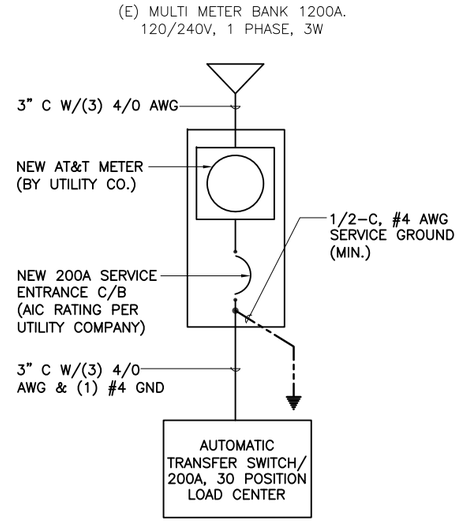
NOTES:

1. CONTRACTOR TO VERIFY LOCAL UTILITY REQUIREMENTS FOR DEPTH, SIZE & SEPARATION OF CONDUITS PRIOR TO INSTALLATION. NOTIFY CONSTRUCTION MANAGER IMMEDIATELY OF ANY DISCREPANCIES.
2. CONTRACTOR TO CALL 811, 48 HRS PRIOR TO EXCAVATING FOR UNDERGROUND UTILITY LOCATIONS. LOCATION SURROUNDING EXCAVATED AREA MUST BE PRIVATELY LOCATED FOR NON-PUBLIC UTILITIES.

811 Know what's below. Call before you dig.

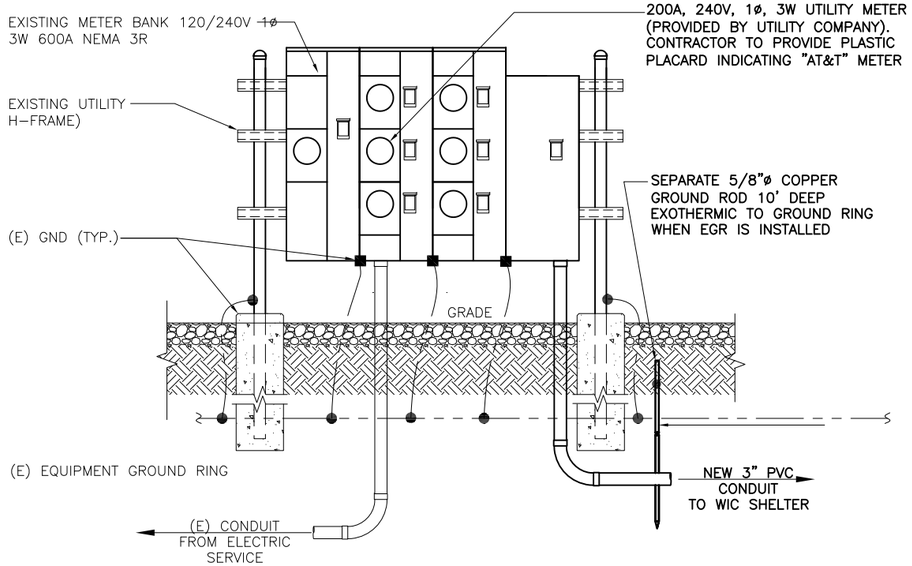
UTILITY TRENCH DETAIL

SCALE: N.T.S. | 3



ONE LINE DIAGRAM

SCALE: N.T.S. | 2



H-FRAME DETAIL

SCALE: N.T.S. | 4

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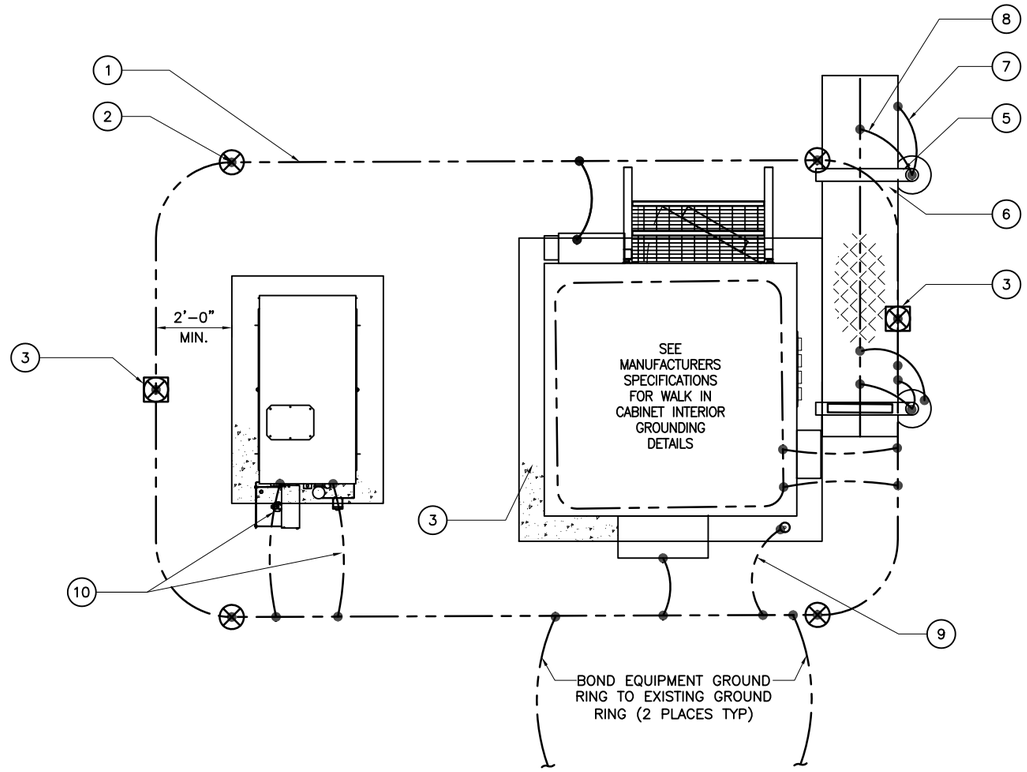
SHEET NAME
POWER CALCULATIONS

SHEET NUMBER
E-2

FEC# 2018.0265.0002



LEGEND

GROUND BAR	5/8" x 10'-0" GROUND ROD
EXISTING GROUND RING	GROUND SYSTEM TEST WELL
NEW GROUND RING	MECHANICAL CONNECTION
	CADWELD OR APPROVED CONNECTION

KEY NOTES

1. GROUND RING, #2 SOLID, TINNED BARE COPPER WIRE. CONSTRUCT RING FROM ONE CONTINUOUS PIECE (NO EXCEPTIONS ALLOWED).
2. 5/8" x 10'-0" COPPER CLAD STEEL GROUND ROD SPACED MIN. 10'-0", MAX 15'-0" APART
3. GROUND SYSTEM TEST WELL.
4. UPPER TOWER GROUND BAR.
5. GROUND BAR ATTACHED TO ICE BRIDGE.
6. #2 SOLID, TINNED BARE COPPER GROUND WIRE FROM GROUND BAR TO GROUND RING (2 REQ'D).
7. #2 SOLID, TINNED BARE COPPER GROUND WIRE FROM ICE BRIDGE TO ICE BRIDGE POST.
8. #2 SOLID, TINNED BARE COPPER GROUND WIRE IN 1/2" CARFLEX SLEEVE, BOND ICE BRIDGE POST W/ VS TYPE CADWELD. (1 PER POST REQ'D).
9. #6 SOLID TINNED, BARE COPPER GROUND WIRE FROM GPS ANTENNA TO GROUND RING.
10. #2 SOLID TINNED, BARE COPPER GROUND WIRE FROM GENERATOR TO GROUND RING.

GROUNDING PLAN

SCALE: 1/4" = 1'-0" | 1

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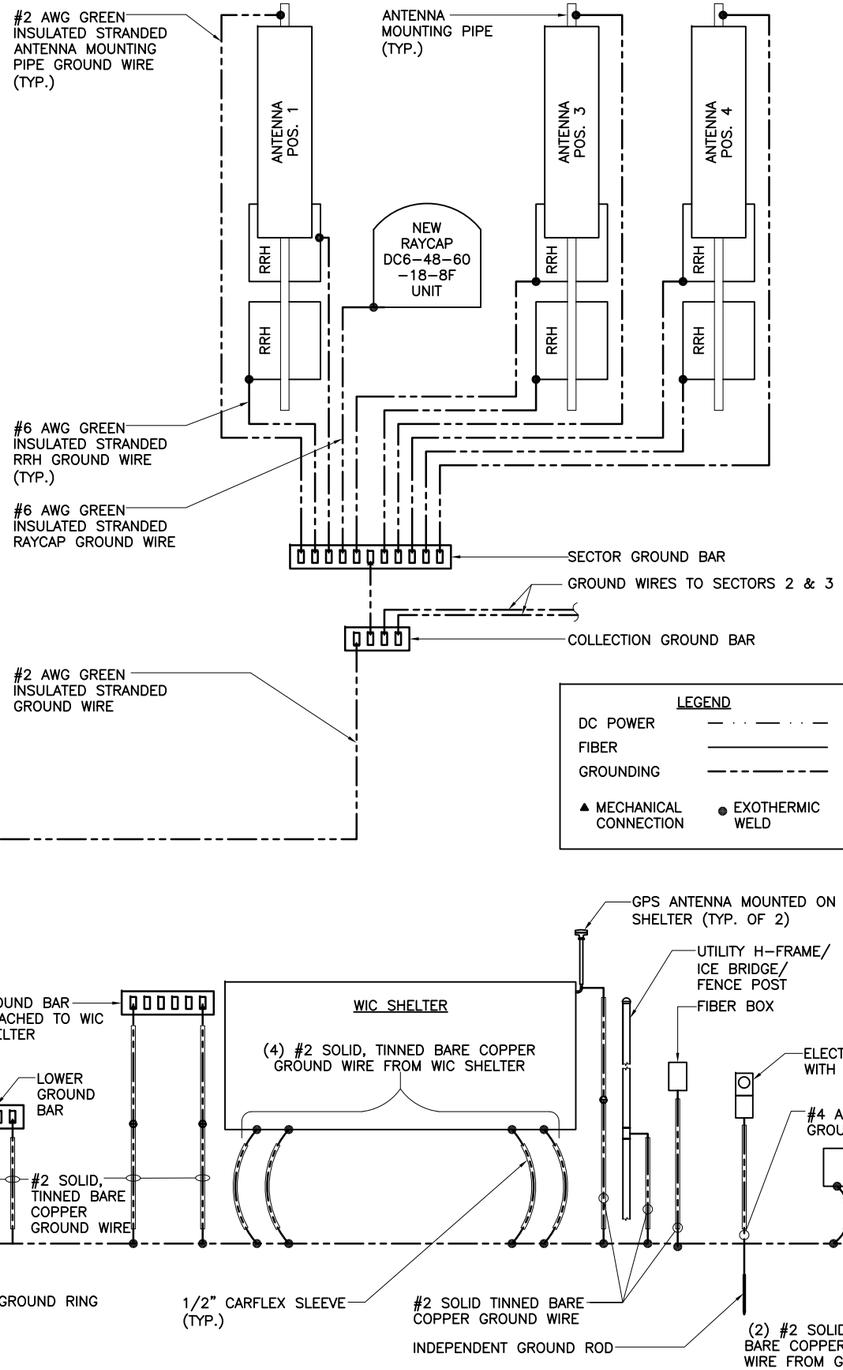
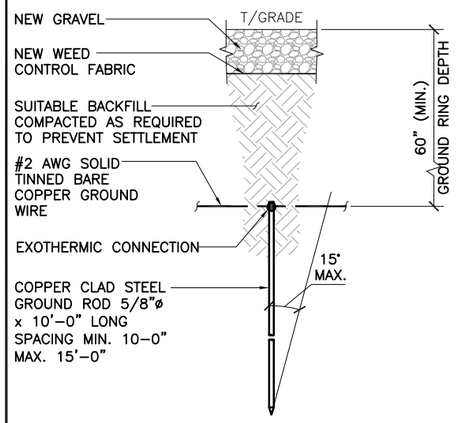
SHEET NAME
GROUNDING NOTES AND DETAILS

SHEET NUMBER
G-1

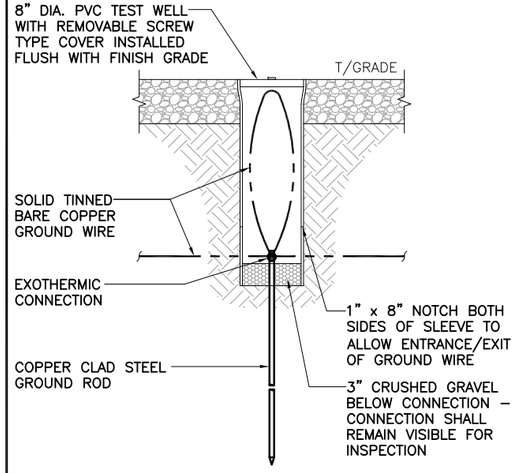
FEC# 2018.0265.0002



RISER DIAGRAM SCALE: N.T.S. 1



GROUND DETAIL SCALE: N.T.S. 2



GROUND TEST WELL DETAIL SCALE: N.T.S. 3

NOT USED SCALE: N.T.S. 4

NOT USED SCALE: N.T.S. 5

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SHEET NAME
DC ONE LINE DIAGRAM

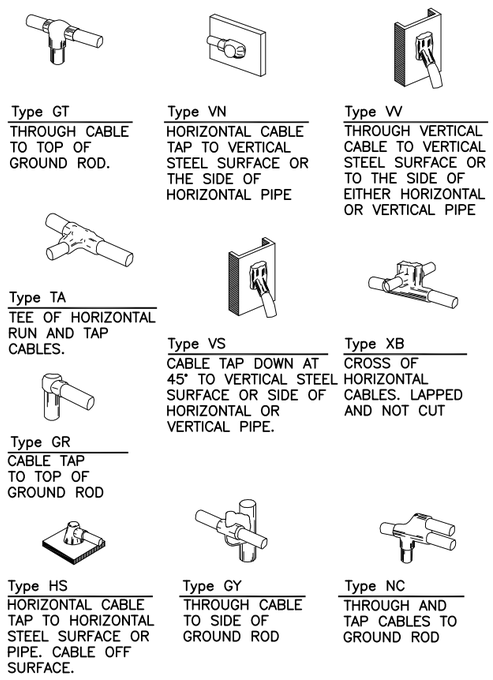
SHEET NUMBER
G-2

FEC# 2018.0265.0002

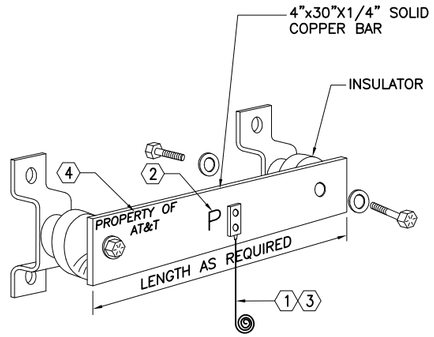
GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER SHALL BE BONDED TOGETHER BELOW GRADE BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE ELECTRICAL CODE
2. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT & PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED CODING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. 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.
6. 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.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK TO BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90^ BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45^ BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR & EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 FT. OF MAIN GROUND WIRES WITH 1-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NONMETALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G. NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. CONTRACTOR TO USE NO-OX COPPER SHIELD OR APPROVED EQUAL.

GROUNDING NOTES SCALE: N.T.S. 1



EXOTHERMIC WELD DETAILS SCALE: N.T.S. 2



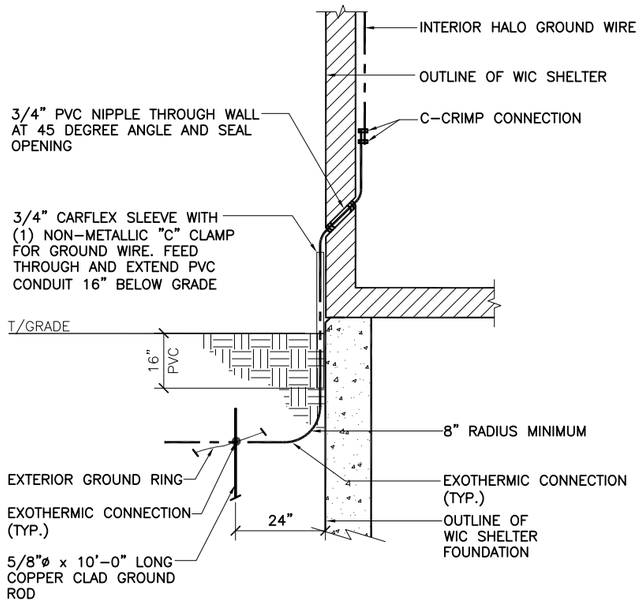
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

CONNECTION FOR:
COAXIAL CABLE SHIELD
COAXIAL CABLE SURGE SUPPRESSORS
CABLE ENTRY PORTS (HATCH PLATES)
RECTIFIER FRAMES
24V & 48V DC POWER RETURN BAR
GENERATOR FRAME WORK
TELCO GROUND BAR MASTER GROUND BAR

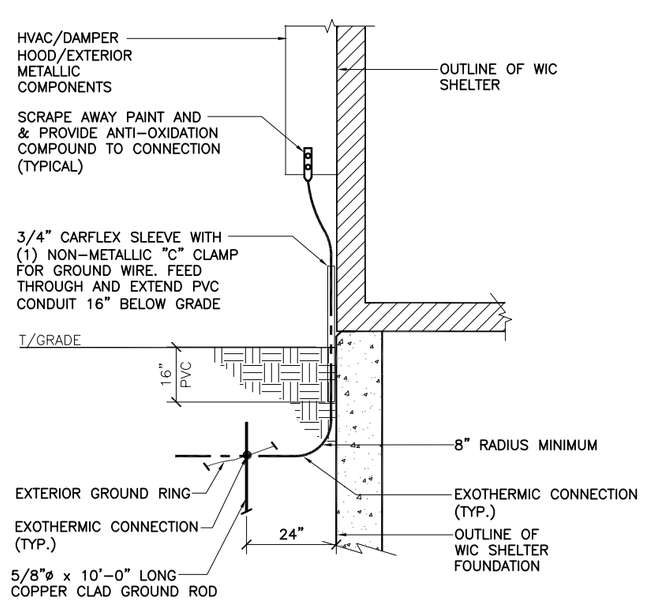
DETAIL NOTES: ⬡

1. TWO-HOLE, LONG BARREL COMPRESSION LUG WITH AWG STRANDED COPPER CONDUCTOR AND GREEN THW INSULATION TO GROUND BAR. ROUTE CONDUCTOR AS APPLICABLE TO BURIED GROUND CONDUCTOR OR MASTER GROUND BAR AND CONNECT WITH TWO-HOLE LUG TO "P" SECTION.
2. USE PERMANENT MARKER TO LABEL THE WHOLE BAR AS "P" WITH 1" HIGH LETTERS.
3. FOR GROUND BAR LOCATED OUTDOORS, ON-GRADE ONLY, EXOTHERMICALLY WELD A 2 AWG BARE TINNED COPPER CONDUCTOR TO GROUND BAR AND EXOTHERMICALLY WELD TO BURIED GROUND CONDUCTOR.
4. GROUND BARS SHALL BE TINNED COPPER AND SHALL BE ENGRAVED OR IMPRESSED "STOLEN-DO NOT RECYCLE" AND/OR "PROPERTY OF AT&T", ETCHED OR STAMPED WITH SITE FA LOCATION AND SECURED WITH ANTI-THEFT HARDWARE.
5. CONTRACTOR TO PROVIDE GROUND BAR WITH ADEQUATE 2 HOLE CONNECTIONS BASED UPON TOTAL EQUIPMENT BEING CONNECTED.
6. CONTRACTOR TO USE NO-OX COPPER SHIELD OR APPROVED EQUAL.

GROUND BAR DETAIL SCALE: N.T.S. 3



WIC SHELTER GROUNDING DETAIL SCALE: N.T.S. 4



HVAC GROUNDING DETAIL SCALE: N.T.S. 5

at&t
7150 STANDARD DRIVE
HANOVER, MD 21076

smartlink
1362 MELLON ROAD, SUITE 140
HANOVER, MD 21076

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REV	DATE	DESCRIPTION	BY
0	11/09/18	90% REVIEW	ASE
1	12/11/18	FOR PERMIT	KC
2	02/07/19	FOR CONSTRUCTION	KC
3	04/26/19	FOR CONSTRUCTION	EB
4	05/22/19	FOR CONSTRUCTION	EB

I HEREBY CERTIFY THAT THESE DRAWINGS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CONTROL, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF COMPLY WITH THE REQUIREMENTS OF ALL APPLICABLE CODES.

SITE NUMBER
CT1837S

SITE NAME
LEDYARD COLONEL LEDYARD HIGHWAY

FA NUMBER:
12685510

USID:
162156

SITE ADDRESS
581 COLONEL LEDYARD HIGHWAY
LEDYARD, CT 06339

SHEET NAME
DC ONE LINE DIAGRAM

SHEET NUMBER
G-3

FEC# 2018.0265.0002

STRUCTURAL ANALYSIS REPORT

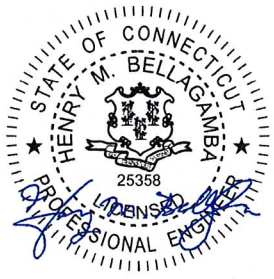
Prepared for: Smartlink / AT&T

New Antenna and Equipment Installation on Existing Guyed Tower

Site No: CT1837S
Site Name: Ledyard Colonel Ledyard Highway
581 Colonel Ledyard Highway
Ledyard, CT 06339

March 11, 2019

Revision I



Henry M. Bellagamba, P.E.

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Project Number: 2018.0265.E002

Summary

This structural analysis was performed by Fullerton, as requested by the client, to determine the conformance of existing structure with the governing building code, 2018 Connecticut Building Code (2015 International Building Code w/ Connecticut State Amendments)) and the industry standard, ANSI/TIA-222-G (Structural Standard for Steel Antenna Towers and Antenna Supporting Structures). The analysis considers the tower properties, existing and proposed appurtenances and the required loading criteria.

Conclusion

- The tower members are in conformance for the loading considered.
- The tower foundation is in conformance for the loading considered.

Analysis Data

The following is based on information provided by the client, field investigation, and other determination by Fullerton Engineering Consultants or third parties.

Configuration	347’-0” Valmont Guyed Tower with a face width of 5’-0” with guy wires at elevations 320’-0”, 260’-0”, 200’-0”, 140’-0” and 70’-0” AGL.
References	Erection Tower Drawings by Valmont Structures, eng. file No. A-173386-, dated 3/22/2013. Geotechnical Report by Geisser Engineering Corp., dated 3/18/2013. RFDS V3.00 by AT&T, dated 1/22/2019.

Appurtenance Loading Schedule

ELEV. (FT.=AGL)	APPURTENANCE	TRANSMISSION LINES
	Proposed AT&T	
173'-0"	(6) KMW EPBQ-654L8H8-L2 antennas (3) CCI HPA65R-BU8A antennas (3) Ericsson RRUS-4478 B14 units (3) Ericsson RRUS-4426 B66 units (3) Ericsson RRUS-E2 units (3) Ericsson RRUS-4415 B30 units (3) Ericsson RRUS-4449 B5/B12 units (3) Ericsson RRUS-4415 B25 units (3) Raycap DC6-48-60-18-8F COVP units Mounted on proposed (3) sector frames (Sabre P/N: C10857001C)	(2) 3/8" Fiber (8) 7/8" DC Power
	Existing (To Remain)	
350'-0"	(1) Beacon Mounted on top of tower	
325'-0"-345'-0"	(1) DCR-M 4 bay FM with radomes antenna Mounted on existing pipe mount frame on tower face	(1) 1-5/8" Coax
300'-0" 290'-0"	(4) 18' Whip Antennas (1) 2'x8' grid dish Mounted on existing (3) sector frames	(4) 1-5/8" Coax (1) 7/8" Coax
180'-0"	(3) Sidemarkers Mounted on tower leg	
160'-0"	(1) 2'x8' grid dish Mounted on tower leg	(1) 7/8" Coax
120'-0"	(2) 2.5' dishes with radome Mounted on tower leg	(1) 7/8" Coax
100'-0"	(1) 3'Ø dish with radome Mounted on tower leg	(1) 1-5/8" Coax
80'-0"	(1) 2'x8' grid dish Mounted on tower leg	(1) 7/8" Coax

Results

The results of the structural analysis are summarized as follows:

Latticed Pole	The Latticed Pole legs are **adequate** for new loads, with a maximum stress ratio of 30.0% @ Elev. 320'-330' AGL.
	The Latticed Pole bolts are **adequate** for new loads, with a maximum stress ratio of 10.2% @ Elev. 320' AGL.
	The Latticed Pole diagonals are **adequate** for new loads, with a maximum stress ratio of 92.4% @ Elev. 320'-330' AGL.
	The Latticed Pole top girts are **adequate** for new loads, with a maximum stress ratio of 6.7% @ Elev. 330' AGL.
	The Latticed Pole bottom girts are **adequate** for new loads, with a maximum stress ratio of 11.1% @ Elev. 330' AGL.
Tower Mast	The tower legs are **adequate** for new loads, with a maximum stress ratio of 65.9% @ Elev. 220'-240' AGL.
	The tower leg bolts are **adequate** for new loads, with a maximum stress ratio of 36.2% @ Elev. 200' AGL.
	The tower diagonals are **adequate** for new loads, with a maximum stress ratio of 56.3% @ Elev. 5'-20' AGL.
	The tower top girts are **adequate** for new loads, with a maximum stress ratio of 16.8% @ Elev. 5' AGL.
	The tower bottom girts are **adequate** for new loads, with a maximum stress ratio of 40.9% @ Elev. 5' AGL.
Guy Wires	The guy wires are **adequate** for new loads, with a maximum stress ratio of 60.3% @ Elev. 320' AGL. **All guy wires shall be tensioned to correspond with an initial tension of 10% of the manufacturer's breaking strength of the strand at an ambient temperature of 60°F.*
Foundation	The foundation is **adequate** for new loads. Please see attached foundation analysis.

Assumptions

This analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. The analysis is based solely on the information supplied, and the results, in turn, are only as accurate as data extracted from this information. Fullerton has been instructed by the client to assume the information supplied is accurate, and Fullerton has made no independent determination of its accuracy. The exception to the previous statement is if Fullerton has been contracted by the client to provide an independent structural mapping report of the tower and related appurtenances, in which case Fullerton has made an independent determination of the accuracy of the information resulting from the mapping report.

- The tower member sizes and geometry are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and stated in the materials section.
- The existing tower is assumed to have been properly maintained in accordance with the TIA/EIA standard and/or its original manufacturer's recommendations. The existing tower is assumed to be in good condition with no structural defects and with no deterioration to its member capacities.
- The antenna configuration is as supplied and/or stated in the analysis section. It is assumed to be complete and accurate. All antennas, mounts, remote radios, cables and cable supports are assumed to be properly installed and supported as per the manufacturer's requirements.
- The antennas, mounts, remote radios, cables and cable supports and lines stated in the appurtenance loading schedule represent Fullerton's understanding of the overall antenna configuration. If the actual configuration is different than above, then this analysis is invalid. Please refer to this report for the projected wind areas used in the calculations for antennas and mounts. If variations or discrepancies are identified, please inform Fullerton.
- Some assumptions are made regarding antenna and mount sizes and their projected areas based on a best interpretation of the data supplied and a best knowledge of antenna type and industry practice.
- The existing foundation is assumed to be in good condition with no structural defects and with no deterioration to its member capacities.
- The soil parameters are as per data supplied, or as assumed, and stated in the calculations.
- All welds and connections are assumed to develop at least the member capacity, unless determined otherwise and explicitly stated in this report.
- All prior structural modifications, if any, are assumed to be as per date supplied/ available, to be properly installed and to be fully effective.

Scope and Limitations

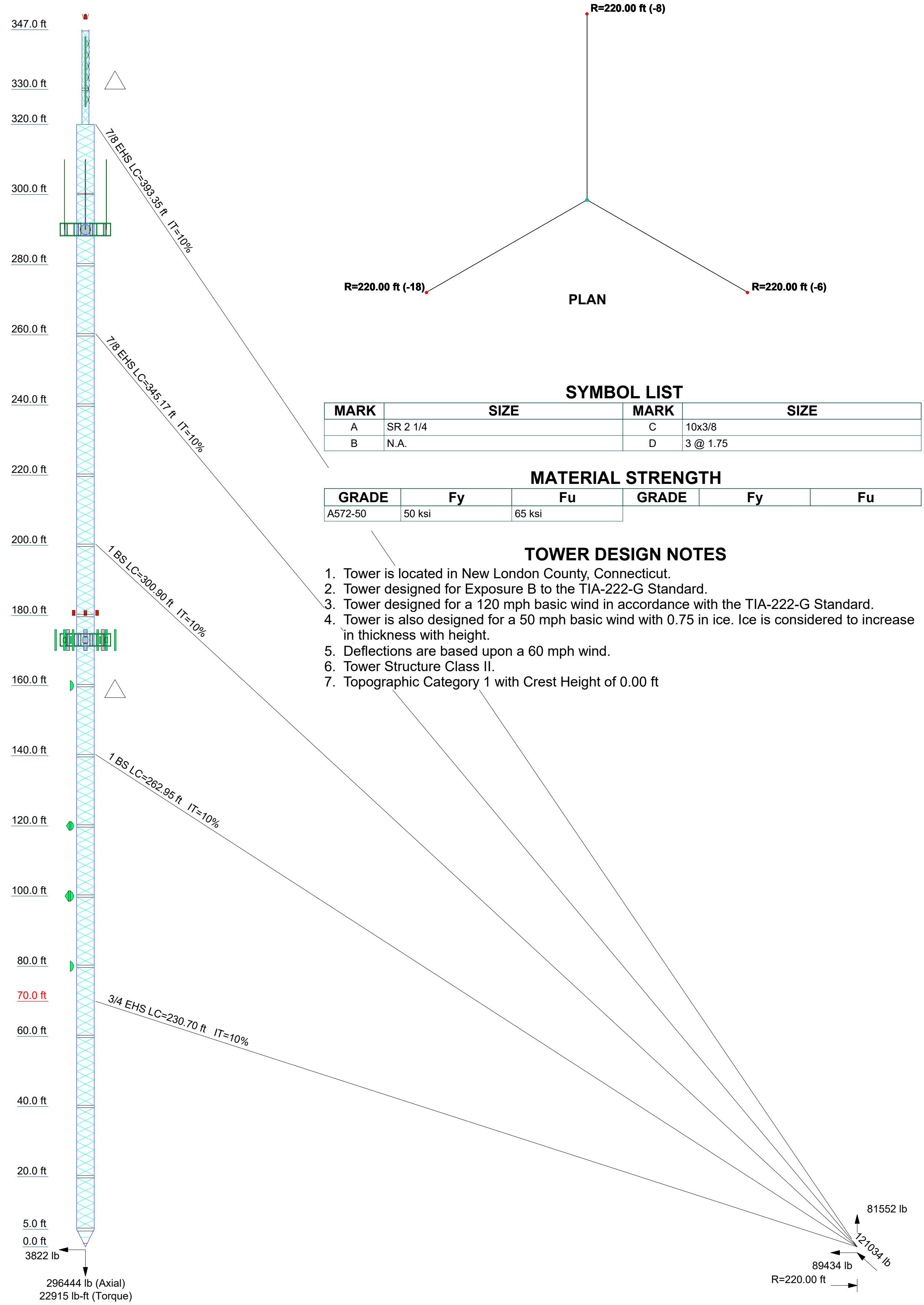
The engineering services rendered by Fullerton Engineering Consultants, Inc. (Fullerton) in connection with this structural analysis are limited to an analysis of the structure, size and capacity of its members. Fullerton does not analyze the fabrication, including welding and connection capacities, except as included in this report.

The information and conclusions contained in this report were determined by application of the current engineering standards and analysis procedures and formulae, and Fullerton assumes no obligation to revise any of the information or conclusions contained in this report in the event such engineering and analysis procedures and formulae are hereafter modified or revised.

Fullerton makes no warranties, expressed or implied in connection with this report and disclaims any liability arising from original design, material, fabrication and erection deficiencies or the “as-built” condition of this tower. Fullerton will not be responsible whatsoever for or on account of consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report.

Installation procedures are not within the scope of this report and should be performed and evaluated by a competent tower erection contractor.

Tower Analysis



Section	Legs	Leg Grade	Diagonals	Diagonal Grade	Top Girts	Bottom Girts	Horizontals	Face Width (ft)	# Panels @ (ft)	Weight (lb)
L1	SR 2	A572-50	SR 3/4	A572-50	SR 3/4	SR 3/4	N.A.	2	11 @ 2.33333	757.3
L2	A					N.A.				525.8
T1	SR 2		SR 7/8		SR 7/8	SR 7/8		5	16 @ 2.45833	1312.5
T2										1312.5
T3									104 @ 2.41667	1310.6
T4										1310.6
T5										1310.6
T6	SR 2 1/4		SR 1		SR 1	SR 1				1684.6
T7	SR 2 1/2									1884.5
T8										1884.5
T9	SR 2 3/4									2105.5
T10										2105.5
T11										2105.5
T12										2105.5
T13	SR 3									2347.5
T14			SR 7/8		SR 7/8	SR 7/8				2152.5
T15										2152.5
T16									6 @ 2.38889	1629.6
T17			B	B	C	C	C		D	769.1
										30766.8

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	SR 2 1/4	C	10x3/8
B	N.A.	D	3 @ 1.75

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi			

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 120 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft

ALL REACTIONS ARE FACTORED

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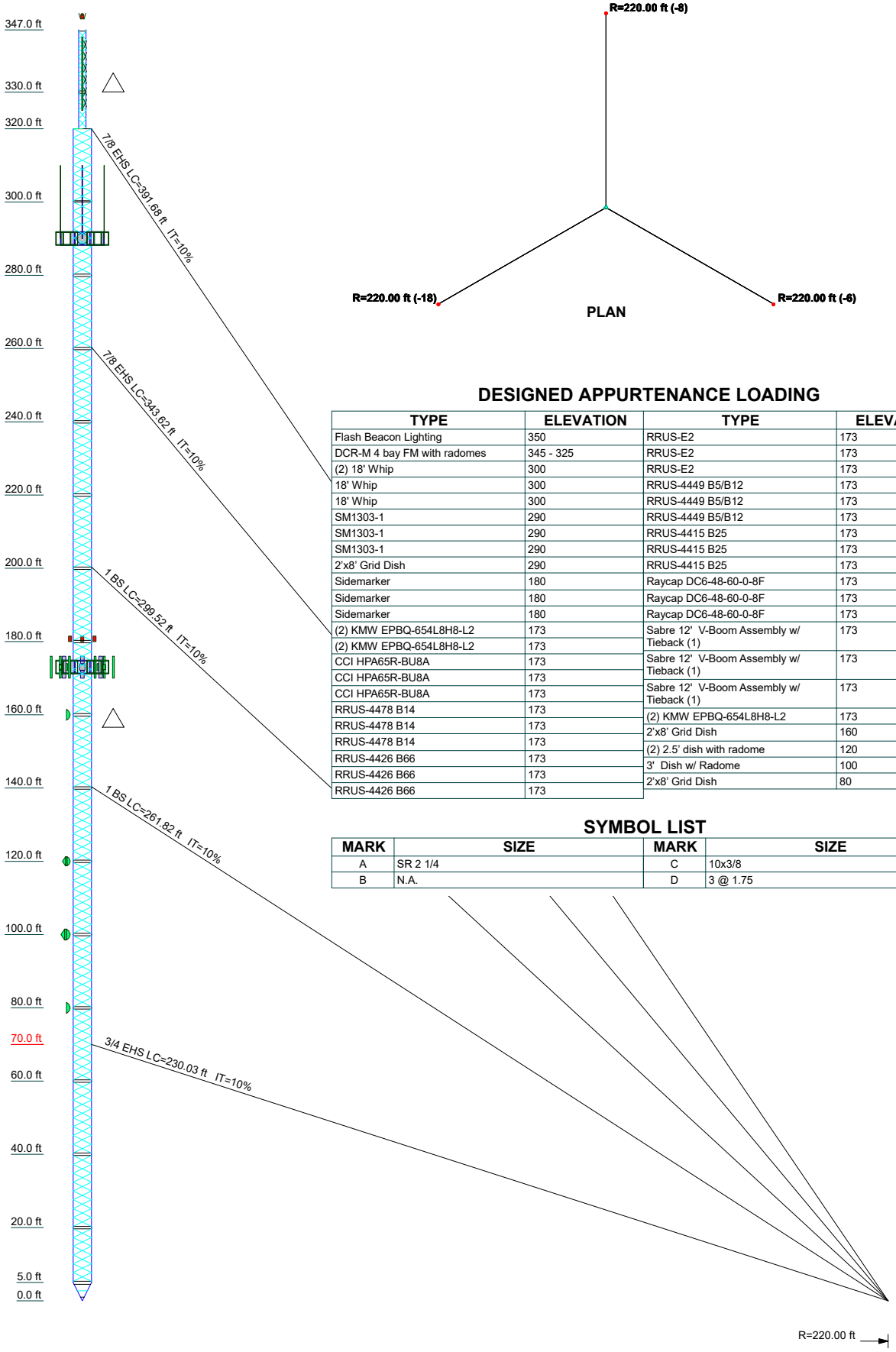
Job: ***CT1837S***			
Project: ***347 ft. Guyed Tower***			
Client: Smartlink / AT&T	Drawn by: VY	App'd:	
Code: TIA-222-G	Date: 03/11/19	Scale: NTS	
Path:		Dwg No. E-1	

Section																			
Legs	SR 2	A	SR 3/4	SR 3/4	SR 3/4	N.A.	2	11 @ 2.33333	757.3
Leg Grade								16 @ 2.45833	1312.5
Diagonals	B	SR 7/8	SR 7/8	SR 7/8	SR 7/8	5		1312.5
Diagonal Grade	B	A572-50	A572-50	A572-50	A572-50			1310.6
Top Girts	C	SR 1	SR 1	SR 1	SR 1			1310.6
Bottom Girts	C	SR 7/8	SR 7/8	SR 7/8	SR 7/8			1310.6
Horizontals	C	N.A.						1684.6
Face Width (ft)								1884.5
# Panels @ (ft)	D6 @ 2.38889						104 @ 2.41667	1884.5
Weight (lb) 30766.8	1629.6	2152.5	2152.5	2347.5	2105.5	2105.5	2105.5	2105.5	2105.5	2105.5	1884.5	1884.5	1684.6	1310.6	1310.6	1310.6	1312.5	1312.5	528.8
	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1	L2	L1	
		SR 3			SR 2 3/4				SR 2 1/2		SR 2 1/4			SR 2					



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Flash Beacon Lighting	350	RRUS-E2	173
DCR-M 4 bay FM with radomes	345 - 325	RRUS-E2	173
(2) 18' Whip	300	RRUS-E2	173
18' Whip	300	RRUS-4449 B5/B12	173
18' Whip	300	RRUS-4449 B5/B12	173
SM1303-1	290	RRUS-4449 B5/B12	173
SM1303-1	290	RRUS-4415 B25	173
SM1303-1	290	RRUS-4415 B25	173
2'x8' Grid Dish	290	RRUS-4415 B25	173
Sidemarker	180	Raycap DC6-48-60-0-8F	173
Sidemarker	180	Raycap DC6-48-60-0-8F	173
Sidemarker	180	Raycap DC6-48-60-0-8F	173
(2) KMW EPBQ-654L8H8-L2	173	Sabre 12' V-Boom Assembly w/ Tieback (1)	173
(2) KMW EPBQ-654L8H8-L2	173	Sabre 12' V-Boom Assembly w/ Tieback (1)	173
CCI HPA65R-BU8A	173	Sabre 12' V-Boom Assembly w/ Tieback (1)	173
CCI HPA65R-BU8A	173	(2) KMW EPBQ-654L8H8-L2	173
CCI HPA65R-BU8A	173	2'x8' Grid Dish	160
RRUS-4478 B14	173	(2) 2.5' dish with radome	120
RRUS-4478 B14	173	3' Dish w/ Radome	100
RRUS-4478 B14	173	2'x8' Grid Dish	80
RRUS-4426 B66	173		
RRUS-4426 B66	173		
RRUS-4426 B66	173		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	SR 2 1/4	C	10x3/8
B	N.A.	D	3 @ 1.75

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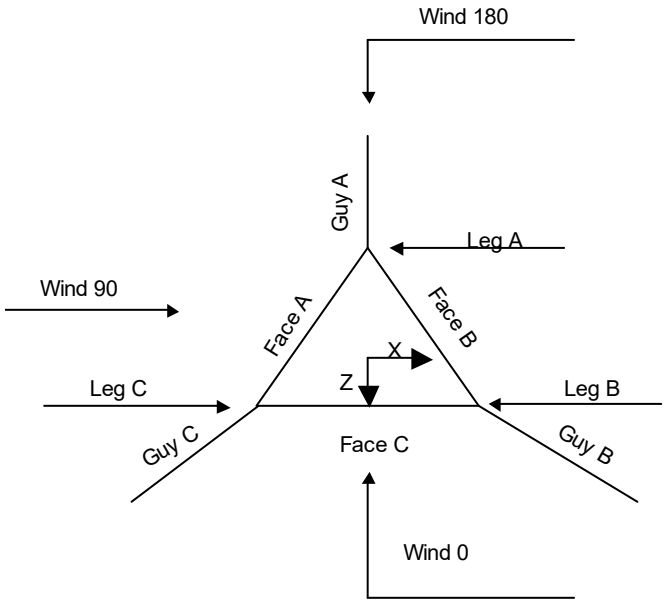
Job:	***CT1837S***		
Project:	***347 ft. Guyed Tower***		
Client:	Smartlink / AT&T	Drawn by: VY	App'd:
Code:	TIA-222-G	Date: 11/19	Scale: NTS
Path:			Dwg No. E-1

Tower Input Data

The main tower is a 3x guyed tower with an overall height of 347.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 5.00 ft at the top and tapered at the base.
An index plate is provided at the 3 sided -tower connection.
There is a 3 sided latticed pole with a face width of 2.00 ft.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in New London County, Connecticut.
Basic wind speed of 120 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Stress ratio used in latticed pole member design is 1.
Safety factor used in guy design is 1.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.



Corner & Starmount Guyed Tower

3 Sided Latticed Pole Section Geometry

Tower Section	*Tower Elevation*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
L1	347.00-330.00			2.00	1	17.00
L2	330.00-320.00			2.00	1	10.00

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Section	*Tower Elevation*	*Diagonal Spacing*	*Bracing Type*	*Has K Brace End Panels*	*Has Horizontals*	*Top Girt Offset*	*Bottom Girt Offset*
	ft	*ft*				*in*	*in*
L1	347.00-330.00	2.33	X Brace	No	No	4.0000	4.0000
L2	330.00-320.00	2.33	X Brace	No	No	4.0000	4.0000

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
L1 347.00-330.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
L2 330.00-320.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
L1 347.00-330.00	Solid Round	3/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
L2 330.00-320.00	Solid Round	3/4	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 347.00-330.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
L2 330.00-320.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
L1 347.00-330.00	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
L2 330.00-320.00	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

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

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
L1 347.00-330.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
L2 330.00-320.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
L1 347.00-330.00	Flange	1.0000 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
L2 330.00-320.00	Flange	1.5000 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	320.00-300.00			5.00	1	20.00
T2	300.00-280.00			5.00	1	20.00
T3	280.00-260.00			5.00	1	20.00
T4	260.00-240.00			5.00	1	20.00
T5	240.00-220.00			5.00	1	20.00
T6	220.00-200.00			5.00	1	20.00
T7	200.00-180.00			5.00	1	20.00
T8	180.00-160.00			5.00	1	20.00
T9	160.00-140.00			5.00	1	20.00
T10	140.00-120.00			5.00	1	20.00
T11	120.00-100.00			5.00	1	20.00
T12	100.00-80.00			5.00	1	20.00
T13	80.00-60.00			5.00	1	20.00
T14	60.00-40.00			5.00	1	20.00
T15	40.00-20.00			5.00	1	20.00
T16	20.00-5.00			5.00	1	15.00
T17	5.00-0.00			5.00	1	5.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	320.00-300.00	2.46	X Brace	No	No	0.0000	4.0000
T2	300.00-280.00	2.46	X Brace	No	No	0.0000	4.0000
T3	280.00-260.00	2.42	X Brace	No	No	4.0000	4.0000
T4	260.00-240.00	2.42	X Brace	No	No	4.0000	4.0000
T5	240.00-220.00	2.42	X Brace	No	No	4.0000	4.0000
T6	220.00-200.00	2.42	X Brace	No	No	4.0000	4.0000
T7	200.00-180.00	2.42	X Brace	No	No	4.0000	4.0000
T8	180.00-160.00	2.42	X Brace	No	No	4.0000	4.0000
T9	160.00-140.00	2.42	X Brace	No	No	4.0000	4.0000
T10	140.00-120.00	2.42	X Brace	No	No	4.0000	4.0000
T11	120.00-100.00	2.42	X Brace	No	No	4.0000	4.0000
T12	100.00-80.00	2.42	X Brace	No	No	4.0000	4.0000
T13	80.00-60.00	2.42	X Brace	No	No	4.0000	4.0000
T14	60.00-40.00	2.42	X Brace	No	No	4.0000	4.0000
T15	40.00-20.00	2.42	X Brace	No	No	4.0000	4.0000
T16	20.00-5.00	2.39	X Brace	No	No	4.0000	4.0000
T17	5.00-0.00	1.75	X Brace	No	Yes	6.0000	12.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 320.00-300.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T2 300.00-280.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T3 280.00-260.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T4 260.00-240.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T5 240.00-220.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T6 220.00-200.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T7 200.00-180.00	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T8 180.00-160.00	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T9 160.00-140.00	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T10 140.00-120.00	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T11 120.00-100.00	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T12 100.00-80.00	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T13 80.00-60.00	Solid Round	3	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T14 60.00-40.00	Solid Round	3	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T15 40.00-20.00	Solid Round	3	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T16 20.00-5.00	Solid Round	3	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T17 5.00-0.00	Solid Round	3	A572-50	Solid Round		A572-50

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
			(50 ksi)			(50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 320.00-300.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T2 300.00-280.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T3 280.00-260.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T4 260.00-240.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T5 240.00-220.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T6 220.00-200.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T7 200.00-180.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T8 180.00-160.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T9 160.00-140.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T10 140.00-120.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T11 120.00-100.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T12 100.00-80.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T13 80.00-60.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T14 60.00-40.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T15 40.00-20.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T16 20.00-5.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T17 5.00-0.00	Flat Bar	10x3/8	A36 (36 ksi)	Flat Bar	10x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T17 5.00-0.00	None	Flat Bar		A36 (36 ksi)	Flat Bar	10x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 320.00-300.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T2 300.00-280.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T3 280.00-260.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T4 260.00-240.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T5 240.00-220.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T6 220.00-200.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T7 200.00-180.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T8 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T9 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T10 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T11 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T12 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T13 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T14 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T15 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T16 20.00-5.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T17 5.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 320.00-300.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 300.00-280.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 280.00-260.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T4	Yes	Yes	1	1	1	1	1	1	1	1
260.00-240.00				1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1
240.00-220.00				1	1	1	1	1	1	1
T6	Yes	Yes	1	1	1	1	1	1	1	1
220.00-200.00				1	1	1	1	1	1	1
T7	Yes	Yes	1	1	1	1	1	1	1	1
200.00-180.00				1	1	1	1	1	1	1
T8	Yes	Yes	1	1	1	1	1	1	1	1
180.00-160.00				1	1	1	1	1	1	1
T9	Yes	Yes	1	1	1	1	1	1	1	1
160.00-140.00				1	1	1	1	1	1	1
T10	Yes	Yes	1	1	1	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1
T11	Yes	Yes	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T12	Yes	Yes	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T13	Yes	Yes	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T14	Yes	Yes	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T15	Yes	Yes	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T16	Yes	Yes	1	1	1	1	1	1	1	1
20.00-5.00				1	1	1	1	1	1	1
T17 5.00-0.00	Yes	Yes	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
320.00-300.00														
T2	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
300.00-280.00														
T3	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
280.00-260.00														
T4	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
260.00-240.00														
T5	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
240.00-220.00														
T6	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
220.00-200.00														
T7	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
200.00-180.00														

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T8 180.00-160.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 160.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 140.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 120.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 20.00-5.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T17 5.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 320.00-300.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 300.00-280.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 280.00-260.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 260.00-240.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 240.00-220.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 220.00-200.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 200.00-180.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 180.00-160.00	Flange	1.0000 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 160.00-140.00	Flange	1.0000 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 140.00-120.00	Flange	1.0000 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 120.00-100.00	Flange	1.0000 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T12 100.00-80.00	Flange	1.0000 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T13 80.00-60.00	Flange	1.0000 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T14 60.00-40.00	Flange	1.0000 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T15 40.00-20.00	Flange	1.0000 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T16 20.00-5.00	Flange	1.0000 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T17 5.00-0.00	Flange	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
320	EHS	A	7/8	7970.00	10%	19000	1.581	393.01	220.00	0.0000	-8.00	100%
		B	7/8	7970.00	10%	19000	1.581	391.34	220.00	0.0000	-6.00	100%
		C	7/8	7970.00	10%	19000	1.581	401.37	220.00	0.0000	-18.00	100%
260.333	EHS	A	7/8	7970.00	10%	19000	1.581	344.87	220.00	0.0000	-8.00	100%
		B	7/8	7970.00	10%	19000	1.581	343.32	220.00	0.0000	-6.00	100%
		C	7/8	7970.00	10%	19000	1.581	352.69	220.00	0.0000	-18.00	100%
200.333	BS	A	1	12200.00	10%	24000	2.100	300.66	220.00	0.0000	-8.00	100%
		B	1	12200.00	10%	24000	2.100	299.28	220.00	0.0000	-6.00	100%
		C	1	12200.00	10%	24000	2.100	307.66	220.00	0.0000	-18.00	100%
140.333	BS	A	1	12200.00	10%	24000	2.100	262.74	220.00	0.0000	-8.00	100%
		B	1	12200.00	10%	24000	2.100	261.61	220.00	0.0000	-6.00	100%
		C	1	12200.00	10%	24000	2.100	268.50	220.00	0.0000	-18.00	100%
70	EHS	A	3/4	5830.00	10%	19000	1.155	230.50	220.00	0.0000	-8.00	100%
		B	3/4	5830.00	10%	19000	1.155	229.84	220.00	0.0000	-6.00	100%
		C	3/4	5830.00	10%	19000	1.155	234.07	220.00	0.0000	-18.00	100%

Guy Data *(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
320	Corner						
260.333	Corner						
200.333	Corner						
140.333	Corner						
70	Corner						

Guy Data *(cont'd)*

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
320.00	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	
260.33	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	
200.33	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	
140.33	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	
70.00	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	

Guy Data *(cont'd)*

Guy Elevation ft	Cable Weight A lb	Cable Weight B lb	Cable Weight C lb	Cable Weight D lb	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
320	621.34	618.71	634.57		14.85 6.7 sec/pulse	14.73 6.6 sec/pulse	15.48 6.8 sec/pulse	
260.333	545.24	542.79	557.61		11.50 5.9 sec/pulse	11.40 5.8 sec/pulse	12.02 6.0 sec/pulse	
200.333	631.38	628.48	646.09		7.65 4.8 sec/pulse	7.58 4.8 sec/pulse	8.00 4.9 sec/pulse	
140.333	551.75	549.39	563.85		5.87 4.2 sec/pulse	5.82 4.2 sec/pulse	6.13 4.3 sec/pulse	
70	266.23	265.46	270.35		5.23 3.9 sec/pulse	5.20 3.9 sec/pulse	5.39 4.0 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
320	No	No			1	1	1	1
260.333	No	No			1	1	1	1
200.333	No	No			1	1	1	1
140.333	No	No			1	1	1	1
70	No	No			1	1	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
320	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Elevation ft	Torque-Arm				Pull Off				Diagonal			
	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U
260.333	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
200.333	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
140.333	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
70	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
320	A	156.00	35	6	1.7521
	B	157.00	35	6	1.7532
	C	151.00	35	6	1.7464
260.333	A	126.17	33	6	1.7153
	B	127.17	33	6	1.7166
	C	121.17	33	6	1.7084
200.333	A	96.17	31	5	1.6693
	B	97.17	31	5	1.6711
	C	91.17	30	5	1.6604
140.333	A	66.17	28	5	1.6081
	B	67.17	28	5	1.6105
	C	61.17	27	5	1.5955
70	A	31.00	22	4	1.4907
	B	32.00	22	4	1.4954
	C	26.00	22	4	1.4647

Guy-Tensioning Information

Guy Elevation ft		H ft	V ft	Temperature At Time Of Tensioning: 0 F Initial Tension lb	0 F Intercept ft	20 F Initial Tension lb	20 F Intercept ft	40 F Initial Tension lb	40 F Intercept ft	60 F Initial Tension lb	60 F Intercept ft	80 F Initial Tension lb	80 F Intercept ft	100 F Initial Tension lb	100 F Intercept ft	120 F Initial Tension lb	120 F Intercept ft
320	A	217.11	328.00	8887	13.36	8578	13.83	8272	14.33	7970	14.85	7673	15.41	7380	16.00	7093	16.63
	B	217.11	326.00	8895	13.24	8583	13.71	8274	14.20	7970	14.73	7670	15.29	7375	15.88	7086	16.51
	C	217.11	338.00	8849	13.98	8553	14.45	8259	14.95	7970	15.48	7685	16.04	7404	16.63	7128	17.25
260.333	A	217.11	268.33	9165	10.03	8761	10.49	8362	10.98	7970	11.50	7586	12.07	7210	12.69	6844	13.35
	B	217.11	266.33	9176	9.93	8768	10.39	8366	10.87	7970	11.40	7582	11.97	7203	12.59	6834	13.25
	C	217.11	278.33	9112	10.54	8726	11.00	8345	11.49	7970	12.02	7602	12.59	7242	13.20	6891	13.85
200.333	A	217.11	208.33	14867	6.30	13963	6.70	13073	7.15	12200	7.65	11348	8.22	10522	8.85	9708	9.58
	B	217.11	206.33	14892	6.23	13979	6.63	13081	7.08	12200	7.58	11340	8.15	10507	8.78	9706	9.49
	C	217.11	218.33	14751	6.64	13887	7.05	13036	7.50	12200	8.00	11384	8.57	10591	9.20	9826	9.90
140.333	A	217.11	148.33	15712	4.57	14518	4.94	13345	5.37	12200	5.87	11092	6.45	10031	7.12	9031	7.90
	B	217.11	146.33	15743	4.52	14538	4.89	13355	5.32	12200	5.82	11082	6.40	10013	7.08	9006	7.86
	C	217.11	158.33	15560	4.82	14418	5.19	13296	5.63	12200	6.13	11138	6.70	10118	7.37	9153	8.13
70	A	217.11	78.00	7822	3.90	7140	4.27	6474	4.71	5830	5.23	5215	5.84	4638	6.56	4109	7.40
	B	217.11	76.00	7834	3.87	7148	4.24	6478	4.68	5830	5.20	5211	5.81	4631	6.53	4101	7.37
	C	217.11	88.00	7761	4.05	7100	4.43	6455	4.87	5830	5.39	5233	6.00	4671	6.71	4154	7.54

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Feedline Ladder (Af)	C	No	Af (CaAa)	320.00 - 5.00	0.0000	0	1	1	3.0000	3.0000		8.40
Feedline Ladder (Af)	C	No	Af (CaAa)	320.00 - 5.00	0.2500	0	1	1	3.0000	3.0000		8.40
Feedline Ladder (Af)	C	No	Af (CaAa)	320.00 - 5.00	-0.2500	0	1	1	3.0000	3.0000		8.40
Safety Line 3/8 *****	C	No	Ar (CaAa)	320.00 - 5.00	0.0000	0	1	1	0.3750	0.3750		0.22
LDF7-50A (1-5/8 FOAM)	C	No	Ar (CaAa)	325.00 - 8.00	0.0000	-0.4	1	1	0.5000	1.9800		0.82
LDF7-50A (1-5/8 FOAM)	C	No	Ar (CaAa)	290.00 - 8.00	0.0000	0.3	4	4	0.5000	1.9800		0.82
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	290.00 - 8.00	0.0000	0.2	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	160.00 - 8.00	0.0000	0.15	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	120.00 - 8.00	0.0000	0.15	1	1	1.0900	1.0900		0.33
LDF7-50A (1-5/8 FOAM)	C	No	Ar (CaAa)	100.00 - 8.00	0.0000	-0.3	1	1	0.5000	1.9800		0.82
LDF5-50A (7/8 FOAM) ***proposed**	C	No	Ar (CaAa)	80.00 - 8.00	0.0000	-0.35	1	1	1.0900	1.0900		0.33
3/8" Fiber	C	No	Ar (CaAa)	173.00 - 8.00	0.0000	0.35	2	2	0.4000	0.4000		0.08
7/8" DC power cable	C	No	Ar (CaAa)	173.00 - 8.00	0.0000	0.35	8	4	0.8750	0.8750		0.40

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	347.00-330.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	330.00-320.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.990	0.000	4.10
T1	320.00-300.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	34.710	0.000	524.80
T2	300.00-280.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	43.720	0.000	560.90
T3	280.00-260.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	52.730	0.000	597.00
T4	260.00-240.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	52.730	0.000	597.00
T5	240.00-220.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		C	0.000	0.000	52.730	0.000	597.00
T6	220.00-200.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	52.730	0.000	597.00
T7	200.00-180.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	52.730	0.000	597.00
T8	180.00-160.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	62.870	0.000	640.68
T9	160.00-140.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	70.510	0.000	670.80
T10	140.00-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	70.510	0.000	670.80
T11	120.00-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	72.690	0.000	677.40
T12	100.00-80.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	76.650	0.000	693.80
T13	80.00-60.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	78.830	0.000	700.40
T14	60.00-40.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	78.830	0.000	700.40
T15	40.00-20.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	78.830	0.000	700.40
T16	20.00-5.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	51.910	0.000	496.50
T17	5.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	347.00-330.00	A	1.893	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	330.00-320.00	A	1.886	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	2.876	0.000	48.62
T1	320.00-300.00	A	1.877	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	72.242	0.000	1641.40
T2	300.00-280.00	A	1.864	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	94.729	0.000	1950.96
T3	280.00-260.00	A	1.851	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	117.058	0.000	2254.94

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T4	260.00-240.00	A	1.837	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	116.625	0.000	2237.70
T5	240.00-220.00	A	1.821	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	116.158	0.000	2219.27
T6	220.00-200.00	A	1.805	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	115.654	0.000	2199.42
T7	200.00-180.00	A	1.787	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	115.105	0.000	2177.91
T8	180.00-160.00	A	1.767	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	143.120	0.000	2529.56
T9	160.00-140.00	A	1.745	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	166.713	0.000	2825.97
T10	140.00-120.00	A	1.720	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	165.511	0.000	2786.14
T11	120.00-100.00	A	1.692	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	173.077	0.000	2862.36
T12	100.00-80.00	A	1.658	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	181.906	0.000	2969.55
T13	80.00-60.00	A	1.617	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	188.231	0.000	3009.36
T14	60.00-40.00	A	1.564	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	184.996	0.000	2909.45
T15	40.00-20.00	A	1.486	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	180.291	0.000	2767.46
T16	20.00-5.00	A	1.361	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	111.542	0.000	1695.89
T17	5.00-0.00	A	1.159	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	347.00-330.00	0.0000	0.0000	0.0000	0.0000
L2	330.00-320.00	9.6000	7.9182	9.6000	7.9182
T1	320.00-300.00	3.4928	17.8832	3.9106	17.8637
T2	300.00-280.00	-1.6731	17.9169	-0.8721	17.9027
T3	280.00-260.00	-4.7809	17.9437	-3.8581	17.9318
T4	260.00-240.00	-4.7809	17.9437	-3.8685	17.9318
T5	240.00-220.00	-4.7809	17.9437	-3.8797	17.9319
T6	220.00-200.00	-4.7809	17.9437	-3.8919	17.9319
T7	200.00-180.00	-4.7809	17.9437	-3.9054	17.9319

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T8	180.00-160.00	-9.1927	18.0481	-9.0914	18.0037
T9	160.00-140.00	-10.6506	18.0793	-10.6877	18.0189
T10	140.00-120.00	-10.6506	18.0793	-10.6635	18.0187
T11	120.00-100.00	-10.6030	18.0702	-10.5614	18.0097
T12	100.00-80.00	-9.1791	18.0875	-9.0422	18.0290
T13	80.00-60.00	-8.3742	18.0790	-7.7942	18.0209
T14	60.00-40.00	-8.3742	18.0790	-7.6815	18.0200
T15	40.00-20.00	-8.3742	18.0790	-7.6303	18.0199
T16	20.00-5.00	-7.8181	18.0544	-7.1505	18.0023
T17	5.00-0.00	0.0000	0.0000	0.0000	0.0000

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L2	9	LDF7-50A (1-5/8 FOAM)	320.00 - 325.00	0.6000	0.2361
T1	2	Feedline Ladder (Af)	300.00 - 320.00	0.6000	0.4877
T1	3	Feedline Ladder (Af)	300.00 - 320.00	0.6000	0.4877
T1	4	Feedline Ladder (Af)	300.00 - 320.00	0.6000	0.4877
T1	7	Safety Line 3/8	300.00 - 320.00	0.6000	0.4877
T1	9	LDF7-50A (1-5/8 FOAM)	300.00 - 320.00	0.6000	0.4877
T2	2	Feedline Ladder (Af)	280.00 - 300.00	0.6000	0.4901
T2	3	Feedline Ladder (Af)	280.00 - 300.00	0.6000	0.4901
T2	4	Feedline Ladder (Af)	280.00 - 300.00	0.6000	0.4901
T2	7	Safety Line 3/8	280.00 - 300.00	0.6000	0.4901
T2	9	LDF7-50A (1-5/8 FOAM)	280.00 - 300.00	0.6000	0.4901
T2	10	LDF7-50A (1-5/8 FOAM)	280.00 - 290.00	0.6000	0.4901
T2	11	LDF5-50A (7/8 FOAM)	280.00 - 290.00	0.6000	0.4901
T3	2	Feedline Ladder (Af)	260.00 - 280.00	0.6000	0.4936
T3	3	Feedline Ladder (Af)	260.00 - 280.00	0.6000	0.4936
T3	4	Feedline Ladder (Af)	260.00 - 280.00	0.6000	0.4936
T3	7	Safety Line 3/8	260.00 - 280.00	0.6000	0.4936
T3	9	LDF7-50A (1-5/8 FOAM)	260.00 - 280.00	0.6000	0.4936
T3	10	LDF7-50A (1-5/8 FOAM)	260.00 - 280.00	0.6000	0.4936
T3	11	LDF5-50A (7/8 FOAM)	260.00 - 280.00	0.6000	0.4936

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	2	Feedline Ladder (Af)	240.00 - 260.00	0.6000	0.4963
T4	3	Feedline Ladder (Af)	240.00 - 260.00	0.6000	0.4963
T4	4	Feedline Ladder (Af)	240.00 - 260.00	0.6000	0.4963
T4	7	Safety Line 3/8	240.00 - 260.00	0.6000	0.4963
T4	9	LDF7-50A (1-5/8 FOAM)	240.00 - 260.00	0.6000	0.4963
T4	10	LDF7-50A (1-5/8 FOAM)	240.00 - 260.00	0.6000	0.4963
T4	11	LDF5-50A (7/8 FOAM)	240.00 - 260.00	0.6000	0.4963
T5	2	Feedline Ladder (Af)	220.00 - 240.00	0.6000	0.4992
T5	3	Feedline Ladder (Af)	220.00 - 240.00	0.6000	0.4992
T5	4	Feedline Ladder (Af)	220.00 - 240.00	0.6000	0.4992
T5	7	Safety Line 3/8	220.00 - 240.00	0.6000	0.4992
T5	9	LDF7-50A (1-5/8 FOAM)	220.00 - 240.00	0.6000	0.4992
T5	10	LDF7-50A (1-5/8 FOAM)	220.00 - 240.00	0.6000	0.4992
T5	11	LDF5-50A (7/8 FOAM)	220.00 - 240.00	0.6000	0.4992
T6	2	Feedline Ladder (Af)	200.00 - 220.00	0.6000	0.4891
T6	3	Feedline Ladder (Af)	200.00 - 220.00	0.6000	0.4891
T6	4	Feedline Ladder (Af)	200.00 - 220.00	0.6000	0.4891
T6	7	Safety Line 3/8	200.00 - 220.00	0.6000	0.4891
T6	9	LDF7-50A (1-5/8 FOAM)	200.00 - 220.00	0.6000	0.4891
T6	10	LDF7-50A (1-5/8 FOAM)	200.00 - 220.00	0.6000	0.4891
T6	11	LDF5-50A (7/8 FOAM)	200.00 - 220.00	0.6000	0.4891
T7	2	Feedline Ladder (Af)	180.00 - 200.00	0.6000	0.4882
T7	3	Feedline Ladder (Af)	180.00 - 200.00	0.6000	0.4882
T7	4	Feedline Ladder (Af)	180.00 - 200.00	0.6000	0.4882
T7	7	Safety Line 3/8	180.00 - 200.00	0.6000	0.4882
T7	9	LDF7-50A (1-5/8 FOAM)	180.00 - 200.00	0.6000	0.4882
T7	10	LDF7-50A (1-5/8 FOAM)	180.00 - 200.00	0.6000	0.4882
T7	11	LDF5-50A (7/8 FOAM)	180.00 - 200.00	0.6000	0.4882
T8	2	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.4920
T8	3	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.4920
T8	4	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.4920

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T8	7	Safety Line 3/8	160.00 - 180.00	0.6000	0.4920
T8	9	LDF7-50A (1-5/8 FOAM)	160.00 - 180.00	0.6000	0.4920
T8	10	LDF7-50A (1-5/8 FOAM)	160.00 - 180.00	0.6000	0.4920
T8	11	LDF5-50A (7/8 FOAM)	160.00 - 180.00	0.6000	0.4920
T8	17	3/8" Fiber	160.00 - 173.00	1.0000	1.0000
T8	18	7/8" DC power cable	160.00 - 173.00	1.0000	1.0000
T9	2	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.4919
T9	3	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.4919
T9	4	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.4919
T9	7	Safety Line 3/8	140.00 - 160.00	0.6000	0.4919
T9	9	LDF7-50A (1-5/8 FOAM)	140.00 - 160.00	0.6000	0.4919
T9	10	LDF7-50A (1-5/8 FOAM)	140.00 - 160.00	0.6000	0.4919
T9	11	LDF5-50A (7/8 FOAM)	140.00 - 160.00	0.6000	0.4919
T9	12	LDF5-50A (7/8 FOAM)	140.00 - 160.00	0.6000	0.4919
T9	17	3/8" Fiber	140.00 - 160.00	1.0000	1.0000
T9	18	7/8" DC power cable	140.00 - 160.00	1.0000	1.0000
T10	2	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.4965
T10	3	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.4965
T10	4	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.4965
T10	7	Safety Line 3/8	120.00 - 140.00	0.6000	0.4965
T10	9	LDF7-50A (1-5/8 FOAM)	120.00 - 140.00	0.6000	0.4965
T10	10	LDF7-50A (1-5/8 FOAM)	120.00 - 140.00	0.6000	0.4965
T10	11	LDF5-50A (7/8 FOAM)	120.00 - 140.00	0.6000	0.4965
T10	12	LDF5-50A (7/8 FOAM)	120.00 - 140.00	0.6000	0.4965
T10	17	3/8" Fiber	120.00 - 140.00	1.0000	1.0000
T10	18	7/8" DC power cable	120.00 - 140.00	1.0000	1.0000
T11	2	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.5019
T11	3	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.5019
T11	4	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.5019
T11	7	Safety Line 3/8	100.00 - 120.00	0.6000	0.5019
T11	9	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.5019

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T11	10	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.5019
T11	11	LDF5-50A (7/8 FOAM)	100.00 - 120.00	0.6000	0.5019
T11	12	LDF5-50A (7/8 FOAM)	100.00 - 120.00	0.6000	0.5019
T11	13	LDF5-50A (7/8 FOAM)	100.00 - 120.00	0.6000	0.5019
T11	17	3/8" Fiber	100.00 - 120.00	1.0000	1.0000
T11	18	7/8" DC power cable	100.00 - 120.00	1.0000	1.0000
T12	2	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.5082
T12	3	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.5082
T12	4	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.5082
T12	7	Safety Line 3/8	80.00 - 100.00	0.6000	0.5082
T12	9	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.5082
T12	10	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.5082
T12	11	LDF5-50A (7/8 FOAM)	80.00 - 100.00	0.6000	0.5082
T12	12	LDF5-50A (7/8 FOAM)	80.00 - 100.00	0.6000	0.5082
T12	13	LDF5-50A (7/8 FOAM)	80.00 - 100.00	0.6000	0.5082
T12	14	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.5082
T12	17	3/8" Fiber	80.00 - 100.00	1.0000	1.0000
T12	18	7/8" DC power cable	80.00 - 100.00	1.0000	1.0000
T13	2	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.5116
T13	3	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.5116
T13	4	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.5116
T13	7	Safety Line 3/8	60.00 - 80.00	0.6000	0.5116
T13	9	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.5116
T13	10	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.5116
T13	11	LDF5-50A (7/8 FOAM)	60.00 - 80.00	0.6000	0.5116
T13	12	LDF5-50A (7/8 FOAM)	60.00 - 80.00	0.6000	0.5116
T13	13	LDF5-50A (7/8 FOAM)	60.00 - 80.00	0.6000	0.5116
T13	14	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.5116
T13	15	LDF5-50A (7/8 FOAM)	60.00 - 80.00	0.6000	0.5116
T13	17	3/8" Fiber	60.00 - 80.00	1.0000	1.0000
T13	18	7/8" DC power cable	60.00 - 80.00	1.0000	1.0000
T14	2	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.5305
T14	3	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.5305
T14	4	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.5305
T14	7	Safety Line 3/8	40.00 - 60.00	0.6000	0.5305
T14	9	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.5305
T14	10	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.5305
T14	11	LDF5-50A (7/8 FOAM)	40.00 - 60.00	0.6000	0.5305
T14	12	LDF5-50A (7/8 FOAM)	40.00 - 60.00	0.6000	0.5305
T14	13	LDF5-50A (7/8 FOAM)	40.00 - 60.00	0.6000	0.5305
T14	14	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.5305
T14	15	LDF5-50A (7/8 FOAM)	40.00 - 60.00	0.6000	0.5305
T14	17	3/8" Fiber	40.00 - 60.00	1.0000	1.0000
T14	18	7/8" DC power cable	40.00 - 60.00	1.0000	1.0000
T15	2	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.5452
T15	3	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.5452
T15	4	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.5452
T15	7	Safety Line 3/8	20.00 - 40.00	0.6000	0.5452
T15	9	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.5452
T15	10	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.5452
T15	11	LDF5-50A (7/8 FOAM)	20.00 - 40.00	0.6000	0.5452
T15	12	LDF5-50A (7/8 FOAM)	20.00 - 40.00	0.6000	0.5452
T15	13	LDF5-50A (7/8 FOAM)	20.00 - 40.00	0.6000	0.5452
T15	14	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.5452
T15	15	LDF5-50A (7/8 FOAM)	20.00 - 40.00	0.6000	0.5452
T15	17	3/8" Fiber	20.00 - 40.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T15	18	7/8" DC power cable	20.00 - 40.00	1.0000	1.0000
T16	2	Feedline Ladder (Af)	5.00 - 20.00	0.6000	0.5607
T16	3	Feedline Ladder (Af)	5.00 - 20.00	0.6000	0.5607
T16	4	Feedline Ladder (Af)	5.00 - 20.00	0.6000	0.5607
T16	7	Safety Line 3/8	5.00 - 20.00	0.6000	0.5607
T16	9	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.5607
T16	10	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.5607
T16	11	LDF5-50A (7/8 FOAM)	8.00 - 20.00	0.6000	0.5607
T16	12	LDF5-50A (7/8 FOAM)	8.00 - 20.00	0.6000	0.5607
T16	13	LDF5-50A (7/8 FOAM)	8.00 - 20.00	0.6000	0.5607
T16	14	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.5607
T16	15	LDF5-50A (7/8 FOAM)	8.00 - 20.00	0.6000	0.5607
T16	17	3/8" Fiber	8.00 - 20.00	1.0000	1.0000
T16	18	7/8" DC power cable	8.00 - 20.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Flash Beacon Lighting	A	None			0.0000	350.00	No Ice	2.70	2.70	50.00
							1/2" Ice	3.10	3.10	70.00
							1" Ice	3.50	3.50	90.00
DCR-M 4 bay FM with radomes	C	From Face	3.00	0.00	0.0000	345.00 - 325.00	No Ice	60.00	60.00	1023.00
				0.00			1/2" Ice	61.50	61.50	1424.37
				0.00			1" Ice	63.01	63.01	1844.59
SM1303-1	A	From Leg	2.00	0.00	0.0000	290.00	No Ice	18.20	17.30	368.00
			0.00				1/2" Ice	23.60	23.80	589.00
			0.00				1" Ice	29.00	30.30	810.00
SM1303-1	B	From Leg	2.00	0.00	0.0000	290.00	No Ice	18.20	17.30	368.00
			0.00				1/2" Ice	23.60	23.80	589.00
			0.00				1" Ice	29.00	30.30	810.00
SM1303-1	C	From Leg	2.00	0.00	0.0000	290.00	No Ice	18.20	17.30	368.00
			0.00				1/2" Ice	23.60	23.80	589.00
			0.00				1" Ice	29.00	30.30	810.00
(2) 18' Whip	A	From Leg	4.00	0.00	0.0000	300.00	No Ice	3.73	3.73	45.95
			0.00				1/2" Ice	5.74	5.74	78.95
			0.00				1" Ice	7.78	7.78	124.35
18' Whip	B	From Leg	4.00	0.00	0.0000	300.00	No Ice	3.73	3.73	45.95
			0.00				1/2" Ice	5.74	5.74	78.95
			0.00				1" Ice	7.78	7.78	124.35
18' Whip	C	From Leg	4.00	0.00	0.0000	300.00	No Ice	3.73	3.73	45.95
			0.00				1/2" Ice	5.74	5.74	78.95
			0.00				1" Ice	7.78	7.78	124.35
Sidemarker	A	From Leg	1.00	0.00	0.0000	180.00	No Ice	0.15	0.15	12.00
			0.00				1/2" Ice	0.20	0.20	13.88
			0.00				1" Ice	0.26	0.26	16.73
Sidemarker	B	From Leg	1.00	0.00	0.0000	180.00	No Ice	0.15	0.15	12.00
			0.00				1/2" Ice	0.20	0.20	13.88
			0.00				1" Ice	0.26	0.26	16.73
Sidemarker	C	From Leg	1.00	0.00	0.0000	180.00	No Ice	0.15	0.15	12.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1/2" Ice	0.20	0.20	13.88
			0.00			1" Ice	0.26	0.26	16.73
Proposed									
(2) KMW EPBQ-654L8H8-L2	A	From Leg	4.00	0.0000	173.00	No Ice	18.09	7.03	104.50
			0.00			1/2" Ice	18.72	7.62	197.75
			0.00			1" Ice	19.36	8.21	299.18
(2) KMW EPBQ-654L8H8-L2	B	From Leg	4.00	0.0000	173.00	No Ice	18.09	7.03	104.50
			0.00			1/2" Ice	18.72	7.62	197.75
			0.00			1" Ice	19.36	8.21	299.18
(2) KMW EPBQ-654L8H8-L2	C	From Leg	4.00	0.0000	173.00	No Ice	18.09	7.03	104.50
			0.00			1/2" Ice	18.72	7.62	197.75
			0.00			1" Ice	19.36	8.21	299.18
CCI HPA65R-BU8A	A	From Leg	4.00	0.0000	173.00	No Ice	11.23	9.94	104.80
			0.00			1/2" Ice	11.85	11.37	192.59
			0.00			1" Ice	12.47	12.64	290.14
CCI HPA65R-BU8A	B	From Leg	4.00	0.0000	173.00	No Ice	11.23	9.94	104.80
			0.00			1/2" Ice	11.85	11.37	192.59
			0.00			1" Ice	12.47	12.64	290.14
CCI HPA65R-BU8A	C	From Leg	4.00	0.0000	173.00	No Ice	11.23	9.94	104.80
			0.00			1/2" Ice	11.85	11.37	192.59
			0.00			1" Ice	12.47	12.64	290.14
RRUS-4478 B14	A	From Leg	4.00	0.0000	173.00	No Ice	1.84	1.06	60.00
			0.00			1/2" Ice	2.01	1.20	75.88
			0.00			1" Ice	2.19	1.34	94.39
RRUS-4478 B14	B	From Leg	4.00	0.0000	173.00	No Ice	1.84	1.06	60.00
			0.00			1/2" Ice	2.01	1.20	75.88
			0.00			1" Ice	2.19	1.34	94.39
RRUS-4478 B14	C	From Leg	4.00	0.0000	173.00	No Ice	1.84	1.06	60.00
			0.00			1/2" Ice	2.01	1.20	75.88
			0.00			1" Ice	2.19	1.34	94.39
RRUS-4426 B66	A	From Leg	4.00	0.0000	173.00	No Ice	1.64	0.73	48.40
			0.00			1/2" Ice	1.80	0.84	61.22
			0.00			1" Ice	1.97	0.97	76.43
RRUS-4426 B66	B	From Leg	4.00	0.0000	173.00	No Ice	1.64	0.73	48.40
			0.00			1/2" Ice	1.80	0.84	61.22
			0.00			1" Ice	1.97	0.97	76.43
RRUS-4426 B66	C	From Leg	4.00	0.0000	173.00	No Ice	1.64	0.73	48.40
			0.00			1/2" Ice	1.80	0.84	61.22
			0.00			1" Ice	1.97	0.97	76.43
RRUS-E2	A	From Leg	4.00	0.0000	173.00	No Ice	3.15	1.29	52.90
			0.00			1/2" Ice	3.36	1.44	76.12
			0.00			1" Ice	3.59	1.60	102.54
RRUS-E2	B	From Leg	4.00	0.0000	173.00	No Ice	3.15	1.29	52.90
			0.00			1/2" Ice	3.36	1.44	76.12
			0.00			1" Ice	3.59	1.60	102.54
RRUS-E2	C	From Leg	4.00	0.0000	173.00	No Ice	3.15	1.29	52.90
			0.00			1/2" Ice	3.36	1.44	76.12
			0.00			1" Ice	3.59	1.60	102.54
RRUS-4449 B5/B12	A	From Leg	4.00	0.0000	173.00	No Ice	1.64	1.30	73.00
			0.00			1/2" Ice	1.80	1.45	90.19
			0.00			1" Ice	1.97	1.60	110.08
RRUS-4449 B5/B12	B	From Leg	4.00	0.0000	173.00	No Ice	1.64	1.30	73.00
			0.00			1/2" Ice	1.80	1.45	90.19
			0.00			1" Ice	1.97	1.60	110.08
RRUS-4449 B5/B12	C	From Leg	4.00	0.0000	173.00	No Ice	1.64	1.30	73.00
			0.00			1/2" Ice	1.80	1.45	90.19
			0.00			1" Ice	1.97	1.60	110.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
RRUS-4415 B25	A	From Leg	4.00 0.00 0.00	0.0000	173.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	46.00 58.43 73.23
RRUS-4415 B25	B	From Leg	4.00 0.00 0.00	0.0000	173.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	46.00 58.43 73.23
RRUS-4415 B25	C	From Leg	4.00 0.00 0.00	0.0000	173.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	46.00 58.43 73.23
Raycap DC6-48-60-0-8F	A	From Leg	2.00 0.00 0.00	0.0000	173.00	No Ice 1/2" Ice 1" Ice	0.83 1.34 1.52	0.83 1.34 1.52	32.80 48.71 67.01
Raycap DC6-48-60-0-8F	B	From Leg	2.00 0.00 0.00	0.0000	173.00	No Ice 1/2" Ice 1" Ice	0.83 1.34 1.52	0.83 1.34 1.52	32.80 48.71 67.01
Raycap DC6-48-60-0-8F	C	From Leg	2.00 0.00 0.00	0.0000	173.00	No Ice 1/2" Ice 1" Ice	0.83 1.34 1.52	0.83 1.34 1.52	32.80 48.71 67.01
Sabre 12' V-Boom Assembly w/ Tieback (1)	A	From Leg	2.00 0.00 0.00	0.0000	173.00	No Ice 1/2" Ice 1" Ice	20.32 24.20 28.08	12.90 20.63 28.36	450.00 795.00 1140.00
Sabre 12' V-Boom Assembly w/ Tieback (1)	B	From Leg	2.00 0.00 0.00	0.0000	173.00	No Ice 1/2" Ice 1" Ice	20.32 24.20 28.08	12.90 20.63 28.36	450.00 795.00 1140.00
Sabre 12' V-Boom Assembly w/ Tieback (1)	C	From Leg	2.00 0.00 0.00	0.0000	173.00	No Ice 1/2" Ice 1" Ice	20.32 24.20 28.08	12.90 20.63 28.36	450.00 795.00 1140.00

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
2'x8' Grid Dish	A	Grid	From Leg	1.00 0.00 0.00	0.0000		290.00	3.00	No Ice 1/2" Ice 1" Ice	7.07 7.47 7.86	80.00 118.35 156.69
2'x8' Grid Dish	C	Grid	From Leg	1.00 0.00 0.00	0.0000		160.00	3.00	No Ice 1/2" Ice 1" Ice	7.07 7.47 7.86	80.00 118.35 156.69
(2) 2.5' dish with radome	C	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		120.00	2.50	No Ice 1/2" Ice 1" Ice	4.91 5.24 5.57	50.00 76.90 103.80
3' Dish w/ Radome	C	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		100.00	3.00	No Ice 1/2" Ice 1" Ice	7.07 7.47 7.86	45.00 83.35 121.69
2'x8' Grid Dish	C	Grid	From Leg	1.00 0.00 0.00	0.0000		80.00	3.00	No Ice 1/2" Ice 1" Ice	7.07 7.47 7.86	80.00 118.35 156.69

Tower Pressures - No Ice

G_H = 0.850 (base tower), 1.100 (upper structure)

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	338.50	1.4	44	36.833	A	0.000	8.361	5.667	67.78	0.000	0.000
347.00-330.00					B	0.000	8.361		67.78	0.000	0.000
					C	0.000	8.361		67.78	0.000	0.000
L2	325.00	1.384	43	21.875	A	0.000	5.256	3.750	71.35	0.000	0.000
330.00-320.00					B	0.000	5.256		71.35	0.000	0.000
					C	0.000	5.256		71.35	0.990	0.000
T1	310.00	1.365	43	103.333	A	0.000	13.655	6.667	48.82	0.000	0.000
320.00-300.00					B	0.000	13.655		48.82	0.000	0.000
					C	0.000	13.655		48.82	34.710	0.000
T2	290.00	1.34	42	103.333	A	0.000	13.655	6.667	48.82	0.000	0.000
300.00-280.00					B	0.000	13.655		48.82	0.000	0.000
					C	0.000	13.655		48.82	43.720	0.000
T3	270.00	1.313	41	103.333	A	0.000	13.635	6.667	48.90	0.000	0.000
280.00-260.00					B	0.000	13.635		48.90	0.000	0.000
					C	0.000	13.635		48.90	52.730	0.000
T4	250.00	1.284	40	103.333	A	0.000	13.635	6.667	48.90	0.000	0.000
260.00-240.00					B	0.000	13.635		48.90	0.000	0.000
					C	0.000	13.635		48.90	52.730	0.000
T5	230.00	1.254	39	103.333	A	0.000	13.635	6.667	48.90	0.000	0.000
240.00-220.00					B	0.000	13.635		48.90	0.000	0.000
					C	0.000	13.635		48.90	52.730	0.000
T6	210.00	1.222	38	103.750	A	0.000	15.429	7.500	48.61	0.000	0.000
220.00-200.00					B	0.000	15.429		48.61	0.000	0.000
					C	0.000	15.429		48.61	52.730	0.000
T7	190.00	1.187	37	104.167	A	0.000	16.228	8.333	51.35	0.000	0.000
200.00-180.00					B	0.000	16.228		51.35	0.000	0.000
					C	0.000	16.228		51.35	52.730	0.000
T8	170.00	1.15	36	104.167	A	0.000	16.228	8.333	51.35	0.000	0.000
180.00-160.00					B	0.000	16.228		51.35	0.000	0.000
					C	0.000	16.228		51.35	62.870	0.000
T9	150.00	1.11	35	104.583	A	0.000	17.027	9.167	53.84	0.000	0.000
160.00-140.00					B	0.000	17.027		53.84	0.000	0.000
					C	0.000	17.027		53.84	70.510	0.000
T10	130.00	1.065	33	104.583	A	0.000	17.027	9.167	53.84	0.000	0.000
140.00-120.00					B	0.000	17.027		53.84	0.000	0.000
					C	0.000	17.027		53.84	70.510	0.000
T11	110.00	1.016	32	104.583	A	0.000	17.027	9.167	53.84	0.000	0.000
120.00-100.00					B	0.000	17.027		53.84	0.000	0.000
					C	0.000	17.027		53.84	72.690	0.000
T12	90.00	0.959	30	104.583	A	0.000	17.027	9.167	53.84	0.000	0.000
100.00-80.00					B	0.000	17.027		53.84	0.000	0.000
					C	0.000	17.027		53.84	76.650	0.000
T13	70.00	0.892	28	105.000	A	0.000	17.826	10.000	56.10	0.000	0.000
80.00-60.00					B	0.000	17.826		56.10	0.000	0.000
					C	0.000	17.826		56.10	78.830	0.000
T14	50.00	0.811	25	105.000	A	0.000	16.848	10.000	59.36	0.000	0.000
60.00-40.00					B	0.000	16.848		59.36	0.000	0.000
					C	0.000	16.848		59.36	78.830	0.000
T15	30.00	0.701	22	105.000	A	0.000	16.848	10.000	59.36	0.000	0.000
40.00-20.00					B	0.000	16.848		59.36	0.000	0.000
					C	0.000	16.848		59.36	78.830	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T16 20.00-5.00	12.50	0.7	22	78.750	A	0.000	12.799	7.500	58.60	0.000	0.000
					B	0.000	12.799		58.60	0.000	0.000
					C	0.000	12.799		58.60	51.910	0.000
T17 5.00-0.00	2.50	0.7	22	13.898	A	6.250	2.887	2.887	31.59	0.000	0.000
					B	6.250	2.887		31.59	0.000	0.000
					C	6.250	2.887		31.59	0.000	0.000

Tower Pressure - With Ice

G_H = 0.850 (base tower), 1.100 (upper structure)

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	338.50	1.4	8	1.8932	42.197	A	0.000	32.690	16.395	50.15	0.000	0.000
347.00-330.00						B	0.000	32.690		50.15	0.000	0.000
						C	0.000	32.690		50.15	0.000	0.000
L2	325.00	1.384	8	1.8855	25.018	A	0.000	19.112	10.035	52.51	0.000	0.000
330.00-320.00						B	0.000	19.112		52.51	0.000	0.000
						C	0.000	19.112		52.51	2.876	0.000
T1	310.00	1.365	7	1.8766	109.589	A	0.000	56.142	19.177	34.16	0.000	0.000
320.00-300.00						B	0.000	56.142		34.16	0.000	0.000
						C	0.000	56.142		34.16	72.242	0.000
T2	290.00	1.34	7	1.8641	109.547	A	0.000	55.860	19.094	34.18	0.000	0.000
300.00-280.00						B	0.000	55.860		34.18	0.000	0.000
						C	0.000	55.860		34.18	94.729	0.000
T3	270.00	1.313	7	1.8509	109.503	A	0.000	55.452	19.006	34.27	0.000	0.000
280.00-260.00						B	0.000	55.452		34.27	0.000	0.000
						C	0.000	55.452		34.27	117.058	0.000
T4	250.00	1.284	7	1.8367	109.456	A	0.000	55.131	18.911	34.30	0.000	0.000
260.00-240.00						B	0.000	55.131		34.30	0.000	0.000
						C	0.000	55.131		34.30	116.625	0.000
T5	230.00	1.254	7	1.8214	109.405	A	0.000	54.787	18.810	34.33	0.000	0.000
240.00-220.00						B	0.000	54.787		34.33	0.000	0.000
						C	0.000	54.787		34.33	116.158	0.000
T6	210.00	1.222	7	1.8049	109.766	A	0.000	56.084	19.533	34.83	0.000	0.000
220.00-200.00						B	0.000	56.084		34.83	0.000	0.000
						C	0.000	56.084		34.83	115.654	0.000
T7	190.00	1.187	6	1.7870	110.123	A	0.000	56.356	20.246	35.93	0.000	0.000
200.00-180.00						B	0.000	56.356		35.93	0.000	0.000
						C	0.000	56.356		35.93	115.105	0.000
T8	170.00	1.15	6	1.7672	110.057	A	0.000	55.912	20.115	35.98	0.000	0.000
180.00-160.00						B	0.000	55.912		35.98	0.000	0.000
						C	0.000	55.912		35.98	143.120	0.000
T9	150.00	1.11	6	1.7452	110.401	A	0.000	56.098	20.801	37.08	0.000	0.000
160.00-140.00						B	0.000	56.098		37.08	0.000	0.000
						C	0.000	56.098		37.08	166.713	0.000
T10	130.00	1.065	6	1.7204	110.318	A	0.000	55.542	20.636	37.15	0.000	0.000
140.00-120.00						B	0.000	55.542		37.15	0.000	0.000
						C	0.000	55.542		37.15	165.511	0.000
T11	110.00	1.016	6	1.6919	110.223	A	0.000	54.904	20.446	37.24	0.000	0.000
120.00-100.00						B	0.000	54.904		37.24	0.000	0.000
						C	0.000	54.904		37.24	173.077	0.000
T12	90.00	0.959	5	1.6583	110.111	A	0.000	54.152	20.222	37.34	0.000	0.000
100.00-80.00						B	0.000	54.152		37.34	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	0.000	54.152		37.34	181.906	0.000
T13 80.00-60.00	70.00	0.892	5	1.6171	110.390	A	0.000	53.918	20.781	38.54	0.000	0.000
						B	0.000	53.918		38.54	0.000	0.000
						C	0.000	53.918		38.54	188.231	0.000
T14 60.00-40.00	50.00	0.811	4	1.5636	110.212	A	0.000	51.746	20.424	39.47	0.000	0.000
						B	0.000	51.746		39.47	0.000	0.000
						C	0.000	51.746		39.47	184.996	0.000
T15 40.00-20.00	30.00	0.701	4	1.4858	109.953	A	0.000	50.008	19.905	39.80	0.000	0.000
						B	0.000	50.008		39.80	0.000	0.000
						C	0.000	50.008		39.80	180.291	0.000
T16 20.00-5.00	12.50	0.7	4	1.3612	82.153	A	0.000	36.092	14.306	39.64	0.000	0.000
						B	0.000	36.092		39.64	0.000	0.000
						C	0.000	36.092		39.64	111.542	0.000
T17 5.00-0.00	2.50	0.7	4	1.1589	14.977	A	6.250	6.566	5.117	39.93	0.000	0.000
						B	6.250	6.566		39.93	0.000	0.000
						C	6.250	6.566		39.93	0.000	0.000

Tower Pressure - Service

G_H = 0.850 (base tower), 1.100 (upper structure)

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	338.50	1.4	11	36.833	A	0.000	8.361	5.667	67.78	0.000	0.000
347.00-330.00					B	0.000	8.361		67.78	0.000	0.000
					C	0.000	8.361		67.78	0.000	0.000
L2	325.00	1.384	11	21.875	A	0.000	5.256	3.750	71.35	0.000	0.000
330.00-320.00					B	0.000	5.256		71.35	0.000	0.000
					C	0.000	5.256		71.35	0.990	0.000
T1	310.00	1.365	11	103.333	A	0.000	13.655	6.667	48.82	0.000	0.000
320.00-300.00					B	0.000	13.655		48.82	0.000	0.000
					C	0.000	13.655		48.82	34.710	0.000
T2	290.00	1.34	10	103.333	A	0.000	13.655	6.667	48.82	0.000	0.000
300.00-280.00					B	0.000	13.655		48.82	0.000	0.000
					C	0.000	13.655		48.82	43.720	0.000
T3	270.00	1.313	10	103.333	A	0.000	13.635	6.667	48.90	0.000	0.000
280.00-260.00					B	0.000	13.635		48.90	0.000	0.000
					C	0.000	13.635		48.90	52.730	0.000
T4	250.00	1.284	10	103.333	A	0.000	13.635	6.667	48.90	0.000	0.000
260.00-240.00					B	0.000	13.635		48.90	0.000	0.000
					C	0.000	13.635		48.90	52.730	0.000
T5	230.00	1.254	10	103.333	A	0.000	13.635	6.667	48.90	0.000	0.000
240.00-220.00					B	0.000	13.635		48.90	0.000	0.000
					C	0.000	13.635		48.90	52.730	0.000
T6	210.00	1.222	10	103.750	A	0.000	15.429	7.500	48.61	0.000	0.000
220.00-200.00					B	0.000	15.429		48.61	0.000	0.000
					C	0.000	15.429		48.61	52.730	0.000
T7	190.00	1.187	9	104.167	A	0.000	16.228	8.333	51.35	0.000	0.000
200.00-180.00					B	0.000	16.228		51.35	0.000	0.000
					C	0.000	16.228		51.35	52.730	0.000
T8	170.00	1.15	9	104.167	A	0.000	16.228	8.333	51.35	0.000	0.000
180.00-160.00					B	0.000	16.228		51.35	0.000	0.000
					C	0.000	16.228		51.35	62.870	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T9	150.00	1.11	9	104.583	A	0.000	17.027	9.167	53.84	0.000	0.000
160.00-140.00					B	0.000	17.027		53.84	0.000	0.000
					C	0.000	17.027		53.84	70.510	0.000
T10	130.00	1.065	8	104.583	A	0.000	17.027	9.167	53.84	0.000	0.000
140.00-120.00					B	0.000	17.027		53.84	0.000	0.000
					C	0.000	17.027		53.84	70.510	0.000
T11	110.00	1.016	8	104.583	A	0.000	17.027	9.167	53.84	0.000	0.000
120.00-100.00					B	0.000	17.027		53.84	0.000	0.000
					C	0.000	17.027		53.84	72.690	0.000
T12	90.00	0.959	8	104.583	A	0.000	17.027	9.167	53.84	0.000	0.000
100.00-80.00					B	0.000	17.027		53.84	0.000	0.000
					C	0.000	17.027		53.84	76.650	0.000
T13	70.00	0.892	7	105.000	A	0.000	17.826	10.000	56.10	0.000	0.000
80.00-60.00					B	0.000	17.826		56.10	0.000	0.000
					C	0.000	17.826		56.10	78.830	0.000
T14	50.00	0.811	6	105.000	A	0.000	16.848	10.000	59.36	0.000	0.000
60.00-40.00					B	0.000	16.848		59.36	0.000	0.000
					C	0.000	16.848		59.36	78.830	0.000
T15	30.00	0.701	5	105.000	A	0.000	16.848	10.000	59.36	0.000	0.000
40.00-20.00					B	0.000	16.848		59.36	0.000	0.000
					C	0.000	16.848		59.36	78.830	0.000
T16 20.00-5.00	12.50	0.7	5	78.750	A	0.000	12.799	7.500	58.60	0.000	0.000
					B	0.000	12.799		58.60	0.000	0.000
					C	0.000	12.799		58.60	51.910	0.000
T17 5.00-0.00	2.50	0.7	5	13.898	A	6.250	2.887	2.887	31.59	0.000	0.000
					B	6.250	2.887		31.59	0.000	0.000
					C	6.250	2.887		31.59	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	757.28	A	0.227	2.508	44	1	1	4.847	586.72	34.51	C
347.00-330.00			B	0.227	2.508		1	1	4.847			
			C	0.227	2.508		1	1	4.847			
L2	4.10	525.79	A	0.24	2.467	43	1	1	3.062	388.72	38.87	C
330.00-320.00			B	0.24	2.467		1	1	3.062			
			C	0.24	2.467		1	1	3.062			
T1	524.80	1312.52	A	0.132	2.838	43	1	1	7.728	1391.38	69.57	C
320.00-300.00			B	0.132	2.838		1	1	7.728			
			C	0.132	2.838		1	1	7.728			
T2	560.90	1312.52	A	0.132	2.838	42	1	1	7.728	1558.00	77.90	C
300.00-280.00			B	0.132	2.838		1	1	7.728			
			C	0.132	2.838		1	1	7.728			
T3	597.00	1310.64	A	0.132	2.839	41	1	1	7.716	1714.52	85.73	C
280.00-260.00			B	0.132	2.839		1	1	7.716			
			C	0.132	2.839		1	1	7.716			
T4	597.00	1310.64	A	0.132	2.839	40	1	1	7.716	1677.23	83.86	C
260.00-240.00			B	0.132	2.839		1	1	7.716			
			C	0.132	2.839		1	1	7.716			
T5	597.00	1310.64	A	0.132	2.839	39	1	1	7.716	1637.75	81.89	C
240.00-220.00			B	0.132	2.839		1	1	7.716			
			C	0.132	2.839		1	1	7.716			
T6	597.00	1684.58	A	0.149	2.776	38	1	1	8.755	1673.73	83.69	C
220.00-200.00			B	0.149	2.776		1	1	8.755			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.149	2.776		1	1	8.755			
T7	597.00	1884.52	A	0.156	2.75	37	1	1	9.220	1659.85	82.99	C
200.00-180.00			B	0.156	2.75		1	1	9.220			
			C	0.156	2.75		1	1	9.220			
T8	640.68	1884.52	A	0.156	2.75	36	1	1	9.220	1918.51	95.93	C
180.00-160.00			B	0.156	2.75		1	1	9.220			
			C	0.156	2.75		1	1	9.220			
T9	670.80	2105.51	A	0.163	2.725	35	1	1	9.688	2081.89	104.09	C
160.00-140.00			B	0.163	2.725		1	1	9.688			
			C	0.163	2.725		1	1	9.688			
T10	670.80	2105.51	A	0.163	2.725	33	1	1	9.688	1998.49	99.92	C
140.00-120.00			B	0.163	2.725		1	1	9.688			
			C	0.163	2.725		1	1	9.688			
T11	677.40	2105.51	A	0.163	2.725	32	1	1	9.688	1940.72	97.04	C
120.00-100.00			B	0.163	2.725		1	1	9.688			
			C	0.163	2.725		1	1	9.688			
T12	693.80	2105.51	A	0.163	2.725	30	1	1	9.688	1893.26	94.66	C
100.00-80.00			B	0.163	2.725		1	1	9.688			
			C	0.163	2.725		1	1	9.688			
T13	700.40	2347.54	A	0.17	2.7	28	1	1	10.158	1817.63	90.88	C
80.00-60.00			B	0.17	2.7		1	1	10.158			
			C	0.17	2.7		1	1	10.158			
T14	700.40	2152.49	A	0.16	2.733	25	1	1	9.581	1624.29	81.21	C
60.00-40.00			B	0.16	2.733		1	1	9.581			
			C	0.16	2.733		1	1	9.581			
T15	700.40	2152.49	A	0.16	2.733	22	1	1	9.581	1403.71	70.19	C
40.00-20.00			B	0.16	2.733		1	1	9.581			
			C	0.16	2.733		1	1	9.581			
T16	496.50	1629.55	A	0.163	2.726	22	1	1	7.282	957.65	63.84	C
20.00-5.00			B	0.163	2.726		1	1	7.282			
			C	0.163	2.726		1	1	7.282			
T17 5.00-0.00	0.00	769.05	A	0.657	1.78	22	1	1	8.506	282.22	56.44	C
			B	0.657	1.78		1	1	8.506			
			C	0.657	1.78		1	1	8.506			
Sum Weight:	10025.98	30766.83								28206.26		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	757.28	A	0.227	2.508	44	0.8	1	4.847	586.72	34.51	C
347.00-330.00			B	0.227	2.508		0.8	1	4.847			
			C	0.227	2.508		0.8	1	4.847			
L2	4.10	525.79	A	0.24	2.467	43	0.8	1	3.062	388.72	38.87	C
330.00-320.00			B	0.24	2.467		0.8	1	3.062			
			C	0.24	2.467		0.8	1	3.062			
T1	524.80	1312.52	A	0.132	2.838	43	0.8	1	7.728	1391.38	69.57	C
320.00-300.00			B	0.132	2.838		0.8	1	7.728			
			C	0.132	2.838		0.8	1	7.728			
T2	560.90	1312.52	A	0.132	2.838	42	0.8	1	7.728	1558.00	77.90	A
300.00-280.00			B	0.132	2.838		0.8	1	7.728			
			C	0.132	2.838		0.8	1	7.728			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T3	597.00	1310.64	A	0.132	2.839	41	0.8	1	7.716	1714.52	85.73	A
280.00-260.00			B	0.132	2.839		0.8	1	7.716			
			C	0.132	2.839		0.8	1	7.716			
T4	597.00	1310.64	A	0.132	2.839	40	0.8	1	7.716	1677.23	83.86	A
260.00-240.00			B	0.132	2.839		0.8	1	7.716			
			C	0.132	2.839		0.8	1	7.716			
T5	597.00	1310.64	A	0.132	2.839	39	0.8	1	7.716	1637.75	81.89	A
240.00-220.00			B	0.132	2.839		0.8	1	7.716			
			C	0.132	2.839		0.8	1	7.716			
T6	597.00	1684.58	A	0.149	2.776	38	0.8	1	8.755	1673.73	83.69	A
220.00-200.00			B	0.149	2.776		0.8	1	8.755			
			C	0.149	2.776		0.8	1	8.755			
T7	597.00	1884.52	A	0.156	2.75	37	0.8	1	9.220	1659.85	82.99	A
200.00-180.00			B	0.156	2.75		0.8	1	9.220			
			C	0.156	2.75		0.8	1	9.220			
T8	640.68	1884.52	A	0.156	2.75	36	0.8	1	9.220	1918.51	95.93	A
180.00-160.00			B	0.156	2.75		0.8	1	9.220			
			C	0.156	2.75		0.8	1	9.220			
T9	670.80	2105.51	A	0.163	2.725	35	0.8	1	9.688	2081.89	104.09	A
160.00-140.00			B	0.163	2.725		0.8	1	9.688			
			C	0.163	2.725		0.8	1	9.688			
T10	670.80	2105.51	A	0.163	2.725	33	0.8	1	9.688	1998.49	99.92	A
140.00-120.00			B	0.163	2.725		0.8	1	9.688			
			C	0.163	2.725		0.8	1	9.688			
T11	677.40	2105.51	A	0.163	2.725	32	0.8	1	9.688	1940.72	97.04	A
120.00-100.00			B	0.163	2.725		0.8	1	9.688			
			C	0.163	2.725		0.8	1	9.688			
T12	693.80	2105.51	A	0.163	2.725	30	0.8	1	9.688	1893.26	94.66	A
100.00-80.00			B	0.163	2.725		0.8	1	9.688			
			C	0.163	2.725		0.8	1	9.688			
T13	700.40	2347.54	A	0.17	2.7	28	0.8	1	10.158	1817.63	90.88	A
80.00-60.00			B	0.17	2.7		0.8	1	10.158			
			C	0.17	2.7		0.8	1	10.158			
T14	700.40	2152.49	A	0.16	2.733	25	0.8	1	9.581	1624.29	81.21	A
60.00-40.00			B	0.16	2.733		0.8	1	9.581			
			C	0.16	2.733		0.8	1	9.581			
T15	700.40	2152.49	A	0.16	2.733	22	0.8	1	9.581	1403.71	70.19	A
40.00-20.00			B	0.16	2.733		0.8	1	9.581			
			C	0.16	2.733		0.8	1	9.581			
T16	496.50	1629.55	A	0.163	2.726	22	0.8	1	7.282	957.65	63.84	A
20.00-5.00			B	0.163	2.726		0.8	1	7.282			
			C	0.163	2.726		0.8	1	7.282			
T17 5.00-0.00	0.00	769.05	A	0.657	1.78	22	0.8	1	7.256	240.74	48.15	C
			B	0.657	1.78		0.8	1	7.256			
			C	0.657	1.78		0.8	1	7.256			
Sum Weight:	10025.98	30766.83								28164.79		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	757.28	A	0.227	2.508	44	0.85	1	4.847	586.72	34.51	C

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
347.00-330.00			B	0.227	2.508		0.85	1	4.847			
			C	0.227	2.508		0.85	1	4.847			
L2	4.10	525.79	A	0.24	2.467	43	0.85	1	3.062	388.72	38.87	C
330.00-320.00			B	0.24	2.467		0.85	1	3.062			
			C	0.24	2.467		0.85	1	3.062			
T1	524.80	1312.52	A	0.132	2.838	43	0.85	1	7.728	1391.38	69.57	C
320.00-300.00			B	0.132	2.838		0.85	1	7.728			
			C	0.132	2.838		0.85	1	7.728			
T2	560.90	1312.52	A	0.132	2.838	42	0.85	1	7.728	1558.00	77.90	B
300.00-280.00			B	0.132	2.838		0.85	1	7.728			
			C	0.132	2.838		0.85	1	7.728			
T3	597.00	1310.64	A	0.132	2.839	41	0.85	1	7.716	1714.52	85.73	B
280.00-260.00			B	0.132	2.839		0.85	1	7.716			
			C	0.132	2.839		0.85	1	7.716			
T4	597.00	1310.64	A	0.132	2.839	40	0.85	1	7.716	1677.23	83.86	B
260.00-240.00			B	0.132	2.839		0.85	1	7.716			
			C	0.132	2.839		0.85	1	7.716			
T5	597.00	1310.64	A	0.132	2.839	39	0.85	1	7.716	1637.75	81.89	B
240.00-220.00			B	0.132	2.839		0.85	1	7.716			
			C	0.132	2.839		0.85	1	7.716			
T6	597.00	1684.58	A	0.149	2.776	38	0.85	1	8.755	1673.73	83.69	B
220.00-200.00			B	0.149	2.776		0.85	1	8.755			
			C	0.149	2.776		0.85	1	8.755			
T7	597.00	1884.52	A	0.156	2.75	37	0.85	1	9.220	1659.85	82.99	B
200.00-180.00			B	0.156	2.75		0.85	1	9.220			
			C	0.156	2.75		0.85	1	9.220			
T8	640.68	1884.52	A	0.156	2.75	36	0.85	1	9.220	1901.09	95.05	B
180.00-160.00			B	0.156	2.75		0.85	1	9.220			
			C	0.156	2.75		0.85	1	9.220			
T9	670.80	2105.51	A	0.163	2.725	35	0.85	1	9.688	2056.03	102.80	B
160.00-140.00			B	0.163	2.725		0.85	1	9.688			
			C	0.163	2.725		0.85	1	9.688			
T10	670.80	2105.51	A	0.163	2.725	33	0.85	1	9.688	1973.66	98.68	B
140.00-120.00			B	0.163	2.725		0.85	1	9.688			
			C	0.163	2.725		0.85	1	9.688			
T11	677.40	2105.51	A	0.163	2.725	32	0.85	1	9.688	1917.05	95.85	B
120.00-100.00			B	0.163	2.725		0.85	1	9.688			
			C	0.163	2.725		0.85	1	9.688			
T12	693.80	2105.51	A	0.163	2.725	30	0.85	1	9.688	1870.91	93.55	B
100.00-80.00			B	0.163	2.725		0.85	1	9.688			
			C	0.163	2.725		0.85	1	9.688			
T13	700.40	2347.54	A	0.17	2.7	28	0.85	1	10.158	1796.83	89.84	B
80.00-60.00			B	0.17	2.7		0.85	1	10.158			
			C	0.17	2.7		0.85	1	10.158			
T14	700.40	2152.49	A	0.16	2.733	25	0.85	1	9.581	1605.40	80.27	B
60.00-40.00			B	0.16	2.733		0.85	1	9.581			
			C	0.16	2.733		0.85	1	9.581			
T15	700.40	2152.49	A	0.16	2.733	22	0.85	1	9.581	1387.38	69.37	B
40.00-20.00			B	0.16	2.733		0.85	1	9.581			
			C	0.16	2.733		0.85	1	9.581			
T16	496.50	1629.55	A	0.163	2.726	22	0.85	1	7.282	947.86	63.19	B
20.00-5.00			B	0.163	2.726		0.85	1	7.282			
			C	0.163	2.726		0.85	1	7.282			
T17 5.00-0.00	0.00	769.05	A	0.657	1.78	22	0.85	1	7.568	251.11	50.22	C
			B	0.657	1.78		0.85	1	7.568			
			C	0.657	1.78		0.85	1	7.568			
Sum Weight:	10025.98	30766.83								27995.23		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	2079.00	A	0.775	1.799	8	1	1	28.313	426.85	25.11	C
347.00-330.00			B	0.775	1.799		1	1	28.313			
			C	0.775	1.799		1	1	28.313			
L2	48.62	1295.79	A	0.764	1.794	8	1	1	16.397	249.20	24.92	C
330.00-320.00			B	0.764	1.794		1	1	16.397			
			C	0.764	1.794		1	1	16.397			
T1	1641.40	3722.26	A	0.512	1.885	7	1	1	38.835	678.73	33.94	C
320.00-300.00			B	0.512	1.885		1	1	38.835			
			C	0.512	1.885		1	1	38.835			
T2	1950.96	3696.09	A	0.51	1.887	7	1	1	38.566	728.17	36.41	C
300.00-280.00			B	0.51	1.887		1	1	38.566			
			C	0.51	1.887		1	1	38.566			
T3	2254.94	3661.10	A	0.506	1.892	7	1	1	38.177	774.36	38.72	C
280.00-260.00			B	0.506	1.892		1	1	38.177			
			C	0.506	1.892		1	1	38.177			
T4	2237.70	3631.73	A	0.504	1.895	7	1	1	37.875	755.36	37.77	C
260.00-240.00			B	0.504	1.895		1	1	37.875			
			C	0.504	1.895		1	1	37.875			
T5	2219.27	3600.36	A	0.501	1.899	7	1	1	37.552	735.32	36.77	C
240.00-220.00			B	0.501	1.899		1	1	37.552			
			C	0.501	1.899		1	1	37.552			
T6	2199.42	4055.42	A	0.511	1.886	7	1	1	38.753	718.68	35.93	C
220.00-200.00			B	0.511	1.886		1	1	38.753			
			C	0.511	1.886		1	1	38.753			
T7	2177.91	4250.50	A	0.512	1.885	6	1	1	38.965	698.38	34.92	C
200.00-180.00			B	0.512	1.885		1	1	38.965			
			C	0.512	1.885		1	1	38.965			
T8	2529.56	4209.12	A	0.508	1.89	6	1	1	38.544	798.16	39.91	C
180.00-160.00			B	0.508	1.89		1	1	38.544			
			C	0.508	1.89		1	1	38.544			
T9	2825.97	4416.46	A	0.508	1.89	6	1	1	38.675	856.14	42.81	C
160.00-140.00			B	0.508	1.89		1	1	38.675			
			C	0.508	1.89		1	1	38.675			
T10	2786.14	4365.04	A	0.503	1.896	6	1	1	38.151	817.37	40.87	C
140.00-120.00			B	0.503	1.896		1	1	38.151			
			C	0.503	1.896		1	1	38.151			
T11	2862.36	4306.60	A	0.498	1.902	6	1	1	37.554	795.45	39.77	C
120.00-100.00			B	0.498	1.902		1	1	37.554			
			C	0.498	1.902		1	1	37.554			
T12	2969.55	4238.59	A	0.492	1.911	5	1	1	36.856	769.48	38.47	C
100.00-80.00			B	0.492	1.911		1	1	36.856			
			C	0.492	1.911		1	1	36.856			
T13	3009.36	4428.33	A	0.488	1.915	5	1	1	36.601	729.45	36.47	C
80.00-60.00			B	0.488	1.915		1	1	36.601			
			C	0.488	1.915		1	1	36.601			
T14	2909.45	4057.17	A	0.47	1.943	4	1	1	34.619	654.79	32.74	C
60.00-40.00			B	0.47	1.943		1	1	34.619			
			C	0.47	1.943		1	1	34.619			
T15	2767.46	3911.91	A	0.455	1.966	4	1	1	33.088	556.15	27.81	C
40.00-20.00			B	0.455	1.966		1	1	33.088			
			C	0.455	1.966		1	1	33.088			
T16	1695.89	2809.40	A	0.439	1.991	4	1	1	23.609	367.77	24.52	C
20.00-5.00			B	0.439	1.991		1	1	23.609			
			C	0.439	1.991		1	1	23.609			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
T17 5.00-0.00	0.00	1262.31	A	0.856	1.868	4	1	1	12.353	74.68	14.94	C
			B	0.856	1.868		1	1	12.353			
			C	0.856	1.868		1	1	12.353			
Sum Weight:	39085.94	67997.18								12184.47		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
L1	0.00	2079.00	A	0.775	1.799	8	0.8	1	28.313	426.85	25.11	C
347.00-330.00			B	0.775	1.799		0.8	1	28.313			
			C	0.775	1.799		0.8	1	28.313			
L2	48.62	1295.79	A	0.764	1.794	8	0.8	1	16.397	249.20	24.92	C
330.00-320.00			B	0.764	1.794		0.8	1	16.397			
			C	0.764	1.794		0.8	1	16.397			
T1	1641.40	3722.26	A	0.512	1.885	7	0.8	1	38.835	678.73	33.94	C
320.00-300.00			B	0.512	1.885		0.8	1	38.835			
			C	0.512	1.885		0.8	1	38.835			
T2	1950.96	3696.09	A	0.51	1.887	7	0.8	1	38.566	728.17	36.41	A
300.00-280.00			B	0.51	1.887		0.8	1	38.566			
			C	0.51	1.887		0.8	1	38.566			
T3	2254.94	3661.10	A	0.506	1.892	7	0.8	1	38.177	774.36	38.72	A
280.00-260.00			B	0.506	1.892		0.8	1	38.177			
			C	0.506	1.892		0.8	1	38.177			
T4	2237.70	3631.73	A	0.504	1.895	7	0.8	1	37.875	755.36	37.77	A
260.00-240.00			B	0.504	1.895		0.8	1	37.875			
			C	0.504	1.895		0.8	1	37.875			
T5	2219.27	3600.36	A	0.501	1.899	7	0.8	1	37.552	735.32	36.77	A
240.00-220.00			B	0.501	1.899		0.8	1	37.552			
			C	0.501	1.899		0.8	1	37.552			
T6	2199.42	4055.42	A	0.511	1.886	7	0.8	1	38.753	718.68	35.93	A
220.00-200.00			B	0.511	1.886		0.8	1	38.753			
			C	0.511	1.886		0.8	1	38.753			
T7	2177.91	4250.50	A	0.512	1.885	6	0.8	1	38.965	698.38	34.92	A
200.00-180.00			B	0.512	1.885		0.8	1	38.965			
			C	0.512	1.885		0.8	1	38.965			
T8	2529.56	4209.12	A	0.508	1.89	6	0.8	1	38.544	798.16	39.91	A
180.00-160.00			B	0.508	1.89		0.8	1	38.544			
			C	0.508	1.89		0.8	1	38.544			
T9	2825.97	4416.46	A	0.508	1.89	6	0.8	1	38.675	856.14	42.81	A
160.00-140.00			B	0.508	1.89		0.8	1	38.675			
			C	0.508	1.89		0.8	1	38.675			
T10	2786.14	4365.04	A	0.503	1.896	6	0.8	1	38.151	817.37	40.87	A
140.00-120.00			B	0.503	1.896		0.8	1	38.151			
			C	0.503	1.896		0.8	1	38.151			
T11	2862.36	4306.60	A	0.498	1.902	6	0.8	1	37.554	795.45	39.77	A
120.00-100.00			B	0.498	1.902		0.8	1	37.554			
			C	0.498	1.902		0.8	1	37.554			
T12	2969.55	4238.59	A	0.492	1.911	5	0.8	1	36.856	769.48	38.47	A
100.00-80.00			B	0.492	1.911		0.8	1	36.856			
			C	0.492	1.911		0.8	1	36.856			
T13	3009.36	4428.33	A	0.488	1.915	5	0.8	1	36.601	729.45	36.47	A

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
80.00-60.00			B	0.488	1.915		0.8	1	36.601			
			C	0.488	1.915		0.8	1	36.601			
T14	2909.45	4057.17	A	0.47	1.943	4	0.8	1	34.619	654.79	32.74	A
60.00-40.00			B	0.47	1.943		0.8	1	34.619			
			C	0.47	1.943		0.8	1	34.619			
T15	2767.46	3911.91	A	0.455	1.966	4	0.8	1	33.088	556.15	27.81	A
40.00-20.00			B	0.455	1.966		0.8	1	33.088			
			C	0.455	1.966		0.8	1	33.088			
T16	1695.89	2809.40	A	0.439	1.991	4	0.8	1	23.609	367.77	24.52	A
20.00-5.00			B	0.439	1.991		0.8	1	23.609			
			C	0.439	1.991		0.8	1	23.609			
T17 5.00-0.00	0.00	1262.31	A	0.856	1.868	4	0.8	1	11.103	67.12	13.42	C
			B	0.856	1.868		0.8	1	11.103			
			C	0.856	1.868		0.8	1	11.103			
Sum Weight:	39085.94	67997.18								12176.92		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
L1	0.00	2079.00	A	0.775	1.799	8	0.85	1	28.313	426.85	25.11	C
347.00-330.00			B	0.775	1.799		0.85	1	28.313			
			C	0.775	1.799		0.85	1	28.313			
L2	48.62	1295.79	A	0.764	1.794	8	0.85	1	16.397	249.20	24.92	C
330.00-320.00			B	0.764	1.794		0.85	1	16.397			
			C	0.764	1.794		0.85	1	16.397			
T1	1641.40	3722.26	A	0.512	1.885	7	0.85	1	38.835	678.73	33.94	C
320.00-300.00			B	0.512	1.885		0.85	1	38.835			
			C	0.512	1.885		0.85	1	38.835			
T2	1950.96	3696.09	A	0.51	1.887	7	0.85	1	38.566	721.11	36.06	B
300.00-280.00			B	0.51	1.887		0.85	1	38.566			
			C	0.51	1.887		0.85	1	38.566			
T3	2254.94	3661.10	A	0.506	1.892	7	0.85	1	38.177	760.43	38.02	B
280.00-260.00			B	0.506	1.892		0.85	1	38.177			
			C	0.506	1.892		0.85	1	38.177			
T4	2237.70	3631.73	A	0.504	1.895	7	0.85	1	37.875	741.66	37.08	B
260.00-240.00			B	0.504	1.895		0.85	1	37.875			
			C	0.504	1.895		0.85	1	37.875			
T5	2219.27	3600.36	A	0.501	1.899	7	0.85	1	37.552	721.86	36.09	B
240.00-220.00			B	0.501	1.899		0.85	1	37.552			
			C	0.501	1.899		0.85	1	37.552			
T6	2199.42	4055.42	A	0.511	1.886	7	0.85	1	38.753	705.83	35.29	B
220.00-200.00			B	0.511	1.886		0.85	1	38.753			
			C	0.511	1.886		0.85	1	38.753			
T7	2177.91	4250.50	A	0.512	1.885	6	0.85	1	38.965	685.91	34.30	B
200.00-180.00			B	0.512	1.885		0.85	1	38.965			
			C	0.512	1.885		0.85	1	38.965			
T8	2529.56	4209.12	A	0.508	1.89	6	0.85	1	38.544	776.70	38.84	B
180.00-160.00			B	0.508	1.89		0.85	1	38.544			
			C	0.508	1.89		0.85	1	38.544			
T9	2825.97	4416.46	A	0.508	1.89	6	0.85	1	38.675	830.62	41.53	B
160.00-140.00			B	0.508	1.89		0.85	1	38.675			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.508	1.89		0.85	1	38.675			
T10	2786.14	4365.04	A	0.503	1.896	6	0.85	1	38.151	792.76	39.64	B
140.00-120.00			B	0.503	1.896		0.85	1	38.151			
			C	0.503	1.896		0.85	1	38.151			
T11	2862.36	4306.60	A	0.498	1.902	6	0.85	1	37.554	771.88	38.59	B
120.00-100.00			B	0.498	1.902		0.85	1	37.554			
			C	0.498	1.902		0.85	1	37.554			
T12	2969.55	4238.59	A	0.492	1.911	5	0.85	1	36.856	747.08	37.35	B
100.00-80.00			B	0.492	1.911		0.85	1	36.856			
			C	0.492	1.911		0.85	1	36.856			
T13	3009.36	4428.33	A	0.488	1.915	5	0.85	1	36.601	708.54	35.43	B
80.00-60.00			B	0.488	1.915		0.85	1	36.601			
			C	0.488	1.915		0.85	1	36.601			
T14	2909.45	4057.17	A	0.47	1.943	4	0.85	1	34.619	635.46	31.77	B
60.00-40.00			B	0.47	1.943		0.85	1	34.619			
			C	0.47	1.943		0.85	1	34.619			
T15	2767.46	3911.91	A	0.455	1.966	4	0.85	1	33.088	539.24	26.96	B
40.00-20.00			B	0.455	1.966		0.85	1	33.088			
			C	0.455	1.966		0.85	1	33.088			
T16	1695.89	2809.40	A	0.439	1.991	4	0.85	1	23.609	357.49	23.83	B
20.00-5.00			B	0.439	1.991		0.85	1	23.609			
			C	0.439	1.991		0.85	1	23.609			
T17 5.00-0.00	0.00	1262.31	A	0.856	1.868	4	0.85	1	11.415	69.01	13.80	C
			B	0.856	1.868		0.85	1	11.415			
			C	0.856	1.868		0.85	1	11.415			
Sum Weight:	39085.94	67997.18								11920.36		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	757.28	A	0.227	2.508	11	1	1	4.847	146.68	8.63	C
347.00-330.00			B	0.227	2.508		1	1	4.847			
			C	0.227	2.508		1	1	4.847			
L2	4.10	525.79	A	0.24	2.467	11	1	1	3.062	97.18	9.72	C
330.00-320.00			B	0.24	2.467		1	1	3.062			
			C	0.24	2.467		1	1	3.062			
T1	524.80	1312.52	A	0.132	2.838	11	1	1	7.728	347.84	17.39	C
320.00-300.00			B	0.132	2.838		1	1	7.728			
			C	0.132	2.838		1	1	7.728			
T2	560.90	1312.52	A	0.132	2.838	10	1	1	7.728	389.50	19.47	C
300.00-280.00			B	0.132	2.838		1	1	7.728			
			C	0.132	2.838		1	1	7.728			
T3	597.00	1310.64	A	0.132	2.839	10	1	1	7.716	428.63	21.43	C
280.00-260.00			B	0.132	2.839		1	1	7.716			
			C	0.132	2.839		1	1	7.716			
T4	597.00	1310.64	A	0.132	2.839	10	1	1	7.716	419.31	20.97	C
260.00-240.00			B	0.132	2.839		1	1	7.716			
			C	0.132	2.839		1	1	7.716			
T5	597.00	1310.64	A	0.132	2.839	10	1	1	7.716	409.44	20.47	C
240.00-220.00			B	0.132	2.839		1	1	7.716			
			C	0.132	2.839		1	1	7.716			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
T6	597.00	1684.58	A	0.149	2.776	10	1	1	8.755	418.43	20.92	C
220.00-200.00			B	0.149	2.776		1	1	8.755			
			C	0.149	2.776		1	1	8.755			
T7	597.00	1884.52	A	0.156	2.75	9	1	1	9.220	414.96	20.75	C
200.00-180.00			B	0.156	2.75		1	1	9.220			
			C	0.156	2.75		1	1	9.220			
T8	640.68	1884.52	A	0.156	2.75	9	1	1	9.220	479.63	23.98	C
180.00-160.00			B	0.156	2.75		1	1	9.220			
			C	0.156	2.75		1	1	9.220			
T9	670.80	2105.51	A	0.163	2.725	9	1	1	9.688	520.47	26.02	C
160.00-140.00			B	0.163	2.725		1	1	9.688			
			C	0.163	2.725		1	1	9.688			
T10	670.80	2105.51	A	0.163	2.725	8	1	1	9.688	499.62	24.98	C
140.00-120.00			B	0.163	2.725		1	1	9.688			
			C	0.163	2.725		1	1	9.688			
T11	677.40	2105.51	A	0.163	2.725	8	1	1	9.688	485.18	24.26	C
120.00-100.00			B	0.163	2.725		1	1	9.688			
			C	0.163	2.725		1	1	9.688			
T12	693.80	2105.51	A	0.163	2.725	8	1	1	9.688	473.32	23.67	C
100.00-80.00			B	0.163	2.725		1	1	9.688			
			C	0.163	2.725		1	1	9.688			
T13	700.40	2347.54	A	0.17	2.7	7	1	1	10.158	454.41	22.72	C
80.00-60.00			B	0.17	2.7		1	1	10.158			
			C	0.17	2.7		1	1	10.158			
T14	700.40	2152.49	A	0.16	2.733	6	1	1	9.581	406.07	20.30	C
60.00-40.00			B	0.16	2.733		1	1	9.581			
			C	0.16	2.733		1	1	9.581			
T15	700.40	2152.49	A	0.16	2.733	5	1	1	9.581	350.93	17.55	C
40.00-20.00			B	0.16	2.733		1	1	9.581			
			C	0.16	2.733		1	1	9.581			
T16	496.50	1629.55	A	0.163	2.726	5	1	1	7.282	239.41	15.96	C
20.00-5.00			B	0.163	2.726		1	1	7.282			
			C	0.163	2.726		1	1	7.282			
T17 5.00-0.00	0.00	769.05	A	0.657	1.78	5	1	1	8.506	70.55	14.11	C
			B	0.657	1.78		1	1	8.506			
			C	0.657	1.78		1	1	8.506			
Sum Weight:	10025.98	30766.83								7051.56		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
L1	0.00	757.28	A	0.227	2.508	11	0.8	1	4.847	146.68	8.63	C
347.00-330.00			B	0.227	2.508		0.8	1	4.847			
			C	0.227	2.508		0.8	1	4.847			
L2	4.10	525.79	A	0.24	2.467	11	0.8	1	3.062	97.18	9.72	C
330.00-320.00			B	0.24	2.467		0.8	1	3.062			
			C	0.24	2.467		0.8	1	3.062			
T1	524.80	1312.52	A	0.132	2.838	11	0.8	1	7.728	347.84	17.39	C
320.00-300.00			B	0.132	2.838		0.8	1	7.728			
			C	0.132	2.838		0.8	1	7.728			
T2	560.90	1312.52	A	0.132	2.838	10	0.8	1	7.728	389.50	19.47	A

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
300.00-280.00			B	0.132	2.838		0.8	1	7.728			
			C	0.132	2.838		0.8	1	7.728			
T3	597.00	1310.64	A	0.132	2.839	10	0.8	1	7.716	428.63	21.43	A
280.00-260.00			B	0.132	2.839		0.8	1	7.716			
			C	0.132	2.839		0.8	1	7.716			
T4	597.00	1310.64	A	0.132	2.839	10	0.8	1	7.716	419.31	20.97	A
260.00-240.00			B	0.132	2.839		0.8	1	7.716			
			C	0.132	2.839		0.8	1	7.716			
T5	597.00	1310.64	A	0.132	2.839	10	0.8	1	7.716	409.44	20.47	A
240.00-220.00			B	0.132	2.839		0.8	1	7.716			
			C	0.132	2.839		0.8	1	7.716			
T6	597.00	1684.58	A	0.149	2.776	10	0.8	1	8.755	418.43	20.92	A
220.00-200.00			B	0.149	2.776		0.8	1	8.755			
			C	0.149	2.776		0.8	1	8.755			
T7	597.00	1884.52	A	0.156	2.75	9	0.8	1	9.220	414.96	20.75	A
200.00-180.00			B	0.156	2.75		0.8	1	9.220			
			C	0.156	2.75		0.8	1	9.220			
T8	640.68	1884.52	A	0.156	2.75	9	0.8	1	9.220	479.63	23.98	A
180.00-160.00			B	0.156	2.75		0.8	1	9.220			
			C	0.156	2.75		0.8	1	9.220			
T9	670.80	2105.51	A	0.163	2.725	9	0.8	1	9.688	520.47	26.02	A
160.00-140.00			B	0.163	2.725		0.8	1	9.688			
			C	0.163	2.725		0.8	1	9.688			
T10	670.80	2105.51	A	0.163	2.725	8	0.8	1	9.688	499.62	24.98	A
140.00-120.00			B	0.163	2.725		0.8	1	9.688			
			C	0.163	2.725		0.8	1	9.688			
T11	677.40	2105.51	A	0.163	2.725	8	0.8	1	9.688	485.18	24.26	A
120.00-100.00			B	0.163	2.725		0.8	1	9.688			
			C	0.163	2.725		0.8	1	9.688			
T12	693.80	2105.51	A	0.163	2.725	8	0.8	1	9.688	473.32	23.67	A
100.00-80.00			B	0.163	2.725		0.8	1	9.688			
			C	0.163	2.725		0.8	1	9.688			
T13	700.40	2347.54	A	0.17	2.7	7	0.8	1	10.158	454.41	22.72	A
80.00-60.00			B	0.17	2.7		0.8	1	10.158			
			C	0.17	2.7		0.8	1	10.158			
T14	700.40	2152.49	A	0.16	2.733	6	0.8	1	9.581	406.07	20.30	A
60.00-40.00			B	0.16	2.733		0.8	1	9.581			
			C	0.16	2.733		0.8	1	9.581			
T15	700.40	2152.49	A	0.16	2.733	5	0.8	1	9.581	350.93	17.55	A
40.00-20.00			B	0.16	2.733		0.8	1	9.581			
			C	0.16	2.733		0.8	1	9.581			
T16	496.50	1629.55	A	0.163	2.726	5	0.8	1	7.282	239.41	15.96	A
20.00-5.00			B	0.163	2.726		0.8	1	7.282			
			C	0.163	2.726		0.8	1	7.282			
T17 5.00-0.00	0.00	769.05	A	0.657	1.78	5	0.8	1	7.256	60.19	12.04	C
			B	0.657	1.78		0.8	1	7.256			
			C	0.657	1.78		0.8	1	7.256			
Sum Weight:	10025.98	30766.83								7041.20		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	757.28	A	0.227	2.508	11	0.85	1	4.847	146.68	8.63	C
347.00-330.00			B	0.227	2.508		0.85	1	4.847			
			C	0.227	2.508		0.85	1	4.847			
L2	4.10	525.79	A	0.24	2.467	11	0.85	1	3.062	97.18	9.72	C
330.00-320.00			B	0.24	2.467		0.85	1	3.062			
			C	0.24	2.467		0.85	1	3.062			
T1	524.80	1312.52	A	0.132	2.838	11	0.85	1	7.728	347.84	17.39	C
320.00-300.00			B	0.132	2.838		0.85	1	7.728			
			C	0.132	2.838		0.85	1	7.728			
T2	560.90	1312.52	A	0.132	2.838	10	0.85	1	7.728	389.50	19.47	B
300.00-280.00			B	0.132	2.838		0.85	1	7.728			
			C	0.132	2.838		0.85	1	7.728			
T3	597.00	1310.64	A	0.132	2.839	10	0.85	1	7.716	428.63	21.43	B
280.00-260.00			B	0.132	2.839		0.85	1	7.716			
			C	0.132	2.839		0.85	1	7.716			
T4	597.00	1310.64	A	0.132	2.839	10	0.85	1	7.716	419.31	20.97	B
260.00-240.00			B	0.132	2.839		0.85	1	7.716			
			C	0.132	2.839		0.85	1	7.716			
T5	597.00	1310.64	A	0.132	2.839	10	0.85	1	7.716	409.44	20.47	B
240.00-220.00			B	0.132	2.839		0.85	1	7.716			
			C	0.132	2.839		0.85	1	7.716			
T6	597.00	1684.58	A	0.149	2.776	10	0.85	1	8.755	418.43	20.92	B
220.00-200.00			B	0.149	2.776		0.85	1	8.755			
			C	0.149	2.776		0.85	1	8.755			
T7	597.00	1884.52	A	0.156	2.75	9	0.85	1	9.220	414.96	20.75	B
200.00-180.00			B	0.156	2.75		0.85	1	9.220			
			C	0.156	2.75		0.85	1	9.220			
T8	640.68	1884.52	A	0.156	2.75	9	0.85	1	9.220	475.27	23.76	B
180.00-160.00			B	0.156	2.75		0.85	1	9.220			
			C	0.156	2.75		0.85	1	9.220			
T9	670.80	2105.51	A	0.163	2.725	9	0.85	1	9.688	514.01	25.70	B
160.00-140.00			B	0.163	2.725		0.85	1	9.688			
			C	0.163	2.725		0.85	1	9.688			
T10	670.80	2105.51	A	0.163	2.725	8	0.85	1	9.688	493.42	24.67	B
140.00-120.00			B	0.163	2.725		0.85	1	9.688			
			C	0.163	2.725		0.85	1	9.688			
T11	677.40	2105.51	A	0.163	2.725	8	0.85	1	9.688	479.26	23.96	B
120.00-100.00			B	0.163	2.725		0.85	1	9.688			
			C	0.163	2.725		0.85	1	9.688			
T12	693.80	2105.51	A	0.163	2.725	8	0.85	1	9.688	467.73	23.39	B
100.00-80.00			B	0.163	2.725		0.85	1	9.688			
			C	0.163	2.725		0.85	1	9.688			
T13	700.40	2347.54	A	0.17	2.7	7	0.85	1	10.158	449.21	22.46	B
80.00-60.00			B	0.17	2.7		0.85	1	10.158			
			C	0.17	2.7		0.85	1	10.158			
T14	700.40	2152.49	A	0.16	2.733	6	0.85	1	9.581	401.35	20.07	B
60.00-40.00			B	0.16	2.733		0.85	1	9.581			
			C	0.16	2.733		0.85	1	9.581			
T15	700.40	2152.49	A	0.16	2.733	5	0.85	1	9.581	346.85	17.34	B
40.00-20.00			B	0.16	2.733		0.85	1	9.581			
			C	0.16	2.733		0.85	1	9.581			
T16	496.50	1629.55	A	0.163	2.726	5	0.85	1	7.282	236.96	15.80	B
20.00-5.00			B	0.163	2.726		0.85	1	7.282			
			C	0.163	2.726		0.85	1	7.282			
T17 5.00-0.00	0.00	769.05	A	0.657	1.78	5	0.85	1	7.568	62.78	12.56	C
			B	0.657	1.78		0.85	1	7.568			
			C	0.657	1.78		0.85	1	7.568			
Sum Weight:	10025.98	30766.83								6998.81		

Force Totals (Does not include forces on guys)

Load Case	*Vertical Forces* lb	*Sum of Forces X* lb	*Sum of Forces Z* lb	*Sum of Torques* lb-ft
Leg Weight	18488.65			
Bracing Weight	12278.18			
Total Member Self-Weight	30766.83			
Guy Weight	7893.24			
Total Weight	54698.55			
Wind 0 deg - No Ice		75.48	-37489.98	-10818.83
Wind 30 deg - No Ice		18717.19	-32403.14	6407.32
Wind 60 deg - No Ice		30265.39	-17500.34	20733.41
Wind 90 deg - No Ice		33259.66	-36.53	25503.54
Wind 120 deg - No Ice		30193.67	17363.33	27370.62
Wind 150 deg - No Ice		18581.41	32117.11	24507.90
Wind 180 deg - No Ice		-20.85	37319.80	10736.21
Wind 210 deg - No Ice		-18669.82	32283.27	-6467.79
Wind 240 deg - No Ice		-30253.72	17485.16	-20728.39
Wind 270 deg - No Ice		-33132.13	21.88	-25415.37
Wind 300 deg - No Ice		-30030.79	-17340.83	-27293.02
Wind 330 deg - No Ice		-18503.14	-32162.26	-24535.60
Member Ice	37230.35			
Guy Ice	24086.32			
Total Weight Ice	159007.42			
Wind 0 deg - Ice		115.51	-14808.39	-3491.17
Wind 30 deg - Ice		7345.51	-12594.06	2061.08
Wind 60 deg - Ice		12176.63	-7040.41	6370.21
Wind 90 deg - Ice		13776.57	-67.56	8272.46
Wind 120 deg - Ice		12175.17	6975.88	8707.20
Wind 150 deg - Ice		7213.81	12556.12	7523.36
Wind 180 deg - Ice		-10.34	14769.28	3597.54
Wind 210 deg - Ice		-7238.39	12610.29	-2013.93
Wind 240 deg - Ice		-12122.99	7079.12	-6451.01
Wind 270 deg - Ice		-13712.40	5.48	-8430.42
Wind 300 deg - Ice		-12077.35	-6971.15	-8732.78
Wind 330 deg - Ice		-7215.56	-12526.63	-7412.54
Total Weight	54698.55			
Wind 0 deg - Service		18.87	-9372.49	-2704.71
Wind 30 deg - Service		4679.30	-8100.78	1601.83
Wind 60 deg - Service		7566.35	-4375.09	5183.35
Wind 90 deg - Service		8314.92	-9.13	6375.88
Wind 120 deg - Service		7548.42	4340.83	6842.66
Wind 150 deg - Service		4645.35	8029.28	6126.98
Wind 180 deg - Service		-5.21	9329.95	2684.05
Wind 210 deg - Service		-4667.45	8070.82	-1616.95
Wind 240 deg - Service		-7563.43	4371.29	-5182.10
Wind 270 deg - Service		-8283.03	5.47	-6353.84
Wind 300 deg - Service		-7507.70	-4335.21	-6823.25
Wind 330 deg - Service		-4625.79	-8040.56	-6133.90

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy
5	1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy
6	1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy
7	1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy
8	1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy
9	1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy
10	1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy
11	1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy
12	1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy
13	1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy
14	1.2 Dead+1.0 Ice+1.0 Temp+Guy
15	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
16	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
17	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
18	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
19	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
20	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
21	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
22	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
23	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
24	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
25	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
26	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	347 - 330	Latticed Pole Leg	Max Tension	8	19769.27	2.15	-150.76
			Max. Compression	10	-20022.35	226.11	70.65
			Max. Mx	5	-15546.90	729.50	-598.22
			Max. My	6	6491.54	572.98	693.97
			Max. Vy	5	2961.46	-247.94	137.37
			Max. Vx	6	2686.81	-174.25	-191.04
		Latticed Pole Diagonal	Max Tension	5	6751.12	0.00	0.00
			Max. Compression	5	-6769.99	0.00	0.00
			Max. Mx	5	128.40	-13.71	0.99
			Max. My	5	-6762.41	-10.85	16.57
			Max. Vy	5	9.84	-13.71	0.99
			Max. Vx	5	-10.85	-10.85	16.57
		Latticed Pole Top Girt	Max Tension	2	19.98	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	12	-30.57	0.00	0.00
			Max. Mx	15	-7.57	3.96	0.00
			Max. My	6	-11.23	0.00	-0.00
			Max. Vy	14	-7.92	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Latticed Pole Bottom Girt	Max Tension	8	721.68	0.00	0.00
			Max. Compression	6	-804.98	0.00	0.00
			Max. Mx	15	75.64	3.96	0.00
			Max. My	6	193.95	0.00	-0.00
			Max. Vy	15	7.92	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
L2	330 - 320	Latticed Pole Leg	Max Tension	8	48679.83	-3.67	876.82
			Max. Compression	10	-49273.01	0.00	0.00
			Max. Mx	5	-40505.69	1475.64	-857.22
			Max. My	6	6428.85	-937.58	-1097.03
			Max. Vy	5	4428.29	0.00	0.00
			Max. Vx	4	-2902.99	0.00	0.00
		Latticed Pole Diagonal	Max Tension	5	10293.44	0.00	0.00
			Max. Compression	5	-10276.96	0.00	0.00
			Max. Mx	5	8290.44	-11.19	-8.03
			Max. My	5	-10263.42	-5.46	32.34
			Max. Vy	5	8.20	-11.19	-8.03
			Max. Vx	5	-21.10	-5.46	32.34
		Latticed Pole Top Girt	Max Tension	6	609.46	0.00	0.00
			Max. Compression	8	-496.69	0.00	0.00
			Max. Mx	15	-60.13	3.94	0.00
			Max. My	6	-126.64	0.00	-0.00
			Max. Vy	15	-7.88	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
T1	320 - 300	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	10	-22234.35	-12.72	11.07
			Max. Mx	11	-11833.04	-239.07	-6.31
			Max. My	4	-18311.28	-13.09	-199.38
			Max. Vy	11	1358.24	213.56	41.98
			Max. Vx	4	1098.59	-13.09	-199.38
		Diagonal	Max Tension	4	1967.30	0.00	0.00
			Max. Compression	10	-2017.39	0.00	0.00
			Max. Mx	25	-8.65	-9.00	-0.11
			Max. My	5	-1601.05	-7.59	1.98
			Max. Vy	25	14.33	-9.00	-0.11
			Max. Vx	5	-0.79	-7.59	1.98
		Top Girt	Max Tension	6	819.24	0.00	0.00
			Max. Compression	6	-380.64	0.00	0.00
			Max. Mx	15	5.94	27.77	0.00
			Max. My	6	-380.44	0.00	-0.00
			Max. Vy	15	22.22	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Bottom Girt	Max Tension	2	187.33	0.00	0.00
			Max. Compression	8	-99.35	0.00	0.00
			Max. Mx	14	83.84	27.77	0.00
			Max. My	6	35.60	0.00	-0.00
			Max. Vy	14	-22.22	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Guy A	Bottom Tension	8	28337.54		
			Top Tension	8	28850.27		
			Top Cable Vert	8	24406.83		
			Top Cable Norm	8	15383.25		
			Top Cable Tan	8	4.44		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Bot Cable Vert	8	-23154.54		
			Bot Cable Norm	8	16336.57		
			Bot Cable Tan	8	4.44		
		Guy B	Bottom Tension	12	27921.05		
			Top Tension	12	28430.78		
			Top Cable Vert	12	24014.53		
			Top Cable Norm	12	15218.79		
			Top Cable Tan	12	15.74		
			Bot Cable Vert	12	-22766.08		
			Bot Cable Norm	12	16164.48		
			Bot Cable Tan	12	15.74		
		Guy C	Bottom Tension	4	28270.62		
			Top Tension	4	28798.90		
			Top Cable Vert	4	24580.71		
			Top Cable Norm	4	15005.49		
			Top Cable Tan	4	12.89		
			Bot Cable Vert	4	-23309.73		
			Bot Cable Norm	4	15996.38		
			Bot Cable Tan	4	12.89		
		Index Plate	Max Tension	8	13297.00	-32753.62	180.11
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	10	4520.74	35105.11	-1868.23
			Max. My	12	7219.27	1605.61	4937.40
			Max. Vy	8	29752.02	1601.17	281.81
			Max. Vx	4	-4112.29	1606.93	-4899.70
T2	300 - 280	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-29329.63	-32.64	-12.84
			Max. Mx	5	-11182.66	795.16	255.66
			Max. My	2	-26667.28	-49.15	-653.14
			Max. Vy	5	2378.47	3.12	-7.09
			Max. Vx	2	-2058.34	-0.55	32.40
		Diagonal	Max Tension	5	3421.27	0.00	0.00
			Max. Compression	5	-3575.64	0.00	0.00
			Max. Mx	26	-357.76	-9.17	-0.10
			Max. My	5	-3554.49	-7.49	3.17
			Max. Vy	26	14.31	-9.17	-0.10
			Max. Vx	5	-1.23	-7.49	3.17
		Top Girt	Max Tension	6	125.81	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	79.72	27.55	0.00
			Max. My	6	27.54	0.00	-0.00
			Max. Vy	14	-22.04	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Bottom Girt	Max Tension	4	716.06	0.00	0.00
			Max. Compression	6	-665.94	0.00	0.00
			Max. Mx	26	256.89	27.55	0.00
			Max. My	6	438.14	0.00	-0.00
			Max. Vy	26	-22.04	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
T3	280 - 260	Leg	Max Tension	4	12499.93	157.80	-170.75
			Max. Compression	6	-60220.45	-46.53	-16.45
			Max. Mx	5	-28856.98	-819.27	238.39
			Max. My	2	-26668.30	47.75	718.46
			Max. Vy	5	2383.61	-790.66	-270.67
			Max. Vx	2	-2059.85	47.75	718.46
		Diagonal	Max Tension	5	4573.16	0.00	0.00
			Max. Compression	5	-4157.58	0.00	0.00
			Max. Mx	20	80.79	-9.73	0.05
			Max. My	5	-4132.92	-7.12	4.02
			Max. Vy	20	14.44	-9.73	0.05
			Max. Vx	5	-1.53	-7.12	4.02

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
		Top Girt	Max Tension	2	818.59	0.00	0.00
			Max. Compression	4	-552.00	0.00	0.00
			Max. Mx	26	-68.79	27.32	0.00
			Max. My	6	-241.04	0.00	-0.00
			Max. Vy	26	-21.86	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Bottom Girt	Max Tension	2	5852.08	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	16	3341.12	27.32	0.00
			Max. My	6	2757.60	0.00	-0.00
			Max. Vy	16	-21.86	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Guy A	Bottom Tension	8	23788.76		
			Top Tension	8	24209.87		
			Top Cable Vert	8	19148.65		
			Top Cable Norm	8	14813.74		
			Top Cable Tan	8	3.93		
			Bot Cable Vert	8	-18087.29		
			Bot Cable Norm	8	15451.71		
			Bot Cable Tan	8	3.93		
		Guy B	Bottom Tension	12	23275.13		
			Top Tension	12	23693.19		
			Top Cable Vert	12	18693.73		
			Top Cable Norm	12	14557.19		
			Top Cable Tan	12	12.03		
			Bot Cable Vert	12	-17636.72		
			Bot Cable Norm	12	15188.07		
			Bot Cable Tan	12	12.03		
		Guy C	Bottom Tension	4	23655.20		
			Top Tension	4	24091.97		
			Top Cable Vert	4	19326.02		
			Top Cable Norm	4	14384.99		
			Top Cable Tan	4	9.64		
			Bot Cable Vert	4	-18243.56		
			Bot Cable Norm	4	15057.92		
			Bot Cable Tan	4	9.64		
T4	260 - 240	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-62025.42	-58.07	-28.07
			Max. Mx	4	-35724.40	351.68	92.96
			Max. My	8	-5444.40	-71.64	431.40
			Max. Vy	13	1161.44	93.21	33.59
			Max. Vx	8	-1609.29	5.72	-104.52
		Diagonal	Max Tension	5	1654.39	0.00	0.00
			Max. Compression	5	-1946.33	0.00	0.00
			Max. Mx	25	89.66	-9.80	-0.06
			Max. My	5	-1153.37	-6.93	1.69
			Max. Vy	25	14.37	-9.80	-0.06
			Max. Vx	5	-0.68	-6.93	1.69
		Top Girt	Max Tension	2	686.80	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	16	478.40	27.07	0.00
			Max. My	6	433.39	0.00	-0.00
			Max. Vy	16	21.66	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Bottom Girt	Max Tension	3	359.32	0.00	0.00
			Max. Compression	2	-180.18	0.00	0.00
			Max. Mx	14	187.15	27.07	0.00
			Max. My	6	289.28	0.00	-0.00
			Max. Vy	14	21.66	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
T5	240 - 220	Leg	Max Tension	4	2878.62	470.78	68.28

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	6	-74200.45	-198.39	-12.90
			Max. Mx	5	-1351.37	499.93	217.19
			Max. My	3	-24712.02	189.56	-437.20
			Max. Vy	5	1874.04	-123.98	-67.69
			Max. Vx	2	-1673.53	4.04	190.94
		Diagonal	Max Tension	5	2738.10	0.00	0.00
			Max. Compression	5	-3009.88	0.00	0.00
			Max. Mx	25	395.84	-9.90	-0.08
			Max. My	5	-2986.17	-6.28	2.47
			Max. Vy	25	14.30	-9.90	-0.08
			Max. Vx	5	-0.96	-6.28	2.47
		Top Girt	Max Tension	2	252.49	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	120.35	26.81	0.00
			Max. My	6	58.43	0.00	-0.00
			Max. Vy	14	-21.45	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Bottom Girt	Max Tension	8	660.23	0.00	0.00
			Max. Compression	2	-516.90	0.00	0.00
			Max. Mx	14	208.14	26.81	0.00
			Max. My	6	436.91	0.00	-0.00
			Max. Vy	14	-21.45	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
T6	220 - 200	Leg	Max Tension	8	19852.07	-16.88	546.24
			Max. Compression	2	-97251.21	8.28	-45.19
			Max. Mx	12	-1484.85	1302.82	921.43
			Max. My	8	19840.79	80.81	-1665.66
			Max. Vy	12	3958.50	1302.82	921.43
			Max. Vx	8	-5184.87	80.82	-1665.64
		Diagonal	Max Tension	4	3938.60	0.00	0.00
			Max. Compression	4	-3785.28	0.00	0.00
			Max. Mx	12	2443.71	-13.67	-0.24
			Max. My	5	-3741.31	-8.94	4.37
			Max. Vy	25	16.43	-12.45	-0.04
			Max. Vx	5	-1.66	-8.94	4.37
		Top Girt	Max Tension	2	585.66	0.00	0.00
			Max. Compression	8	-212.25	0.00	0.00
			Max. Mx	14	170.39	29.85	0.00
			Max. My	6	-17.20	0.00	-0.00
			Max. Vy	14	-23.88	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Bottom Girt	Max Tension	2	8514.62	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	5905.01	29.85	0.00
			Max. My	6	3212.14	0.00	-0.00
			Max. Vy	14	-23.88	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Guy A	Bottom Tension	8	30371.63		
			Top Tension	8	30807.28		
			Top Cable Vert	8	21679.20		
			Top Cable Norm	8	21888.37		
			Top Cable Tan	8	5.58		
			Bot Cable Vert	8	-20614.84		
			Bot Cable Norm	8	22303.91		
			Bot Cable Tan	8	5.58		
		Guy B	Bottom Tension	12	29354.23		
			Top Tension	12	29785.78		
			Top Cable Vert	12	20869.92		
			Top Cable Norm	12	21251.79		
			Top Cable Tan	12	14.67		
			Bot Cable Vert	12	-19811.54		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Bot Cable Norm	12	21660.41		
			Bot Cable Tan	12	14.67		
		Guy C	Bottom Tension	4	29988.08		
			Top Tension	4	30444.64		
			Top Cable Vert	4	21940.92		
			Top Cable Norm	4	21106.21		
			Top Cable Tan	4	11.40		
			Bot Cable Vert	4	-20847.57		
			Bot Cable Norm	4	21556.06		
			Bot Cable Tan	4	11.40		
T7	200 - 180	Leg	Max Tension	8	116.72	-2.04	62.12
			Max. Compression	2	-97254.03	80.90	-1023.72
			Max. Mx	12	-1500.79	-1333.12	-1092.86
			Max. My	8	-2606.32	-84.54	1788.67
			Max. Vy	12	3954.04	-15.91	-85.59
			Max. Vx	8	-5181.40	-2.04	62.12
		Diagonal	Max Tension	9	4368.41	0.00	0.00
			Max. Compression	9	-4801.37	0.00	0.00
			Max. Mx	6	-1452.84	-12.32	1.08
			Max. My	10	-3912.56	-9.90	-3.02
			Max. Vy	20	16.10	-11.90	0.05
			Max. Vx	10	1.16	-9.90	-3.02
		Top Girt	Max Tension	7	1593.65	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	1096.83	29.54	0.00
			Max. My	6	1184.84	0.00	-0.00
			Max. Vy	14	-23.63	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Bottom Girt	Max Tension	2	846.36	0.00	0.00
			Max. Compression	8	-397.12	0.00	0.00
			Max. Mx	14	326.51	29.54	0.00
			Max. My	6	-48.50	0.00	-0.00
			Max. Vy	14	-23.63	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
T8	180 - 160	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-65933.07	-179.93	-41.97
			Max. Mx	5	-35751.92	825.10	115.34
			Max. My	8	-35407.73	-59.42	881.25
			Max. Vy	5	-2514.94	-11.23	58.10
			Max. Vx	2	2655.03	-1.76	102.22
		Diagonal	Max Tension	10	3337.52	0.00	0.00
			Max. Compression	10	-3782.51	0.00	0.00
			Max. Mx	26	33.67	-12.13	-0.14
			Max. My	5	-2331.93	-8.96	3.04
			Max. Vy	26	16.05	-12.13	-0.14
			Max. Vx	5	-1.18	-8.96	3.04
		Top Girt	Max Tension	8	811.93	0.00	0.00
			Max. Compression	2	-473.91	0.00	0.00
			Max. Mx	14	238.79	29.19	0.00
			Max. My	6	526.33	0.00	-0.00
			Max. Vy	14	-23.35	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Bottom Girt	Max Tension	8	663.47	0.00	0.00
			Max. Compression	2	-193.91	0.00	0.00
			Max. Mx	14	351.85	29.19	0.00
			Max. My	6	426.43	0.00	-0.00
			Max. Vy	14	-23.35	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
T9	160 - 140	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	2	-92039.21	-8.90	171.46
			Max. Mx	4	-25432.94	-1797.78	1369.45

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	8	-10752.47	15.05	-2418.45
			Max. Vy	4	-4411.10	-1797.78	1369.45
			Max. Vx	8	-6117.43	15.06	-2418.44
		Diagonal	Max Tension	12	4810.39	0.00	0.00
			Max. Compression	12	-4373.15	0.00	0.00
			Max. Mx	25	-172.72	-11.48	-0.16
			Max. My	5	-4291.93	-8.10	3.92
			Max. Vy	25	15.66	-11.48	-0.16
			Max. Vx	5	-1.49	-8.10	3.92
		Top Girt	Max Tension	2	565.82	0.00	0.00
			Max. Compression	8	-201.73	0.00	0.00
			Max. Mx	14	271.06	28.81	0.00
			Max. My	6	70.39	0.00	-0.00
			Max. Vy	14	-23.05	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Bottom Girt	Max Tension	2	7665.49	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	6230.17	28.81	0.00
			Max. My	7	4811.23	0.00	-0.00
			Max. Vy	14	-23.05	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
		Guy A	Bottom Tension	8	28382.04		
			Top Tension	8	28692.55		
			Top Cable Vert	8	16480.82		
			Top Cable Norm	8	23487.12		
			Top Cable Tan	8	5.79		
			Bot Cable Vert	8	-15670.76		
			Bot Cable Norm	8	23663.63		
			Bot Cable Tan	8	5.79		
		Guy B	Bottom Tension	12	26905.62		
			Top Tension	12	27212.00		
			Top Cable Vert	12	15505.42		
			Top Cable Norm	12	22362.35		
			Top Cable Tan	12	13.49		
			Bot Cable Vert	12	-14701.38		
			Bot Cable Norm	12	22534.01		
			Bot Cable Tan	12	13.49		
		Guy C	Bottom Tension	4	27575.77		
			Top Tension	4	27907.23		
			Top Cable Vert	4	16743.89		
			Top Cable Norm	4	22326.12		
			Top Cable Tan	4	10.19		
			Bot Cable Vert	4	-15904.48		
			Bot Cable Norm	4	22527.11		
			Bot Cable Tan	4	10.19		
T10	140 - 120	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	2	-92042.81	-27.48	-676.88
			Max. Mx	4	-25454.94	1141.41	-1076.25
			Max. My	8	-27173.84	30.57	1659.27
			Max. Vy	4	-4411.23	-328.24	147.12
			Max. Vx	8	-6119.23	22.28	-379.89
		Diagonal	Max Tension	7	4070.94	0.00	0.00
			Max. Compression	7	-4520.57	0.00	0.00
			Max. Mx	20	-332.93	-11.95	0.21
			Max. My	6	-3857.74	-10.32	3.33
			Max. Vy	20	15.66	-11.95	0.21
			Max. Vx	6	-1.28	-10.32	3.33
		Top Girt	Max Tension	15	1775.53	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	1709.28	28.39	0.00
			Max. My	7	1298.74	0.00	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vy	14	-22.71	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
		Bottom Girt	Max Tension	2	766.90	0.00	0.00
			Max. Compression	8	-193.33	0.00	0.00
			Max. Mx	14	413.60	28.39	0.00
			Max. My	7	306.64	0.00	-0.00
			Max. Vy	14	-22.71	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
T11	120 - 100	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	16	-87769.79	133.60	-79.94
			Max. Mx	5	-51054.40	785.49	113.72
			Max. My	13	-56336.33	-353.63	-846.48
			Max. Vy	5	-2385.34	9.98	89.01
			Max. Vx	7	-2419.96	188.01	746.85
		Diagonal	Max Tension	6	3282.75	0.00	0.00
			Max. Compression	6	-3805.58	0.00	0.00
			Max. Mx	26	-534.19	-11.98	-0.34
			Max. My	6	-3194.45	-9.22	3.60
			Max. Vy	26	15.48	-11.98	-0.34
			Max. Vx	6	-1.37	-9.22	3.60
		Top Girt	Max Tension	8	678.60	0.00	0.00
			Max. Compression	2	-165.52	0.00	0.00
			Max. Mx	14	354.01	27.91	0.00
			Max. My	7	265.96	0.00	-0.00
			Max. Vy	14	-22.33	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
		Bottom Girt	Max Tension	2	520.88	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	423.63	27.91	0.00
			Max. My	7	302.27	0.00	-0.00
			Max. Vy	14	-22.33	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
T12	100 - 80	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	17	-90852.23	74.44	-55.61
			Max. Mx	6	-61487.45	706.43	249.02
			Max. My	13	-70132.52	0.02	-655.60
			Max. Vy	6	-2118.94	706.43	249.02
			Max. Vx	13	-1962.55	92.41	47.78
		Diagonal	Max Tension	12	2648.19	0.00	0.00
			Max. Compression	12	-3165.68	0.00	0.00
			Max. Mx	26	-809.65	-11.93	-0.50
			Max. My	12	-3138.26	-9.22	-4.31
			Max. Vy	26	15.24	-11.93	-0.50
			Max. Vx	12	1.62	-9.22	-4.31
		Top Girt	Max Tension	21	420.02	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	361.39	27.35	0.00
			Max. My	7	281.40	0.00	-0.00
			Max. Vy	14	21.88	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
		Bottom Girt	Max Tension	20	529.79	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	523.47	27.35	0.00
			Max. My	7	353.21	0.00	-0.00
			Max. Vy	14	21.88	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
T13	80 - 60	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	17	-98944.94	101.04	-49.65
			Max. Mx	15	-94842.15	1326.71	676.52
			Max. My	21	-97289.18	3.81	-1505.71
			Max. Vy	6	-2606.40	-72.99	77.72

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	13	2533.80	-108.56	13.71
		Diagonal	Max Tension	12	5197.05	0.00	0.00
			Max. Compression	7	-4259.69	0.00	0.00
			Max. Mx	19	2994.25	-19.13	0.33
			Max. My	6	-4106.24	-7.30	5.13
			Max. Vy	19	17.57	-19.13	0.33
			Max. Vx	6	-1.91	-7.30	5.13
		Top Girt	Max Tension	15	489.74	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	392.45	26.68	0.00
			Max. My	7	315.44	0.00	-0.00
			Max. Vy	14	-21.35	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
		Bottom Girt	Max Tension	2	548.08	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	488.83	26.68	0.00
			Max. My	7	333.59	0.00	-0.00
			Max. Vy	14	-21.35	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
		Guy A	Bottom Tension	8	12352.51		
			Top Tension	8	12442.38		
			Top Cable Vert	8	4347.34		
			Top Cable Norm	8	11658.19		
			Top Cable Tan	8	2.34		
			Bot Cable Vert	8	-4025.07		
			Bot Cable Norm	8	11678.32		
			Bot Cable Tan	8	2.34		
		Guy B	Bottom Tension	25	11563.63		
			Top Tension	12	11665.14		
			Top Cable Vert	25	4401.81		
			Top Cable Norm	25	10802.76		
			Top Cable Tan	25	0.59		
			Bot Cable Vert	12	-3670.73		
			Bot Cable Norm	12	10965.55		
			Bot Cable Tan	12	5.12		
		Guy C	Bottom Tension	4	11845.60		
			Top Tension	4	11947.00		
			Top Cable Vert	4	4632.78		
			Top Cable Norm	4	11012.18		
			Top Cable Tan	4	3.83		
			Bot Cable Vert	4	-4293.96		
			Bot Cable Norm	4	11039.93		
			Bot Cable Tan	4	3.83		
T14	60 - 40	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	17	-101863.06	157.50	-91.24
			Max. Mx	6	-69840.70	796.79	290.21
			Max. My	13	-78499.99	-29.37	-831.21
			Max. Vy	6	-2610.02	796.78	290.23
			Max. Vx	13	2535.36	-29.37	-831.21
		Diagonal	Max Tension	7	3357.85	0.00	0.00
			Max. Compression	7	-3787.52	0.00	0.00
			Max. Mx	26	-850.76	-8.56	-0.54
			Max. My	6	-3229.38	-4.98	5.27
			Max. Vy	26	12.13	-8.56	-0.54
			Max. Vx	6	-1.94	-4.98	5.27
		Top Girt	Max Tension	21	447.02	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	399.24	22.62	0.00
			Max. My	7	301.87	0.00	-0.00
			Max. Vy	14	-18.09	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
		Bottom Girt	Max Tension	23	395.96	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	384.63	22.62	0.00
			Max. My	7	244.92	0.00	-0.00
			Max. Vy	14	-18.09	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
T15	40 - 20	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	17	-102290.55	88.56	-55.55
			Max. Mx	12	-78465.91	-864.43	492.85
			Max. My	13	-63231.31	-443.99	-928.38
			Max. Vy	6	-2390.09	802.66	120.63
			Max. Vx	7	2689.10	97.02	-52.03
		Diagonal	Max Tension	6	3882.53	0.00	0.00
			Max. Compression	12	-4338.93	0.00	0.00
			Max. Mx	26	-1059.59	-8.27	-0.66
			Max. My	12	-4318.41	-4.65	-7.03
			Max. Vy	26	11.56	-8.27	-0.66
			Max. Vx	12	2.57	-4.65	-7.03
		Top Girt	Max Tension	15	411.87	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	337.93	21.45	0.00
			Max. My	7	265.74	0.00	-0.00
			Max. Vy	14	17.16	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
		Bottom Girt	Max Tension	17	427.93	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	394.34	21.45	0.00
			Max. My	7	238.56	0.00	-0.00
			Max. Vy	14	17.16	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
T16	20 - 5	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	17	-101708.29	-33.62	-109.56
			Max. Mx	15	-99412.46	-7686.94	4341.09
			Max. My	21	-99161.80	-104.68	-8809.30
			Max. Vy	18	20659.72	-7576.07	4589.62
			Max. Vx	21	23400.41	-104.68	-8809.30
		Diagonal	Max Tension	12	6640.97	0.00	0.00
			Max. Compression	6	-4524.86	0.00	0.00
			Max. Mx	19	-607.50	-8.81	0.17
			Max. My	6	-4016.63	-0.67	7.09
			Max. Vy	19	11.05	-8.81	0.17
			Max. Vx	6	-2.59	-0.67	7.09
		Top Girt	Max Tension	2	458.89	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	332.47	19.68	0.00
			Max. My	7	263.47	0.00	-0.00
			Max. Vy	14	15.74	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
		Bottom Girt	Max Tension	15	11070.85	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	10893.59	19.68	0.00
			Max. My	7	7292.34	0.00	-0.00
			Max. Vy	14	15.74	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
T17	5 - 0	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	16	-115836.73	69.46	227.76
			Max. Mx	16	-98125.05	8872.00	-66.93
			Max. My	6	-69682.49	-741.41	12676.99
			Max. Vy	16	29666.47	-8253.12	-25.51
			Max. Vx	6	-15571.43	-728.16	12664.74
		Horizontal	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	15	-845.56	353.64	4.64
			Max. Mx	6	-522.94	-7839.82	-126.40
			Max. My	6	-574.46	-7832.88	-128.84
			Max. Vy	6	-5493.47	-7832.88	-128.84
			Max. Vx	6	-97.47	-7802.55	-127.89
		Top Girt	Max Tension	15	20363.99	-4489.53	-23.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	12	13413.99	-6351.13	-81.44
			Max. My	6	13900.28	-6326.13	-82.32
			Max. Vy	6	-1604.37	-6289.69	-81.68
			Max. Vx	6	-42.75	-6289.69	-81.68
		Bottom Girt	Max Tension	1	0.00	0.00	0.00
			Max. Compression	15	-909.97	-19.31	20.08
			Max. Mx	6	-660.99	-12064.87	-257.41
			Max. My	6	-660.99	-12064.87	-257.41
			Max. Vy	6	-22691.89	-11999.62	-256.03
			Max. Vx	6	-514.44	-11999.62	-256.03

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Mast	Max. Vert	19	296443.92	-834.69	-217.47
	Max. H_x	11	193629.81	2981.58	204.67
	Max. H_z	2	199585.19	-2.47	3821.82
	Max. M_x	1	0.00	-18.73	52.53
	Max. M_z	1	0.00	-18.73	52.53
	Max. Torsion	12	22555.07	2901.86	1745.89
	Min. Vert	1	143688.40	-18.73	52.53
	Min. H_x	5	194841.42	-2989.18	192.59
	Min. H_z	8	194385.38	-25.23	-3754.02
	Min. M_x	1	0.00	-18.73	52.53
	Min. M_z	1	0.00	-18.73	52.53
	Min. Torsion	6	-22914.65	-2907.13	-1625.82
Guy C @ 220 ft Elev -18 ft Azimuth 240 deg	Max. Vert	10	-7234.87	-5566.50	3218.39
	Max. H_x	10	-7234.87	-5566.50	3218.39
	Max. H_z	3	-80584.76	-72197.37	43224.63
	Min. Vert	4	-82599.30	-74655.80	43047.17
	Min. H_x	4	-82599.30	-74655.80	43047.17
	Min. H_z	10	-7234.87	-5566.50	3218.39
Guy B @ 220 ft Elev -6 ft Azimuth 120 deg	Max. Vert	6	-6343.93	5357.65	3099.83
	Max. H_x	12	-78586.45	74952.57	43203.39
	Max. H_z	12	-78586.45	74952.57	43203.39
	Min. Vert	12	-78586.45	74952.57	43203.39
	Min. H_x	6	-6343.93	5357.65	3099.83
	Min. H_z	6	-6343.93	5357.65	3099.83
Guy A @ 220 ft Elev -8 ft Azimuth 0 deg	Max. Vert	2	-5949.90	-2.37	-5370.05
	Max. H_x	11	-43312.11	2997.89	-46498.79
	Max. H_z	2	-5949.90	-2.37	-5370.05
	Min. Vert	8	-81552.49	22.09	-89434.14

Location	*Condition*	*Gov. Load Comb.*	*Vertical lb*	*Horizontal, X lb*	*Horizontal, Z lb*
	Min. H_x	5	-42489.56	-3004.35	-45645.99
	Min. H_z	8	-81552.49	22.09	-89434.14

Tower Mast Reaction Summary

Load Combination	*Vertical lb*	*Shear$_x$ lb*	*Shear$_z$ lb*	*Overturning Moment, M_x lb-ft*	*Overturning Moment, M_z lb-ft*	*Torque lb-ft*
Dead Only	143688.40	18.73	-52.53	0.00	0.00	0.29
1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy	199585.19	2.47	-3821.82	0.00	0.00	-10122.60
1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy	198797.01	1946.11	-3097.66	0.00	0.00	4933.29
1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy	194166.42	2914.42	-1723.67	0.00	0.00	16487.37
1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy	194841.42	2989.18	-192.59	0.00	0.00	19975.29
1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy	195963.97	2907.13	1625.82	0.00	0.00	22914.65
1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy	197999.32	1691.70	3162.37	0.00	0.00	21811.70
1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy	194385.38	25.23	3754.02	0.00	0.00	10016.61
1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy	197511.81	-1656.71	3158.15	0.00	0.00	-4979.76
1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy	194508.76	-2888.77	1619.41	0.00	0.00	-16441.48
1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy	193629.81	-2981.58	-204.67	0.00	0.00	-19701.64
1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy	193183.09	-2901.86	-1745.89	0.00	0.00	-22555.07
1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy	197536.84	-1939.39	-3125.59	0.00	0.00	-21802.33
1.2 Dead+1.0 Ice+1.0 Temp+Guy	293487.67	88.21	-217.14	0.00	0.00	3.66
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	296373.33	84.89	-1163.85	0.00	0.00	-1944.81
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	295867.16	526.57	-999.94	0.00	0.00	1325.78
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	295367.48	810.64	-634.01	0.00	0.00	3155.84
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	295867.55	903.70	-205.79	0.00	0.00	3750.56
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	296443.92	834.69	217.47	0.00	0.00	4449.98
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	295780.39	545.15	561.33	0.00	0.00	4359.95
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	295125.90	90.77	705.06	0.00	0.00	2013.41
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	295441.34	-366.67	559.84	0.00	0.00	-1259.86
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	295877.65	-659.27	214.41	0.00	0.00	-3155.57
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	295324.50	-731.42	-211.70	0.00	0.00	-3826.11
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy	294954.24	-639.90	-640.23	0.00	0.00	-4490.72

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy	295642.66	-357.83	-1003.23	0.00	0.00	-4323.69
Dead+Wind 0 deg - Service+Guy	144521.41	15.23	-697.14	0.00	0.00	-1744.91
Dead+Wind 30 deg - Service+Guy	144357.10	328.61	-594.73	0.00	0.00	969.88
Dead+Wind 60 deg - Service+Guy	144216.69	498.82	-329.97	0.00	0.00	2968.07
Dead+Wind 90 deg - Service+Guy	144364.74	532.54	-50.77	0.00	0.00	3537.24
Dead+Wind 120 deg - Service+Guy	144538.49	510.15	235.12	0.00	0.00	4045.23
Dead+Wind 150 deg - Service+Guy	144384.20	329.18	491.63	0.00	0.00	3886.04
Dead+Wind 180 deg - Service+Guy	144229.22	16.35	580.19	0.00	0.00	1732.55
Dead+Wind 210 deg - Service+Guy	144357.99	-297.24	491.86	0.00	0.00	-975.79
Dead+Wind 240 deg - Service+Guy	144516.69	-478.70	234.39	0.00	0.00	-2955.55
Dead+Wind 270 deg - Service+Guy	144371.17	-500.87	-52.27	0.00	0.00	-3514.35
Dead+Wind 300 deg - Service+Guy	144242.10	-467.21	-330.69	0.00	0.00	-4029.67
Dead+Wind 330 deg - Service+Guy	144386.29	-297.58	-594.08	0.00	0.00	-3888.17

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-54697.76	0.00	1.95	54697.77	-0.12	0.004%
2	165.01	-64683.51	-71729.48	-164.89	64683.39	71725.62	0.004%
3	35852.03	-64100.73	-62034.60	-35852.54	64100.62	62030.51	0.004%
4	58643.40	-63510.89	-33910.08	-58643.32	63510.93	33913.67	0.004%
5	64972.83	-64109.14	-81.56	-64969.82	64109.04	83.85	0.004%
6	58487.68	-64699.05	33616.11	-58484.25	64698.92	-33614.27	0.004%
7	35564.01	-64067.24	61500.58	-35559.97	64067.13	-61499.10	0.004%
8	-77.59	-63434.14	71457.19	80.41	63434.17	-71458.40	0.003%
9	-35776.24	-64016.92	61842.81	35772.21	64016.81	-61841.20	0.005%
10	-58624.73	-64606.76	33885.78	58621.48	64606.64	-33883.89	0.004%
11	-64768.79	-64008.51	58.12	64765.91	64008.41	-55.81	0.004%
12	-58227.06	-63418.60	-33580.11	58230.76	63418.69	33580.83	0.004%
13	-35438.78	-64050.41	-61572.81	35439.49	64050.31	61568.92	0.004%
14	0.00	-168365.25	0.00	3.52	168365.25	2.16	0.002%
15	141.35	-168675.82	-20827.59	-140.87	168675.82	20824.45	0.002%
16	10375.70	-168382.18	-17818.98	-10375.12	168382.18	17818.38	0.000%
17	17418.30	-168086.22	-10072.30	-17417.37	168086.21	10072.03	0.001%
18	19805.31	-168385.62	-82.03	-19804.29	168385.62	82.13	0.001%
19	17391.22	-168682.29	9963.13	-17387.44	168682.28	-9961.20	0.002%
20	10201.50	-168368.69	17736.38	-10200.89	168368.68	-17735.71	0.001%
21	-36.18	-168054.67	20788.48	36.39	168054.66	-20787.22	0.001%
22	-10268.59	-168348.31	17835.21	10268.05	168348.31	-17834.08	0.001%
23	-17364.66	-168644.28	10111.01	17361.95	168644.27	-10109.11	0.002%
24	-19741.14	-168344.87	19.95	19739.93	168344.87	-19.81	0.001%
25	-17293.39	-168048.20	-9958.41	17292.34	168048.20	9957.98	0.001%
26	-10203.25	-168361.81	-17706.89	10200.91	168361.79	17702.91	0.003%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
27	25.78	-54795.37	-11207.73	-25.63	54795.37	11206.58	0.002%
28	5601.88	-54704.31	-9692.91	-5600.97	54704.31	9691.85	0.003%
29	9163.03	-54612.15	-5298.45	-9161.49	54612.14	5297.72	0.003%
30	10152.01	-54705.62	-12.74	-10150.54	54705.62	12.64	0.003%
31	9138.70	-54797.80	5252.52	-9137.54	54797.80	-5251.96	0.002%
32	5556.88	-54699.08	9609.47	-5556.07	54699.08	-9608.36	0.002%
33	-12.12	-54600.15	11165.19	12.30	54600.15	-11163.75	0.003%
34	-5590.04	-54691.21	9662.94	5589.52	54691.21	-9661.79	0.002%
35	-9160.11	-54783.38	5294.65	9159.17	54783.38	-5294.04	0.002%
36	-10120.12	-54689.90	9.08	10118.92	54689.90	-9.11	0.002%
37	-9097.98	-54597.73	-5246.89	9096.83	54597.72	5246.20	0.002%
38	-5537.31	-54696.45	-9620.75	5536.76	54696.45	9619.67	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	12	0.00000001	0.00002874
2	Yes	32	0.00007853	0.00005552
3	Yes	31	0.00009126	0.00006090
4	Yes	19	0.00008818	0.00005290
5	Yes	31	0.00008738	0.00005713
6	Yes	32	0.00008102	0.00005740
7	Yes	31	0.00009818	0.00006376
8	Yes	20	0.00007943	0.00004448
9	Yes	30	0.00009842	0.00006504
10	Yes	31	0.00007954	0.00005669
11	Yes	30	0.00008856	0.00005680
12	Yes	18	0.00008190	0.00006580
13	Yes	31	0.00009183	0.00005897
14	Yes	14	0.00010000	0.00003920
15	Yes	19	0.00010000	0.00003404
16	Yes	22	0.00000001	0.00000956
17	Yes	22	0.00000001	0.00001115
18	Yes	22	0.00000001	0.00001173
19	Yes	19	0.00010000	0.00004579
20	Yes	22	0.00000001	0.00001037
21	Yes	21	0.00000001	0.00001470
22	Yes	21	0.00000001	0.00001413
23	Yes	19	0.00010000	0.00003567
24	Yes	21	0.00000001	0.00001382
25	Yes	21	0.00000001	0.00001303
26	Yes	18	0.00010000	0.00004969
27	Yes	14	0.00000001	0.00002285
28	Yes	14	0.00000001	0.00002791
29	Yes	14	0.00000001	0.00003435
30	Yes	14	0.00000001	0.00002975
31	Yes	14	0.00000001	0.00002594
32	Yes	14	0.00000001	0.00002809
33	Yes	14	0.00000001	0.00002991
34	Yes	14	0.00000001	0.00002553
35	Yes	14	0.00000001	0.00002240
36	Yes	14	0.00000001	0.00002452
37	Yes	14	0.00000001	0.00002782
38	Yes	14	0.00000001	0.00002473

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	347 - 330	2.576	33	0.1136	0.9473
L2	330 - 320	2.205	29	0.0983	0.8529
T1	320 - 300	2.053	29	0.0673	0.7089
T2	300 - 280	1.821	29	0.0641	0.6872
T3	280 - 260	1.561	29	0.0650	0.6640
T4	260 - 240	1.300	29	0.0546	0.6355
T5	240 - 220	1.094	29	0.0452	0.6098
T6	220 - 200	0.920	29	0.0346	0.5798
T7	200 - 180	0.801	28	0.0189	0.5539
T8	180 - 160	0.762	28	0.0136	0.5346
T9	160 - 140	0.708	28	0.0155	0.5117
T10	140 - 120	0.648	28	0.0100	0.4837
T11	120 - 100	0.632	28	0.0077	0.4593
T12	100 - 80	0.599	28	0.0123	0.4283
T13	80 - 60	0.531	28	0.0193	0.3912
T14	60 - 40	0.440	28	0.0242	0.3507
T15	40 - 20	0.326	28	0.0314	0.2955
T16	20 - 5	0.175	28	0.0382	0.2350
T17	5 - 0	0.044	28	0.0409	0.1823

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
350.00	Flash Beacon Lighting	33	2.576	0.1136	0.9473	106571
345.00	DCR-M 4 bay FM with radomes	33	2.527	0.1136	0.9451	106571
340.00	DCR-M 4 bay FM with radomes	33	2.406	0.1125	0.9346	76122
335.00	DCR-M 4 bay FM with radomes	33	2.290	0.1082	0.9077	44404
330.00	DCR-M 4 bay FM with radomes	29	2.205	0.0983	0.8529	31662
325.00	DCR-M 4 bay FM with radomes	29	2.126	0.0824	0.7786	25401
320.00	Guy	29	2.053	0.0673	0.7089	23260
300.00	(2) 18' Whip	29	1.821	0.0641	0.6872	63637
290.00	2'x8' Grid Dish	29	1.696	0.0670	0.6846	94118
260.33	Guy	29	1.304	0.0548	0.6358	57839
200.33	Guy	28	0.802	0.0191	0.5543	49035
180.00	Sidemarker	28	0.762	0.0136	0.5346	118949
173.00	(2) KMW EPBQ-654L8H8-L2	28	0.746	0.0144	0.5274	126738
160.00	2'x8' Grid Dish	28	0.708	0.0155	0.5117	250295
140.33	Guy	28	0.649	0.0101	0.4841	69714
120.00	(2) 2.5' dish with radome	28	0.632	0.0077	0.4593	161212
100.00	3' Dish w/ Radome	28	0.599	0.0123	0.4283	123055
80.00	2'x8' Grid Dish	28	0.531	0.0193	0.3912	221618
70.00	Guy	28	0.488	0.0218	0.3722	239574

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	347 - 330	32.945	6	1.1952	5.4073
L2	330 - 320	28.951	2	1.1335	4.8009
T1	320 - 300	26.773	2	0.9841	3.7753
T2	300 - 280	22.934	2	0.9691	3.6651
T3	280 - 260	19.018	2	0.9508	3.5467
T4	260 - 240	15.259	2	0.8377	3.3987
T5	240 - 220	12.106	2	0.7001	3.2863
T6	220 - 200	9.484	2	0.5351	3.1449
T7	200 - 180	7.572	2	0.3486	3.0185
T8	180 - 160	6.527	3	0.2467	2.9358
T9	160 - 140	5.625	3	0.2055	2.8292
T10	140 - 120	4.851	3	0.1365	2.6891
T11	120 - 100	4.475	3	0.0969	2.5706
T12	100 - 80	4.095	3	0.1117	2.4089
T13	80 - 60	3.558	3	0.1451	2.2084
T14	60 - 40	2.907	3	0.1693	1.9854
T15	40 - 20	2.132	3	0.2107	1.6783
T16	20 - 5	1.140	3	0.2511	1.3372
T17	5 - 0	0.284	3	0.2677	1.0370

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
350.00	Flash Beacon Lighting	6	32.945	1.1952	5.4073	26878
345.00	DCR-M 4 bay FM with radomes	6	32.438	1.1969	5.3938	26878
340.00	DCR-M 4 bay FM with radomes	2	31.255	1.1961	5.3281	19199
335.00	DCR-M 4 bay FM with radomes	2	30.093	1.1789	5.1558	11199
330.00	DCR-M 4 bay FM with radomes	2	28.951	1.1335	4.8009	7639
325.00	DCR-M 4 bay FM with radomes	2	27.838	1.0574	4.2484	5258
320.00	Guy	2	26.773	0.9841	3.7753	4376
300.00	(2) 18' Whip	2	22.934	0.9691	3.6651	12524
290.00	2'x8' Grid Dish	2	20.993	0.9763	3.6648	23624
260.33	Guy	2	15.317	0.8399	3.4005	6296
200.33	Guy	2	7.596	0.3512	3.0202	4948
180.00	Sidemarker	3	6.527	0.2467	2.9358	45825
173.00	(2) KMW EPBQ-654L8H8-L2	3	6.213	0.2313	2.9038	46985
160.00	2'x8' Grid Dish	3	5.625	0.2055	2.8292	36498
140.33	Guy	3	4.860	0.1376	2.6913	8371
120.00	(2) 2.5' dish with radome	3	4.475	0.0969	2.5706	41719
100.00	3' Dish w/ Radome	3	4.095	0.1117	2.4089	23713
80.00	2'x8' Grid Dish	3	3.558	0.1451	2.2084	37163
70.00	Guy	3	3.245	0.1568	2.1045	39286

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load / Allowable	Allowable Ratio	Criteria
L1	347	Latticed Pole	A325N	1.0000	4	4942.32	53014.40	0.093 ✔	1	Bolt Tension

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load / Allowable	Allowable Ratio	Criteria
L2	330	Leg Latticed Pole Leg	A325N	1.5000	4	12170.00	119282.00	0.102 ✔	1	Bolt Tension
T1	320	Leg	A325N	0.7500	3	2315.39	29820.60	0.078 ✔	1	Bolt Tension
T2	300	Leg	A325N	0.7500	3	3258.85	29820.60	0.109 ✔	1	Bolt Tension
T3	280	Leg	A325N	0.7500	3	6691.16	29820.60	0.224 ✔	1	Bolt Tension
T4	260	Leg	A325N	0.7500	3	6891.71	29820.60	0.231 ✔	1	Bolt Tension
T5	240	Leg	A325N	0.7500	3	8244.49	29820.60	0.276 ✔	1	Bolt Tension
T6	220	Leg	A325N	0.7500	3	10805.70	29820.60	0.362 ✔	1	Bolt Tension
T7	200	Leg	A325N	0.7500	3	7130.97	29820.60	0.239 ✔	1	Bolt Tension
T8	180	Leg	A325N	1.0000	3	7325.90	53014.40	0.138 ✔	1	Bolt Tension
T9	160	Leg	A325N	1.0000	3	10226.60	53014.40	0.193 ✔	1	Bolt Tension
T10	140	Leg	A325N	1.0000	3	9041.42	53014.40	0.171 ✔	1	Bolt Tension
T11	120	Leg	A325N	1.0000	3	9752.20	53014.40	0.184 ✔	1	Bolt Tension
T12	100	Leg	A325N	1.0000	3	10094.70	53014.40	0.190 ✔	1	Bolt Tension
T13	80	Leg	A325N	1.0000	3	10993.90	53014.40	0.207 ✔	1	Bolt Tension
T14	60	Leg	A325N	1.0000	3	11318.10	53014.40	0.213 ✔	1	Bolt Tension
T15	40	Leg	A325N	1.0000	3	11298.50	53014.40	0.213 ✔	1	Bolt Tension
T16	20	Leg	A325N	1.0000	3	11083.30	53014.40	0.209 ✔	1	Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.
T1	320.00 (A) (996)	7/8 EHS	7970.00	79699.84	28850.30	47820.00	1.000	1.658 ✔
	320.00 (B) (995)	7/8 EHS	7970.00	79699.84	28430.80	47820.00	1.000	1.682 ✔
	320.00 (C) (994)	7/8 EHS	7970.00	79699.84	28798.90	47820.00	1.000	1.660 ✔
T3	260.33 (A) (999)	7/8 EHS	7970.00	79699.84	24209.90	47820.00	1.000	1.975 ✔
	260.33 (B) (998)	7/8 EHS	7970.00	79699.84	23693.20	47820.00	1.000	2.018 ✔
	260.33 (C) (997)	7/8 EHS	7970.00	79699.84	24092.00	47820.00	1.000	1.985 ✔
T6	200.33 (A) (1002)	1 BS	12200.00	121999.80	30807.30	73200.00	1.000	2.376 ✔
	200.33 (B) (1001)	1 BS	12200.00	121999.80	29785.80	73200.00	1.000	2.458 ✔
	200.33 (C) (1000)	1 BS	12200.00	121999.80	30444.60	73200.00	1.000	2.404 ✔
T9	140.33 (A) (1005)	1 BS	12200.00	121999.80	28692.60	73200.00	1.000	2.551 ✔
	140.33 (B)	1 BS	12200.00	121999.80	27212.00	73200.00	1.000	2.690 ✔

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.
	(1004) 140.33 (C) (1003)	1 BS	12200.00	121999.80	27907.20	73200.00	1.000	2.623 ✔
T13	70.00 (A) (1008)	3/4 EHS	5830.00	58299.91	12442.40	34980.00	1.000	2.811 ✔
	70.00 (B) (1007)	3/4 EHS	5830.00	58299.91	11665.10	34980.00	1.000	2.999 ✔
	70.00 (C) (1006)	3/4 EHS	5830.00	58299.91	11947.00	34980.00	1.000	2.928 ✔

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	347 - 330	2	17.00	2.33	56.0 K=1.00	3.1416	1.00	-16989.50	112404.00	0.151 [1] ✔
L2	330 - 320	2 1/4	10.00	2.33	49.8 K=1.00	3.9761	1.00	-44824.00	149274.00	0.300 [1] ✔
T1	320 - 300	2	20.00	2.46	59.0 K=1.00	3.1416	1.00	-22234.30	109604.00	0.203 [1] ✔
T2	300 - 280	2	20.00	2.46	59.0 K=1.00	3.1416	1.00	-27580.90	109604.00	0.252 [1] ✔
T3	280 - 260	2	20.00	2.42	58.0 K=1.00	3.1416	1.00	-56563.20	110545.00	0.512 [1] ✔
T4	260 - 240	2	20.00	2.42	58.0 K=1.00	3.1416	1.00	-61392.80	110545.00	0.555 [1] ✔
T5	240 - 220	2	20.00	2.42	58.0 K=1.00	3.1416	1.00	-72877.10	110545.00	0.659 [1] ✔
T6	220 - 200	2 1/4	20.00	2.42	51.6 K=1.00	3.9761	1.00	-95208.60	147321.00	0.646 [1] ✔
T7	200 - 180	2 1/2	20.00	2.42	46.4 K=1.00	4.9087	1.00	-94211.00	188719.00	0.499 [1] ✔
T8	180 - 160	2 1/2	20.00	2.42	46.4 K=1.00	4.9087	1.00	-64509.80	188719.00	0.342 [1] ✔
T9	160 - 140	2 3/4	20.00	2.42	42.2 K=1.00	5.9396	1.00	-89944.10	234675.00	0.383 [1] ✔
T10	140 - 120	2 3/4	20.00	2.42	42.2 K=1.00	5.9396	1.00	-89197.70	234675.00	0.380 [1] ✔
T11	120 - 100	2 3/4	20.00	2.42	42.2 K=1.00	5.9396	1.00	-87170.10	234675.00	0.371 [1] ✔
T12	100 - 80	2 3/4	20.00	2.42	42.2 K=1.00	5.9396	1.00	-90842.90	234675.00	0.387 [1] ✔
T13	80 - 60	3	20.00	2.42	38.7 K=1.00	7.0686	1.00	-98851.80	285147.00	0.347 [1] ✔
T14	60 - 40	3	20.00	2.42	38.7	7.0686	1.00	-101789.00	285147.00	0.357 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
					K=1.00					✔
T15	40 - 20	3	20.00	2.42	38.7 K=1.00	7.0686	1.00	-102291.00	285147.00	0.359 [1] ✔
T16	20 - 5	3	15.00	2.39	38.2 K=1.00	7.0686	1.00	-101706.00	285860.00	0.356 [1] ✔
T17	5 - 0	3	5.77	2.02	32.3 K=1.00	7.0686	0.99	-115837.00	290668.00	0.399 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	347 - 330	3/4	3.07	1.41	90.1 K=1.00	0.4418	-6769.99	10974.30	0.617 [1] ✔
L2	330 - 320	3/4	3.07	1.39	89.1 K=1.00	0.4418	-10277.00	11122.60	0.924 [1] ✔
T1	320 - 300	7/8	5.57	2.69	133.0 K=0.90	0.6013	-2017.39	7684.78	0.263 [1] ✔
T2	300 - 280	7/8	5.57	2.69	133.0 K=0.90	0.6013	-3575.64	7684.78	0.465 [1] ✔
T3	280 - 260	7/8	5.55	2.68	132.5 K=0.90	0.6013	-4157.58	7735.40	0.537 [1] ✔
T4	260 - 240	7/8	5.55	2.68	132.5 K=0.90	0.6013	-1946.33	7735.40	0.252 [1] ✔
T5	240 - 220	7/8	5.55	2.68	132.5 K=0.90	0.6013	-3009.88	7735.40	0.389 [1] ✔
T6	220 - 200	1	5.55	2.67	115.5 K=0.90	0.7854	-3785.28	13310.70	0.284 [1] ✔
T7	200 - 180	1	5.55	2.66	115.0 K=0.90	0.7854	-4801.37	13426.70	0.358 [1] ✔
T8	180 - 160	1	5.55	2.66	115.0 K=0.90	0.7854	-3782.51	13426.70	0.282 [1] ✔
T9	160 - 140	1	5.55	2.65	114.5 K=0.90	0.7854	-4373.15	13544.30	0.323 [1] ✔
T10	140 - 120	1	5.55	2.65	114.5 K=0.90	0.7854	-4520.57	13544.30	0.334 [1] ✔
T11	120 - 100	1	5.55	2.65	114.5 K=0.90	0.7854	-3805.58	13544.30	0.281 [1] ✔
T12	100 - 80	1	5.55	2.65	114.5 K=0.90	0.7854	-3165.68	13544.30	0.234 [1] ✔
T13	80 - 60	1	5.55	2.64	114.0 K=0.90	0.7854	-4259.69	13663.30	0.312 [1] ✔
T14	60 - 40	7/8	5.55	2.64	130.2 K=0.90	0.6013	-3787.52	8009.20	0.473 [1] ✔
T15	40 - 20	7/8	5.55	2.64	130.2 K=0.90	0.6013	-4338.93	8009.20	0.542 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T16	20 - 5	7/8	5.54	2.63	130.0 K=0.90	0.6013	-4524.86	8044.01	0.563 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T17	5 - 0	10x3/8	2.75	2.50	277.1 K=1.00	3.7500	-845.56	11030.90	0.077 [1] ✔
		KL/R > 200 (C) - 991							

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	347 - 330	3/4	2.00	1.83	117.3 K=1.00	0.4418	-30.57	7249.52	0.004 [1] ✔
L2	330 - 320	3/4	2.00	1.81	116.0 K=1.00	0.4418	-496.69	7417.14	0.067 [1] ✔
T1	320 - 300	7/8	5.00	4.83	185.6 K=0.70	0.6013	-380.64	3943.57	0.097 [1] ✔
T3	280 - 260	7/8	5.00	4.83	185.6 K=0.70	0.6013	-552.00	3943.57	0.140 [1] ✔
T6	220 - 200	1	5.00	4.81	161.7 K=0.70	0.7854	-212.25	6785.94	0.031 [1] ✔
T8	180 - 160	1	5.00	4.79	161.0 K=0.70	0.7854	-473.91	6845.07	0.069 [1] ✔
T9	160 - 140	1	5.00	4.77	160.3 K=0.70	0.7854	-201.73	6904.98	0.029 [1] ✔
T11	120 - 100	1	5.00	4.77	160.3 K=0.70	0.7854	-165.52	6904.98	0.024 [1] ✔

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	347 - 330	3/4	2.00	1.83	117.3 K=1.00	0.4418	-804.98	7249.52	0.111 [1] ✔
T1	320 - 300	7/8	5.00	4.83	185.6 K=0.70	0.6013	-99.35	3943.57	0.025 [1] ✔
T2	300 - 280	7/8	5.00	4.83	185.6 K=0.70	0.6013	-665.94	3943.57	0.169 [1] ✔
T4	260 - 240	7/8	5.00	4.83	185.6 K=0.70	0.6013	-180.18	3943.57	0.046 [1] ✔
T5	240 - 220	7/8	5.00	4.83	185.6 K=0.70	0.6013	-516.90	3943.57	0.131 [1] ✔
T7	200 - 180	1	5.00	4.79	161.0 K=0.70	0.7854	-397.12	6845.07	0.058 [1] ✔
T8	180 - 160	1	5.00	4.79	161.0 K=0.70	0.7854	-193.91	6845.07	0.028 [1] ✔
T10	140 - 120	1	5.00	4.77	160.3 K=0.70	0.7854	-193.33	6904.98	0.028 [1] ✔
T17	5 - 0	10x3/8	1.00	0.75	83.1 K=1.00	3.7500	-909.97	84439.60	0.011 [1] ✔

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	347 - 330	2	17.00	0.33	8.0	3.1416	19769.30	141372.00	0.140 [1] ✔
L2	330 - 320	2 1/4	10.00	0.33	7.1	3.9761	48679.80	178924.00	0.272 [1] ✔
T3	280 - 260	2	20.00	2.42	58.0	3.1416	12499.90	141372.00	0.088 [1] ✔
T5	240 - 220	2	20.00	0.33	8.0	3.1416	2878.62	141372.00	0.020 [1] ✔
T6	220 - 200	2 1/4	20.00	2.42	51.6	3.9761	19852.10	178924.00	0.111 [1] ✔
T7	200 - 180	2 1/2	20.00	0.33	6.4	4.9087	116.72	220893.00	0.001 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	347 - 330	3/4	3.07	1.41	90.1	0.4418	6751.12	19880.40	0.340 [1] ✔
L2	330 - 320	3/4	3.07	1.39	89.1	0.4418	10293.40	19880.40	0.518 [1] ✔
T1	320 - 300	7/8	5.57	2.69	147.7	0.6013	1967.30	27059.40	0.073 [1] ✔
T2	300 - 280	7/8	5.57	2.69	147.7	0.6013	3421.27	27059.40	0.126 [1] ✔
T3	280 - 260	7/8	5.55	2.68	147.2	0.6013	4573.16	27059.40	0.169 [1] ✔
T4	260 - 240	7/8	5.55	2.68	147.2	0.6013	1654.39	27059.40	0.061 [1] ✔
T5	240 - 220	7/8	5.55	2.68	147.2	0.6013	2738.10	27059.40	0.101 [1] ✔
T6	220 - 200	1	5.55	2.67	128.3	0.7854	3938.60	35342.90	0.111 [1] ✔
T7	200 - 180	1	5.55	2.66	127.7	0.7854	4368.41	35342.90	0.124 [1] ✔
T8	180 - 160	1	5.55	2.66	127.7	0.7854	3337.52	35342.90	0.094 [1] ✔
T9	160 - 140	1	5.55	2.65	127.2	0.7854	4810.39	35342.90	0.136 [1] ✔
T10	140 - 120	1	5.55	2.65	127.2	0.7854	4070.94	35342.90	0.115 [1] ✔
T11	120 - 100	1	5.55	2.65	127.2	0.7854	3282.75	35342.90	0.093 [1] ✔
T12	100 - 80	1	5.55	2.65	127.2	0.7854	2648.19	35342.90	0.075 [1] ✔
T13	80 - 60	1	5.55	2.64	126.6	0.7854	5197.05	35342.90	0.147 [1] ✔
T14	60 - 40	7/8	5.55	2.64	144.7	0.6013	3357.85	27059.40	0.124 [1] ✔
T15	40 - 20	7/8	5.55	2.64	144.7	0.6013	3882.53	27059.40	0.143 [1] ✔
T16	20 - 5	7/8	5.54	2.63	144.4	0.6013	6640.97	27059.40	0.245 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	347 - 330	3/4	2.00	1.83	117.3	0.4418	19.98	19880.40	0.001 [1] ✔
L2	330 - 320	3/4	2.00	1.81	116.0	0.4418	609.46	19880.40	0.031 [1] ✔
T1	320 - 300	7/8	5.00	4.83	265.1	0.6013	819.24	27059.40	0.030 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	300 - 280	7/8	5.00	4.83	265.1	0.6013	125.81	27059.40	0.005 [1]
T3	280 - 260	7/8	5.00	4.83	265.1	0.6013	818.59	27059.40	0.030 [1]
T4	260 - 240	7/8	5.00	4.83	265.1	0.6013	686.80	27059.40	0.025 [1]
T5	240 - 220	7/8	5.00	4.83	265.1	0.6013	252.49	27059.40	0.009 [1]
T6	220 - 200	1	5.00	4.81	231.0	0.7854	585.66	35342.90	0.017 [1]
T7	200 - 180	1	5.00	4.79	230.0	0.7854	1593.65	35342.90	0.045 [1]
T8	180 - 160	1	5.00	4.79	230.0	0.7854	811.93	35342.90	0.023 [1]
T9	160 - 140	1	5.00	4.77	229.0	0.7854	565.82	35342.90	0.016 [1]
T10	140 - 120	1	5.00	4.77	229.0	0.7854	1775.53	35342.90	0.050 [1]
T11	120 - 100	1	5.00	4.77	229.0	0.7854	678.60	35342.90	0.019 [1]
T12	100 - 80	1	5.00	4.77	229.0	0.7854	420.02	35342.90	0.012 [1]
T13	80 - 60	1	5.00	4.75	228.0	0.7854	489.74	35342.90	0.014 [1]
T14	60 - 40	7/8	5.00	4.75	260.6	0.6013	447.02	27059.40	0.017 [1]
T15	40 - 20	7/8	5.00	4.75	260.6	0.6013	411.87	27059.40	0.015 [1]
T16	20 - 5	7/8	5.00	4.75	260.6	0.6013	458.89	27059.40	0.017 [1]
T17	5 - 0	10x3/8	4.50	4.25	471.1	3.7500	20364.00	121500.00	0.168 [1]

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	347 - 330	3/4	2.00	1.83	117.3	0.4418	721.68	19880.40	0.036 [1]
T1	320 - 300	7/8	5.00	4.83	265.1	0.6013	187.33	27059.40	0.007 [1]
T2	300 - 280	7/8	5.00	4.83	265.1	0.6013	716.06	27059.40	0.026 [1]
T3	280 - 260	7/8	5.00	4.83	265.1	0.6013	5852.08	27059.40	0.216 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T4	260 - 240	7/8	5.00	4.83	265.1	0.6013	359.32	27059.40	0.013 [1] ✔
T5	240 - 220	7/8	5.00	4.83	265.1	0.6013	660.22	27059.40	0.024 [1] ✔
T6	220 - 200	1	5.00	4.81	231.0	0.7854	8514.62	35342.90	0.241 [1] ✔
T7	200 - 180	1	5.00	4.79	230.0	0.7854	846.36	35342.90	0.024 [1] ✔
T8	180 - 160	1	5.00	4.79	230.0	0.7854	663.47	35342.90	0.019 [1] ✔
T9	160 - 140	1	5.00	4.77	229.0	0.7854	7665.49	35342.90	0.217 [1] ✔
T10	140 - 120	1	5.00	4.77	229.0	0.7854	766.90	35342.90	0.022 [1] ✔
T11	120 - 100	1	5.00	4.77	229.0	0.7854	520.88	35342.90	0.015 [1] ✔
T12	100 - 80	1	5.00	4.77	229.0	0.7854	529.79	35342.90	0.015 [1] ✔
T13	80 - 60	1	5.00	4.75	228.0	0.7854	548.08	35342.90	0.016 [1] ✔
T14	60 - 40	7/8	5.00	4.75	260.6	0.6013	395.96	27059.40	0.015 [1] ✔
T15	40 - 20	7/8	5.00	4.75	260.6	0.6013	427.93	27059.40	0.016 [1] ✔
T16	20 - 5	7/8	5.00	4.75	260.6	0.6013	11070.80	27059.40	0.409 [1] ✔

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	347 - 330	Latticed Pole Leg	2	1	-16989.50	112404.00	15.1	Pass
L2	330 - 320	Latticed Pole Leg	2 1/4	52	-44824.00	149274.00	30.0	Pass
L1	347 - 330	Latticed Pole Diagonal	3/4	11	-6769.99	10974.30	61.7	Pass
L2	330 - 320	Latticed Pole Diagonal	3/4	59	-10277.00	11122.60	92.4	Pass
L1	347 - 330	Latticed Pole Top Girt	3/4	6	-30.57	7249.52	0.4	Pass
L2	330 - 320	Latticed Pole Top Girt	3/4	55	-496.69	7417.14	6.7	Pass
L1	347 - 330	Latticed Pole Bottom Girt	3/4	9	-804.98	7249.52	11.1	Pass
T1	320 - 300	Leg	2	82	-22234.30	109604.00	20.3	Pass
T2	300 - 280	Leg	2	140	-27580.90	109604.00	25.2	Pass
T3	280 - 260	Leg	2	197	-56563.20	110545.00	51.2	Pass
T4	260 - 240	Leg	2	254	-61392.80	110545.00	55.5	Pass
T5	240 - 220	Leg	2	311	-72877.10	110545.00	65.9	Pass
T6	220 - 200	Leg	2 1/4	369	-95208.60	147321.00	64.6	Pass
T7	200 - 180	Leg	2 1/2	426	-94211.00	188719.00	49.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T8	180 - 160	Leg	2 1/2	482	-64509.80	188719.00	34.2	Pass
T9	160 - 140	Leg	2 3/4	540	-89944.10	234675.00	38.3	Pass
T10	140 - 120	Leg	2 3/4	597	-89197.70	234675.00	38.0	Pass
T11	120 - 100	Leg	2 3/4	652	-87170.10	234675.00	37.1	Pass
T12	100 - 80	Leg	2 3/4	709	-90842.90	234675.00	38.7	Pass
T13	80 - 60	Leg	3	766	-98851.80	285147.00	34.7	Pass
T14	60 - 40	Leg	3	823	-101789.00	285147.00	35.7	Pass
T15	40 - 20	Leg	3	880	-102291.00	285147.00	35.9	Pass
T16	20 - 5	Leg	3	937	-101706.00	285860.00	35.6	Pass
T17	5 - 0	Leg	3	982	-115837.00	290668.00	39.9	Pass
T1	320 - 300	Diagonal	7/8	137	-2017.39	7684.78	26.3	Pass
T2	300 - 280	Diagonal	7/8	149	-3575.64	7684.78	46.5	Pass
T3	280 - 260	Diagonal	7/8	212	-4157.58	7735.40	53.7	Pass
T4	260 - 240	Diagonal	7/8	263	-1946.33	7735.40	25.2	Pass
T5	240 - 220	Diagonal	7/8	320	-3009.88	7735.40	38.9	Pass
T6	220 - 200	Diagonal	1	383	-3785.28	13310.70	28.4	Pass
T7	200 - 180	Diagonal	1	479	-4801.37	13426.70	35.8	Pass
T8	180 - 160	Diagonal	1	536	-3782.51	13426.70	28.2	Pass
T9	160 - 140	Diagonal	1	553	-4373.15	13544.30	32.3	Pass
T10	140 - 120	Diagonal	1	649	-4520.57	13544.30	33.4	Pass
T11	120 - 100	Diagonal	1	706	-3805.58	13544.30	28.1	Pass
T12	100 - 80	Diagonal	1	718	-3165.68	13544.30	23.4	Pass
T13	80 - 60	Diagonal	1	790	-4259.69	13663.30	31.2	Pass
T14	60 - 40	Diagonal	7/8	877	-3787.52	8009.20	47.3	Pass
T15	40 - 20	Diagonal	7/8	889	-4338.93	8009.20	54.2	Pass
T16	20 - 5	Diagonal	7/8	953	-4524.86	8044.01	56.3	Pass
T17	5 - 0	Horizontal	10x3/8	991	-845.56	11030.90	7.7	Pass
T1	320 - 300	Top Girt	7/8	86	-380.64	3943.57	9.7	Pass
T2	300 - 280	Top Girt	7/8	144	125.81	27059.40	0.5	Pass
T3	280 - 260	Top Girt	7/8	200	-552.00	3943.57	14.0	Pass
T4	260 - 240	Top Girt	7/8	256	686.80	27059.40	2.5	Pass
T5	240 - 220	Top Girt	7/8	313	252.49	27059.40	0.9	Pass
T6	220 - 200	Top Girt	1	370	-212.25	6785.94	3.1	Pass
T7	200 - 180	Top Girt	1	427	1593.65	35342.90	4.5	Pass
T8	180 - 160	Top Girt	1	484	-473.91	6845.07	6.9	Pass
T9	160 - 140	Top Girt	1	541	-201.73	6904.98	2.9	Pass
T10	140 - 120	Top Girt	1	598	1775.53	35342.90	5.0	Pass
T11	120 - 100	Top Girt	1	655	-165.52	6904.98	2.4	Pass
T12	100 - 80	Top Girt	1	712	420.02	35342.90	1.2	Pass
T13	80 - 60	Top Girt	1	769	489.74	35342.90	1.4	Pass
T14	60 - 40	Top Girt	7/8	826	447.02	27059.40	1.7	Pass
T15	40 - 20	Top Girt	7/8	883	411.87	27059.40	1.5	Pass
T16	20 - 5	Top Girt	7/8	940	458.89	27059.40	1.7	Pass
T17	5 - 0	Top Girt	10x3/8	985	20364.00	121500.00	16.8	Pass
T1	320 - 300	Bottom Girt	7/8	88	-99.35	3943.57	2.5	Pass
T2	300 - 280	Bottom Girt	7/8	147	-665.94	3943.57	16.9	Pass
T3	280 - 260	Bottom Girt	7/8	202	5852.08	27059.40	21.6	Pass
T4	260 - 240	Bottom Girt	7/8	259	-180.18	3943.57	4.6	Pass
T5	240 - 220	Bottom Girt	7/8	316	-516.90	3943.57	13.1	Pass
T6	220 - 200	Bottom Girt	1	373	8514.62	35342.90	24.1	Pass
T7	200 - 180	Bottom Girt	1	430	-397.12	6845.07	5.8	Pass
T8	180 - 160	Bottom Girt	1	487	-193.91	6845.07	2.8	Pass
T9	160 - 140	Bottom Girt	1	544	7665.49	35342.90	21.7	Pass
T10	140 - 120	Bottom Girt	1	601	-193.33	6904.98	2.8	Pass
T11	120 - 100	Bottom Girt	1	658	520.88	35342.90	1.5	Pass
T12	100 - 80	Bottom Girt	1	716	529.79	35342.90	1.5	Pass
T13	80 - 60	Bottom Girt	1	772	548.08	35342.90	1.6	Pass
T14	60 - 40	Bottom Girt	7/8	830	395.96	27059.40	1.5	Pass
T15	40 - 20	Bottom Girt	7/8	887	427.93	27059.40	1.6	Pass
T16	20 - 5	Bottom Girt	7/8	943	11070.80	27059.40	40.9	Pass
T17	5 - 0	Bottom Girt	10x3/8	988	-909.97	84439.60	31.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	320 - 300	Guy A@320	7/8	996	28850.30	47820.00	60.3	Pass
T3	280 - 260	Guy A@260.333	7/8	999	24209.90	47820.00	50.6	Pass
T6	220 - 200	Guy A@200.333	1	1002	30807.30	73200.00	42.1	Pass
T9	160 - 140	Guy A@140.333	1	1005	28692.60	73200.00	39.2	Pass
T13	80 - 60	Guy A@70	3/4	1008	12442.40	34980.00	35.6	Pass
T1	320 - 300	Guy B@320	7/8	995	28430.80	47820.00	59.5	Pass
T3	280 - 260	Guy B@260.333	7/8	998	23693.20	47820.00	49.5	Pass
T6	220 - 200	Guy B@200.333	1	1001	29785.80	73200.00	40.7	Pass
T9	160 - 140	Guy B@140.333	1	1004	27212.00	73200.00	37.2	Pass
T13	80 - 60	Guy B@70	3/4	1007	11665.10	34980.00	33.3	Pass
T1	320 - 300	Guy C@320	7/8	994	28798.90	47820.00	60.2	Pass
T3	280 - 260	Guy C@260.333	7/8	997	24092.00	47820.00	50.4	Pass
T6	220 - 200	Guy C@200.333	1	1000	30444.60	73200.00	41.6	Pass
T9	160 - 140	Guy C@140.333	1	1003	27907.20	73200.00	38.1	Pass
T13	80 - 60	Guy C@70	3/4	1006	11947.00	34980.00	34.2	Pass
							Summary	
						Latticed Pole Leg (L2)	30.0	Pass
						Latticed Pole Diagonal (L2)	92.4	Pass
						Latticed Pole Top Girt (L2)	6.7	Pass
						Latticed Pole Bottom Girt (L1)	11.1	Pass
						Leg (T5)	65.9	Pass
						Diagonal (T16)	56.3	Pass
						Horizontal (T17)	7.7	Pass
						Top Girt (T17)	16.8	Pass
						Bottom Girt (T16)	40.9	Pass
						Guy A (T1)	60.3	Pass
						Guy B (T1)	59.5	Pass
						Guy C (T1)	60.2	Pass
						Bolt Checks	36.2	Pass
						RATING =	**92.4**	**Pass**

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Guyed Tower Foundation Analysis

PAD AND PIER BASE FOUNDATION

GUY SHAFT AND DEAD MAN ANCHOR BLOCKS

Site No:	CT1837S	**Fullerton Engineering Consultants, Inc.**	**Date:** 3/11/2019
Site Name:	Ledyard Colonel Ledyard Highway	1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 (847) 908-8400	
Prepared By:	VY		
Checked By:	AJR		

Pad and Pier Foundation at Tower Base

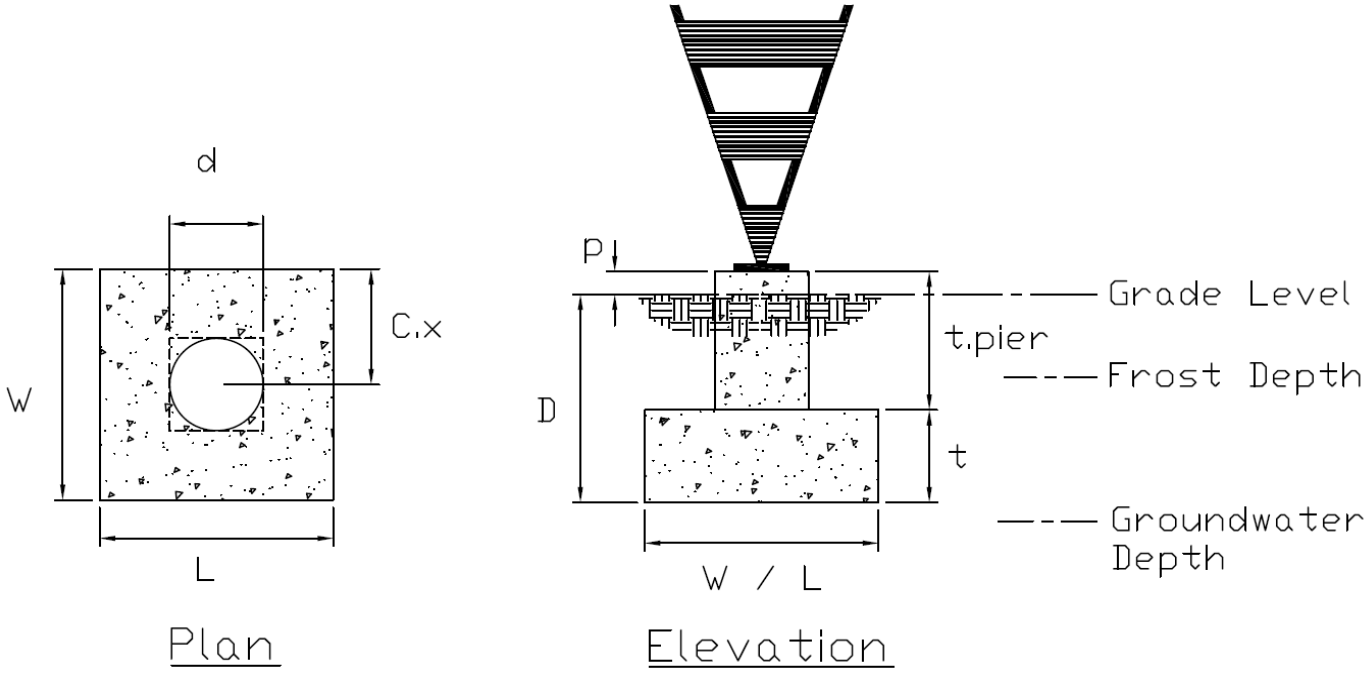
Factored Tower Reactions (based on Tnx calculations):

$P_{u\_base} := 296444 \cdot lbf$ — *Max. Axial Reaction*

$V_{u\_base} := 3822 \cdot lbf$ — *Max. Shear Reaction*

$M_{u\_base} := 0 \cdot kip \cdot ft$ — *Max. Moment Reaction*

Foundation Dimensions and Properties:



$W := 9.5 \cdot ft$ — *Width of pad*

$L := 9.5 \cdot ft$ — *Length of pad*

$d := 3.5 \cdot ft$ — *Diameter of pier*

$C_x := \min\left(\frac{W}{2}, \frac{L}{2}\right) = 4.75\ ft$ — *Minimum distance to center of gravity of tower from outer edge of pad foundation (based on foundation drawings)*

$p := 0.5 \cdot ft$ — *Projection of pier above grade*

$D := 5 \cdot ft$ — *Distance from top of grade to bottom of pad*

$t := 1.5 \cdot ft$ — *Thickness of pad*

$t_{pier} := D + p - t = 4\ ft$ — *Length of pier*

Pier_Type := (•) "Circular" ( ) "Square"

$\gamma_{conc} := 150 \cdot pcf$ — *Unit weight of concrete*

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Soil Properties based on Geotechnical Report and TIA Recommendations:

$\gamma_{soil} := 130 \cdot pcf$

$\gamma_{H20} := 62.4pcf$

$Bearing_{allowable} := 6 \cdot ksf$ — *Allowable bearing pressure*

Bearing_Type :=
- ○ "Gross"
- ◉ "Net"

$SF_{Bearing} := 2$ — *Minimum safety factor for allowable bearing for shallow foundation*

$Bearing_{Ult} := Bearing_{allowable} \cdot SF_{Bearing} = 12 \cdot ksf$ — *Ultimate bearing pressure*

$\phi_{soil} := 34 \cdot deg$ — *Angle of internal friction*

$\mu := 0.55$ — *Coefficient of friction*

$H_{frost} := 3.5 \cdot ft$ — *Frost depth*

$H_{water} := 8.5ft$ — *Depth of ground water per Geotechnical Report*

$\phi_b := 0.6$ — *Strength reduction factor for bearing of guyed masts*

$\phi_o := 0.75$ — *Strength reduction factor for overturning*

$\phi_f := 0.75$ — *Strength reduction factor for friction resistance*

$\phi_{lat} := 0.75$ — *Strength reduction factor for lateral resistance*

$\phi_s := 0.75$ — *Strength reduction factor for uplift resistance*

$A_{pad} := W \cdot L$ $A_{pad} = 90.25\ ft^2$ *Area of pad*

$A_{pier} := \begin{cases} \pi \frac{d^2}{4} & \text{if Pier\_Type = "Circular"} \\ d^2 & \text{if Pier\_Type = "Square"} \end{cases}$ $A_{pier} = 9.62\ ft^2$ *Area of pier*

$S := \frac{A_{pad} \cdot \min(W, L)}{6}$ $S = 142.9 \cdot ft^3$ *Section modulus of pad base*

$Wt_{pad} = 2.71 \cdot kip$ *Weight of concrete pad*

$Wt_{pier} = 1.4 \cdot kip$ *Weight of concrete pier*

$Wt_{soils} = 0 \cdot kip$ *Weight of soil is ignored if net bearing pressure is given*

$Wt_{total} := 1.2Wt_{pad} + 1.2Wt_{pier} + 1.2Wt_{soils}$ $Wt_{total} = 4.92 \cdot kip$ *Total factored weight of foundation*

$M_v := V_{u\_base} \cdot (D + p)$ $M_v = 21.02 \cdot kip \cdot ft$ *Moment due to shear*

Base Foundation Overturning Check:

$M_{OTM} := M_v + M_{u\_base}$ *Total Overturning Moment (Required strength)*

$M_{res} := (P_{u\_base} + Wt_{total}) \cdot C_x$ *Total Resisting Moment*

$\phi M_{res} := \phi_o \cdot M_{res}$ *Resisting moment (Ultimate strength)*

$\frac{M_{OTM}}{\phi M_{res}} = 0.0196$ *<1. OK*

OTMCheck = "Foundation is adequate for overturning moment"

Base foundation soil bearing check:

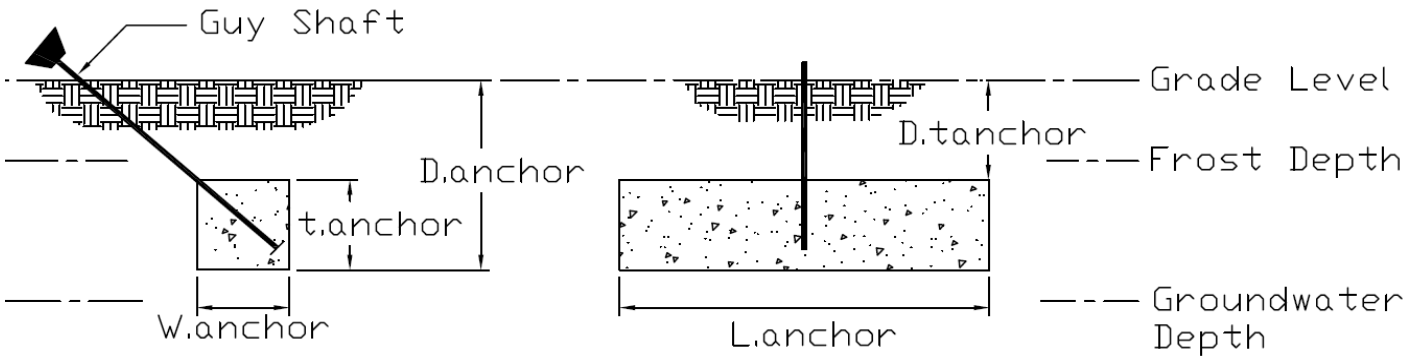
$R_u := \frac{(P_{u\_base} + Wt_{total})}{A_{pad}} + \frac{M_{OTM} + \left[P_{u\_base} \cdot \left(\frac{\min(L, W)}{2} - C_x\right)\right]}{S}$ $R_u = 3.49 \cdot ksf$ *Required bearing strength*

$\phi R_s := \phi_b \cdot Bearing_{Ult}$ $\phi R_s = 7.2 \cdot ksf$ *Ultimate bearing strength of soil based on soil properties*

$\frac{R_u}{\phi R_s} = 0.48$ *<1. OK*

BearingCheck = "Tower base foundation is adequate for bearing capacity of soil."

Guy Anchor Rod and Anchor Block Foundation Check



220 ft. Guy Anchorage Radius:

Anchor Block Foundation Dimensions and Properties:

$D_{anchor} := 8.5 \cdot ft$	*Depth to bottom of anchor block*
$W_{anchor} := 4 \cdot ft$	*Width of anchor block*
$t_{anchor} := 4 \cdot ft$	*Thickness of anchor block*
$L_{anchor} := 36 \cdot ft$	*Length of anchor block*

Factored Reactions (based on Tnx calculations):

$V := 81522 \cdot lbf$	*Max factored vertical reaction at this radius*
$H := 89434 \cdot lbf$	*Max factored horizontal reaction at this radius*
$T := 121034 \cdot lbf$	*Max factored tensile reaction at this radius*

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Soil Properties based on Geotechnical Report and TIA Recommendations:

Passive_Pressure_Listed_in_GeoReport := (●) "Yes" ( ) "No"

Passive_Pressure_per_GeoReport := (●) "Allowable" ( ) "Ultimate"

Soil_Type := ( ) "Cohesive" (●) "Sandy"

Note: "0" indicates value not listed in Geotechnical Report. This note does not apply to safety factors.

$\gamma_{soil} := 130 \cdot pcf$ *Unit weight of soil*

$H_{water} := 8.5 \cdot ft$ *Depth of ground water per Geotechnical Report*

$\mu := 0.55$ *Coefficient of friction*

$c := 0 \cdot psf$ *Cohesion.*

$\phi_{soil} := 34 \cdot deg$ *Angle of internal friction. "0" indicates value not listed in Geotech.Report*

$D := D_{anchor} - 0.5 \cdot t_{anchor} = 6.5\,ft$ *Distance from top of grade to center of anchor block*

$P_{P\_allow} := 150 \cdot psf$ *Allowable passive pressure per Geotechnical Report. "0" indicates value not listed in Geotech.Report*

$SF_{Pp} := 2$ *Safety factor for passive pressure*

$P_{ult} := 0 \cdot ksf$ *Ultimate passive pressure per Geotechnical Report. "0" indicates value not listed in Geotech.Report*

$$P_p := \begin{cases} P_{P\_allow} \cdot SF_{Pp} & \text{if Passive\_Pressure\_per\_GeoReport} = \text{"Allowable"} \\ P_{ult} & \text{if Passive\_Pressure\_per\_GeoReport} = \text{"Ultimate"} \end{cases}$$

$$K_p := \frac{1 + \sin(\phi_{soil})}{1 - \sin(\phi_{soil})}$$

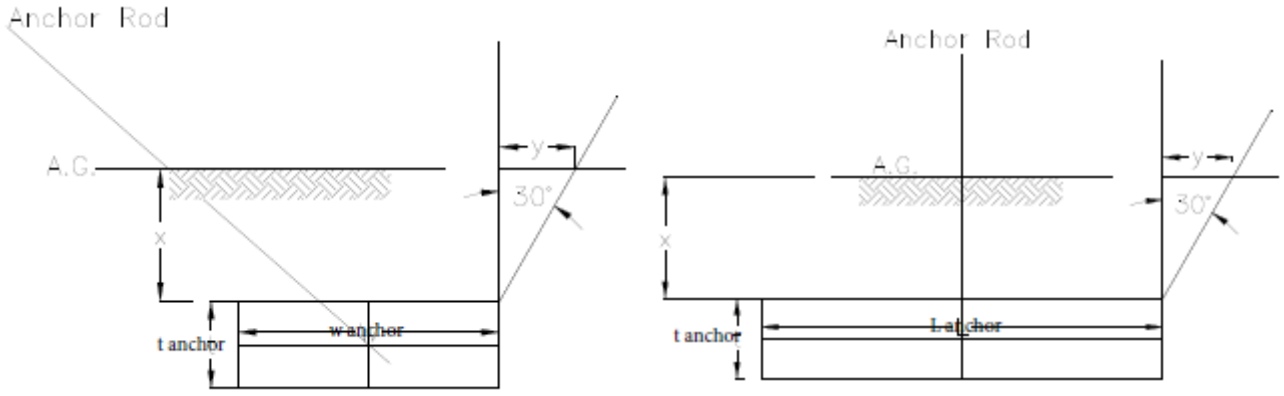
$$P_p := \begin{cases} \text{if Soil\_Type} = \text{"Sandy"} \\ \quad \begin{cases} P_p & \text{if Passive\_Pressure\_Listed\_in\_GeoReport} = \text{"Yes"} \\ K_p \cdot \gamma_{soil} \cdot (D) \cdot SF_{Pp} & \text{if Passive\_Pressure\_Listed\_in\_GeoReport} = \text{"No"} \end{cases} \\ \text{if Soil\_Type} = \text{"Cohesive"} \\ \quad \begin{cases} P_p & \text{if Passive\_Pressure\_Listed\_in\_GeoReport} = \text{"Yes"} \\ \left[K_p \cdot \gamma_{soil} \cdot (D) + 2 \cdot c \cdot \sqrt{K_p}\right] \cdot SF_{Pp} & \text{if Passive\_Pressure\_Listed\_in\_GeoReport} = \text{"No"} \end{cases} \end{cases}$$

$P_u := P_p$ $P_u = 0.3 \cdot ksf$ *Ultimate Passive Pressure*

Anchor Block Foundation Check:

$V_{conc} := W_{anchor} \cdot t_{anchor} \cdot L_{anchor}$ $\quad V_{conc} = 576 \cdot ft^3$ *Volume of concrete anchor block*

$Wt_{conc} := \begin{cases} 1.2 \cdot (V_{conc} \cdot \gamma_{conc}) & \text{if } H_{water} > D_{anchor} \\ 1.2 \cdot (V_{conc} \cdot \gamma_{conc\_sub}) & \text{otherwise} \end{cases}$ $\quad Wt_{conc} = 60.55 \cdot kip$ *Weight of anchor block*



Uplift Resistance Check:

$x := D_{anchor} - t_{anchor}$ $\quad x = 4.5\,ft$

$y := \tan(30°) \cdot x$ $\quad y = 2.6\,ft$

$A_{bottom} := (W_{anchor}) \cdot (L_{anchor})$ $\quad A_{bottom} = 144\,ft^2$ *Area of block foundation (soil pyramid lower base)*

$A_{top} := [2 \cdot y + (W_{anchor})] \cdot [2 \cdot y + (L_{anchor})]$ $\quad A_{top} = 378.85\,ft^2$ *Area of soil at ground level (soil pyramid upper base)*

$V_{cone} := \frac{x}{3} \cdot (A_{top} + A_{bottom} + \sqrt{A_{top} \cdot A_{bottom}})$ $\quad V_{cone} = 1134.62 \cdot ft^3$ *Total volume of soil pyramid*

$Wt_{soil} := 1.2 \cdot V_{cone} \cdot \gamma_{soil}$ $\quad Wt_{soil} = 177 \cdot kip$ *Factored weight of soil pyramid*

$Wt_{soil} := \begin{cases} 1.2 \cdot (V_{cone} \cdot \gamma_{soil}) & \text{if } H_{water} > x \\ 1.2 \cdot (V_{cone} \cdot \gamma_{soil\_sub}) & \text{otherwise} \end{cases}$ $\quad Wt_{soil} = 177 \cdot kip$ *Weight of concrete anchor block*

$U_{resistance} := 0.9 \cdot (Wt_{conc} + Wt_{soil})$ $\quad U_{resistance} = 213.79 \cdot kip$ *Nominal uplift resistance based on weight of concrete anchor block and soil pyramid*

$\phi U_{resistance} := \phi_s \cdot U_{resistance}$ $\quad \phi U_{resistance} = 160.35 \cdot kip$ *Ultimate uplift resistance based on weight of concrete anchor block and soil pyramid*

Fullerton Engineering Consultants, Inc.
1100 E. Woodfield Road, Suite 500
Schaumburg, IL 60173
(847) 908-8400

$U_{req} := V$ $\quad U_{req} = 81.52 \cdot kip$ *Required strength*

$\frac{U_{req}}{\phi U_{resistance}} = 0.51$ *<1. OK.*

UpliftCheck = "Uplift resistance is adequate."

Lateral Resistance Check:

$F_{friction} := 0.9 \cdot (Wt_{conc} + Wt_{soil}) \cdot \mu$ $\quad F_{friction} = 117.59 \cdot kip$ *Nominal friction resistance based on weight of concrete and soil*

$P_{front} := P_u \cdot (L_{anchor} \cdot t_{anchor})$ $\quad P_{front} = 43.2 \cdot kip$ *Nominal lateral resistance based on soil passive pressure*

$\phi P_{res} := \phi_{lat} \cdot P_{front} + \phi_f \cdot F_{friction}$ $\quad \phi P_{res} = 120.59 \cdot kip$ *Ultimate lateral resistance*

$P_{req} := H$ $\quad P_{req} = 89.43 \cdot kip$ *Required strength*

$\frac{H}{\phi P_{res}} = 0.74$ *<1 OK.*

LateralResistanceCheck = "Lateral Pressure resistance is adequate."

CUDDY +FEDER LLP

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

April 29, 2019

VIA EMAIL & OVERNIGHT DELIVERY
Members of the Connecticut Siting Council
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Re: Tower Sharing Request by New Cingular Wireless PCS, LLC
Premises: 581 Colonel Ledyard Highway, Ledyard Connecticut

Dear Members of the Siting Council:

Pursuant to Connecticut General Statutes (C.G.S.) § 16-50aa, New Cingular Wireless PCS, LLC ("AT&T" or "the Applicant") hereby requests an order from the Connecticut Siting Council (the "Council") to approve the proposed shared use of a communications tower and associated compound at the parcel identified as 581 Colonel Ledyard Highway in the Town of Ledyard (the "Ledyard Highway Facility"). The tower owner is Mind Reader Research, Inc. ("Mind Reader"). AT&T and Mind Reader have agreed to share the use of the Ledyard Highway Facility as detailed below. Additionally, annexed here as **Attachment 4** is the Letter of Authorization between the Applicant and Mind Reader authorizing the Applicant to prepare and file an application for the Applicant's use of the existing tower.

The Ledyard Highway Facility

The Ledyard Highway Facility consists of an approximately three-hundred and fifty foot (350') guyed tower (the "Tower") and associated equipment. The tower and compound are located on an approximately 115.13-acre parcel owned by Frederic and Jeanne Allyn.

AT&T Wireless' Facility

As depicted on the enclosed plans annexed hereto as **Attachment 1** prepared by Fullerton Engineering Consultants, Inc. last updated April 26, 2019, including a site plan, compound and equipment layout and tower elevation, AT&T proposes shared use of the Ledyard Highway Facility to provide FCC licensed services. AT&T will install 9 antennas, 18 remote radiohead units, and four raycap units on a v-boom antenna mount system at approximately the 173-foot level of the tower. As also depicted on the drawings, within the existing compound AT&T will install a 6'-8"x6'-8" walk in equipment cabinet on an 8'x8'

concrete pad. Also, within the existing compound, AT&T will install a 20kw backup diesel generator on a 6'x4' concrete pad.

Connecticut General Statutes § 16-50aa provides that, upon written request for shared use approval, an order approving such use shall be issued "if the Council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns." (C.G.S. § 16-50aa(c)(1)). Further, upon approval of such shared use, it is exclusive, and no local zoning or land use approvals are required. (C.G.S. § 16-50x). Shared use of the Ledyard Highway Facility satisfies the approval criteria set forth in C.G.S. § 16-50aa as follows:

A. Technical Feasibility: As evidenced in the structural letter prepared by Fullerton Engineering Consultants, Inc. and dated March 11, 2019 annexed hereto as **Attachment 2**, AT&T confirmed that the tower is designed to support the addition of AT&T's antennas and tower mounted equipment in addition to the existing loading. The proposed shared use of this tower is therefore technically feasible.

B. Legal Feasibility: Pursuant to C.G.S. § 16-50aa, the Council is authorized to issue an order approving shared use of the existing Ledyard Highway Facility. (C.G.S. § 16-50aa(c)(1)). Under the authority vested in the Council by C.G.S. § 16-50aa, an order by the Council approving the shared use of a tower would permit the Applicant to obtain a building permit for the proposed installation. Notably, this tower was not previously approved by the Council or subject to this Council's jurisdiction. However, the tower currently houses various equipment for transmitting and receiving signals in the electromagnetic spectrum.

C. Environmental Feasibility: The proposed shared use would have a minimal environmental effect, for the following reasons:

1. Given the height of the existing tower, AT&T's proposed installation would have a *de minimis* visual impact and would not cause any significant change or alteration in the physical or environmental characteristics of the facility;

2. The installation by AT&T will not increase the height of the tower;

3. The proposed installation will not increase the noise levels at the site boundaries by six decibels or more;

4. Operation of AT&T's antennas at this site will not exceed the total radio frequency electromagnetic radiation power density level adopted by the FCC and Connecticut Department of Health. AT&T's proposed antenna installation along with the existing equipment is calculated to be within

5.98% of FCC Standard for General Public/Uncontrolled Maximum Permissible Exposure (MPE). Please see the assessment of RF power density dated March 22, 2019, prepared by Keith Vellante, Director of RF Services, C Squared Systems, LLC, annexed hereto as **Attachment 3**; and

5. The proposed shared use of the Ledyard Highway Facility would not require any water or sanitary facilities or discharges into any waterbodies. The only air emissions would be from weekly testing of the emergency back-up generator and its use during a power outage. Further, the installation will not generate any traffic other than for periodic maintenance visits.

D. Economic Feasibility: The Applicant and the tower owner entered into a mutual agreement to share use of the Ledyard Highway Street on terms agreeable to both parties. The proposed tower sharing is therefore economically feasible.

E. Public Safety: As stated above and evidenced in attachments hereto the tower is structurally capable of supporting AT&T's installation and emissions are well within the maximum permitted by the FCC and the Connecticut Department of Health. Further, the addition of AT&T's telecommunications service in the Ledyard area through shared use of the Ledyard Highway Facility is expected to enhance the safety and welfare of local residents and travelers through the area resulting in an improvement to public safety in this area of the State.

Conclusion

As explained above, the proposed shared use of the Ledyard Highway Facility satisfies the criteria set forth in C.G.S. §16-50aa and advances the General Assembly's and the Siting Council's goal of preventing the proliferation of towers in the State of Connecticut. AT&T therefore requests the Siting Council issue an order approving the proposed shared use of the Ledyard Highway Facility.

Respectfully submitted,

Lucia Chiocchio

Lucia Chiocchio
On behalf of AT&T

Attachments

cc: Melanie Bachman, Executive Director
Town of Ledyard

Mind Reader Research, Inc.
Frederic and Jeanne Allyn
AT&T
C Squared Systems, LLC
Daniel Patrick, Esq.
Julie Durkin

Attachment 1

AT&T APPROVALS

	PRINT NAME	SIGNATURE	DATE
SA MANAGER			
SMARTLINK CM			
SMARTLINK SA PM			
SMARTLINK SA SPEC.			
SMARTLINK COMPLIANCE MGR.			
AT&T RF PM			
AT&T PM			

APPROVED FOR CONSTRUCTION

NETWORK DEVELOPMENT		
SA		
RF		
CONSTRUCTION		
PROPERTY OWNER		

at&t

SITE NAME:	LEDYARD COLONEL LEDYARD HIGHWAY
SEARCH RING NUMBER:	CT1837S
USID:	162156
FA NUMBER:	12685510
SITE ADDRESS:	581 COLONEL LEDYARD HIGHWAY LEDYARD, CT 06339
SITE TYPE:	GUYED TOWER

at&t
7150 STANDARD DRIVE
HANOVER, MD 21076

smartlink
1362 MELLON ROAD, SUITE 140
HANOVER, MD 21076

FULLERTON ENGINEERING DESIGN
1100 E. WOODFIELD ROAD, SUITE 500
SCHAUMBURG, ILLINOIS 60173
TEL: 847-908-8400
COA# PEC.0001444
www.FullertonEngineering.com

PROJECT INFORMATION

SITE NAME:	LEDYARD COLONEL LEDYARD HIGHWAY
USID:	162156
SITE ADDRESS:	581 COLONEL LEDYARD HIGHWAY LEDYARD, CT 06339
SITE TYPE:	GUY TOWER
COUNTY:	NEW LONDON
JURISDICTION:	TOWN OF LEDYARD
APN:	–
ZONING CLASSIFICATION:	–
FA#:	12685510
APPLICANT:	AT&T WIRELESS 7150 STANDARD DRIVE HANOVER, MD 21076
SITE COORDINATES:	
LATITUDE:	41.4340500°
LONGITUDE:	-72.0016850°
GROUND ELEV. (A.M.S.L.):	306'
PROPERTY OWNER:	ALLYN FREDERIC B. JR & JEANNE S. 610 COLONEL LEDYARD HIGHWAY LEDYARD, CT 06339

SCOPE OF WORK

THE SCOPE OF WORK CONSISTS OF:

- (3) ANTENNA SECTOR FRAMES
- (9) NEW ANTENNAS
- (18) NEW RRH UNITS
- (4) NEW RAYCAP UNITS
- (2) NEW FIBER CABLES & (8) NEW DC POWER CABLES
- NEW 6'-8"x6'-8" WIC SHELTER
- NEW 8'x8' CONCRETE SLAB
- NEW 4'x6' CONCRETE SLAB
- NEW 20KW GENERATOR W/ FUEL TANK

- CONTRACTOR SHALL FURNISH ALL MATERIAL WITH THE EXCEPTION OF AT&T SUPPLIED MATERIAL.
- ALL MATERIAL SHALL BE INSTALLED BY THE CONTRACTOR, UNLESS STATED OTHERWISE.

APPLICABLE BUILDING CODES AND STANDARDS

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES.

BUILDING CODE: 2012 INTERNATIONAL BUILDING CODE
2018 CONNECTICUT STATE BUILDING CODE SUPPLEMENT

ELECTRICAL CODE: 2014 NATIONAL ELECTRICAL CODE (NEC)

- FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.
- ADA ACCESS REQUIREMENTS ARE NOT REQUIRED.
- THIS FACILITY DOES NOT REQUIRE POTABLE WATER AND WILL NOT PRODUCE ANY SEWAGE

SITE LOCATION MAP

DRAWING INDEX

REV	DATE	DESCRIPTION	BY
0	11/09/18	90% REVIEW	ASE
1	12/11/18	FOR PERMIT	KC
2	02/07/19	FOR CONSTRUCTION	KC
3	04/26/19	FOR CONSTRUCTION	EB

I HEREBY CERTIFY THAT THESE DRAWINGS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CONTROL, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF COMPLY WITH THE REQUIREMENTS OF ALL APPLICABLE CODES.

STATE OF CONNECTICUT · HENRY M. BELLAGAMBA · 25358 · LICENSED PROFESSIONAL ENGINEER

PROJECT CONSULTANTS

	NAME	COMPANY	PHONE
A/E	RYAN O'SHAUGHNESSY	FULLERTON	(847) 908-8505
REAL ESTATE	MICHAEL PATTISON	SMARTLINK	(941) 979-2622
RF		AT&T	
PM	KRISTEN SMITH	SMARTLINK	(941) 979-2622
REGULATORY	DANIELLE KOVACH	SMARTLINK	(941) 979-2622
CM	ROBERT PICARD	SMARTLINK	(443) 858-2055

DIRECTIONS

SCAN QR CODE FOR LINK TO SITE LOCATION MAP

811 Know what's below. Call before you dig.

DRAWING SCALES ARE FOR 11"x17" SHEETS

SITE NUMBER
CT1837S

SITE NAME
LEDYARD COLONEL LEDYARD HIGHWAY

FA NUMBER:
12685510

USID:
162156

SITE ADDRESS
581 COLONEL LEDYARD HIGHWAY
LEDYARD, CT 06339

SHEET NAME
TITLE SHEET

SHEET NUMBER
T-1

FEC# 2018.0265. 0002

GENERAL:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FOLLOWING ALL LAWS, REGULATIONS, AND RULES SET FORTH BY FEDERAL, STATE, AND LOCAL AUTHORITIES WITH JURISDICTION OVER THE PROJECT. THIS RESPONSIBILITY IS IN EFFECT REGARDLESS OF WHETHER THE LAW, ORDINANCE, REGULATION OR RULE IS MENTIONED IN THESE SPECIFICATIONS.
2. ALL WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS, PROJECT SPECIFICATIONS, AND THE CONSTRUCTION CONTRACT DOCUMENTS.
3. THE CONTRACTOR SHALL HAVE AND MAINTAIN A VALID CONTRACTOR'S LICENSE FOR THE LOCATION IN WHICH THE WORK IS TO BE PERFORMED. FOR JURISDICTIONS THAT LICENSE INDIVIDUAL TRADES, THE TRADESMAN OR SUBCONTRACTOR PERFORMING THOSE TRADES SHALL BE LICENSED.
4. FOLLOW ALL APPLICABLE RULES AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND STATE LAW AS DEFINED IN THE FEDERAL OCCUPATIONAL SAFETY AND HEALTH ACT.
5. PRIOR TO THE SUBMISSION OF THE BID, THE CONTRACTOR SHALL VISIT THE JOB SITE, VERIFY ALL DIMENSIONS AND BECOME FAMILIAR WITH THE FIELD CONDITIONS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE PROJECT MANAGER.
6. DRAWING PLANS SHALL NOT BE SCALED.
7. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK NOT CLEARLY IDENTIFIED ON THE DRAWINGS WITHOUT THE PRIOR WRITTEN APPROVAL OF THE PROJECT MANAGER.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS UNLESS SPECIFICALLY OTHERWISE NOTED.
9. ALL MEANS AND METHODS OF CONSTRUCTION DEALING WITH TOWER CONSTRUCTION AND SAFETY, STEEL ERECTION, EXCAVATIONS, TRENCHING, SCAFFOLDING, FORMWORK, ELECTRICAL, AND WORK IN CONFINED SPACES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
10. WHEN THE CONTRACTOR ACTIVITIES IMPEDE OR OBSTRUCT TRAFFIC FLOW, CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL DEVICES, SIGNS, AND FLAGMEN IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, DOT AND LOCAL REQUIREMENTS.
11. THE CONTRACTOR SHALL COORDINATE SITE ACCESS AND SECURITY WITH THE PROPERTY OWNER AND THE PROJECT MANAGER PRIOR TO CONSTRUCTION.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH UTILITIES.
13. THE CONTRACTOR SHALL CALL THE LOCAL PUBLIC UTILITY LOCATING PROVIDER (811) A MINIMUM OF THREE BUSINESS DAYS PRIOR TO EXCAVATING IN THE PUBLIC RIGHT OF WAY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING PRIVATE UTILITIES.
15. THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY UTILITIES OR FACILITIES IT DEEMS NECESSARY TO COMPLETE THE WORK. THIS INCLUDES, BUT IS NOT LIMITED TO WATER, SEWER, POWER, TELEPHONE, HEAT, LIGHTING OR SECURITY.
16. WHEN EXCAVATING IN THE AREA OF EXISTING UTILITIES, THE CONTRACTOR SHALL USE REASONABLE CARE IN PROTECTING SUCH UTILITIES. CONTRACTOR SHALL NOTIFY THE PROJECT MANAGER IMMEDIATELY OF ANY CONFLICTS BETWEEN EXISTING UTILITIES AND PROPOSED CONSTRUCTION.
17. DAMAGE TO PUBLIC OR PRIVATE UTILITIES SHALL BE REPORTED TO THE PROJECT MANAGER AND THE OWNER OF THE UTILITY IMMEDIATELY. ANY DAMAGE RESULTING FROM CONTRACTORS NEGLIGENCE OR FAILURE TO ACT WITH DUE REGARD SHALL BE REPAIRED AT CONTRACTORS EXPENSE.
18. UNLESS OTHERWISE NOTED ON THE PLANS, CONTRACTOR SHALL ASSUME ALL SURFACE FEATURES SUCH AS BUT NOT LIMITED TO BUILDINGS, PAVEMENTS, LANDSCAPING FEATURES, PLANTS, ETC. ARE TO BE SAVED AND PROTECTED FROM DAMAGE. CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SITE CONDITIONS AND UPON COMPLETION OF WORK REPAIR BACK TO ORIGINAL CONDITIONS ANY DAMAGE THAT OCCURRED DURING CONSTRUCTION.
19. KEEP THE CONSTRUCTION SITE CLEAN, HAZARD FREE, AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. LEAVE PREMISES IN CLEAN CONDITION AND SHALL BE SUBJECT TO APPROVAL BY THE PROPERTY OWNER AND THE PROJECT MANAGER.
20. THE CONTRACTOR SHALL PROVIDE ON-SITE TRASH RECEPTACLES FOR COLLECTION OF NON-TOXIC DEBRIS. ALL TRASH SHALL BE COLLECTED ON A DAILY BASIS.
21. ALL TOXIC AND ENVIRONMENTALLY HAZARDOUS SUBSTANCES SHALL BE USED AND DISPOSED OF IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS. UNDER NO CIRCUMSTANCES SHALL RINSING OR DUMPING OF THESE SUBSTANCES OCCUR ON-SITE.
22. UNLESS NOTED OTHERWISE, CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL PERMITS NECESSARY FOR CONSTRUCTION.
23. THE PROJECT MANAGER MAY RETAIN THE SERVICES OF A TESTING LABORATORY TO PERFORM QUALITY ASSURANCE TESTING ON VARIOUS PORTIONS OF THE CONTRACTORS WORK. WHEN REQUESTED, THE CONTRACTOR SHALL INFORM THE TESTING LABORATORY AND ASSIST THEM IN COMPLETING TESTS.
24. THE CONTRACTOR SHALL MAINTAIN AND SUPPLY THE PROJECT MANAGER WITH AS-BUILT PLANS UPON COMPLETION OF THE PROJECT.

ELECTRIC:

1. THE CONTRACTOR SHALL PERFORM WORK IN ACCORDANCE WITH ALL GOVERNING STATE, COUNTY AND LOCAL CODES AND OSHA REQUIREMENTS.
2. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES.
3. THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS AND TRANSPORTATION FOR A COMPLETE AND PROPERLY OPERATIVE SYSTEM ENERGIZED THROUGHOUT AND AS INDICATED ON DRAWINGS.
4. THE CONTRACTOR SHALL OBTAIN ALL PERMITS, PAY PERMIT AND INSPECTION FEES, AND BE RESPONSIBLE FOR SCHEDULING INSPECTIONS WITH THE AUTHORITY HAVING JURISDICTION.
5. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, IEEE, NEMA AND NFPA.
6. ALL MATERIALS SHALL BE U.L. LISTED.
7. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT.
8. MATERIALS SHALL MEET WITH APPROVAL OF THE AUTHORITY HAVING JURISDICTION.
9. THE CONTRACTOR SHALL PERFORM ALL VERIFICATION OBSERVATIONS TEST, AND EXAMINATION WORK PRIOR TO THE ORDERING OF THE ELECTRICAL EQUIPMENT AND STARTING CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE PROJECT MANAGER LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.
10. THE CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR CONNECTION OF THE TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL HOOKUP COSTS TO BE PAID BY CONTRACTOR.
11. UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL OF POTENTIAL GROUND TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO THE PROJECT MANAGER.
12. ALL BROCHURES, OPERATING MANUALS, CATALOGS, SHOP DRAWINGS, ETC. SHALL BE TURNED OVER TO THE PROJECT MANAGER AT JOB COMPLETION.
13. POST-INSTALLATION, ANY WORK, MATERIAL OR EQUIPMENT FOUND TO BE FAULTY SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE CONTRACTOR.
14. PROVIDE THE PROJECT MANAGER WITH ONE SET OF COMPLETE ELECTRICAL "AS-INSTALLED" DRAWINGS AT THE COMPLETION OF THE JOB, SHOWING ACTUAL DIMENSIONS, ROUTINGS AND CIRCUITS.
15. ALL ELECTRICAL EQUIPMENT SHALL BE LABELED WITH PERMANENT ENGRAVED PLASTIC LABELS NOTING USE FUNCTION.
16. EACH CONDUCTOR OF EVERY SYSTEM SHALL BE PERMANENTLY TAGGED IN EACH PANEL BOARD, PULL BOX, J-BOX, SWITCH BOX, ETC.
17. ALL CONDUIT INSTALLED SHALL BE SURFACE MOUNTED OR DIRECT BURIAL UNLESS OTHERWISE NOTED.
18. ALL CONDUIT SHALL HAVE A PULL WIRE OR ROPE.
19. ALL CONDUCTORS SHALL BE COPPER.
20. ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING SHORT CIRCUIT CURRENT TO WHICH THEY MAY BE SUBJECTED, AND A MINIMUM OF 10,000 A.I.C.
21. PATCH, REPAIR AND PAINT ANY AREA THAT HAS BEEN DAMAGED IN THE COURSE OF THE ELECTRICAL WORK.
22. PENETRATIONS IN FIRE RATED WALLS SHALL BE FIRE STOPPED TO MATCH ORIGINAL RATING.
23. BX OR ROMEX CABLE IS NOT PERMITTED.
24. ALL ELECTRICAL/FIBER ENCLOSURES, JUNCTION BOXES, CONDUIT KNOCKOUTS, RACEWAYS, ETC. SHALL BE RODENT-PROOF.
25. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNDAMAGED CONDITION.

at&t
7150 STANDARD DRIVE
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smartlink
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HANOVER, MD 21076

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TEL: 847-908-8400
COA# PEC.0001444
www.FullertonEngineering.com

REV	DATE	DESCRIPTION	BY
0	11/09/18	90% REVIEW	ASE
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2	02/07/19	FOR CONSTRUCTION	KC
3	04/26/19	FOR CONSTRUCTION	EB

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STATE OF CONNECTICUT · HENRY M. BELLAGAMBA · 25358 · LICENSED PROFESSIONAL ENGINEER

SITE NUMBER
CT1837S

SITE NAME
LEDYARD COLONEL LEDYARD HIGHWAY

FA NUMBER:
12685510

USID:
162156

SITE ADDRESS
581 COLONEL LEDYARD HIGHWAY
LEDYARD, CT 06339

SHEET NAME
GENERAL NOTES

SHEET NUMBER
T-2

FEC# 2018.0265. 0002

GENERAL ABBREVIATIONS

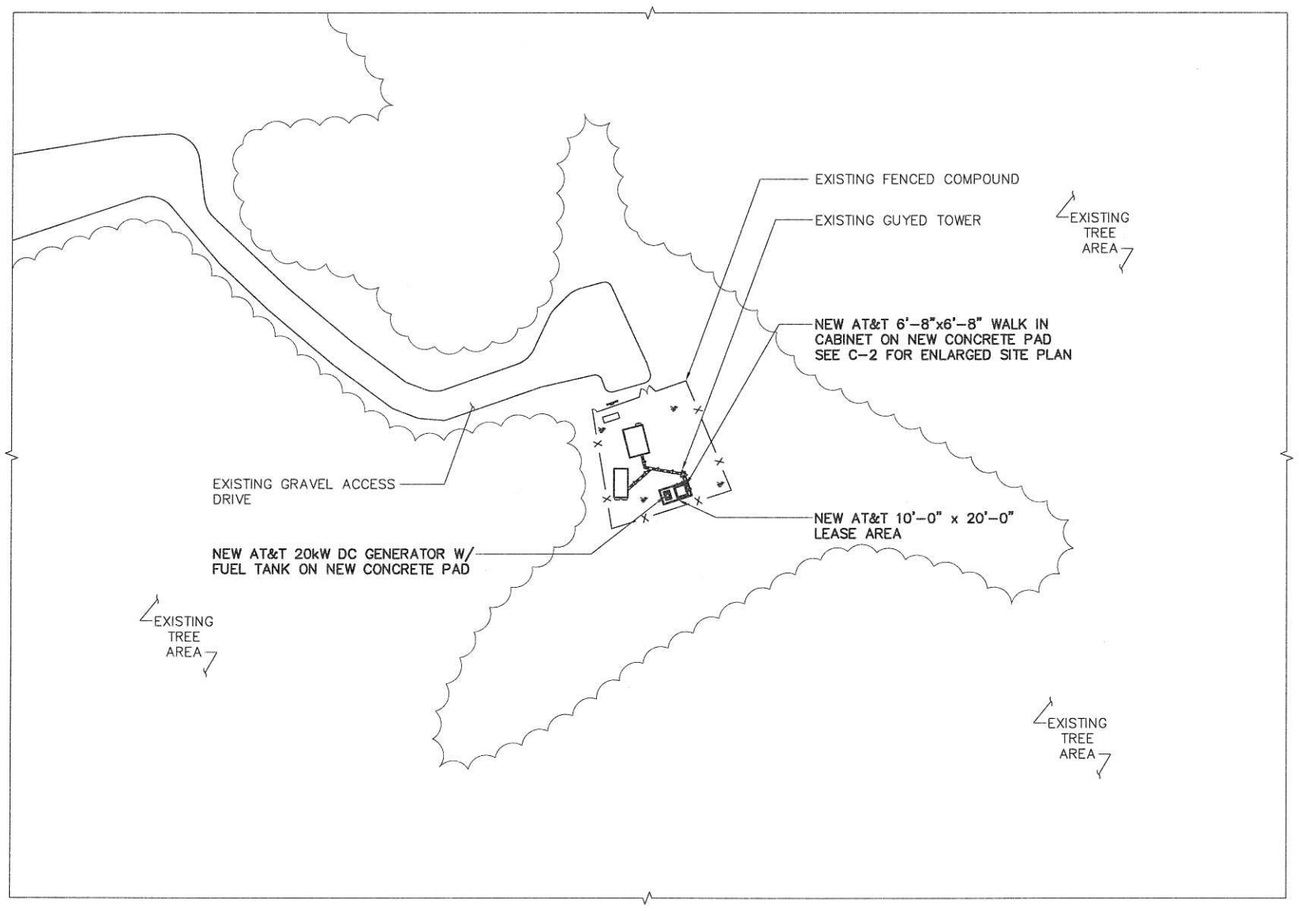
AFF	ABOVE FINISHED FLOOR
AGL	ABOVE GRADE LEVEL
AMSL	ABOVE MEAN SEA LEVEL
APPROX	APPROXIMATE
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BLDG	BUILDING
℄	CENTERLINE
CLR	CLEAR
COL	COLUMN
CONC	CONCRETE
CND	CONDUIT
DIA	DIAMETER
DWG	DRAWING
FT	FOOT(FEET)
EGB	EQUIPMENT GROUND BAR
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
ELEV	ELEVATION
EQUIP	EQUIPMENT
(E)	EXISTING
EXT	EXTERIOR
FND	FOUNDATION
F	FIBER
GA	GAUGE
GALV	GALVANIZED
GPS	GLOBAL POSITIONING SYSTEM
GND	GROUND
LP	LIQUID PROPANE
MAX	MAXIMUM
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MTS	MANUAL TRANSFER SWITCH
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
OE/OT	OVERHEAD ELECTRIC/TELCO
PPC	POWER PROTECTION CABINET
PL	PROPERTY LINE
RGS	RIGID GALVANIZED STEEL
IN	INCH(ES)
INT	INTERIOR
LB(S), #	POUND(S)
SF	SQUARE FOOT
STL	STEEL
TYP	TYPICAL
UE/UT	UNDERGROUND ELECTRIC/TELCO
UNO	UNLESS NOTED OTHERWISE
VIF	VERIFY IN FIELD
W/	WITH
XFMR	TRANSFORMER

TELECOM ABBREVIATIONS

FIF	FACILITY INTERFACE FRAME
GSM	GLOBAL SYSTEM FOR MOBILE COMMUNICATION
LTE	LONG TERM EVOLUTION
MW	MICROWAVE
MCPA	MULTI-CARRIER POWER AMPLIFIER
RBS	RADIO BASED STATION
RET	REMOTE ELECTRIC TILT
TMA	TOWER MOUNTED AMPLIFIER
UMTS	UNIVERSAL MOBILE TELECOMMUNICATION SYSTEM

SYMBOLS

- REVISION
- WORK POINT
- UTILITY POLE
- BRICK
- COMPRESSED STONE
- CONCRETE
- EARTH
- GRAVEL
- CENTERLINE
- PROPERTY LINE
- LEASE LINE
- EASEMENT LINE
- FENCE
  - CHAINLINK
  - WOOD
  - WROUGHT IRON
- ELECTRIC
  - OVERHEAD
  - UNDERGROUND
- FIBER
  - OVERHEAD
  - UNDERGROUND
- TELEPHONE
  - OVERHEAD
  - UNDERGROUND
- DCPOWER



SITE PLAN

SCALE: 1" = 20'-0" | 1

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smartlink
1362 MELLON ROAD, SUITE 140
HANOVER, MD 21076

FULLERTON ENGINEERING DESIGN
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TEL: 847-908-8400
COA# PEC.0001444
www.FullertonEngineering.com

REV	DATE	DESCRIPTION	BY
0	11/09/18	90% REVIEW	ASE
1	12/11/18	FOR PERMIT	KC
2	02/07/19	FOR CONSTRUCTION	KC
3	04/26/19	FOR CONSTRUCTION	EB

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STATE OF CONNECTICUT · HENRY M. BELLAGAMBA · 25358 · LICENSED PROFESSIONAL ENGINEER

SITE NUMBER
CT1837S

SITE NAME
LEDYARD COLONEL LEDYARD HIGHWAY

FA NUMBER:
12685510

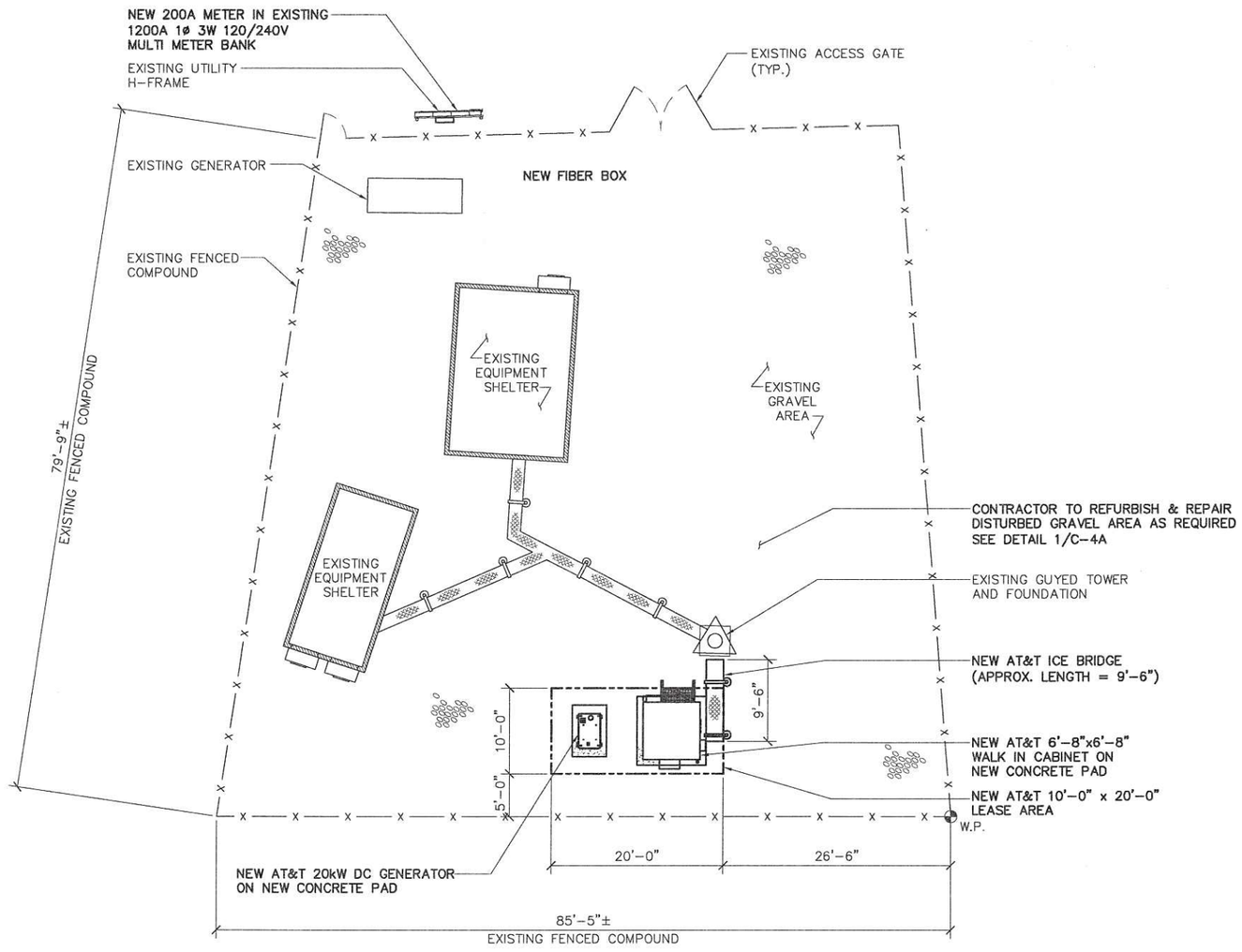
USID:
162156

SITE ADDRESS
581 COLONEL LEDYARD HIGHWAY
LEDYARD, CT 06339

SHEET NAME
SITE PLAN

SHEET NUMBER
C-1

FEC# 2018.0265. 0002



ENLARGED SITE PLAN

SCALE: 1/16" = 1'-0" | 1

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HANOVER, MD 21076

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HANOVER, MD 21076

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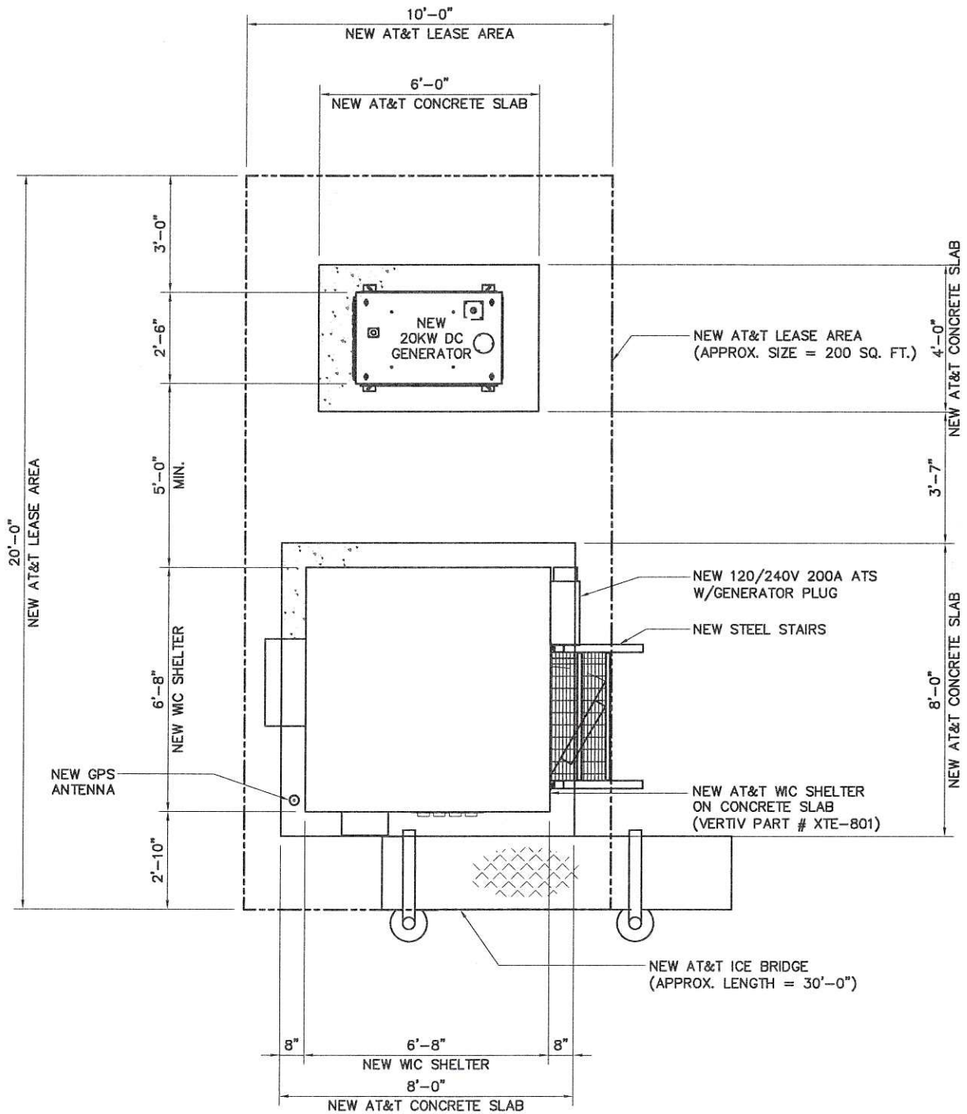
LEDYARD, CT 06339

SHEET NAME
ENLARGED SITE PLAN

SHEET NUMBER
C-2

FEC# 2018.0265. 0002



EQUIPMENT LAYOUT

SCALE: 1/4" = 1'-0" | 1

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SITE ADDRESS
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LEDYARD, CT 06339

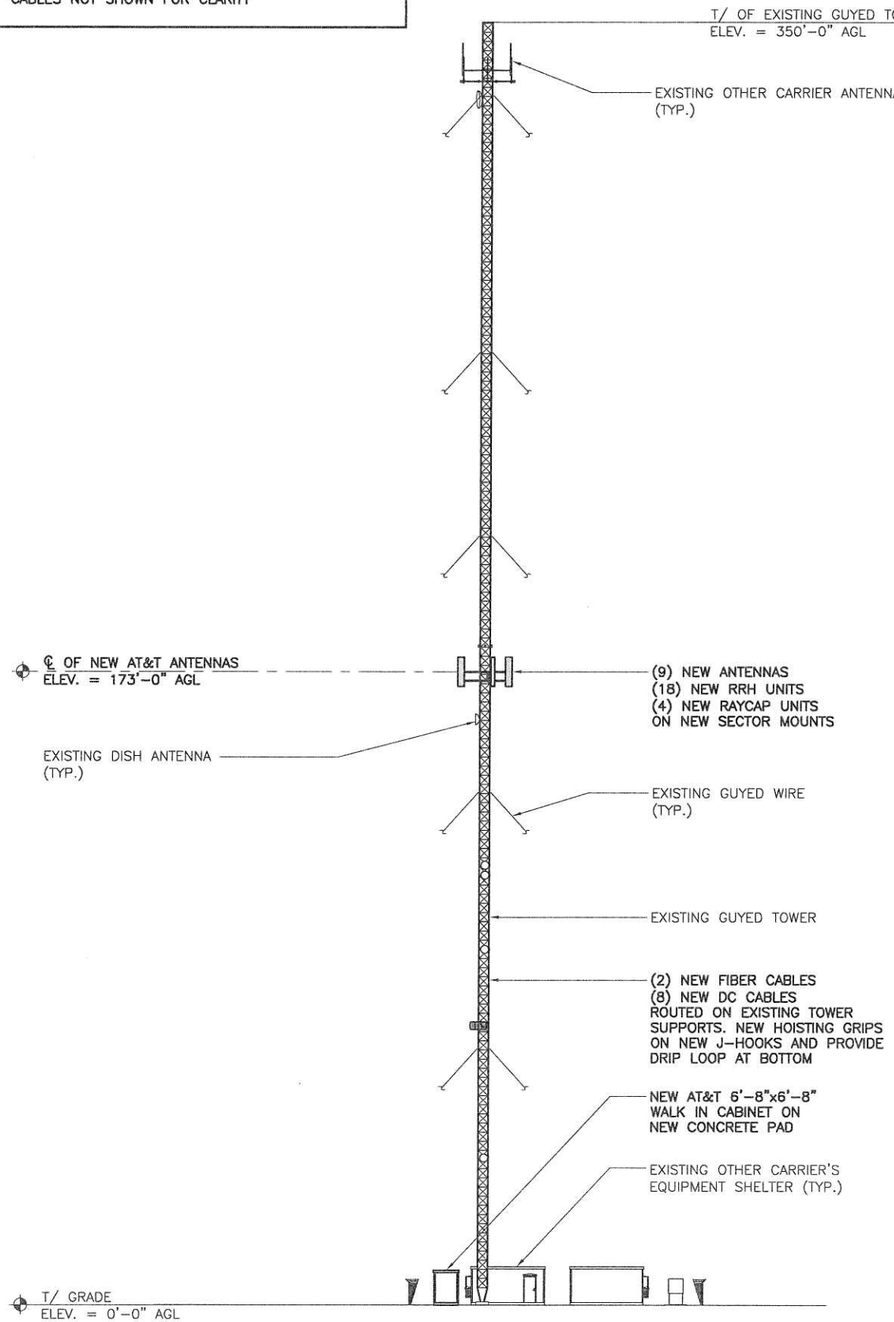
SHEET NAME
EQUIPMENT LAYOUT

SHEET NUMBER
C-2A

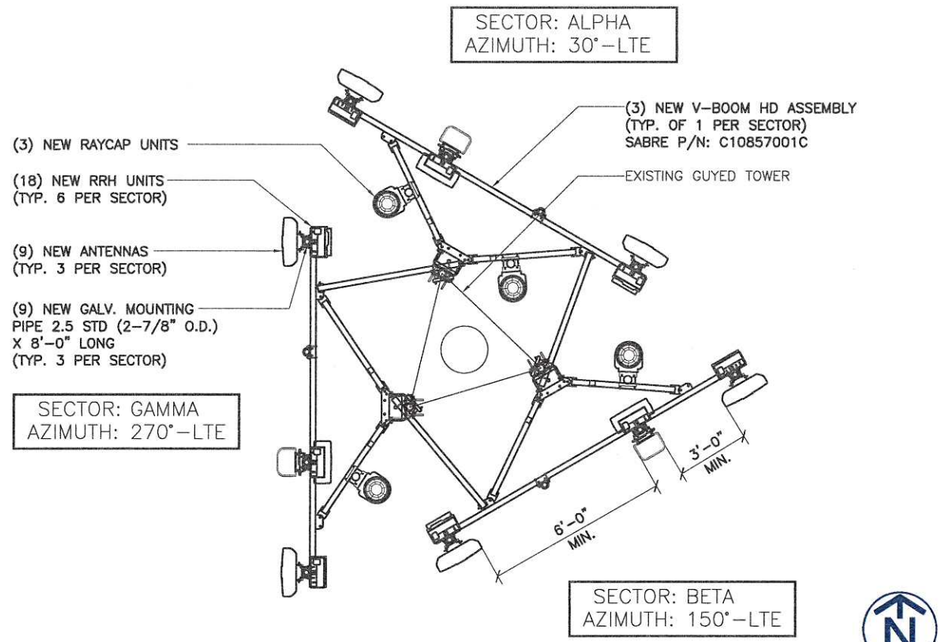
FEC# 2018.0265. 0002

NOTES:

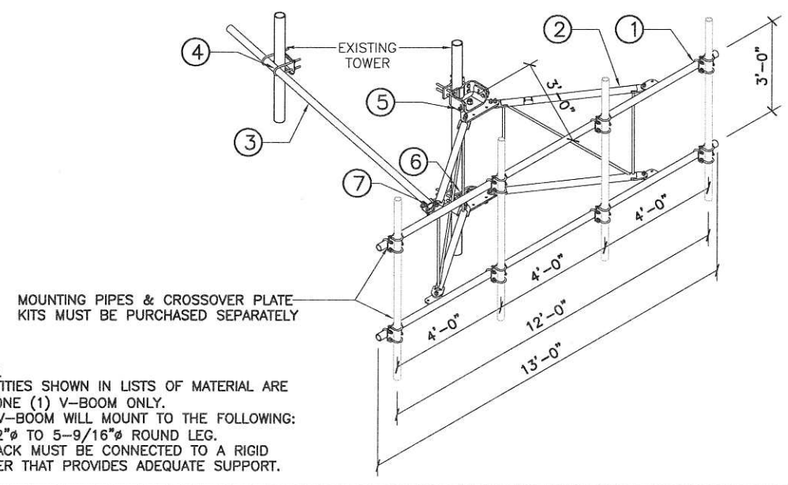
1. CALCULATIONS FOR THE STRUCTURE AND ANTENNA MOUNTS WERE PREPARED BY FULLERTON AND THOSE CALCULATIONS CERTIFY THE CAPACITY OF THE STRUCTURE TO SUPPORT THE NEW EQUIPMENT
2. CABLES NOT SHOWN FOR CLARITY



ELEVATION SCALE: 1" = 20'-0" | 1



ANTENNA PLAN SCALE: 3/16" = 1'-0" | 2



NOTES:

1. QUANTITIES SHOWN IN LISTS OF MATERIAL ARE FOR ONE (1) V-BOOM ONLY.
2. THIS V-BOOM WILL MOUNT TO THE FOLLOWING: 1-1/2"ø TO 5-9/16"ø ROUND LEG.
3. TIE BACK MUST BE CONNECTED TO A RIGID MEMBER THAT PROVIDES ADEQUATE SUPPORT.

ITEM	QTY	DESCRIPTION
1	2	WELDMENT, FACE PIPE
2	2	WELDMENT, STANDOFF ARM
3	1/2	PIPE, TIE BACK (DEPENDENT ON NEEDED SUPPORT)
4	1/2	TIE BACK CLAMP (ONE PER OF TIE BACK ARM)
5	1	UPPER LEG MOUNT
6	1	LOWER LEG MOUNT
7	1	TIE BACK SWIVEL

12' HD V-BOOM ASSEMBLY W/TIEBACK
(3' STANDOFF)
WITHOUT ANTENNA MOUNTING PIPES

MFR - SABRE
PART# - C10857001C

WEIGHT - 462 LBS

ANTENNA SECTOR FRAME SPEC SCALE: N.T.S. | 3

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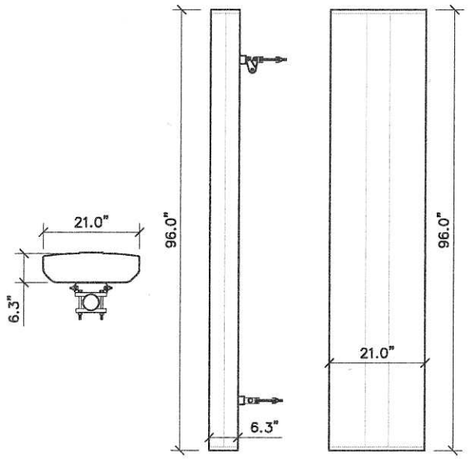
LEDYARD, CT 06339

SHEET NAME
ELEVATION AND ANTENNA PLAN

SHEET NUMBER
C-3

FEC# 2018.0265.0002

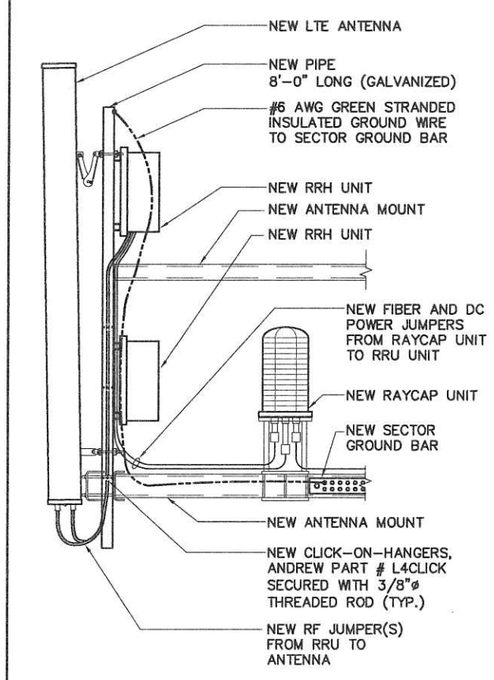


KMW – EPBQ-654L8H8-L2

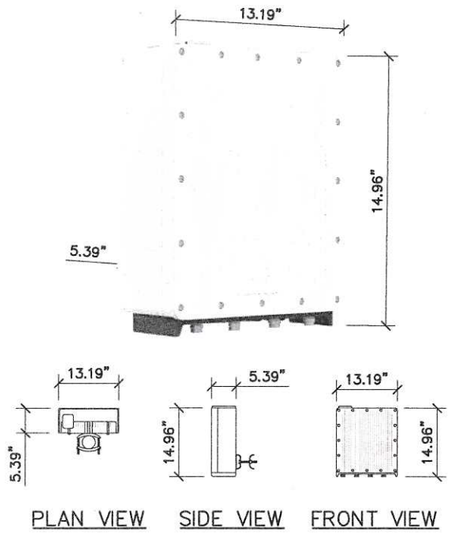
12-PORT MULTI-BAND ANTENNA

FREQUENCY RANGE	698–806 MHz 806–894 MHz 1695–1850 MHz 1850–1910 MHz 1910–2180 MHz 2300–2400 MHz
ANTENNA	86.0 Lbs
BRACKET	7.5 Lbs
TOTAL WEIGHT	93.5 Lbs

ANTENNA SPECS SCALE: N.T.S. 1



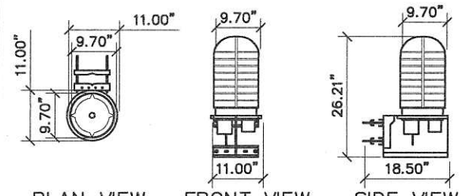
ANTENNA SCHEMATIC SCALE: N.T.S. 2



ERICSSON – RRUS 4415 B25

FREQUENCY RANGE	TX = 1930–1995 MHz RX = 1850–1915 MHz
TOTAL WEIGHT	46.0 Lbs

RRU SPEC SCALE: N.T.S. 3

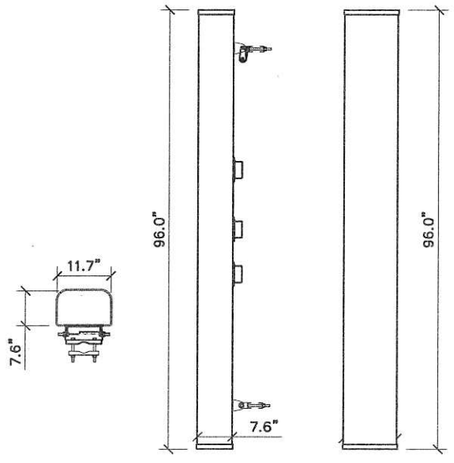


RAYCAP – DC6-48-60-18-8F

TOWER DC OVER VOLTAGE PROTECTION POWER CONNECTION SOLUTION

UNIT WEIGHT 32.8 Lbs

RAYCAP DC6-48-60-18-8F SPECS SCALE: N.T.S. 4

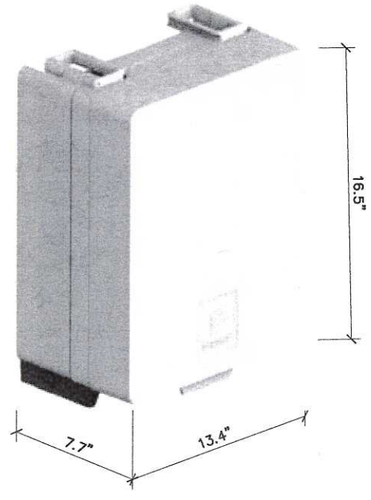


CCI – HPA65R-BU8A

HEXPORT MULTI-BAND ANTENNA

FREQUENCY RANGE	2 x LOW BAND 698–896 MHz 4 x HIGH BAND 1695–2400 MHz
ANTENNA	54.0 Lbs
(3) RETS	5.0 Lbs
BRACKET	16.6 Lbs
TOTAL WEIGHT	75.6 Lbs

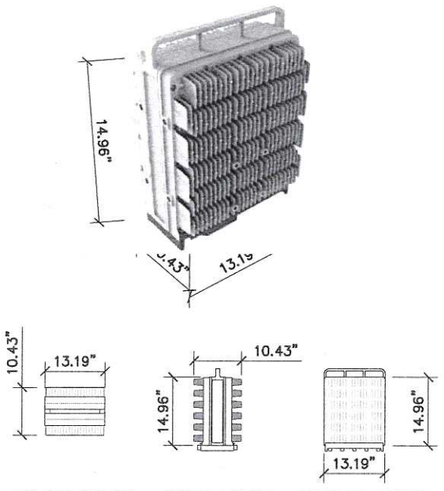
ANTENNA SPECS SCALE: N.T.S. 5



ERICSSON – RRUS 4478 B14

FREQUENCY RANGE	TX 758–768 MHz RX 788–798 MHz
TOTAL WEIGHT	59.9 Lbs

RRU SPEC SCALE: N.T.S. 6



ERICSSON

RADIO 4449 DUAL B5 & B12

AISG TMA & RET SUPPORT

4TX/4RX PER BAND (B5 & B12)

WEIGHT ~73 Lbs

RRU SPEC SCALE: N.T.S. 7

NOT USED SCALE: N.T.S. 8

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12685510

USID:
162156

SITE ADDRESS
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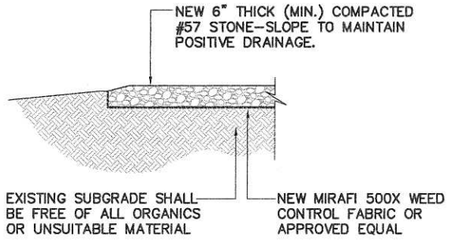
LEDYARD, CT 06339

SHEET NAME
SITE DETAILS

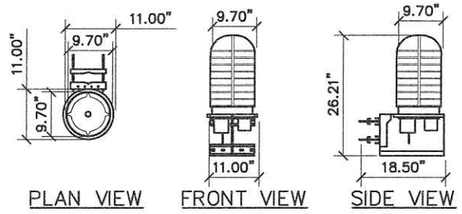
SHEET NUMBER
C-4

FEC# 2018.0265. 0002



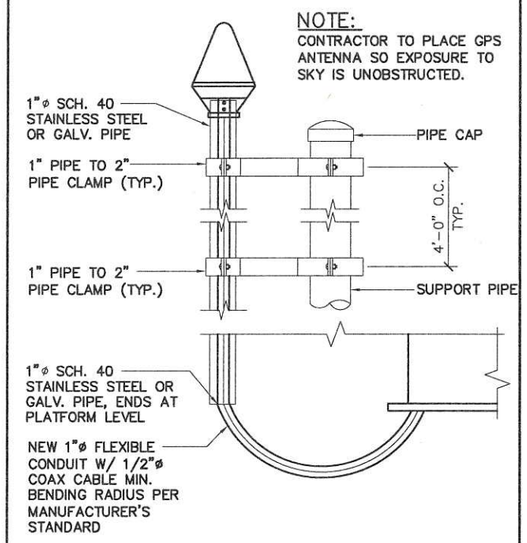
NOTE:
WEED CONTROL FABRIC SHALL BE USED UNDER ENTIRE PROPOSED GRAVELED AREA. CONTRACTOR SHALL INSTALL FABRIC PER MANUFACTURER'S RECOMMENDATIONS.

YARD DETAIL SCALE: N.T.S. | 1

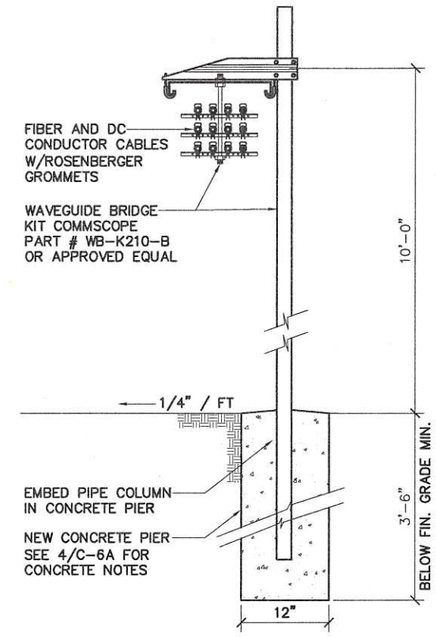


RAYCAP – DC6–48–60–18–8F
TOWER DC OVER VOLTAGE PROTECTION POWER CONNECTION SOLUTION
UNIT WEIGHT 32.8 Lbs

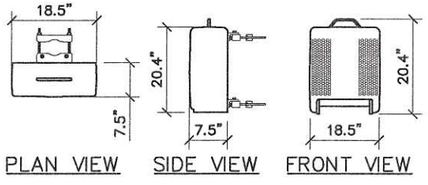
RAYCAP DC6-48-60-18-8F SPECS SCALE: N.T.S. | 2



GPS ANTENNA SCALE: N.T.S. | 3



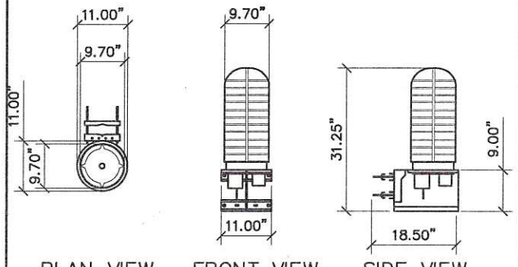
ICE BRIDGE DETAIL SCALE: N.T.S. | 4



ERICSSON – RRUS E2
WITH SOLAR SHIELD
UNIT WEIGHT 52.9 Lbs

RRUS SPEC SCALE: N.T.S. | 5

NOMINAL OPERATING VOLTAGE:	48 VDC
NOMINAL DISCHARGE CURRENT:	20 kA 8/20ms
MAXIMUM DISCHARGE CURRENT:	60 kA 8/20ms
MAXIMUM CONTINUOUS OPERATING VOLTAGE:	75 VDC
VOLTAGE PROTECTION RATING:	400 V
WIND LOADING:	150 MPH SUSTAINED (105.7 lbs) 195 MPH GUST (213.6 lbs)



RAYCAP – DC6–48–60–0–8F
TOWER DC OVER VOLTAGE PROTECTION POWER CONNECTION SOLUTION
UNIT WEIGHT 32.8 Lbs

CONTRACTOR TO USE "THREAD LUBRICANT" ON MOUNTING BOLTS DURING INSTALLATION ON EXISTING STRUCTURAL MEMBER

RAYCAP DC6-48-60-0-8F SPECS SCALE: N.T.S. | 6

NOT USED SCALE: N.T.S. | 7

NOT USED SCALE: N.T.S. | 8

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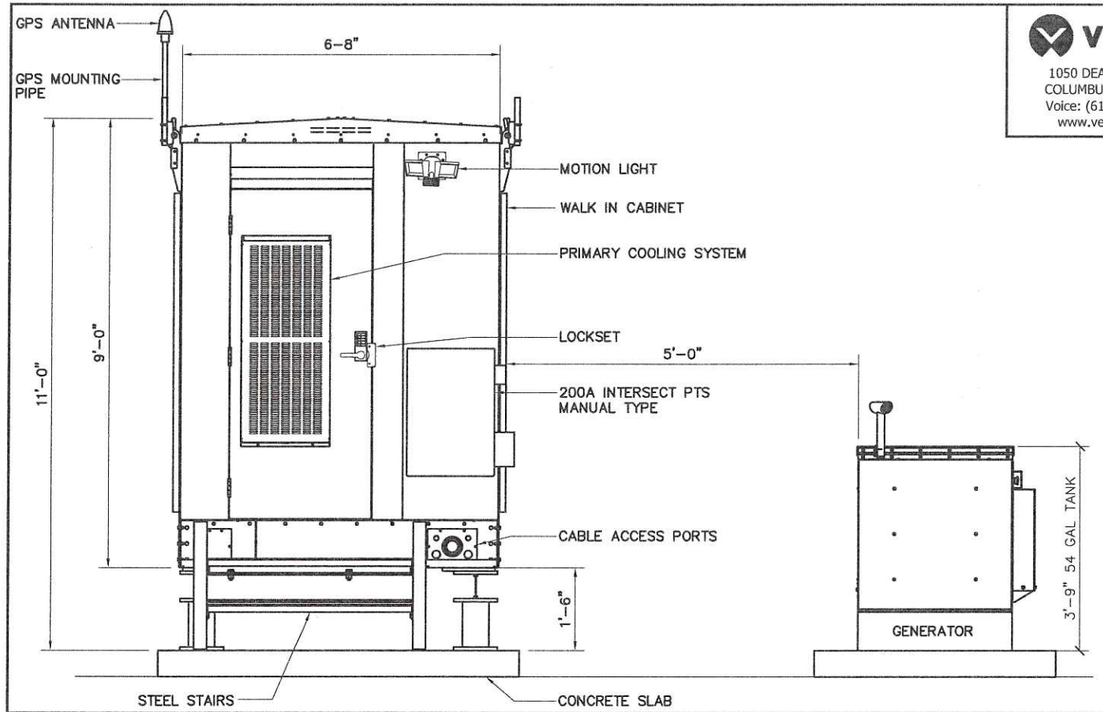
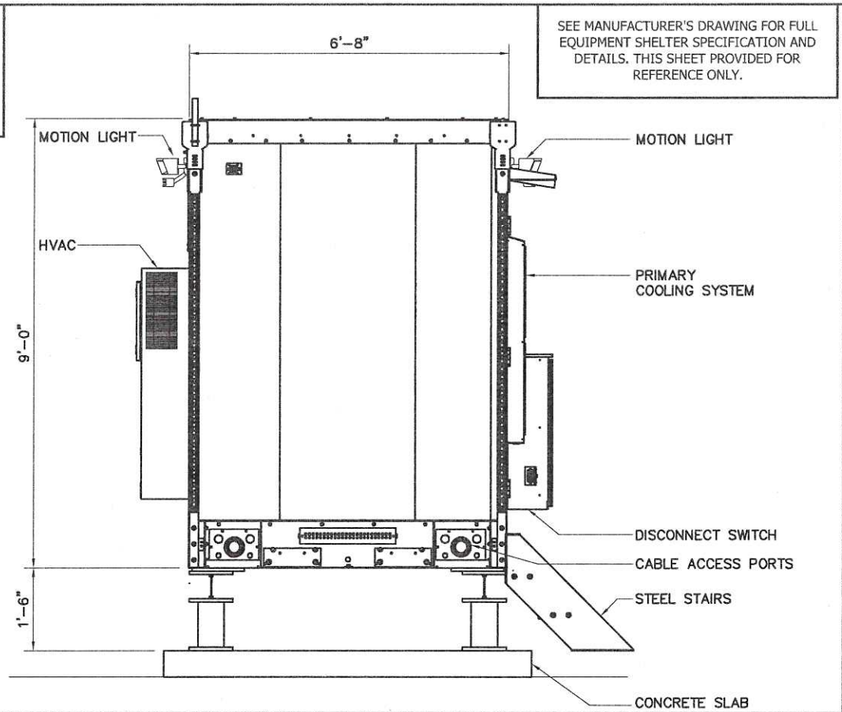
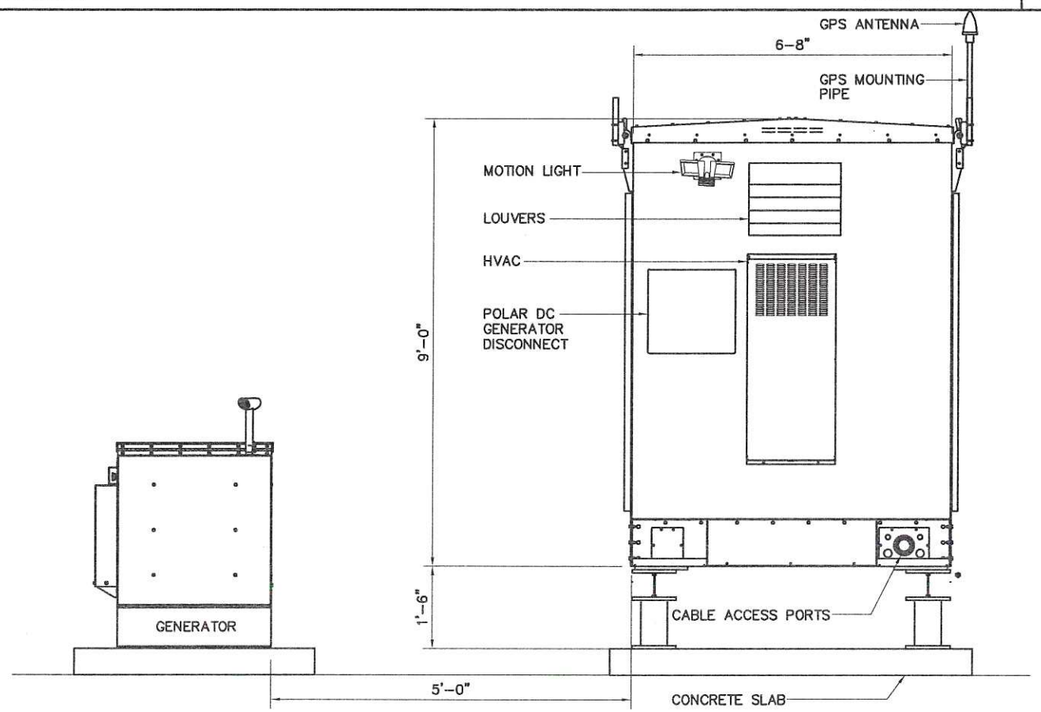


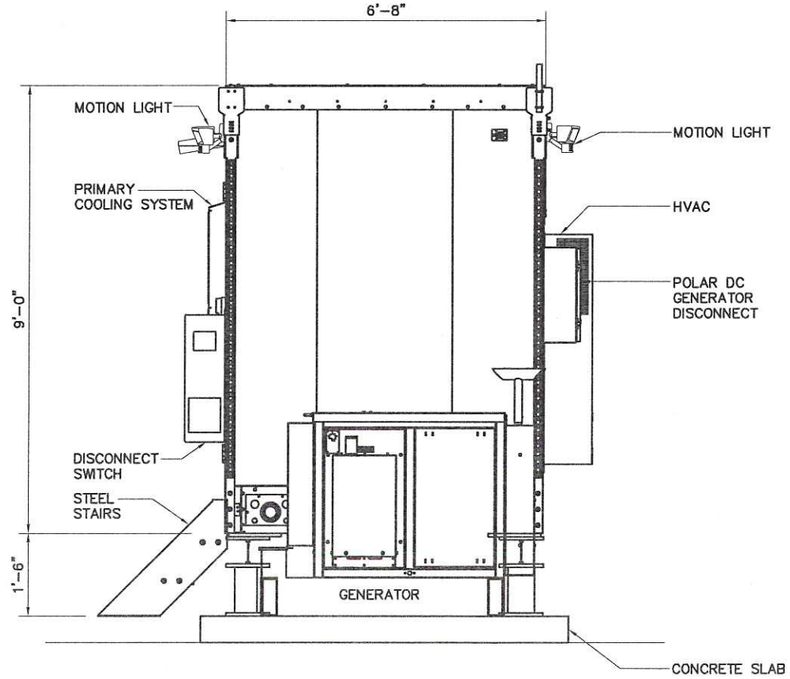
ELEVATION A — SCALE: 3/8" = 1'–0" | 1



ELEVATION B — SCALE: 3/8" = 1'–0" | 2



ELEVATION C — SCALE: 3/8" = 1'–0" | 3



ELEVATION D — SCALE: 3/8" = 1'–0" | 4

VERTIV
1050 DEARBORN DR.
COLUMBUS, OH 43085
Voice: (614) 888-0246
www.vertivco.com

SEE MANUFACTURER'S DRAWING FOR FULL EQUIPMENT SHELTER SPECIFICATION AND DETAILS. THIS SHEET PROVIDED FOR REFERENCE ONLY.

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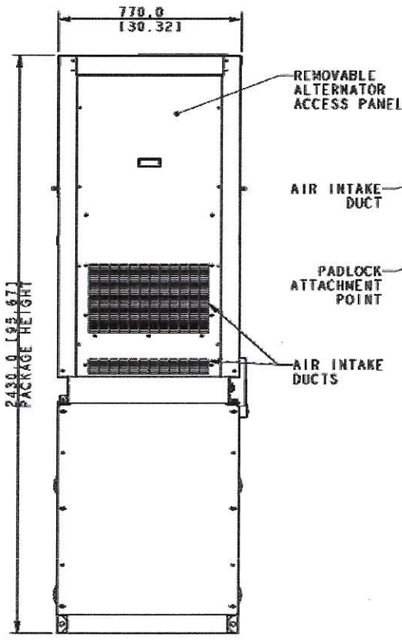
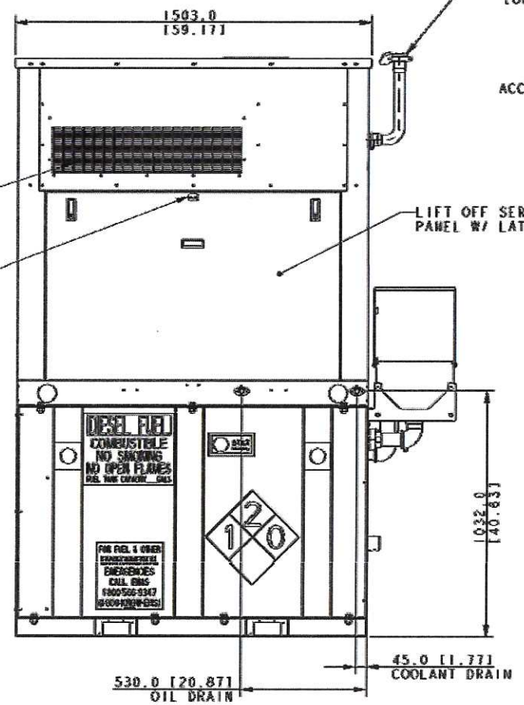
SHEET NAME
WIC SHELTER ELEVATION

SHEET NUMBER
C-5

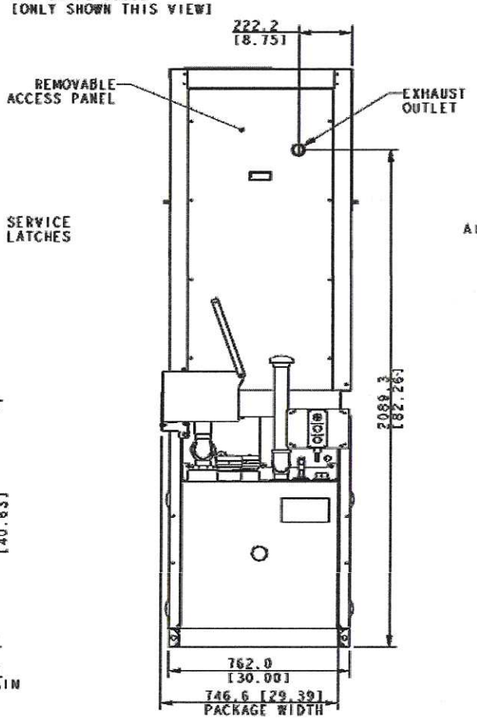
FEC# 2018.0265. 0002

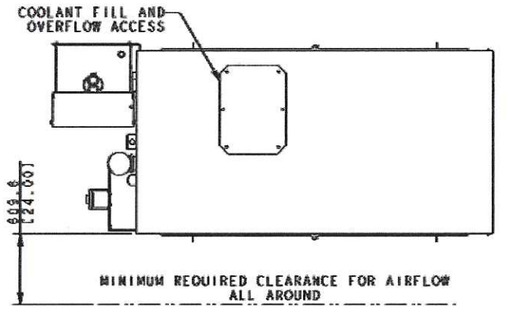
NOTES:
1. ALL SIDES OF THE GENERATOR ARE SERVICE ACCESSIBLE. RIGHT SIDE IS PRIMARY SERVICE SIDE.
2. 6 AMP BATTERY CHARGER.
3. 120VAC ENGINE BLOCK HEATER.
4. 120VAC 60W BATTERY HEATER.
5. GENERATOR MUST BE GROUNDED.
6. SOUND ATTENUATED ENCLOSURE STANDARD WITH GENERATOR.
7. MUST ALLOW FREE FLOW OF DISCHARGE AIR AND EXHAUST.
8. MUST ALLOW FREE FLOW OF INTAKE AIR.
9. BASE TANK REQUIRES ALL STUB-UPS TO BE IN THE REAR TANK STUB-UP AREA.
10. TANK EQUIPPED WITH FIRE SAFETY VALVE ON FUEL SUPPLY LINE.
11. IT IS THE RESPONSIBILITY OF THE INSTALLATION TECHNICIAN TO ENSURE THAT THE GENERATOR INSTALLATION COMPLIES WITH ALL APPLICABLE CODES, STANDARDS, AND REGULATIONS.
12. GENERATOR IS INSTALLED ON A UL-142 RATED DOUBLE WALL SUBBASE FUEL TANK.

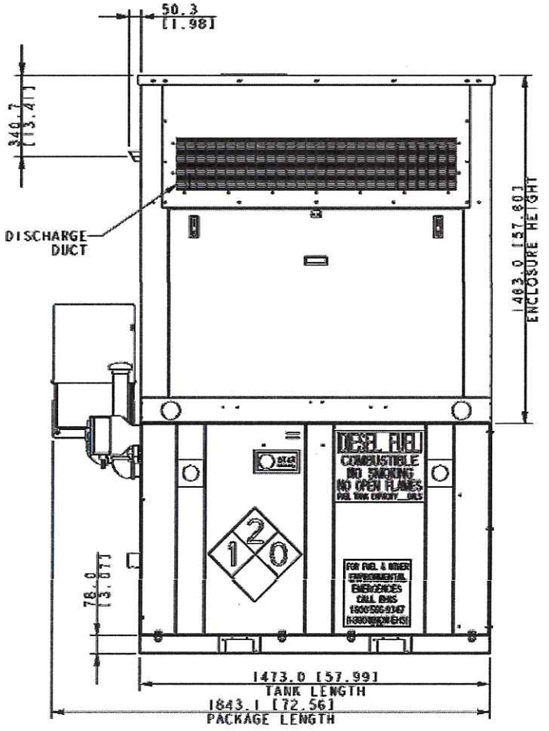




RIGHT SIDE
[SERVICE SIDE]







TOTAL PACKAGE WEIGHT: 982 KG [2164 LBS]

AT&T 20KW KOHLER DIESEL
COMPACT SOUND ENCLOSURE
W/ 105 GAL STATE TANK

REV	DATE	ON COMPOSITE DWGS. SEE PART NO. FOR REVISION LEVEL	BY
-	3-22-18	PER DRAWING [CT1853B0]	JMR

DO NOT SCALE, REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS

UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS IN MILLIMETERS TOLERANCES: X.XX ± 0.25, X.X ± 1.0, X ± 1.5, ANGLES ± 2°30' SURFACE FINISH 250 MAX.

KOHLER
KOHLER, WISCONSIN 53044
THIS DRAWING IS DESIGN AND DETAIL IS KOHLER CO. PROPERTY AND MUST NOT BE USED EXCEPT IN CONNECTION WITH KOHLER CO. WORK. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.

TITLE: DIMENSION PRINT, 20KW STATE TANK, ENCL

APPROVALS	DATE
DRAWN: JMR	3-22-18
CHECKED: JMR	3-22-18
APPROVED: LBD	3-22-18

SCALE: 0.40 DWG NO. ADV-9064 SHEET 1 of 3 REV D

GENERATOR

SCALE: N.T.S. 1

FEC# 2018.0265. 0002

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TEL: 847-908-8400
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2	02/07/19	FOR CONSTRUCTION	KC
3	04/26/19	FOR CONSTRUCTION	EB

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STATE OF CONNECTICUT · HENRY M. BELLAGAMBA · 25358 · LICENSED PROFESSIONAL ENGINEER

SITE NUMBER
CT1837S

SITE NAME
LEDYARD COLONEL LEDYARD HIGHWAY

FA NUMBER:
12685510

USID:
162156

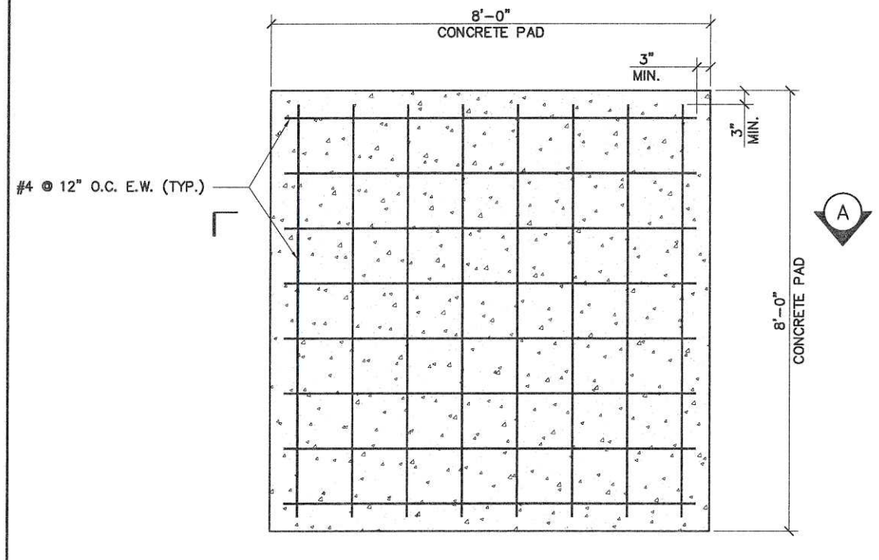
SITE ADDRESS
581 COLONEL LEDYARD HIGHWAY
LEDYARD, CT 06339

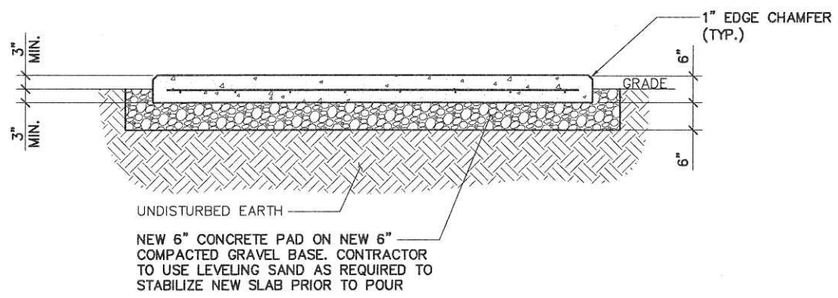
SHEET NAME
GENERATOR

SHEET NUMBER
C-6

NOTES:

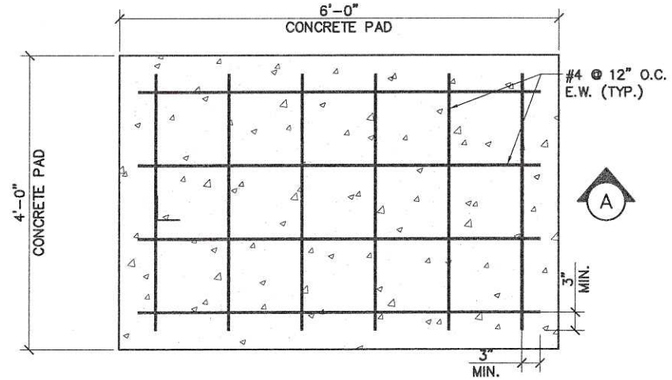
1. REFER TO SITE PLAN FOR EQUIPMENT SHELTER/PRECAST CONCRETE SLAB ORIENTATION.
2. SLAB TO BE LEVEL ±1/4".
3. USE SHIMS AS REQUIRED TO ASSURE EQUIPMENT SHELTER/PRECAST CONCRETE SLAB IS LEVEL.

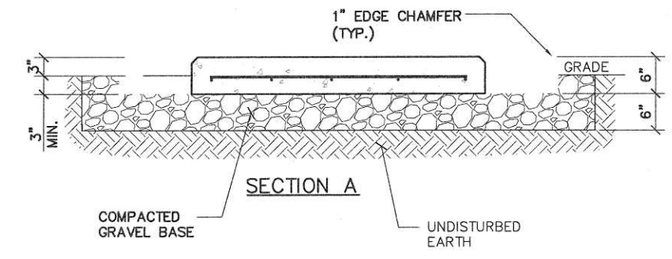




SECTION A

CONCRETE PAD — SCALE: N.T.S. — 2





CONCRETE PAD — SCALE: N.T.S. — 1

CONCRETE NOTES:

1. MEET OR EXCEED THE FOLLOWING CODES AND STANDARDS:

DESIGN	ACI 318
CONSTRUCTION	ACI 301
HOT WEATHER PLACEMENT	ACI 305
COLD WEATHER PLACEMENT	ACI 306
CEMENT	ASTM C-150 (TYPE I)
REINFORCING BARS	ASTM A-615
WIRE MESH	ASTM A-185
NORMAL WT AGGREGATE	ASTM C-33
MIXING	ASTM C-94
ADMIXTURES	ASTM C-494
AIR ENTRAINMENT	ASTM C-260
WATER	POTABLE
DETAILING	CRSI MANUAL OF STANDARD PRACTICE

2. CONCRETE SHALL BE NORMAL WEIGHT WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI.
3. PROVIDE AIR ENTRAINED CONCRETE WITH AIR CONTENT OF 4% TO 7%. FOR ALL CONCRETE EXPOSED TO EARTH OR WEATHER
4. ALL REINFORCING STEEL SHALL BE GRADE 60.
5. MINIMUM CONCRETE COVER FOR REINFORCING BARS:
   A. CAST AGAINST AND EXPOSED TO EARTH: 3"
   B. EXPOSED TO EARTH OR WEATHER (NO 5 AND SMALLER): 1 1/2"
   C. EXPOSED TO EARTH OR WEATHER (NO 6 AND LARGER): 2"
6. NO ADMIXTURE SHALL CONTAIN CALCIUM CHLORIDE.
7. PROVIDE ALL ACCESSORIES NECESSARY TO SUPPORT REINFORCEMENT.

NOTES — SCALE: N.T.S. — 3

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STATE OF CONNECTICUT
HENRY M. BELLAGAMBA
25358
LICENSED PROFESSIONAL ENGINEER

SITE NUMBER
CT1837S

SITE NAME
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FA NUMBER:
12685510

USID:
162156

SITE ADDRESS
581 COLONEL LEDYARD HIGHWAY
LEDYARD, CT 06339

SHEET NAME
GENERATOR

SHEET NUMBER
C-6A

FEC# 2018.0265. 0002

RF DESIGN NOTE:
THIS ANTENNA AND COAX CABLE SCHEDULE HAS BEEN CREATED USING THE FOLLOWING RFDS
DATED: 02/20/19 V4.00
ALL ANTENNA DESIGN, ZONING, STRUCTURAL ANALYSIS PERMITS AND COMPLIANCE SUBMISSIONS ARE COORDINATED WITH THE AFOREMENTIONED DOCUMENT

SECTOR	ANTENNA NUMBER	ANTENNA STATUS & TYPE	ANTENNA MODEL NUMBER	ANTENNA VENDOR	ANTENNA SIZE (HxWxD)	ANTENNA WEIGHT (LBS.)	RRU MODEL NUMBER	ANTENNA PORTS	TECH.	AZIMUTH	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	ANTENNA ℄ FROM GROUND	ANTENNA TIP HEIGHT	CABLE FEEDER	
															TYPE	LENGTH
A	A-1	NEW LTE ANTENNA	EPBQ-654L8H8-L2	KMW	96"x21"x6.3"	86.0 LBS.	(1) NEW RRUS-4478 B14	1	700	30°	0°	4°/4°	173'-0"	177'-0"	(1) FIBER CABLE	250'-0"
							(1) NEW RRUS-4426 B66	5	AWS						(2) DC POWER CABLES	250'-0"
	A-2	NEW LTE ANTENNA	HPA65R-BU8A	CCI	96"x11.7"x7.6"	57.3 LBS.	(1) NEW RRUS-E2	1	700	30°	0°	4°	173'-0"	177'-0"	SEE ANTENNA A-1 FOR CABLE TYPE AND LENGTH	
							(1) NEW RRUS-4415 B30	5	WCS							
	A-3	NEW LTE ANTENNA	EPBQ-654L8H8-L2	KMW	96"x21"x6.3"	86.0 LBS.	(1) NEW RRUS-4449 B5/B12	1/3	700/850	30°	0°	4°/4°/2°	173'-0"	177'-0"	SEE ANTENNA A-1 FOR CABLE TYPE AND LENGTH	
							(1) NEW RRUS-4415 B25	9	PCS							
	A-4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B	B-5	NEW LTE ANTENNA	EPBQ-654L8H8-L2	KMW	96"x21"x6.3"	86.0 LBS.	(1) NEW RRUS-4478 B14	1	700	150°	0°	4°/4°	173'-0"	177'-0"	SEE ANTENNA A-1 FOR FIBER CABLE	
							(1) NEW RRUS-4426 B66	5	AWS						(4) DC POWER CABLES	250'-0"
	B-6	NEW LTE ANTENNA	HPA65R-BU8A	CCI	96"x11.7"x7.6"	57.3 LBS.	(1) NEW RRUS-E2	1	700	150°	0°	4°	173'-0"	177'-0"	SEE ANTENNA B-1 FOR CABLE TYPE AND LENGTH	
							(1) NEW RRUS-4415 B30	5	WCS							
	B-7	NEW LTE ANTENNA	EPBQ-654L8H8-L2	KMW	96"x21"x6.3"	86.0 LBS.	(1) NEW RRUS-4449 B5/B12	1/3	700/850	150°	0°	4°/4°/2°	173'-0"	177'-0"	SEE ANTENNA B-1 FOR CABLE TYPE AND LENGTH	
							(1) NEW RRUS-4415 B25	9	PCS							
	B-8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C	C-9	NEW LTE ANTENNA	EPBQ-654L8H8-L2	KMW	96"x21"x6.3"	86.0 LBS.	(1) NEW RRUS-4478 B14	1	700	270°	0°	4°/4°	173'-0"	177'-0"	(1) FIBER CABLE	250'-0"
							(1) NEW RRUS-4426 B66	5	AWS						(2) DC POWER CABLES	250'-0"
	C-10	NEW LTE ANTENNA	HPA65R-BU8A	CCI	96"x11.7"x7.6"	57.3 LBS.	(1) NEW RRUS-E2	1	700	270°	0°	4°	173'-0"	177'-0"	SEE ANTENNA C-1 FOR CABLE TYPE AND LENGTH	
							(1) NEW RRUS-4415 B30	5	WCS							
	C-11	NEW LTE ANTENNA	EPBQ-654L8H8-L2	KMW	96"x21"x6.3"	86.0 LBS.	(1) NEW RRUS-4449 B5/B12	1/3	700/850	270°	0°	4°/4°/2°	173'-0"	177'-0"	SEE ANTENNA C-1 FOR CABLE TYPE AND LENGTH	
							(1) NEW RRUS-4415 B25	9	PCS							
	C-12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
N/A	N/A															

ANTENNA INFORMATION CHART

SCALE: N.T.S. | 1

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STATE OF CONNECTICUT · HENRY M. BELLAGAMBA · 25358 · LICENSED PROFESSIONAL ENGINEER

SITE NUMBER
CT1837S

SITE NAME
LEDYARD COLONEL LEDYARD HIGHWAY

FA NUMBER:
12685510

USID:
162156

SITE ADDRESS
581 COLONEL LEDYARD HIGHWAY
LEDYARD, CT 06339

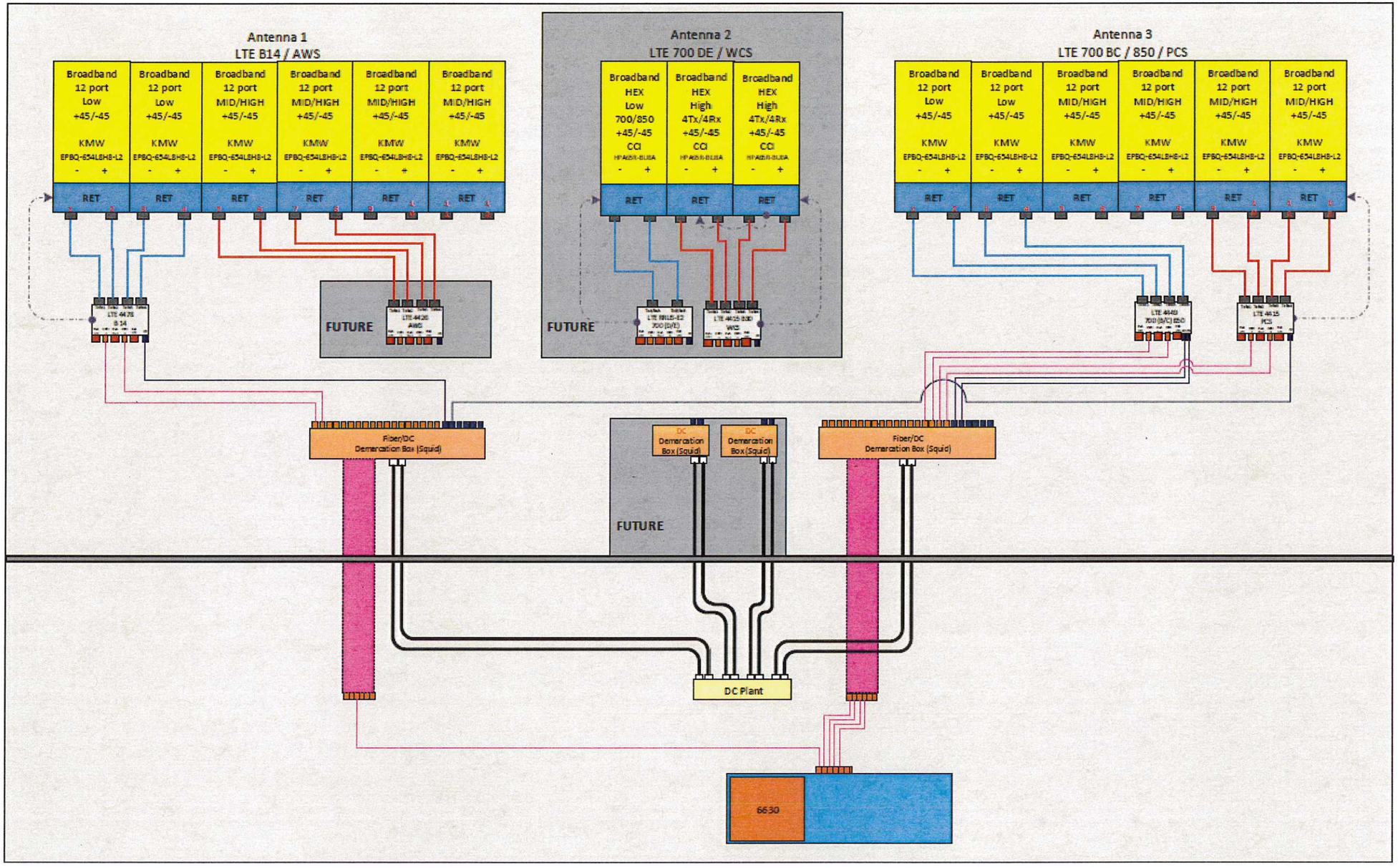
SHEET NAME
ANTENNA INFORMATION CHART

SHEET NUMBER
C-7

FEC# 2018.0265. 0002

Diagram - Sector	A	Diagram File Name - CT1837_4C.vsd					
Atoll Site Name -	CT1837	Location Name -	LEDYARD COLONEL LEDYARD HIGHWAY	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND

Comments: pls maintain 3' separation between antennas and minimum 6' separation between antenna 2 and 3 of each sector



*BASED ON RFDS V4.00, DATED (02/20/19)

PLUMBING DIAGRAM SCALE: N.T.S. 1

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581 COLONEL LEDYARD HIGHWAY
LEDYARD, CT 06339

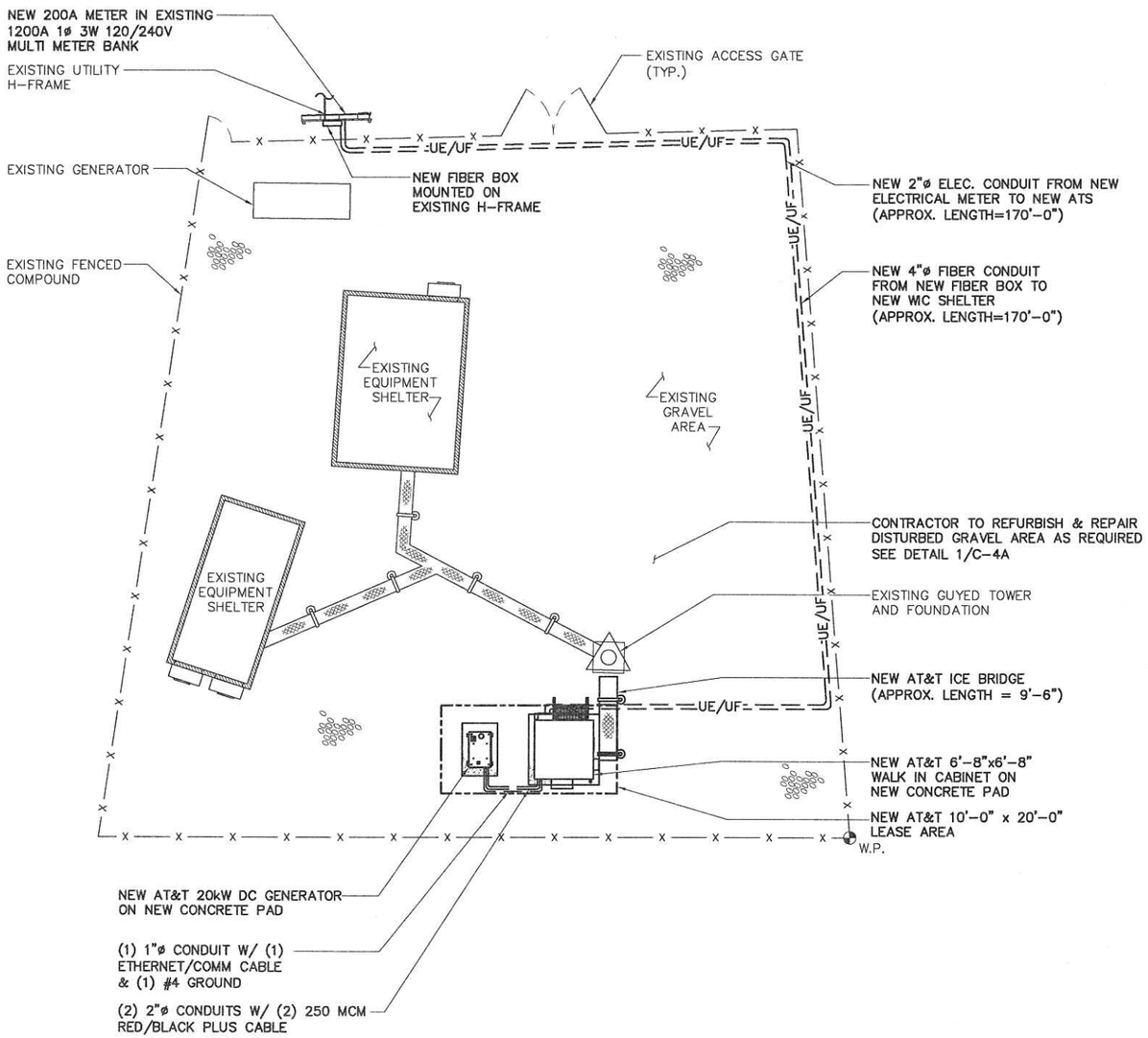
SHEET NAME
PLUMBING DIAGRAM

SHEET NUMBER
C-8

FEC# 2018.0265. 0002

KEY NOTES:

1. CONTRACTOR TO CALL 811, 48 HRS PRIOR TO EXCAVATING FOR UNDERGROUND UTILITY LOCATIONS. LOCATION SURROUNDING EXCAVATED AREA MUST BE PRIVATELY LOCATED FOR NON-PUBLIC UTILITIES.



UTILITY SITE PLAN

SCALE: 1/16" = 1'-0" | 1

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LEDYARD, CT 06339

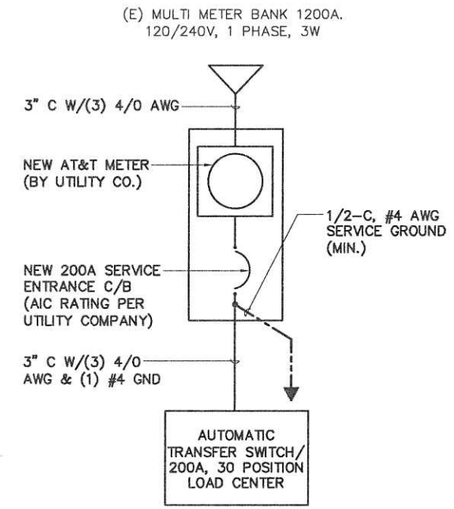
SHEET NAME
UTILITY PLAN

SHEET NUMBER
E-1

FEC# 2018.0265. 0002

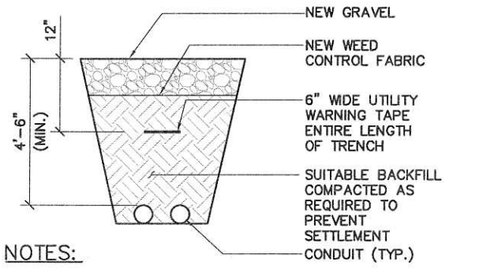
NOT USED

SCALE: N.T.S. | 1



ONE LINE DIAGRAM

SCALE: N.T.S. | 2



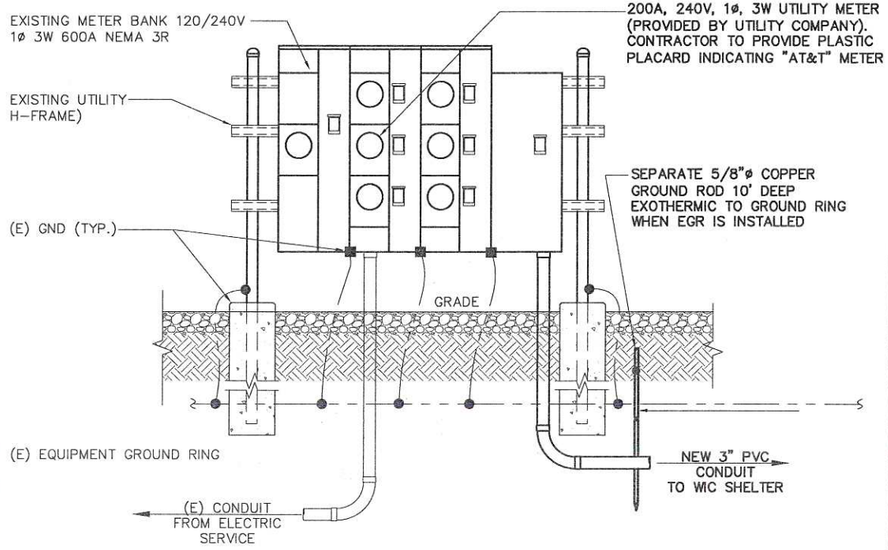
NOTES:

1. CONTRACTOR TO VERIFY LOCAL UTILITY REQUIREMENTS FOR DEPTH, SIZE & SEPARATION OF CONDUITS PRIOR TO INSTALLATION. NOTIFY CONSTRUCTION MANAGER IMMEDIATELY OF ANY DISCREPANCIES.
2. CONTRACTOR TO CALL 811, 48 HRS PRIOR TO EXCAVATING FOR UNDERGROUND UTILITY LOCATIONS. LOCATION SURROUNDING EXCAVATED AREA MUST BE PRIVATELY LOCATED FOR NON-PUBLIC UTILITIES.

811 Know what's below. Call before you dig.

UTILITY TRENCH DETAIL

SCALE: N.T.S. | 3



H-FRAME DETAIL

SCALE: N.T.S. | 4

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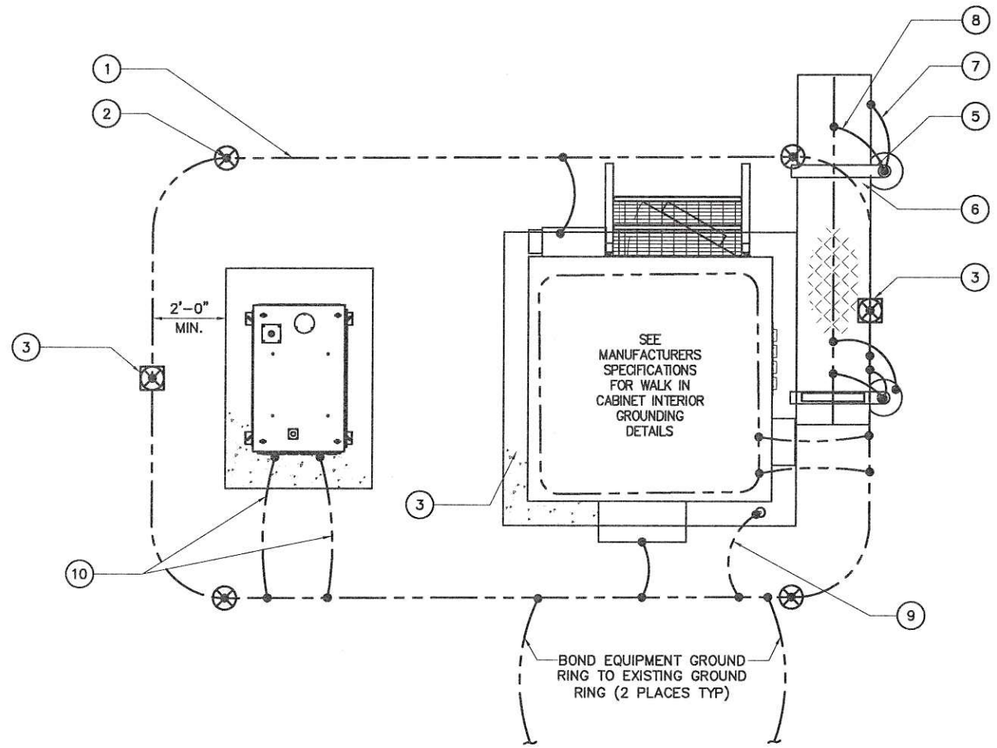
LEDYARD, CT 06339

SHEET NAME
POWER CALCULATIONS

SHEET NUMBER
E-2

FEC# 2018.0265. 0002



GROUNDING PLAN

SCALE: 1/4" = 1'-0" | 1

LEGEND

- GROUND BAR
- EXISTING GROUND RING
- NEW GROUND RING
- ⊗ 5/8"• x 10'-0" GROUND ROD
- ⊠ GROUND SYSTEM TEST WELL
- ▲ MECHANICAL CONNECTION
- ● CADWELD OR APPROVED CONNECTION

KEY NOTES

1. GROUND RING, #2 SOLID, TINNED BARE COPPER WIRE. CONSTRUCT RING FROM ONE CONTINUOUS PIECE (NO EXCEPTIONS ALLOWED).
2. 5/8"• x 10'-0" COPPER CLAD STEEL GROUND ROD SPACED MIN. 10'-0", MAX 15'-0" APART
3. GROUND SYSTEM TEST WELL.
4. UPPER TOWER GROUND BAR.
5. GROUND BAR ATTACHED TO ICE BRIDGE.
6. #2 SOLID, TINNED BARE COPPER GROUND WIRE FROM GROUND BAR TO GROUND RING (2 REQ'D).
7. #2 SOLID, TINNED BARE COPPER GROUND WIRE FROM ICE BRIDGE TO ICE BRIDGE POST.
8. #2 SOLID, TINNED BARE COPPER GROUND WIRE IN 1/2" CARFLEX SLEEVE, BOND ICE BRIDGE POST W/ VS TYPE CADWELD. (1 PER POST REQ'D).
9. #6 SOLID TINNED, BARE COPPER GROUND WIRE FROM GPS ANTENNA TO GROUND RING.
10. #2 SOLID TINNED, BARE COPPER GROUND WIRE FROM GENERATOR TO GROUND RING.

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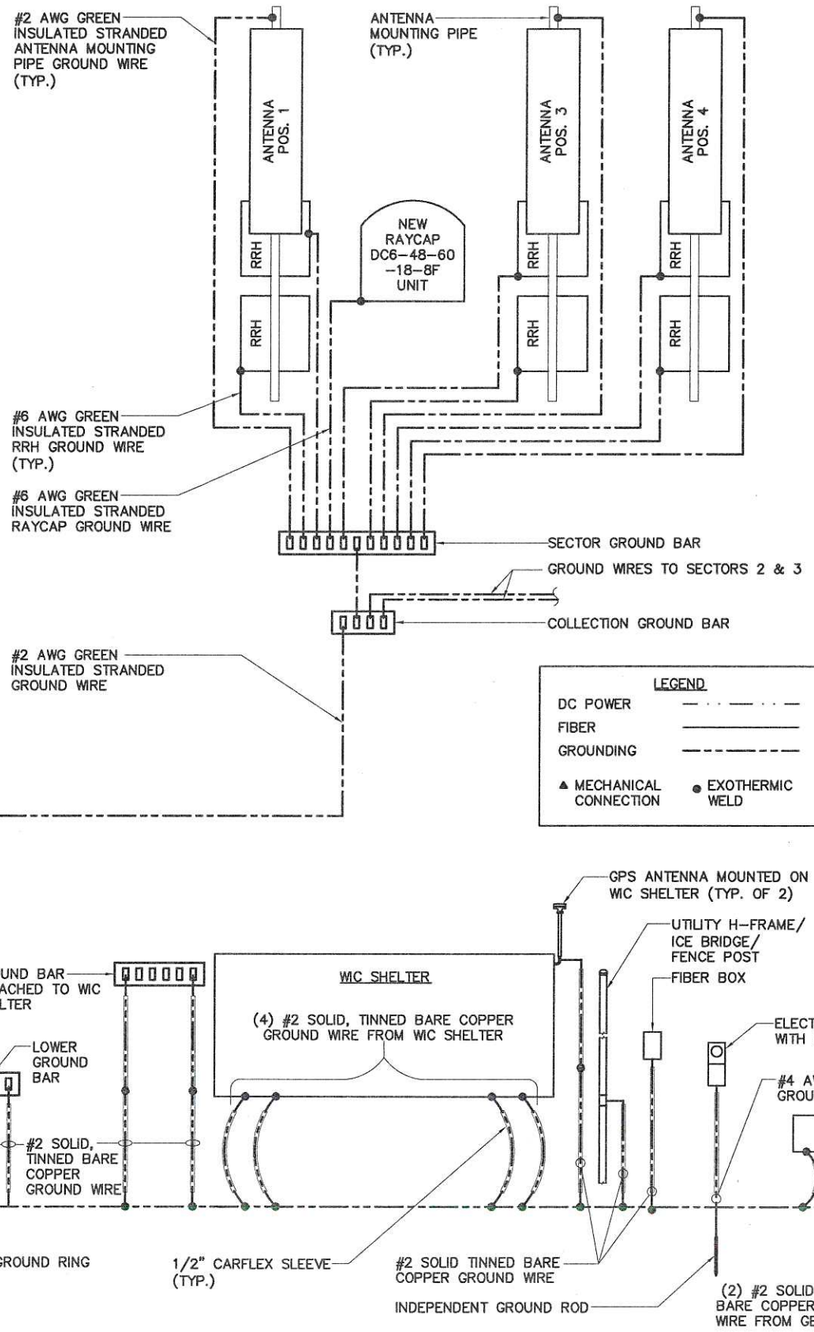
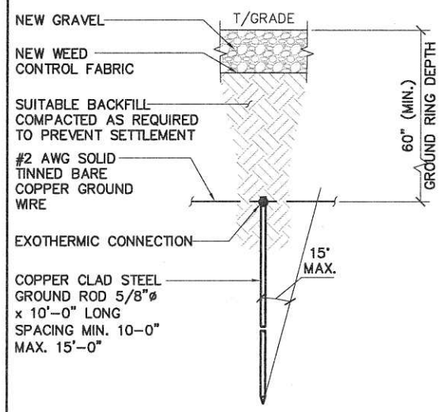
SHEET NAME
GROUNDING NOTES AND DETAILS

SHEET NUMBER
G-1

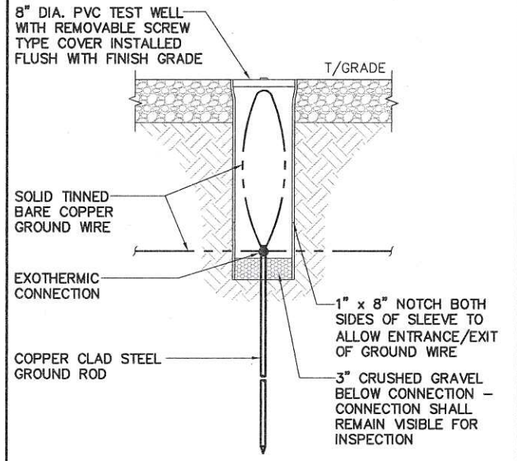
FEC# 2018.0265. 0002



RISER DIAGRAM SCALE: N.T.S. 1



GROUND DETAIL SCALE: N.T.S. 2



GROUND TEST WELL DETAIL SCALE: N.T.S. 3

NOT USED SCALE: N.T.S. 4

NOT USED SCALE: N.T.S. 5

at&t
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smartlink
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REV	DATE	DESCRIPTION	BY
0	11/09/18	90% REVIEW	ASE
1	12/11/18	FOR PERMIT	KC
2	02/07/19	FOR CONSTRUCTION	KC
3	04/26/19	FOR CONSTRUCTION	EB

I HEREBY CERTIFY THAT THESE DRAWINGS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CONTROL, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF COMPLY WITH THE REQUIREMENTS OF ALL APPLICABLE CODES.

STATE OF CONNECTICUT · HENRY M. BELLAGAMBA · 25358 · LICENSED PROFESSIONAL ENGINEER

SITE NUMBER
CT1837S

SITE NAME
LEDYARD COLONEL LEDYARD HIGHWAY

FA NUMBER:
12685510

USID:
162156

SITE ADDRESS
581 COLONEL LEDYARD HIGHWAY
LEDYARD, CT 06339

SHEET NAME
DC ONE LINE DIAGRAM

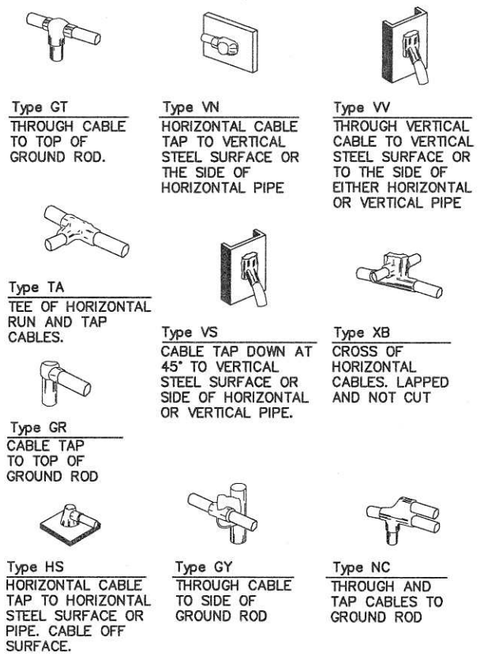
SHEET NUMBER
G-2

FEC# 2018.0265. 0002

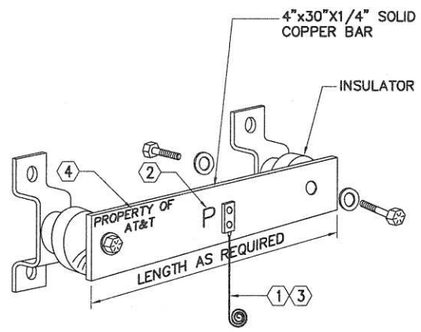
GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER SHALL BE BONDED TOGETHER BELOW GRADE BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE ELECTRICAL CODE
2. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT & PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED CODING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. 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.
6. 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.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK TO BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90^ BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45^ BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR & EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 FT. OF MAIN GROUND WIRES WITH 1-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NONMETALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G. NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. CONTRACTOR TO USE NO-OX COPPER SHIELD OR APPROVED EQUAL.

GROUNDING NOTES SCALE: N.T.S. | 1



EXOTHERMIC WELD DETAILS SCALE: N.T.S. | 2



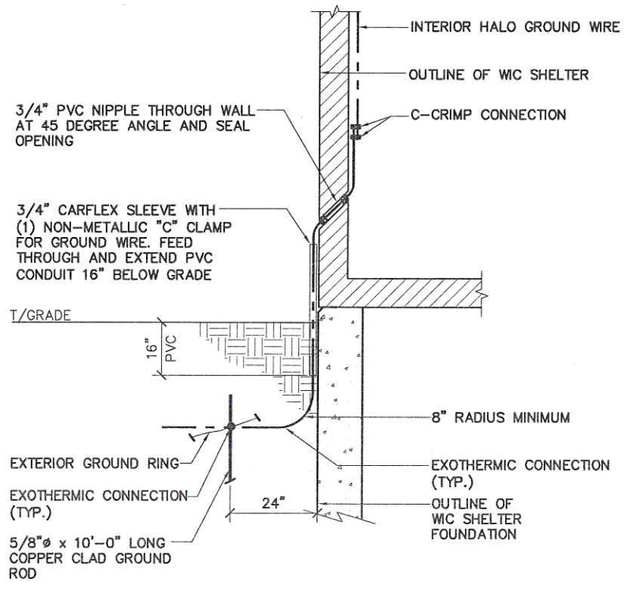
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

CONNECTION FOR:
COAXIAL CABLE SHIELD
COAXIAL CABLE SURGE SUPPRESSORS
CABLE ENTRY PORTS (HATCH PLATES)
RECTIFIER FRAMES
24V & 48V DC POWER RETURN BAR
GENERATOR FRAME WORK
TELCO GROUND BAR MASTER GROUND BAR

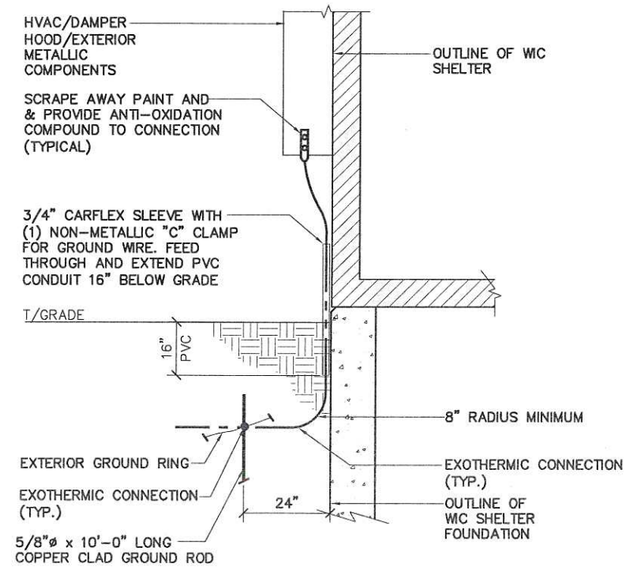
DETAIL NOTES: ⬡

1. TWO-HOLE, LONG BARREL COMPRESSION LUG WITH AWG STRANDED COPPER CONDUCTOR AND GREEN THW INSULATION TO GROUND BAR. ROUTE CONDUCTOR AS APPLICABLE TO BURIED GROUND CONDUCTOR OR MASTER GROUND BAR AND CONNECT WITH TWO-HOLE LUG TO "P" SECTION.
2. USE PERMANENT MARKER TO LABEL THE WHOLE BAR AS "P" WITH 1" HIGH LETTERS.
3. FOR GROUND BAR LOCATED OUTDOORS, ON-GRADE ONLY, EXOTHERMICALLY WELD A 2 AWG BARE TINNED COPPER CONDUCTOR TO GROUND BAR AND EXOTHERMICALLY WELD TO BURIED GROUND CONDUCTOR.
4. GROUND BARS SHALL BE TINNED COPPER AND SHALL BE ENGRAVED OR IMPRESSED "STOLEN-DO NOT RECYCLE" AND/OR "PROPERTY OF AT&T", ETCHED OR STAMPED WITH SITE FA LOCATION AND SECURED WITH ANTI-THEFT HARDWARE.
5. CONTRACTOR TO PROVIDE GROUND BAR WITH ADEQUATE 2 HOLE CONNECTIONS BASED UPON TOTAL EQUIPMENT BEING CONNECTED.
6. CONTRACTOR TO USE NO-OX COPPER SHIELD OR APPROVED EQUAL.

GROUND BAR DETAIL SCALE: N.T.S. | 3



WIC SHELTER GROUNDING DETAIL SCALE: N.T.S. | 4



HVAC GROUNDING DETAIL SCALE: N.T.S. | 5

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DC ONE LINE DIAGRAM

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FEC# 2018.0265. 0002

Attachment 2

STRUCTURAL ANALYSIS REPORT

Prepared for: Smartlink / AT&T

New Antenna and Equipment Installation on Existing Guyed Tower

Site No: CT1837S
Site Name: Ledyard Colonel Ledyard Highway
581 Colonel Ledyard Highway
Ledyard, CT 06339

March 11, 2019

Revision I

Henry M. Bellagamba, P.E.

FULLERTON
ENGINEERING · DESIGN

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Project Number: 2018.0265.E002

Summary

This structural analysis was performed by Fullerton, as requested by the client, to determine the conformance of existing structure with the governing building code, 2018 Connecticut Building Code (2015 International Building Code w/ Connecticut State Amendments)) and the industry standard, ANSI/TIA-222-G (Structural Standard for Steel Antenna Towers and Antenna Supporting Structures). The analysis considers the tower properties, existing and proposed appurtenances and the required loading criteria.

Conclusion

- The tower members are in conformance for the loading considered.
- The tower foundation is in conformance for the loading considered.

Analysis Data

The following is based on information provided by the client, field investigation, and other determination by Fullerton Engineering Consultants or third parties.

Configuration	347'-0" Valmont Guyed Tower with a face width of 5'-0" with guy wires at elevations 320'-0", 260'-0", 200'-0", 140'-0" and 70'-0" AGL.
References	Erection Tower Drawings by Valmont Structures, eng. file No. A-173386-, dated 3/22/2013. Geotechnical Report by Geisser Engineering Corp., dated 3/18/2013. RFDS V3.00 by AT&T, dated 1/22/2019.

Appurtenance Loading Schedule

ELEV. (FT.=AGL)	APPURTENANCE	TRANSMISSION LINES
	Proposed AT&T	
173'-0"	(6) KMW EPBQ-654L8H8-L2 antennas (3) CCI HPA65R-BU8A antennas (3) Ericsson RRUS-4478 B14 units (3) Ericsson RRUS-4426 B66 units (3) Ericsson RRUS-E2 units (3) Ericsson RRUS-4415 B30 units (3) Ericsson RRUS-4449 B5/B12 units (3) Ericsson RRUS-4415 B25 units (3) Raycap DC6-48-60-18-8F COVP units Mounted on proposed (3) sector frames (Sabre P/N: C10857001C)	(2) 3/8" Fiber (8) 7/8" DC Power
	Existing (To Remain)	
350'-0"	(1) Beacon Mounted on top of tower	
325'-0"-345'-0"	(1) DCR-M 4 bay FM with radomes antenna Mounted on existing pipe mount frame on tower face	(1) 1-5/8" Coax
300'-0" 290'-0"	(4) 18' Whip Antennas (1) 2'x8' grid dish Mounted on existing (3) sector frames	(4) 1-5/8" Coax (1) 7/8" Coax
180'-0"	(3) Sidemarkers Mounted on tower leg	
160'-0"	(1) 2'x8' grid dish Mounted on tower leg	(1) 7/8" Coax
120'-0"	(2) 2.5' dishes with radome Mounted on tower leg	(1) 7/8" Coax
100'-0"	(1) 3'Ø dish with radome Mounted on tower leg	(1) 1-5/8" Coax
80'-0"	(1) 2'x8' grid dish Mounted on tower leg	(1) 7/8" Coax

Results

The results of the structural analysis are summarized as follows:

Latticed Pole	The Latticed Pole legs are **adequate** for new loads, with a maximum stress ratio of 30.0% @ Elev. 320'-330' AGL.
	The Latticed Pole bolts are **adequate** for new loads, with a maximum stress ratio of 10.2% @ Elev. 320' AGL.
	The Latticed Pole diagonals are **adequate** for new loads, with a maximum stress ratio of 92.4% @ Elev. 320'-330' AGL.
	The Latticed Pole top girts are **adequate** for new loads, with a maximum stress ratio of 6.7% @ Elev. 330' AGL.
	The Latticed Pole bottom girts are **adequate** for new loads, with a maximum stress ratio of 11.1% @ Elev. 330' AGL.
Tower Mast	The tower legs are **adequate** for new loads, with a maximum stress ratio of 65.9% @ Elev. 220'-240' AGL.
	The tower leg bolts are **adequate** for new loads, with a maximum stress ratio of 36.2% @ Elev. 200' AGL.
	The tower diagonals are **adequate** for new loads, with a maximum stress ratio of 56.3% @ Elev. 5'-20' AGL.
	The tower top girts are **adequate** for new loads, with a maximum stress ratio of 16.8% @ Elev. 5' AGL.
	The tower bottom girts are **adequate** for new loads, with a maximum stress ratio of 40.9% @ Elev. 5' AGL.
Guy Wires	The guy wires are **adequate** for new loads, with a maximum stress ratio of 60.3% @ Elev. 320' AGL. **All guy wires shall be tensioned to correspond with an initial tension of 10% of the manufacturer's breaking strength of the strand at an ambient temperature of 60°F.*
Foundation	The foundation is **adequate** for new loads. Please see attached foundation analysis.

Assumptions

This analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. The analysis is based solely on the information supplied, and the results, in turn, are only as accurate as data extracted from this information. Fullerton has been instructed by the client to assume the information supplied is accurate, and Fullerton has made no independent determination of its accuracy. The exception to the previous statement is if Fullerton has been contracted by the client to provide an independent structural mapping report of the tower and related appurtenances, in which case Fullerton has made an independent determination of the accuracy of the information resulting from the mapping report.

- The tower member sizes and geometry are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and stated in the materials section.
- The existing tower is assumed to have been properly maintained in accordance with the TIA/EIA standard and/or its original manufacturer's recommendations. The existing tower is assumed to be in good condition with no structural defects and with no deterioration to its member capacities.
- The antenna configuration is as supplied and/or stated in the analysis section. It is assumed to be complete and accurate. All antennas, mounts, remote radios, cables and cable supports are assumed to be properly installed and supported as per the manufacturer's requirements.
- The antennas, mounts, remote radios, cables and cable supports and lines stated in the appurtenance loading schedule represent Fullerton's understanding of the overall antenna configuration. If the actual configuration is different than above, then this analysis is invalid. Please refer to this report for the projected wind areas used in the calculations for antennas and mounts. If variations or discrepancies are identified, please inform Fullerton.
- Some assumptions are made regarding antenna and mount sizes and their projected areas based on a best interpretation of the data supplied and a best knowledge of antenna type and industry practice.
- The existing foundation is assumed to be in good condition with no structural defects and with no deterioration to its member capacities.
- The soil parameters are as per data supplied, or as assumed, and stated in the calculations.
- All welds and connections are assumed to develop at least the member capacity, unless determined otherwise and explicitly stated in this report.
- All prior structural modifications, if any, are assumed to be as per date supplied/ available, to be properly installed and to be fully effective.

Scope and Limitations

The engineering services rendered by Fullerton Engineering Consultants, Inc. (Fullerton) in connection with this structural analysis are limited to an analysis of the structure, size and capacity of its members. Fullerton does not analyze the fabrication, including welding and connection capacities, except as included in this report.

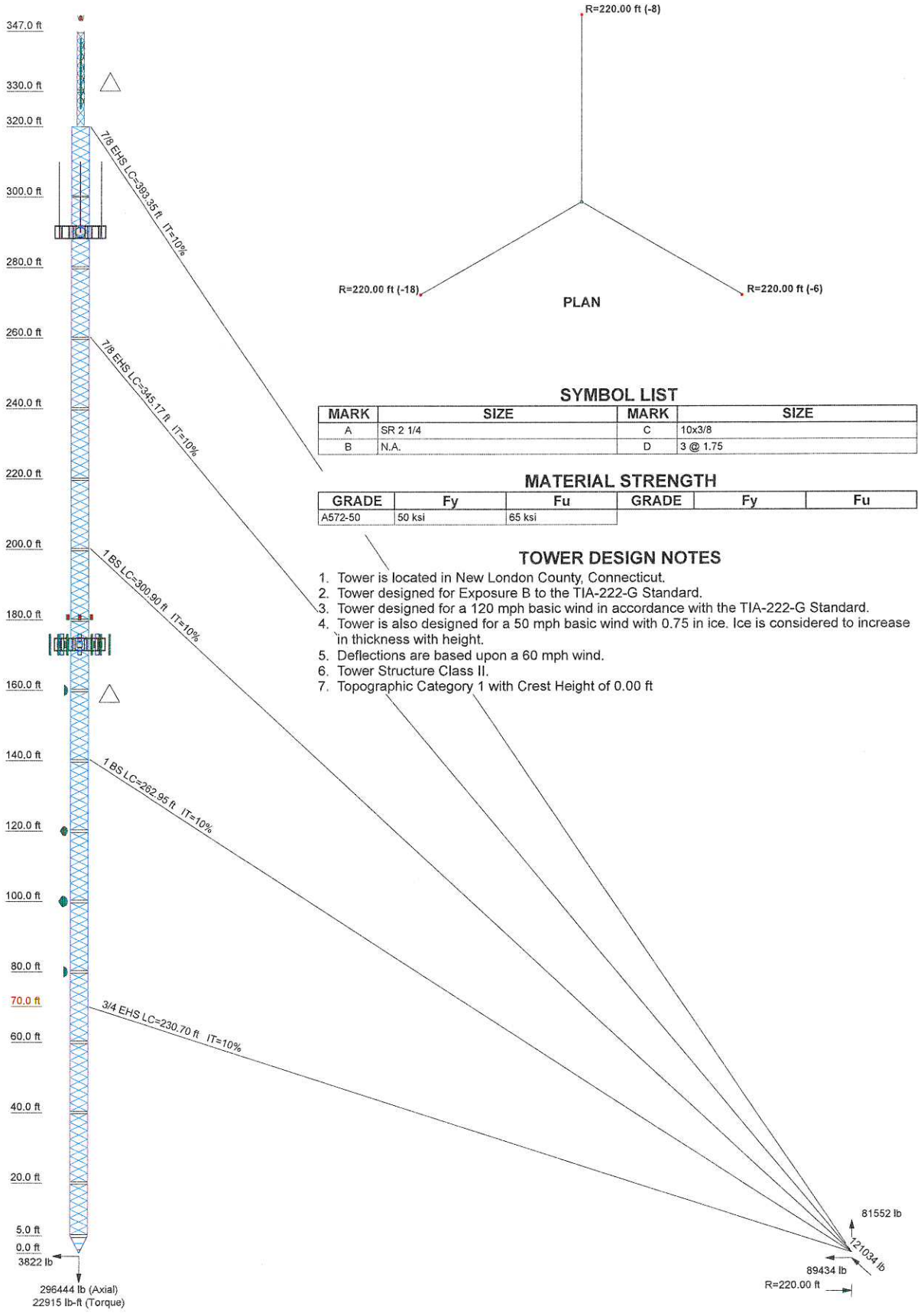
The information and conclusions contained in this report were determined by application of the current engineering standards and analysis procedures and formulae, and Fullerton assumes no obligation to revise any of the information or conclusions contained in this report in the event such engineering and analysis procedures and formulae are hereafter modified or revised.

Fullerton makes no warranties, expressed or implied in connection with this report and disclaims any liability arising from original design, material, fabrication and erection deficiencies or the "as-built" condition of this tower. Fullerton will not be responsible whatsoever for or on account of consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report.

Installation procedures are not within the scope of this report and should be performed and evaluated by a competent tower erection contractor.

Tower Analysis

Section	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1	L2	L1
Legs			SR 3				SR 2 3/4				SR 2 1/2	SR 2 1/4			SR 2			A	SR 2
Leg Grade											A572-50								
Diagonals	B		SR 7/8				SR 1				SR 7/8							SR 3/4	
Diagonal Grade	B										A572-50								
Top Girts	C		SR 7/8				SR 1				SR 7/8							SR 3/4	
Bottom Girts	C		SR 7/8				SR 1				SR 7/8							N.A.	SR 3/4
Horizontals	C										N.A.								
Face Width (ft)																	5		2
# Panels @ (ft)		D6 @ 2.38889							104 @ 2.41667							16 @ 2.45833		11 @ 2.33333	
Weight (lb) 30766.8		1629.6	2152.5	2152.5	2347.5	2105.5	2105.5	2105.5	2105.5	1884.5	1884.5	1684.6	1310.6	1310.6	1310.6	1312.5	1312.5	625.8	757.3



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	SR 2 1/4	C	10x3/8
B	N.A.	D	3 @ 1.75

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi			

TOWER DESIGN NOTES

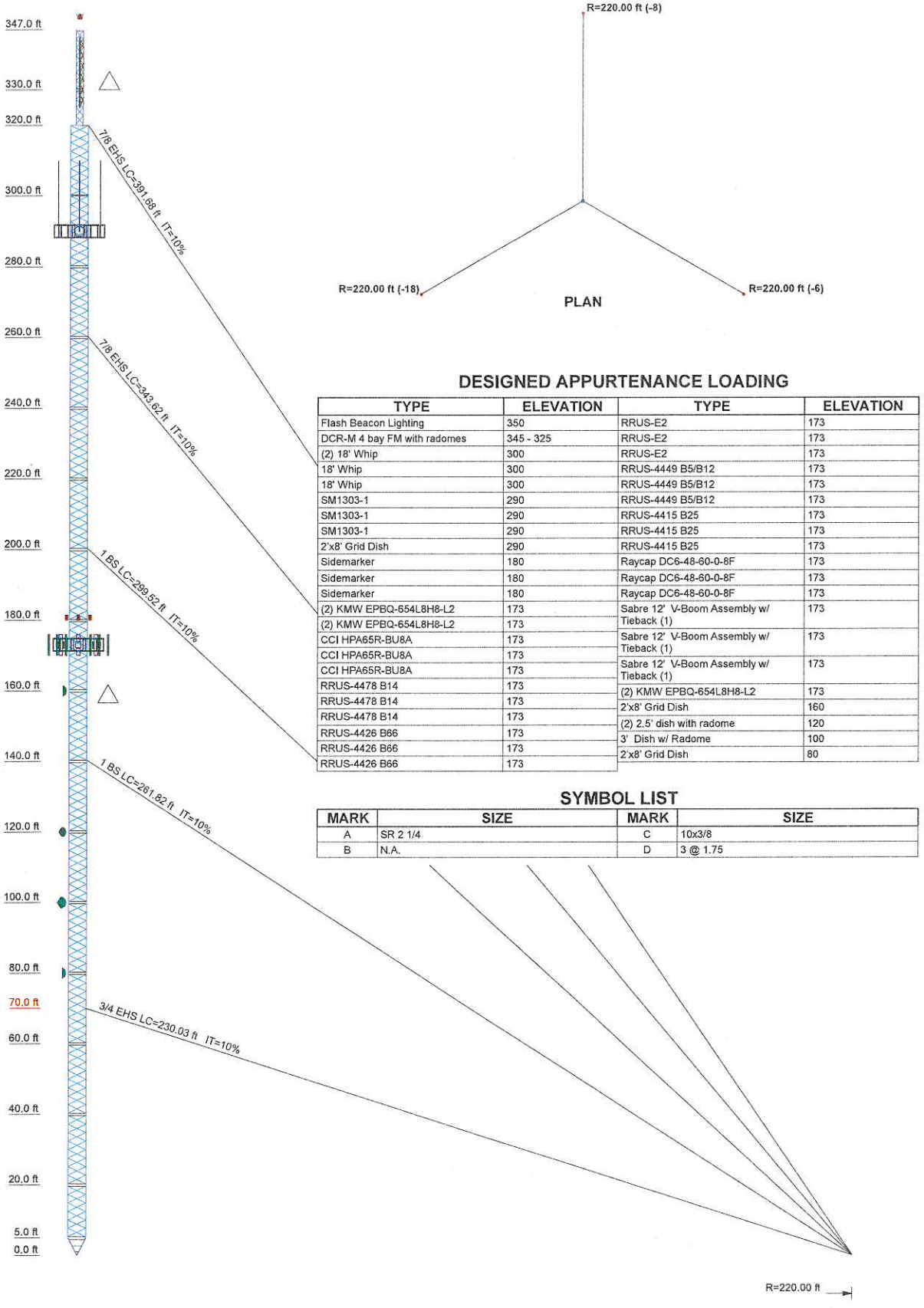
1. Tower is located in New London County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 120 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft

ALL REACTIONS ARE FACTORED

Fullerton Engineering Consultants
1100 E. Woodfield Road, Suite 500
Schaumburg, IL 60173
Phone: (847) 908-8400
FAX: fax@fullertonengineering.com

Job: *CT1837S*			
Project: *347 ft. Guyed Tower*			
Client: Smartlink / AT&T	Drawn by: VY	App'd:	
Code: TIA-222-G	Date: 08/11/19	Scale: NTS	
Path:		Dwg No. E-1	

Section		T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1	L2	L1
Legs			SR 3					SR 2 3/4			SR 2 1/2		SR 2 1/4			SR 2			A	SR 2
Leg Grade											A572-50									
Diagonals	B		SR 7/8				SR 1				SR 7/8							SR 3/4		
Diagonal Grade	B										A572-50									
Top Girts	C		SR 7/8				SR 1				SR 7/8							SR 3/4		
Bottom Girts	C		SR 7/8				SR 1				SR 7/8							N.A.		SR 3/4
Horizontals	C										N.A.									
Face Width (ft)																	5			2
# Panels @ (ft)		D6 @ 2.38889								104 @ 2.41667							16 @ 2.45833			11 @ 2.33333
Weight (lb) 30766.8		698.1	1625.6	2152.5	2152.5	2347.5	2105.5	2105.5	2105.5	2105.5	1884.5	1884.5	1684.6	1310.6	1310.6	1310.6	1312.5	1312.5	525.8	757.3



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Flash Beacon Lighting	350	RRUS-E2	173
DCR-M 4 bay FM with radomes	345 - 325	RRUS-E2	173
(2) 18' Whip	300	RRUS-E2	173
18' Whip	300	RRUS-4449 B5/B12	173
18' Whip	300	RRUS-4449 B5/B12	173
SM1303-1	290	RRUS-4449 B5/B12	173
SM1303-1	290	RRUS-4415 B25	173
SM1303-1	290	RRUS-4415 B25	173
2'x8' Grid Dish	290	RRUS-4415 B25	173
Sidemarker	180	Raycap DC6-48-60-0-8F	173
Sidemarker	180	Raycap DC6-48-60-0-8F	173
Sidemarker	180	Raycap DC6-48-60-0-8F	173
(2) KMW EPBQ-654L8H8-L2	173	Sabre 12' V-Boom Assembly w/ Tieback (1)	173
(2) KMW EPBQ-654L8H8-L2	173	Sabre 12' V-Boom Assembly w/ Tieback (1)	173
CCI HPA65R-BU8A	173	Sabre 12' V-Boom Assembly w/ Tieback (1)	173
CCI HPA65R-BU8A	173	(2) KMW EPBQ-654L8H8-L2	173
CCI HPA65R-BU8A	173	2'x8' Grid Dish	160
RRUS-4478 B14	173	(2) 2.5' dish with radome	120
RRUS-4478 B14	173	3' Dish w/ Radome	100
RRUS-4478 B14	173	2'x8' Grid Dish	80
RRUS-4426 B66	173		
RRUS-4426 B66	173		
RRUS-4426 B66	173		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	SR 2 1/4	C	10x3/8
B	N.A.	D	3 @ 1.75

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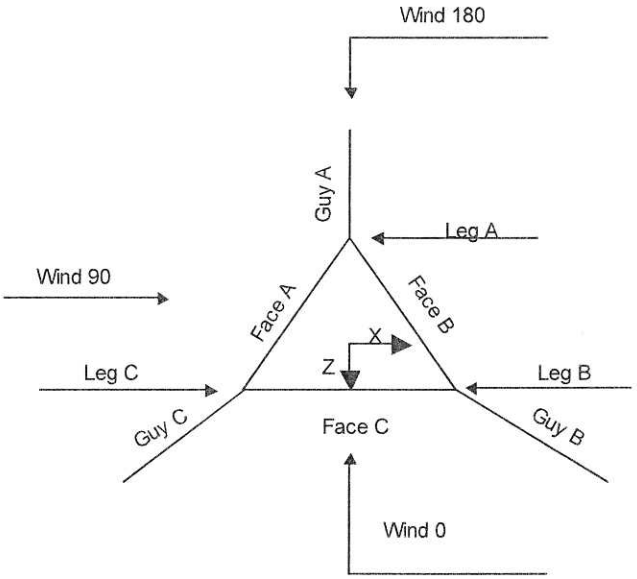
Project: *347 ft. Guyed Tower*			
Client: Smartlink / AT&T	Drawn by: VY	App'd:	
Code: TIA-222-G	Date: 08/11/19	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

The main tower is a 3x guyed tower with an overall height of 347.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 5.00 ft at the top and tapered at the base.
An index plate is provided at the 3 sided -tower connection.
There is a 3 sided latticed pole with a face width of 2.00 ft.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in New London County, Connecticut.
Basic wind speed of 120 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Stress ratio used in latticed pole member design is 1.
Safety factor used in guy design is 1.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.



Corner & Starmount Guyed Tower

3 Sided Latticed Pole Section Geometry

Tower Section	*Tower Elevation*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
L1	347.00-330.00			2.00	1	17.00
L2	330.00-320.00			2.00	1	10.00

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Section	*Tower Elevation*	*Diagonal Spacing*	*Bracing Type*	*Has K Brace End Panels*	*Has Horizontals*	*Top Girt Offset*	*Bottom Girt Offset*
	ft	*ft*				*in*	*in*
L1	347.00-330.00	2.33	X Brace	No	No	4.0000	4.0000
L2	330.00-320.00	2.33	X Brace	No	No	4.0000	4.0000

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
L1 347.00-330.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
L2 330.00-320.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
L1 347.00-330.00	Solid Round	3/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
L2 330.00-320.00	Solid Round	3/4	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 347.00-330.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
L2 330.00-320.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
L1 347.00-330.00	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
L2 330.00-320.00	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

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

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
L1 347.00-330.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
L2 330.00-320.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
L1 347.00-330.00	Flange	1.0000 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
L2 330.00-320.00	Flange	1.5000 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	320.00-300.00			5.00	1	20.00
T2	300.00-280.00			5.00	1	20.00
T3	280.00-260.00			5.00	1	20.00
T4	260.00-240.00			5.00	1	20.00
T5	240.00-220.00			5.00	1	20.00
T6	220.00-200.00			5.00	1	20.00
T7	200.00-180.00			5.00	1	20.00
T8	180.00-160.00			5.00	1	20.00
T9	160.00-140.00			5.00	1	20.00
T10	140.00-120.00			5.00	1	20.00
T11	120.00-100.00			5.00	1	20.00
T12	100.00-80.00			5.00	1	20.00
T13	80.00-60.00			5.00	1	20.00
T14	60.00-40.00			5.00	1	20.00
T15	40.00-20.00			5.00	1	20.00
T16	20.00-5.00			5.00	1	15.00
T17	5.00-0.00			5.00	1	5.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	320.00-300.00	2.46	X Brace	No	No	0.0000	4.0000
T2	300.00-280.00	2.46	X Brace	No	No	0.0000	4.0000
T3	280.00-260.00	2.42	X Brace	No	No	4.0000	4.0000
T4	260.00-240.00	2.42	X Brace	No	No	4.0000	4.0000
T5	240.00-220.00	2.42	X Brace	No	No	4.0000	4.0000
T6	220.00-200.00	2.42	X Brace	No	No	4.0000	4.0000
T7	200.00-180.00	2.42	X Brace	No	No	4.0000	4.0000
T8	180.00-160.00	2.42	X Brace	No	No	4.0000	4.0000
T9	160.00-140.00	2.42	X Brace	No	No	4.0000	4.0000
T10	140.00-120.00	2.42	X Brace	No	No	4.0000	4.0000
T11	120.00-100.00	2.42	X Brace	No	No	4.0000	4.0000
T12	100.00-80.00	2.42	X Brace	No	No	4.0000	4.0000
T13	80.00-60.00	2.42	X Brace	No	No	4.0000	4.0000
T14	60.00-40.00	2.42	X Brace	No	No	4.0000	4.0000
T15	40.00-20.00	2.42	X Brace	No	No	4.0000	4.0000
T16	20.00-5.00	2.39	X Brace	No	No	4.0000	4.0000
T17	5.00-0.00	1.75	X Brace	No	Yes	6.0000	12.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 320.00-300.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T2 300.00-280.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T3 280.00-260.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T4 260.00-240.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T5 240.00-220.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T6 220.00-200.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T7 200.00-180.00	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T8 180.00-160.00	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T9 160.00-140.00	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T10 140.00-120.00	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T11 120.00-100.00	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T12 100.00-80.00	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T13 80.00-60.00	Solid Round	3	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T14 60.00-40.00	Solid Round	3	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T15 40.00-20.00	Solid Round	3	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T16 20.00-5.00	Solid Round	3	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T17 5.00-0.00	Solid Round	3	A572-50	Solid Round		A572-50

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
			(50 ksi)			(50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 320.00-300.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T2 300.00-280.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T3 280.00-260.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T4 260.00-240.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T5 240.00-220.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T6 220.00-200.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T7 200.00-180.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T8 180.00-160.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T9 160.00-140.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T10 140.00-120.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T11 120.00-100.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T12 100.00-80.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T13 80.00-60.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T14 60.00-40.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T15 40.00-20.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T16 20.00-5.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T17 5.00-0.00	Flat Bar	10x3/8	A36 (36 ksi)	Flat Bar	10x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T17 5.00-0.00	None	Flat Bar		A36 (36 ksi)	Flat Bar	10x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft^2	in					in	in	in
T1 320.00-300.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T2 300.00-280.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T3 280.00-260.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T4 260.00-240.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T5 240.00-220.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T6 220.00-200.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T7 200.00-180.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T8 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T9 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T10 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T11 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T12 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T13 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T14 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T15 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T16 20.00-5.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T17 5.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
ft										
T1 320.00-300.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 300.00-280.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 280.00-260.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T4	Yes	Yes	1	1	1	1	1	1	1	1
260.00-240.00				1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1
240.00-220.00				1	1	1	1	1	1	1
T6	Yes	Yes	1	1	1	1	1	1	1	1
220.00-200.00				1	1	1	1	1	1	1
T7	Yes	Yes	1	1	1	1	1	1	1	1
200.00-180.00				1	1	1	1	1	1	1
T8	Yes	Yes	1	1	1	1	1	1	1	1
180.00-160.00				1	1	1	1	1	1	1
T9	Yes	Yes	1	1	1	1	1	1	1	1
160.00-140.00				1	1	1	1	1	1	1
T10	Yes	Yes	1	1	1	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1
T11	Yes	Yes	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T12	Yes	Yes	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T13	Yes	Yes	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T14	Yes	Yes	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T15	Yes	Yes	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T16	Yes	Yes	1	1	1	1	1	1	1	1
20.00-5.00				1	1	1	1	1	1	1
T17 5.00-0.00	Yes	Yes	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	U	Diagonal Net Width Deduct in	U	Top Girt Net Width Deduct in	U	Bottom Girt Net Width Deduct in	U	Mid Girt Net Width Deduct in	U	Long Horizontal Net Width Deduct in	U	Short Horizontal Net Width Deduct in	U
T1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
320.00-300.00														
T2	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
300.00-280.00														
T3	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
280.00-260.00														
T4	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
260.00-240.00														
T5	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
240.00-220.00														
T6	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
220.00-200.00														
T7	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
200.00-180.00														

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T8 180.00-160.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 160.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 140.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 120.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 20.00-5.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T17 5.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 320.00-300.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 300.00-280.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 280.00-260.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 260.00-240.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 240.00-220.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 220.00-200.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 200.00-180.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 180.00-160.00	Flange	1.0000 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 160.00-140.00	Flange	1.0000 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 140.00-120.00	Flange	1.0000 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 120.00-100.00	Flange	1.0000 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T12 100.00-80.00	Flange	1.0000 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T13 80.00-60.00	Flange	1.0000 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T14	Flange	1.0000	3	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
60.00-40.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T15	Flange	1.0000	3	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
40.00-20.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T16 20.00-5.00	Flange	1.0000	3	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T17 5.00-0.00	Flange	0.7500	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
320	EHS	A	7/8	7970.00	10%	19000	1.581	393.01	220.00	0.0000	-8.00	100%
		B	7/8	7970.00	10%	19000	1.581	391.34	220.00	0.0000	-6.00	100%
		C	7/8	7970.00	10%	19000	1.581	401.37	220.00	0.0000	-18.00	100%
260.333	EHS	A	7/8	7970.00	10%	19000	1.581	344.87	220.00	0.0000	-8.00	100%
		B	7/8	7970.00	10%	19000	1.581	343.32	220.00	0.0000	-6.00	100%
		C	7/8	7970.00	10%	19000	1.581	352.69	220.00	0.0000	-18.00	100%
200.333	BS	A	1	12200.00	10%	24000	2.100	300.66	220.00	0.0000	-8.00	100%
		B	1	12200.00	10%	24000	2.100	299.28	220.00	0.0000	-6.00	100%
		C	1	12200.00	10%	24000	2.100	307.66	220.00	0.0000	-18.00	100%
140.333	BS	A	1	12200.00	10%	24000	2.100	262.74	220.00	0.0000	-8.00	100%
		B	1	12200.00	10%	24000	2.100	261.61	220.00	0.0000	-6.00	100%
		C	1	12200.00	10%	24000	2.100	268.50	220.00	0.0000	-18.00	100%
70	EHS	A	3/4	5830.00	10%	19000	1.155	230.50	220.00	0.0000	-8.00	100%
		B	3/4	5830.00	10%	19000	1.155	229.84	220.00	0.0000	-6.00	100%
		C	3/4	5830.00	10%	19000	1.155	234.07	220.00	0.0000	-18.00	100%

Guy Data *(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
320	Corner						
260.333	Corner						
200.333	Corner						
140.333	Corner						
70	Corner						

Guy Data *(cont'd)*

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
320.00	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	
260.33	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	
200.33	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	
140.33	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	
70.00	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	

Guy Data (cont'd)

Guy Elevation ft	Cable Weight A lb	Cable Weight B lb	Cable Weight C lb	Cable Weight D lb	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
320	621.34	618.71	634.57		14.85 6.7 sec/pulse	14.73 6.6 sec/pulse	15.48 6.8 sec/pulse	
260.333	545.24	542.79	557.61		11.50 5.9 sec/pulse	11.40 5.8 sec/pulse	12.02 6.0 sec/pulse	
200.333	631.38	628.48	646.09		7.65 4.8 sec/pulse	7.58 4.8 sec/pulse	8.00 4.9 sec/pulse	
140.333	551.75	549.39	563.85		5.87 4.2 sec/pulse	5.82 4.2 sec/pulse	6.13 4.3 sec/pulse	
70	266.23	265.46	270.35		5.23 3.9 sec/pulse	5.20 3.9 sec/pulse	5.39 4.0 sec/pulse	

Guy Data (cont'd)

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
320	No	No			1	1	1	1
260.333	No	No			1	1	1	1
200.333	No	No			1	1	1	1
140.333	No	No			1	1	1	1
70	No	No			1	1	1	1

Guy Data (cont'd)

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
320	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Elevation ft	Torque-Arm Bolt Size in	Number	Net Width Deduct in	U	Pull Off Bolt Size in	Number	Net Width Deduct in	U	Diagonal Bolt Size in	Number	Net Width Deduct in	U
260.333	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
200.333	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
140.333	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
70	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
320	A	156.00	35	6	1.7521
	B	157.00	35	6	1.7532
	C	151.00	35	6	1.7464
260.333	A	126.17	33	6	1.7153
	B	127.17	33	6	1.7166
	C	121.17	33	6	1.7084
200.333	A	96.17	31	5	1.6693
	B	97.17	31	5	1.6711
	C	91.17	30	5	1.6604
140.333	A	66.17	28	5	1.6081
	B	67.17	28	5	1.6105
	C	61.17	27	5	1.5955
70	A	31.00	22	4	1.4907
	B	32.00	22	4	1.4954
	C	26.00	22	4	1.4647

Guy-Tensioning Information

Guy Elevation ft		H ft	V ft	Temperature At Time Of Tensioning: 0 F Initial Tension lb	0 F Intercept ft	20 F Initial Tension lb	20 F Intercept ft	40 F Initial Tension lb	40 F Intercept ft	60 F Initial Tension lb	60 F Intercept ft	80 F Initial Tension lb	80 F Intercept ft	100 F Initial Tension lb	100 F Intercept ft	120 F Initial Tension lb	120 F Intercept ft
320	A	217.11	328.00	8887	13.36	8578	13.83	8272	14.33	7970	14.85	7673	15.41	7380	16.00	7093	16.63
	B	217.11	326.00	8895	13.24	8583	13.71	8274	14.20	7970	14.73	7670	15.29	7375	15.88	7086	16.51
	C	217.11	338.00	8849	13.98	8553	14.45	8259	14.95	7970	15.48	7685	16.04	7404	16.63	7128	17.25
260.333	A	217.11	268.33	9165	10.03	8761	10.49	8362	10.98	7970	11.50	7586	12.07	7210	12.69	6844	13.35
	B	217.11	266.33	9176	9.93	8768	10.39	8366	10.87	7970	11.40	7582	11.97	7203	12.59	6834	13.25
	C	217.11	278.33	9112	10.54	8726	11.00	8345	11.49	7970	12.02	7602	12.59	7242	13.20	6891	13.85
200.333	A	217.11	208.33	14867	6.30	13963	6.70	13073	7.15	12200	7.65	11348	8.22	10522	8.85	9708	9.58
	B	217.11	206.33	14892	6.23	13979	6.63	13081	7.08	12200	7.58	11340	8.15	10507	8.78	9706	9.49
	C	217.11	218.33	14751	6.64	13887	7.05	13036	7.50	12200	8.00	11384	8.57	10591	9.20	9826	9.90
140.333	A	217.11	148.33	15712	4.57	14518	4.94	13345	5.37	12200	5.87	11092	6.45	10031	7.12	9031	7.90
	B	217.11	146.33	15743	4.52	14538	4.89	13355	5.32	12200	5.82	11082	6.40	10013	7.08	9006	7.86
	C	217.11	158.33	15560	4.82	14418	5.19	13296	5.63	12200	6.13	11138	6.70	10118	7.37	9153	8.13
70	A	217.11	78.00	7822	3.90	7140	4.27	6474	4.71	5830	5.23	5215	5.84	4638	6.56	4109	7.40
	B	217.11	76.00	7834	3.87	7148	4.24	6478	4.68	5830	5.20	5211	5.81	4631	6.53	4101	7.37
	C	217.11	88.00	7761	4.05	7100	4.43	6455	4.87	5830	5.39	5233	6.00	4671	6.71	4154	7.54

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Feedline Ladder (Af)	C	No	Af (CaAa)	320.00 - 5.00	0.0000	0	1	1	3.0000	3.0000		8.40
Feedline Ladder (Af)	C	No	Af (CaAa)	320.00 - 5.00	0.2500	0	1	1	3.0000	3.0000		8.40
Feedline Ladder (Af)	C	No	Af (CaAa)	320.00 - 5.00	-0.2500	0	1	1	3.0000	3.0000		8.40
Safety Line 3/8 *****	C	No	Ar (CaAa)	320.00 - 5.00	0.0000	0	1	1	0.3750	0.3750		0.22
LDF7-50A (1-5/8 FOAM)	C	No	Ar (CaAa)	325.00 - 8.00	0.0000	-0.4	1	1	0.5000	1.9800		0.82
LDF7-50A (1-5/8 FOAM)	C	No	Ar (CaAa)	290.00 - 8.00	0.0000	0.3	4	4	0.5000	1.9800		0.82
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	290.00 - 8.00	0.0000	0.2	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	160.00 - 8.00	0.0000	0.15	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	120.00 - 8.00	0.0000	0.15	1	1	1.0900	1.0900		0.33
LDF7-50A (1-5/8 FOAM)	C	No	Ar (CaAa)	100.00 - 8.00	0.0000	-0.3	1	1	0.5000	1.9800		0.82
LDF5-50A (7/8 FOAM) ***proposed** **	C	No	Ar (CaAa)	80.00 - 8.00	0.0000	-0.35	1	1	1.0900	1.0900		0.33
3/8" Fiber	C	No	Ar (CaAa)	173.00 - 8.00	0.0000	0.35	2	2	0.4000	0.4000		0.08
7/8" DC power cable	C	No	Ar (CaAa)	173.00 - 8.00	0.0000	0.35	8	4	0.8750	0.8750		0.40

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	347.00-330.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	330.00-320.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.990	0.000	4.10
T1	320.00-300.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	34.710	0.000	524.80
T2	300.00-280.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	43.720	0.000	560.90
T3	280.00-260.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	52.730	0.000	597.00
T4	260.00-240.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	52.730	0.000	597.00
T5	240.00-220.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		C	0.000	0.000	52.730	0.000	597.00
T6	220.00-200.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	52.730	0.000	597.00
T7	200.00-180.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	52.730	0.000	597.00
T8	180.00-160.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	62.870	0.000	640.68
T9	160.00-140.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	70.510	0.000	670.80
T10	140.00-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	70.510	0.000	670.80
T11	120.00-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	72.690	0.000	677.40
T12	100.00-80.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	76.650	0.000	693.80
T13	80.00-60.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	78.830	0.000	700.40
T14	60.00-40.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	78.830	0.000	700.40
T15	40.00-20.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	78.830	0.000	700.40
T16	20.00-5.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	51.910	0.000	496.50
T17	5.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	347.00-330.00	A	1.893	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	330.00-320.00	A	1.886	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	2.876	0.000	48.62
T1	320.00-300.00	A	1.877	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	72.242	0.000	1641.40
T2	300.00-280.00	A	1.864	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	94.729	0.000	1950.96
T3	280.00-260.00	A	1.851	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	117.058	0.000	2254.94

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T4	260.00-240.00	A	1.837	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	116.625	0.000	2237.70
T5	240.00-220.00	A	1.821	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	116.158	0.000	2219.27
T6	220.00-200.00	A	1.805	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	115.654	0.000	2199.42
T7	200.00-180.00	A	1.787	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	115.105	0.000	2177.91
T8	180.00-160.00	A	1.767	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	143.120	0.000	2529.56
T9	160.00-140.00	A	1.745	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	166.713	0.000	2825.97
T10	140.00-120.00	A	1.720	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	165.511	0.000	2786.14
T11	120.00-100.00	A	1.692	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	173.077	0.000	2862.36
T12	100.00-80.00	A	1.658	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	181.906	0.000	2969.55
T13	80.00-60.00	A	1.617	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	188.231	0.000	3009.36
T14	60.00-40.00	A	1.564	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	184.996	0.000	2909.45
T15	40.00-20.00	A	1.486	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	180.291	0.000	2767.46
T16	20.00-5.00	A	1.361	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	111.542	0.000	1695.89
T17	5.00-0.00	A	1.159	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	347.00-330.00	0.0000	0.0000	0.0000	0.0000
L2	330.00-320.00	9.6000	7.9182	9.6000	7.9182
T1	320.00-300.00	3.4928	17.8832	3.9106	17.8637
T2	300.00-280.00	-1.6731	17.9169	-0.8721	17.9027
T3	280.00-260.00	-4.7809	17.9437	-3.8581	17.9318
T4	260.00-240.00	-4.7809	17.9437	-3.8685	17.9318
T5	240.00-220.00	-4.7809	17.9437	-3.8797	17.9319
T6	220.00-200.00	-4.7809	17.9437	-3.8919	17.9319
T7	200.00-180.00	-4.7809	17.9437	-3.9054	17.9319

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T8	180.00-160.00	-9.1927	18.0481	-9.0914	18.0037
T9	160.00-140.00	-10.6506	18.0793	-10.6877	18.0189
T10	140.00-120.00	-10.6506	18.0793	-10.6635	18.0187
T11	120.00-100.00	-10.6030	18.0702	-10.5614	18.0097
T12	100.00-80.00	-9.1791	18.0875	-9.0422	18.0290
T13	80.00-60.00	-8.3742	18.0790	-7.7942	18.0209
T14	60.00-40.00	-8.3742	18.0790	-7.6815	18.0200
T15	40.00-20.00	-8.3742	18.0790	-7.6303	18.0199
T16	20.00-5.00	-7.8181	18.0544	-7.1505	18.0023
T17	5.00-0.00	0.0000	0.0000	0.0000	0.0000

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L2	9	LDF7-50A (1-5/8 FOAM)	320.00 - 325.00	0.6000	0.2361
T1	2	Feedline Ladder (Af)	300.00 - 320.00	0.6000	0.4877
T1	3	Feedline Ladder (Af)	300.00 - 320.00	0.6000	0.4877
T1	4	Feedline Ladder (Af)	300.00 - 320.00	0.6000	0.4877
T1	7	Safety Line 3/8	300.00 - 320.00	0.6000	0.4877
T1	9	LDF7-50A (1-5/8 FOAM)	300.00 - 320.00	0.6000	0.4877
T2	2	Feedline Ladder (Af)	280.00 - 300.00	0.6000	0.4901
T2	3	Feedline Ladder (Af)	280.00 - 300.00	0.6000	0.4901
T2	4	Feedline Ladder (Af)	280.00 - 300.00	0.6000	0.4901
T2	7	Safety Line 3/8	280.00 - 300.00	0.6000	0.4901
T2	9	LDF7-50A (1-5/8 FOAM)	280.00 - 300.00	0.6000	0.4901
T2	10	LDF7-50A (1-5/8 FOAM)	280.00 - 290.00	0.6000	0.4901
T2	11	LDF5-50A (7/8 FOAM)	280.00 - 290.00	0.6000	0.4901
T3	2	Feedline Ladder (Af)	260.00 - 280.00	0.6000	0.4936
T3	3	Feedline Ladder (Af)	260.00 - 280.00	0.6000	0.4936
T3	4	Feedline Ladder (Af)	260.00 - 280.00	0.6000	0.4936
T3	7	Safety Line 3/8	260.00 - 280.00	0.6000	0.4936
T3	9	LDF7-50A (1-5/8 FOAM)	260.00 - 280.00	0.6000	0.4936
T3	10	LDF7-50A (1-5/8 FOAM)	260.00 - 280.00	0.6000	0.4936
T3	11	LDF5-50A (7/8 FOAM)	260.00 - 280.00	0.6000	0.4936

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	2	Feedline Ladder (Af)	240.00 - 260.00	0.6000	0.4963
T4	3	Feedline Ladder (Af)	240.00 - 260.00	0.6000	0.4963
T4	4	Feedline Ladder (Af)	240.00 - 260.00	0.6000	0.4963
T4	7	Safety Line 3/8	240.00 - 260.00	0.6000	0.4963
T4	9	LDF7-50A (1-5/8 FOAM)	240.00 - 260.00	0.6000	0.4963
T4	10	LDF7-50A (1-5/8 FOAM)	240.00 - 260.00	0.6000	0.4963
T4	11	LDF5-50A (7/8 FOAM)	240.00 - 260.00	0.6000	0.4963
T5	2	Feedline Ladder (Af)	220.00 - 240.00	0.6000	0.4992
T5	3	Feedline Ladder (Af)	220.00 - 240.00	0.6000	0.4992
T5	4	Feedline Ladder (Af)	220.00 - 240.00	0.6000	0.4992
T5	7	Safety Line 3/8	220.00 - 240.00	0.6000	0.4992
T5	9	LDF7-50A (1-5/8 FOAM)	220.00 - 240.00	0.6000	0.4992
T5	10	LDF7-50A (1-5/8 FOAM)	220.00 - 240.00	0.6000	0.4992
T5	11	LDF5-50A (7/8 FOAM)	220.00 - 240.00	0.6000	0.4992
T6	2	Feedline Ladder (Af)	200.00 - 220.00	0.6000	0.4891
T6	3	Feedline Ladder (Af)	200.00 - 220.00	0.6000	0.4891
T6	4	Feedline Ladder (Af)	200.00 - 220.00	0.6000	0.4891
T6	7	Safety Line 3/8	200.00 - 220.00	0.6000	0.4891
T6	9	LDF7-50A (1-5/8 FOAM)	200.00 - 220.00	0.6000	0.4891
T6	10	LDF7-50A (1-5/8 FOAM)	200.00 - 220.00	0.6000	0.4891
T6	11	LDF5-50A (7/8 FOAM)	200.00 - 220.00	0.6000	0.4891
T7	2	Feedline Ladder (Af)	180.00 - 200.00	0.6000	0.4882
T7	3	Feedline Ladder (Af)	180.00 - 200.00	0.6000	0.4882
T7	4	Feedline Ladder (Af)	180.00 - 200.00	0.6000	0.4882
T7	7	Safety Line 3/8	180.00 - 200.00	0.6000	0.4882
T7	9	LDF7-50A (1-5/8 FOAM)	180.00 - 200.00	0.6000	0.4882
T7	10	LDF7-50A (1-5/8 FOAM)	180.00 - 200.00	0.6000	0.4882
T7	11	LDF5-50A (7/8 FOAM)	180.00 - 200.00	0.6000	0.4882
T8	2	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.4920
T8	3	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.4920
T8	4	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.4920

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T8	7	Safety Line 3/8	160.00 - 180.00	0.6000	0.4920
T8	9	LDF7-50A (1-5/8 FOAM)	160.00 - 180.00	0.6000	0.4920
T8	10	LDF7-50A (1-5/8 FOAM)	160.00 - 180.00	0.6000	0.4920
T8	11	LDF5-50A (7/8 FOAM)	160.00 - 180.00	0.6000	0.4920
T8	17	3/8" Fiber	160.00 - 173.00	1.0000	1.0000
T8	18	7/8" DC power cable	160.00 - 173.00	1.0000	1.0000
T9	2	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.4919
T9	3	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.4919
T9	4	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.4919
T9	7	Safety Line 3/8	140.00 - 160.00	0.6000	0.4919
T9	9	LDF7-50A (1-5/8 FOAM)	140.00 - 160.00	0.6000	0.4919
T9	10	LDF7-50A (1-5/8 FOAM)	140.00 - 160.00	0.6000	0.4919
T9	11	LDF5-50A (7/8 FOAM)	140.00 - 160.00	0.6000	0.4919
T9	12	LDF5-50A (7/8 FOAM)	140.00 - 160.00	0.6000	0.4919
T9	17	3/8" Fiber	140.00 - 160.00	1.0000	1.0000
T9	18	7/8" DC power cable	140.00 - 160.00	1.0000	1.0000
T10	2	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.4965
T10	3	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.4965
T10	4	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.4965
T10	7	Safety Line 3/8	120.00 - 140.00	0.6000	0.4965
T10	9	LDF7-50A (1-5/8 FOAM)	120.00 - 140.00	0.6000	0.4965
T10	10	LDF7-50A (1-5/8 FOAM)	120.00 - 140.00	0.6000	0.4965
T10	11	LDF5-50A (7/8 FOAM)	120.00 - 140.00	0.6000	0.4965
T10	12	LDF5-50A (7/8 FOAM)	120.00 - 140.00	0.6000	0.4965
T10	17	3/8" Fiber	120.00 - 140.00	1.0000	1.0000
T10	18	7/8" DC power cable	120.00 - 140.00	1.0000	1.0000
T11	2	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.5019
T11	3	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.5019
T11	4	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.5019
T11	7	Safety Line 3/8	100.00 - 120.00	0.6000	0.5019
T11	9	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.5019

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T11	10	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.5019
T11	11	LDF5-50A (7/8 FOAM)	100.00 - 120.00	0.6000	0.5019
T11	12	LDF5-50A (7/8 FOAM)	100.00 - 120.00	0.6000	0.5019
T11	13	LDF5-50A (7/8 FOAM)	100.00 - 120.00	0.6000	0.5019
T11	17	3/8" Fiber	100.00 - 120.00	1.0000	1.0000
T11	18	7/8" DC power cable	100.00 - 120.00	1.0000	1.0000
T12	2	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.5082
T12	3	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.5082
T12	4	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.5082
T12	7	Safety Line 3/8	80.00 - 100.00	0.6000	0.5082
T12	9	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.5082
T12	10	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.5082
T12	11	LDF5-50A (7/8 FOAM)	80.00 - 100.00	0.6000	0.5082
T12	12	LDF5-50A (7/8 FOAM)	80.00 - 100.00	0.6000	0.5082
T12	13	LDF5-50A (7/8 FOAM)	80.00 - 100.00	0.6000	0.5082
T12	14	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.5082
T12	17	3/8" Fiber	80.00 - 100.00	1.0000	1.0000
T12	18	7/8" DC power cable	80.00 - 100.00	1.0000	1.0000
T13	2	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.5116
T13	3	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.5116
T13	4	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.5116
T13	7	Safety Line 3/8	60.00 - 80.00	0.6000	0.5116
T13	9	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.5116
T13	10	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.5116
T13	11	LDF5-50A (7/8 FOAM)	60.00 - 80.00	0.6000	0.5116
T13	12	LDF5-50A (7/8 FOAM)	60.00 - 80.00	0.6000	0.5116
T13	13	LDF5-50A (7/8 FOAM)	60.00 - 80.00	0.6000	0.5116
T13	14	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.5116
T13	15	LDF5-50A (7/8 FOAM)	60.00 - 80.00	0.6000	0.5116
T13	17	3/8" Fiber	60.00 - 80.00	1.0000	1.0000
T13	18	7/8" DC power cable	60.00 - 80.00	1.0000	1.0000
T14	2	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.5305
T14	3	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.5305
T14	4	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.5305
T14	7	Safety Line 3/8	40.00 - 60.00	0.6000	0.5305
T14	9	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.5305
T14	10	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.5305
T14	11	LDF5-50A (7/8 FOAM)	40.00 - 60.00	0.6000	0.5305
T14	12	LDF5-50A (7/8 FOAM)	40.00 - 60.00	0.6000	0.5305
T14	13	LDF5-50A (7/8 FOAM)	40.00 - 60.00	0.6000	0.5305
T14	14	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.5305
T14	15	LDF5-50A (7/8 FOAM)	40.00 - 60.00	0.6000	0.5305
T14	17	3/8" Fiber	40.00 - 60.00	1.0000	1.0000
T14	18	7/8" DC power cable	40.00 - 60.00	1.0000	1.0000
T15	2	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.5452
T15	3	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.5452
T15	4	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.5452
T15	7	Safety Line 3/8	20.00 - 40.00	0.6000	0.5452
T15	9	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.5452
T15	10	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.5452
T15	11	LDF5-50A (7/8 FOAM)	20.00 - 40.00	0.6000	0.5452
T15	12	LDF5-50A (7/8 FOAM)	20.00 - 40.00	0.6000	0.5452
T15	13	LDF5-50A (7/8 FOAM)	20.00 - 40.00	0.6000	0.5452
T15	14	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.5452
T15	15	LDF5-50A (7/8 FOAM)	20.00 - 40.00	0.6000	0.5452
T15	17	3/8" Fiber	20.00 - 40.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T15	18	7/8" DC power cable	20.00 - 40.00	1.0000	1.0000
T16	2	Feedline Ladder (Af)	5.00 - 20.00	0.6000	0.5607
T16	3	Feedline Ladder (Af)	5.00 - 20.00	0.6000	0.5607
T16	4	Feedline Ladder (Af)	5.00 - 20.00	0.6000	0.5607
T16	7	Safety Line 3/8	5.00 - 20.00	0.6000	0.5607
T16	9	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.5607
T16	10	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.5607
T16	11	LDF5-50A (7/8 FOAM)	8.00 - 20.00	0.6000	0.5607
T16	12	LDF5-50A (7/8 FOAM)	8.00 - 20.00	0.6000	0.5607
T16	13	LDF5-50A (7/8 FOAM)	8.00 - 20.00	0.6000	0.5607
T16	14	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.5607
T16	15	LDF5-50A (7/8 FOAM)	8.00 - 20.00	0.6000	0.5607
T16	17	3/8" Fiber	8.00 - 20.00	1.0000	1.0000
T16	18	7/8" DC power cable	8.00 - 20.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Offsets: Horz Lateral ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Flash Beacon Lighting	A	None				0.0000	350.00	No Ice	2.70	2.70	50.00
								1/2" Ice	3.10	3.10	70.00
								1" Ice	3.50	3.50	90.00
DCR-M 4 bay FM with radomes	C	From Face	3.00	0.00	0.00	0.0000	345.00 - 325.00	No Ice	60.00	60.00	1023.00
								1/2" Ice	61.50	61.50	1424.37
								1" Ice	63.01	63.01	1844.59
SM1303-1	A	From Leg	2.00	0.00	0.00	0.0000	290.00	No Ice	18.20	17.30	368.00
								1/2" Ice	23.60	23.80	589.00
								1" Ice	29.00	30.30	810.00
SM1303-1	B	From Leg	2.00	0.00	0.00	0.0000	290.00	No Ice	18.20	17.30	368.00
								1/2" Ice	23.60	23.80	589.00
								1" Ice	29.00	30.30	810.00
SM1303-1	C	From Leg	2.00	0.00	0.00	0.0000	290.00	No Ice	18.20	17.30	368.00
								1/2" Ice	23.60	23.80	589.00
								1" Ice	29.00	30.30	810.00
(2) 18' Whip	A	From Leg	4.00	0.00	0.00	0.0000	300.00	No Ice	3.73	3.73	45.95
								1/2" Ice	5.74	5.74	78.95
								1" Ice	7.78	7.78	124.35
18' Whip	B	From Leg	4.00	0.00	0.00	0.0000	300.00	No Ice	3.73	3.73	45.95
								1/2" Ice	5.74	5.74	78.95
								1" Ice	7.78	7.78	124.35
18' Whip	C	From Leg	4.00	0.00	0.00	0.0000	300.00	No Ice	3.73	3.73	45.95
								1/2" Ice	5.74	5.74	78.95
								1" Ice	7.78	7.78	124.35
Sidemarker	A	From Leg	1.00	0.00	0.00	0.0000	180.00	No Ice	0.15	0.15	12.00
								1/2" Ice	0.20	0.20	13.88
								1" Ice	0.26	0.26	16.73
Sidemarker	B	From Leg	1.00	0.00	0.00	0.0000	180.00	No Ice	0.15	0.15	12.00
								1/2" Ice	0.20	0.20	13.88
								1" Ice	0.26	0.26	16.73
Sidemarker	C	From Leg	1.00	0.00	0.00	0.0000	180.00	No Ice	0.15	0.15	12.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1/2" Ice	0.20	0.20	13.88
			0.00			1" Ice	0.26	0.26	16.73
Proposed									
(2) KMW EPBQ-654L8H8-L2	A	From Leg	4.00	0.0000	173.00	No Ice	18.09	7.03	104.50
			0.00			1/2" Ice	18.72	7.62	197.75
			0.00			1" Ice	19.36	8.21	299.18
(2) KMW EPBQ-654L8H8-L2	B	From Leg	4.00	0.0000	173.00	No Ice	18.09	7.03	104.50
			0.00			1/2" Ice	18.72	7.62	197.75
			0.00			1" Ice	19.36	8.21	299.18
(2) KMW EPBQ-654L8H8-L2	C	From Leg	4.00	0.0000	173.00	No Ice	18.09	7.03	104.50
			0.00			1/2" Ice	18.72	7.62	197.75
			0.00			1" Ice	19.36	8.21	299.18
CCI HPA65R-BU8A	A	From Leg	4.00	0.0000	173.00	No Ice	11.23	9.94	104.80
			0.00			1/2" Ice	11.85	11.37	192.59
			0.00			1" Ice	12.47	12.64	290.14
CCI HPA65R-BU8A	B	From Leg	4.00	0.0000	173.00	No Ice	11.23	9.94	104.80
			0.00			1/2" Ice	11.85	11.37	192.59
			0.00			1" Ice	12.47	12.64	290.14
CCI HPA65R-BU8A	C	From Leg	4.00	0.0000	173.00	No Ice	11.23	9.94	104.80
			0.00			1/2" Ice	11.85	11.37	192.59
			0.00			1" Ice	12.47	12.64	290.14
RRUS-4478 B14	A	From Leg	4.00	0.0000	173.00	No Ice	1.84	1.06	60.00
			0.00			1/2" Ice	2.01	1.20	75.88
			0.00			1" Ice	2.19	1.34	94.39
RRUS-4478 B14	B	From Leg	4.00	0.0000	173.00	No Ice	1.84	1.06	60.00
			0.00			1/2" Ice	2.01	1.20	75.88
			0.00			1" Ice	2.19	1.34	94.39
RRUS-4478 B14	C	From Leg	4.00	0.0000	173.00	No Ice	1.84	1.06	60.00
			0.00			1/2" Ice	2.01	1.20	75.88
			0.00			1" Ice	2.19	1.34	94.39
RRUS-4426 B66	A	From Leg	4.00	0.0000	173.00	No Ice	1.64	0.73	48.40
			0.00			1/2" Ice	1.80	0.84	61.22
			0.00			1" Ice	1.97	0.97	76.43
RRUS-4426 B66	B	From Leg	4.00	0.0000	173.00	No Ice	1.64	0.73	48.40
			0.00			1/2" Ice	1.80	0.84	61.22
			0.00			1" Ice	1.97	0.97	76.43
RRUS-4426 B66	C	From Leg	4.00	0.0000	173.00	No Ice	1.64	0.73	48.40
			0.00			1/2" Ice	1.80	0.84	61.22
			0.00			1" Ice	1.97	0.97	76.43
RRUS-E2	A	From Leg	4.00	0.0000	173.00	No Ice	3.15	1.29	52.90
			0.00			1/2" Ice	3.36	1.44	76.12
			0.00			1" Ice	3.59	1.60	102.54
RRUS-E2	B	From Leg	4.00	0.0000	173.00	No Ice	3.15	1.29	52.90
			0.00			1/2" Ice	3.36	1.44	76.12
			0.00			1" Ice	3.59	1.60	102.54
RRUS-E2	C	From Leg	4.00	0.0000	173.00	No Ice	3.15	1.29	52.90
			0.00			1/2" Ice	3.36	1.44	76.12
			0.00			1" Ice	3.59	1.60	102.54
RRUS-4449 B5/B12	A	From Leg	4.00	0.0000	173.00	No Ice	1.64	1.30	73.00
			0.00			1/2" Ice	1.80	1.45	90.19
			0.00			1" Ice	1.97	1.60	110.08
RRUS-4449 B5/B12	B	From Leg	4.00	0.0000	173.00	No Ice	1.64	1.30	73.00
			0.00			1/2" Ice	1.80	1.45	90.19
			0.00			1" Ice	1.97	1.60	110.08
RRUS-4449 B5/B12	C	From Leg	4.00	0.0000	173.00	No Ice	1.64	1.30	73.00
			0.00			1/2" Ice	1.80	1.45	90.19
			0.00			1" Ice	1.97	1.60	110.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral / Vert ft / ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
RRUS-4415 B25	A	From Leg	4.00	0.0000	173.00	No Ice	1.64	0.68	46.00
			0.00			1/2" Ice	1.80	0.79	58.43
			0.00			1" Ice	1.97	0.91	73.23
RRUS-4415 B25	B	From Leg	4.00	0.0000	173.00	No Ice	1.64	0.68	46.00
			0.00			1/2" Ice	1.80	0.79	58.43
			0.00			1" Ice	1.97	0.91	73.23
RRUS-4415 B25	C	From Leg	4.00	0.0000	173.00	No Ice	1.64	0.68	46.00
			0.00			1/2" Ice	1.80	0.79	58.43
			0.00			1" Ice	1.97	0.91	73.23
Raycap DC6-48-60-0-8F	A	From Leg	2.00	0.0000	173.00	No Ice	0.83	0.83	32.80
			0.00			1/2" Ice	1.34	1.34	48.71
			0.00			1" Ice	1.52	1.52	67.01
Raycap DC6-48-60-0-8F	B	From Leg	2.00	0.0000	173.00	No Ice	0.83	0.83	32.80
			0.00			1/2" Ice	1.34	1.34	48.71
			0.00			1" Ice	1.52	1.52	67.01
Raycap DC6-48-60-0-8F	C	From Leg	2.00	0.0000	173.00	No Ice	0.83	0.83	32.80
			0.00			1/2" Ice	1.34	1.34	48.71
			0.00			1" Ice	1.52	1.52	67.01
Sabre 12' V-Boom Assembly w/ Tieback (1)	A	From Leg	2.00	0.0000	173.00	No Ice	20.32	12.90	450.00
			0.00			1/2" Ice	24.20	20.63	795.00
			0.00			1" Ice	28.08	28.36	1140.00
Sabre 12' V-Boom Assembly w/ Tieback (1)	B	From Leg	2.00	0.0000	173.00	No Ice	20.32	12.90	450.00
			0.00			1/2" Ice	24.20	20.63	795.00
			0.00			1" Ice	28.08	28.36	1140.00
Sabre 12' V-Boom Assembly w/ Tieback (1)	C	From Leg	2.00	0.0000	173.00	No Ice	20.32	12.90	450.00
			0.00			1/2" Ice	24.20	20.63	795.00
			0.00			1" Ice	28.08	28.36	1140.00

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
2'x8' Grid Dish	A	Grid	From Leg	1.00	0.0000		290.00	3.00	No Ice	7.07	80.00
				0.00					1/2" Ice	7.47	118.35
				0.00					1" Ice	7.86	156.69
2'x8' Grid Dish	C	Grid	From Leg	1.00	0.0000		160.00	3.00	No Ice	7.07	80.00
				0.00					1/2" Ice	7.47	118.35
				0.00					1" Ice	7.86	156.69
(2) 2.5' dish with radome	C	Paraboloid w/Radome	From Leg	1.00	0.0000		120.00	2.50	No Ice	4.91	50.00
				0.00					1/2" Ice	5.24	76.90
				0.00					1" Ice	5.57	103.80
3' Dish w/ Radome	C	Paraboloid w/Radome	From Leg	1.00	0.0000		100.00	3.00	No Ice	7.07	45.00
				0.00					1/2" Ice	7.47	83.35
				0.00					1" Ice	7.86	121.69
2'x8' Grid Dish	C	Grid	From Leg	1.00	0.0000		80.00	3.00	No Ice	7.07	80.00
				0.00					1/2" Ice	7.47	118.35
				0.00					1" Ice	7.86	156.69

Tower Pressures - No Ice

G_H = 0.850 (base tower), 1.100 (upper structure)

Section Elevation ft	z ft	K_z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	338.50	1.4	44	36.833	A	0.000	8.361	5.667	67.78	0.000	0.000
347.00-330.00					B	0.000	8.361		67.78	0.000	0.000
					C	0.000	8.361		67.78	0.000	0.000
L2	325.00	1.384	43	21.875	A	0.000	5.256	3.750	71.35	0.000	0.000
330.00-320.00					B	0.000	5.256		71.35	0.000	0.000
					C	0.000	5.256		71.35	0.990	0.000
T1	310.00	1.365	43	103.333	A	0.000	13.655	6.667	48.82	0.000	0.000
320.00-300.00					B	0.000	13.655		48.82	0.000	0.000
					C	0.000	13.655		48.82	34.710	0.000
T2	290.00	1.34	42	103.333	A	0.000	13.655	6.667	48.82	0.000	0.000
300.00-280.00					B	0.000	13.655		48.82	0.000	0.000
					C	0.000	13.655		48.82	43.720	0.000
T3	270.00	1.313	41	103.333	A	0.000	13.635	6.667	48.90	0.000	0.000
280.00-260.00					B	0.000	13.635		48.90	0.000	0.000
					C	0.000	13.635		48.90	52.730	0.000
T4	250.00	1.284	40	103.333	A	0.000	13.635	6.667	48.90	0.000	0.000
260.00-240.00					B	0.000	13.635		48.90	0.000	0.000
					C	0.000	13.635		48.90	52.730	0.000
T5	230.00	1.254	39	103.333	A	0.000	13.635	6.667	48.90	0.000	0.000
240.00-220.00					B	0.000	13.635		48.90	0.000	0.000
					C	0.000	13.635		48.90	52.730	0.000
T6	210.00	1.222	38	103.750	A	0.000	15.429	7.500	48.61	0.000	0.000
220.00-200.00					B	0.000	15.429		48.61	0.000	0.000
					C	0.000	15.429		48.61	52.730	0.000
T7	190.00	1.187	37	104.167	A	0.000	16.228	8.333	51.35	0.000	0.000
200.00-180.00					B	0.000	16.228		51.35	0.000	0.000
					C	0.000	16.228		51.35	52.730	0.000
T8	170.00	1.15	36	104.167	A	0.000	16.228	8.333	51.35	0.000	0.000
180.00-160.00					B	0.000	16.228		51.35	0.000	0.000
					C	0.000	16.228		51.35	62.870	0.000
T9	150.00	1.11	35	104.583	A	0.000	17.027	9.167	53.84	0.000	0.000
160.00-140.00					B	0.000	17.027		53.84	0.000	0.000
					C	0.000	17.027		53.84	70.510	0.000
T10	130.00	1.065	33	104.583	A	0.000	17.027	9.167	53.84	0.000	0.000
140.00-120.00					B	0.000	17.027		53.84	0.000	0.000
					C	0.000	17.027		53.84	70.510	0.000
T11	110.00	1.016	32	104.583	A	0.000	17.027	9.167	53.84	0.000	0.000
120.00-100.00					B	0.000	17.027		53.84	0.000	0.000
					C	0.000	17.027		53.84	72.690	0.000
T12	90.00	0.959	30	104.583	A	0.000	17.027	9.167	53.84	0.000	0.000
100.00-80.00					B	0.000	17.027		53.84	0.000	0.000
					C	0.000	17.027		53.84	76.650	0.000
T13	70.00	0.892	28	105.000	A	0.000	17.826	10.000	56.10	0.000	0.000
80.00-60.00					B	0.000	17.826		56.10	0.000	0.000
					C	0.000	17.826		56.10	78.830	0.000
T14	50.00	0.811	25	105.000	A	0.000	16.848	10.000	59.36	0.000	0.000
60.00-40.00					B	0.000	16.848		59.36	0.000	0.000
					C	0.000	16.848		59.36	78.830	0.000
T15	30.00	0.701	22	105.000	A	0.000	16.848	10.000	59.36	0.000	0.000
40.00-20.00					B	0.000	16.848		59.36	0.000	0.000
					C	0.000	16.848		59.36	78.830	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T16 20.00-5.00	12.50	0.7	22	78.750	A	0.000	12.799	7.500	58.60	0.000	0.000
					B	0.000	12.799		58.60	0.000	0.000
					C	0.000	12.799		58.60	51.910	0.000
T17 5.00-0.00	2.50	0.7	22	13.898	A	6.250	2.887	2.887	31.59	0.000	0.000
					B	6.250	2.887		31.59	0.000	0.000
					C	6.250	2.887		31.59	0.000	0.000

Tower Pressure - With Ice

G_H = 0.850 (base tower), 1.100 (upper structure)

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	338.50	1.4	8	1.8932	42.197	A	0.000	32.690	16.395	50.15	0.000	0.000
347.00-330.00						B	0.000	32.690		50.15	0.000	0.000
						C	0.000	32.690		50.15	0.000	0.000
L2	325.00	1.384	8	1.8855	25.018	A	0.000	19.112	10.035	52.51	0.000	0.000
330.00-320.00						B	0.000	19.112		52.51	0.000	0.000
						C	0.000	19.112		52.51	2.876	0.000
T1	310.00	1.365	7	1.8766	109.589	A	0.000	56.142	19.177	34.16	0.000	0.000
320.00-300.00						B	0.000	56.142		34.16	0.000	0.000
						C	0.000	56.142		34.16	72.242	0.000
T2	290.00	1.34	7	1.8641	109.547	A	0.000	55.860	19.094	34.18	0.000	0.000
300.00-280.00						B	0.000	55.860		34.18	0.000	0.000
						C	0.000	55.860		34.18	94.729	0.000
T3	270.00	1.313	7	1.8509	109.503	A	0.000	55.452	19.006	34.27	0.000	0.000
280.00-260.00						B	0.000	55.452		34.27	0.000	0.000
						C	0.000	55.452		34.27	117.058	0.000
T4	250.00	1.284	7	1.8367	109.456	A	0.000	55.131	18.911	34.30	0.000	0.000
260.00-240.00						B	0.000	55.131		34.30	0.000	0.000
						C	0.000	55.131		34.30	116.625	0.000
T5	230.00	1.254	7	1.8214	109.405	A	0.000	54.787	18.810	34.33	0.000	0.000
240.00-220.00						B	0.000	54.787		34.33	0.000	0.000
						C	0.000	54.787		34.33	116.158	0.000
T6	210.00	1.222	7	1.8049	109.766	A	0.000	56.084	19.533	34.83	0.000	0.000
220.00-200.00						B	0.000	56.084		34.83	0.000	0.000
						C	0.000	56.084		34.83	115.654	0.000
T7	190.00	1.187	6	1.7870	110.123	A	0.000	56.356	20.246	35.93	0.000	0.000
200.00-180.00						B	0.000	56.356		35.93	0.000	0.000
						C	0.000	56.356		35.93	115.105	0.000
T8	170.00	1.15	6	1.7672	110.057	A	0.000	55.912	20.115	35.98	0.000	0.000
180.00-160.00						B	0.000	55.912		35.98	0.000	0.000
						C	0.000	55.912		35.98	143.120	0.000
T9	150.00	1.11	6	1.7452	110.401	A	0.000	56.098	20.801	37.08	0.000	0.000
160.00-140.00						B	0.000	56.098		37.08	0.000	0.000
						C	0.000	56.098		37.08	166.713	0.000
T10	130.00	1.065	6	1.7204	110.318	A	0.000	55.542	20.636	37.15	0.000	0.000
140.00-120.00						B	0.000	55.542		37.15	0.000	0.000
						C	0.000	55.542		37.15	165.511	0.000
T11	110.00	1.016	6	1.6919	110.223	A	0.000	54.904	20.446	37.24	0.000	0.000
120.00-100.00						B	0.000	54.904		37.24	0.000	0.000
						C	0.000	54.904		37.24	173.077	0.000
T12	90.00	0.959	5	1.6583	110.111	A	0.000	54.152	20.222	37.34	0.000	0.000
100.00-80.00						B	0.000	54.152		37.34	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	0.000	54.152		37.34	181.906	0.000
T13 80.00-60.00	70.00	0.892	5	1.6171	110.390	A	0.000	53.918	20.781	38.54	0.000	0.000
						B	0.000	53.918		38.54	0.000	0.000
						C	0.000	53.918		38.54	188.231	0.000
T14 60.00-40.00	50.00	0.811	4	1.5636	110.212	A	0.000	51.746	20.424	39.47	0.000	0.000
						B	0.000	51.746		39.47	0.000	0.000
						C	0.000	51.746		39.47	184.996	0.000
T15 40.00-20.00	30.00	0.701	4	1.4858	109.953	A	0.000	50.008	19.905	39.80	0.000	0.000
						B	0.000	50.008		39.80	0.000	0.000
						C	0.000	50.008		39.80	180.291	0.000
T16 20.00-5.00	12.50	0.7	4	1.3612	82.153	A	0.000	36.092	14.306	39.64	0.000	0.000
						B	0.000	36.092		39.64	0.000	0.000
						C	0.000	36.092		39.64	111.542	0.000
T17 5.00-0.00	2.50	0.7	4	1.1589	14.977	A	6.250	6.566	5.117	39.93	0.000	0.000
						B	6.250	6.566		39.93	0.000	0.000
						C	6.250	6.566		39.93	0.000	0.000

Tower Pressure - Service

G_H = 0.850 (base tower), 1.100 (upper structure)

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	338.50	1.4	11	36.833	A	0.000	8.361	5.667	67.78	0.000	0.000
347.00-330.00					B	0.000	8.361		67.78	0.000	0.000
					C	0.000	8.361		67.78	0.000	0.000
L2	325.00	1.384	11	21.875	A	0.000	5.256	3.750	71.35	0.000	0.000
330.00-320.00					B	0.000	5.256		71.35	0.000	0.000
					C	0.000	5.256		71.35	0.990	0.000
T1	310.00	1.365	11	103.333	A	0.000	13.655	6.667	48.82	0.000	0.000
320.00-300.00					B	0.000	13.655		48.82	0.000	0.000
					C	0.000	13.655		48.82	34.710	0.000
T2	290.00	1.34	10	103.333	A	0.000	13.655	6.667	48.82	0.000	0.000
300.00-280.00					B	0.000	13.655		48.82	0.000	0.000
					C	0.000	13.655		48.82	43.720	0.000
T3	270.00	1.313	10	103.333	A	0.000	13.635	6.667	48.90	0.000	0.000
280.00-260.00					B	0.000	13.635		48.90	0.000	0.000
					C	0.000	13.635		48.90	52.730	0.000
T4	250.00	1.284	10	103.333	A	0.000	13.635	6.667	48.90	0.000	0.000
260.00-240.00					B	0.000	13.635		48.90	0.000	0.000
					C	0.000	13.635		48.90	52.730	0.000
T5	230.00	1.254	10	103.333	A	0.000	13.635	6.667	48.90	0.000	0.000
240.00-220.00					B	0.000	13.635		48.90	0.000	0.000
					C	0.000	13.635		48.90	52.730	0.000
T6	210.00	1.222	10	103.750	A	0.000	15.429	7.500	48.61	0.000	0.000
220.00-200.00					B	0.000	15.429		48.61	0.000	0.000
					C	0.000	15.429		48.61	52.730	0.000
T7	190.00	1.187	9	104.167	A	0.000	16.228	8.333	51.35	0.000	0.000
200.00-180.00					B	0.000	16.228		51.35	0.000	0.000
					C	0.000	16.228		51.35	52.730	0.000
T8	170.00	1.15	9	104.167	A	0.000	16.228	8.333	51.35	0.000	0.000
180.00-160.00					B	0.000	16.228		51.35	0.000	0.000
					C	0.000	16.228		51.35	62.870	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T9	150.00	1.11	9	104.583	A	0.000	17.027	9.167	53.84	0.000	0.000
160.00-140.00					B	0.000	17.027		53.84	0.000	0.000
					C	0.000	17.027		53.84	70.510	0.000
T10	130.00	1.065	8	104.583	A	0.000	17.027	9.167	53.84	0.000	0.000
140.00-120.00					B	0.000	17.027		53.84	0.000	0.000
					C	0.000	17.027		53.84	70.510	0.000
T11	110.00	1.016	8	104.583	A	0.000	17.027	9.167	53.84	0.000	0.000
120.00-100.00					B	0.000	17.027		53.84	0.000	0.000
					C	0.000	17.027		53.84	72.690	0.000
T12	90.00	0.959	8	104.583	A	0.000	17.027	9.167	53.84	0.000	0.000
100.00-80.00					B	0.000	17.027		53.84	0.000	0.000
					C	0.000	17.027		53.84	76.650	0.000
T13	70.00	0.892	7	105.000	A	0.000	17.826	10.000	56.10	0.000	0.000
80.00-60.00					B	0.000	17.826		56.10	0.000	0.000
					C	0.000	17.826		56.10	78.830	0.000
T14	50.00	0.811	6	105.000	A	0.000	16.848	10.000	59.36	0.000	0.000
60.00-40.00					B	0.000	16.848		59.36	0.000	0.000
					C	0.000	16.848		59.36	78.830	0.000
T15	30.00	0.701	5	105.000	A	0.000	16.848	10.000	59.36	0.000	0.000
40.00-20.00					B	0.000	16.848		59.36	0.000	0.000
					C	0.000	16.848		59.36	78.830	0.000
T16 20.00-5.00	12.50	0.7	5	78.750	A	0.000	12.799	7.500	58.60	0.000	0.000
					B	0.000	12.799		58.60	0.000	0.000
					C	0.000	12.799		58.60	51.910	0.000
T17 5.00-0.00	2.50	0.7	5	13.898	A	6.250	2.887	2.887	31.59	0.000	0.000
					B	6.250	2.887		31.59	0.000	0.000
					C	6.250	2.887		31.59	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	757.28	A	0.227	2.508	44	1	1	4.847	586.72	34.51	C
347.00-330.00			B	0.227	2.508		1	1	4.847			
			C	0.227	2.508		1	1	4.847			
L2	4.10	525.79	A	0.24	2.467	43	1	1	3.062	388.72	38.87	C
330.00-320.00			B	0.24	2.467		1	1	3.062			
			C	0.24	2.467		1	1	3.062			
T1	524.80	1312.52	A	0.132	2.838	43	1	1	7.728	1391.38	69.57	C
320.00-300.00			B	0.132	2.838		1	1	7.728			
			C	0.132	2.838		1	1	7.728			
T2	560.90	1312.52	A	0.132	2.838	42	1	1	7.728	1558.00	77.90	C
300.00-280.00			B	0.132	2.838		1	1	7.728			
			C	0.132	2.838		1	1	7.728			
T3	597.00	1310.64	A	0.132	2.839	41	1	1	7.716	1714.52	85.73	C
280.00-260.00			B	0.132	2.839		1	1	7.716			
			C	0.132	2.839		1	1	7.716			
T4	597.00	1310.64	A	0.132	2.839	40	1	1	7.716	1677.23	83.86	C
260.00-240.00			B	0.132	2.839		1	1	7.716			
			C	0.132	2.839		1	1	7.716			
T5	597.00	1310.64	A	0.132	2.839	39	1	1	7.716	1637.75	81.89	C
240.00-220.00			B	0.132	2.839		1	1	7.716			
			C	0.132	2.839		1	1	7.716			
T6	597.00	1684.58	A	0.149	2.776	38	1	1	8.755	1673.73	83.69	C
220.00-200.00			B	0.149	2.776		1	1	8.755			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.149	2.776		1	1	8.755			
T7	597.00	1884.52	A	0.156	2.75	37	1	1	9.220	1659.85	82.99	C
200.00-180.00			B	0.156	2.75		1	1	9.220			
			C	0.156	2.75		1	1	9.220			
T8	640.68	1884.52	A	0.156	2.75	36	1	1	9.220	1918.51	95.93	C
180.00-160.00			B	0.156	2.75		1	1	9.220			
			C	0.156	2.75		1	1	9.220			
T9	670.80	2105.51	A	0.163	2.725	35	1	1	9.688	2081.89	104.09	C
160.00-140.00			B	0.163	2.725		1	1	9.688			
			C	0.163	2.725		1	1	9.688			
T10	670.80	2105.51	A	0.163	2.725	33	1	1	9.688	1998.49	99.92	C
140.00-120.00			B	0.163	2.725		1	1	9.688			
			C	0.163	2.725		1	1	9.688			
T11	677.40	2105.51	A	0.163	2.725	32	1	1	9.688	1940.72	97.04	C
120.00-100.00			B	0.163	2.725		1	1	9.688			
			C	0.163	2.725		1	1	9.688			
T12	693.80	2105.51	A	0.163	2.725	30	1	1	9.688	1893.26	94.66	C
100.00-80.00			B	0.163	2.725		1	1	9.688			
			C	0.163	2.725		1	1	9.688			
T13	700.40	2347.54	A	0.17	2.7	28	1	1	10.158	1817.63	90.88	C
80.00-60.00			B	0.17	2.7		1	1	10.158			
			C	0.17	2.7		1	1	10.158			
T14	700.40	2152.49	A	0.16	2.733	25	1	1	9.581	1624.29	81.21	C
60.00-40.00			B	0.16	2.733		1	1	9.581			
			C	0.16	2.733		1	1	9.581			
T15	700.40	2152.49	A	0.16	2.733	22	1	1	9.581	1403.71	70.19	C
40.00-20.00			B	0.16	2.733		1	1	9.581			
			C	0.16	2.733		1	1	9.581			
T16	496.50	1629.55	A	0.163	2.726	22	1	1	7.282	957.65	63.84	C
20.00-5.00			B	0.163	2.726		1	1	7.282			
			C	0.163	2.726		1	1	7.282			
T17 5.00-0.00	0.00	769.05	A	0.657	1.78	22	1	1	8.506	282.22	56.44	C
			B	0.657	1.78		1	1	8.506			
			C	0.657	1.78		1	1	8.506			
Sum Weight:	10025.98	30766.83								28206.26		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	757.28	A	0.227	2.508	44	0.8	1	4.847	586.72	34.51	C
347.00-330.00			B	0.227	2.508		0.8	1	4.847			
			C	0.227	2.508		0.8	1	4.847			
L2	4.10	525.79	A	0.24	2.467	43	0.8	1	3.062	388.72	38.87	C
330.00-320.00			B	0.24	2.467		0.8	1	3.062			
			C	0.24	2.467		0.8	1	3.062			
T1	524.80	1312.52	A	0.132	2.838	43	0.8	1	7.728	1391.38	69.57	C
320.00-300.00			B	0.132	2.838		0.8	1	7.728			
			C	0.132	2.838		0.8	1	7.728			
T2	560.90	1312.52	A	0.132	2.838	42	0.8	1	7.728	1558.00	77.90	A
300.00-280.00			B	0.132	2.838		0.8	1	7.728			
			C	0.132	2.838		0.8	1	7.728			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T3	597.00	1310.64	A	0.132	2.839	41	0.8	1	7.716	1714.52	85.73	A
280.00-260.00			B	0.132	2.839		0.8	1	7.716			
			C	0.132	2.839		0.8	1	7.716			
T4	597.00	1310.64	A	0.132	2.839	40	0.8	1	7.716	1677.23	83.86	A
260.00-240.00			B	0.132	2.839		0.8	1	7.716			
			C	0.132	2.839		0.8	1	7.716			
T5	597.00	1310.64	A	0.132	2.839	39	0.8	1	7.716	1637.75	81.89	A
240.00-220.00			B	0.132	2.839		0.8	1	7.716			
			C	0.132	2.839		0.8	1	7.716			
T6	597.00	1684.58	A	0.149	2.776	38	0.8	1	8.755	1673.73	83.69	A
220.00-200.00			B	0.149	2.776		0.8	1	8.755			
			C	0.149	2.776		0.8	1	8.755			
T7	597.00	1884.52	A	0.156	2.75	37	0.8	1	9.220	1659.85	82.99	A
200.00-180.00			B	0.156	2.75		0.8	1	9.220			
			C	0.156	2.75		0.8	1	9.220			
T8	640.68	1884.52	A	0.156	2.75	36	0.8	1	9.220	1918.51	95.93	A
180.00-160.00			B	0.156	2.75		0.8	1	9.220			
			C	0.156	2.75		0.8	1	9.220			
T9	670.80	2105.51	A	0.163	2.725	35	0.8	1	9.688	2081.89	104.09	A
160.00-140.00			B	0.163	2.725		0.8	1	9.688			
			C	0.163	2.725		0.8	1	9.688			
T10	670.80	2105.51	A	0.163	2.725	33	0.8	1	9.688	1998.49	99.92	A
140.00-120.00			B	0.163	2.725		0.8	1	9.688			
			C	0.163	2.725		0.8	1	9.688			
T11	677.40	2105.51	A	0.163	2.725	32	0.8	1	9.688	1940.72	97.04	A
120.00-100.00			B	0.163	2.725		0.8	1	9.688			
			C	0.163	2.725		0.8	1	9.688			
T12	693.80	2105.51	A	0.163	2.725	30	0.8	1	9.688	1893.26	94.66	A
100.00-80.00			B	0.163	2.725		0.8	1	9.688			
			C	0.163	2.725		0.8	1	9.688			
T13	700.40	2347.54	A	0.17	2.7	28	0.8	1	10.158	1817.63	90.88	A
80.00-60.00			B	0.17	2.7		0.8	1	10.158			
			C	0.17	2.7		0.8	1	10.158			
T14	700.40	2152.49	A	0.16	2.733	25	0.8	1	9.581	1624.29	81.21	A
60.00-40.00			B	0.16	2.733		0.8	1	9.581			
			C	0.16	2.733		0.8	1	9.581			
T15	700.40	2152.49	A	0.16	2.733	22	0.8	1	9.581	1403.71	70.19	A
40.00-20.00			B	0.16	2.733		0.8	1	9.581			
			C	0.16	2.733		0.8	1	9.581			
T16	496.50	1629.55	A	0.163	2.726	22	0.8	1	7.282	957.65	63.84	A
20.00-5.00			B	0.163	2.726		0.8	1	7.282			
			C	0.163	2.726		0.8	1	7.282			
T17 5.00-0.00	0.00	769.05	A	0.657	1.78	22	0.8	1	7.256	240.74	48.15	C
			B	0.657	1.78		0.8	1	7.256			
			C	0.657	1.78		0.8	1	7.256			
Sum Weight:	10025.98	30766.83								28164.79		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	757.28	A	0.227	2.508	44	0.85	1	4.847	586.72	34.51	C

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
347.00-330.00			B	0.227	2.508		0.85	1	4.847			
			C	0.227	2.508		0.85	1	4.847			
L2	4.10	525.79	A	0.24	2.467	43	0.85	1	3.062	388.72	38.87	C
330.00-320.00			B	0.24	2.467		0.85	1	3.062			
			C	0.24	2.467		0.85	1	3.062			
T1	524.80	1312.52	A	0.132	2.838	43	0.85	1	7.728	1391.38	69.57	C
320.00-300.00			B	0.132	2.838		0.85	1	7.728			
			C	0.132	2.838		0.85	1	7.728			
T2	560.90	1312.52	A	0.132	2.838	42	0.85	1	7.728	1558.00	77.90	B
300.00-280.00			B	0.132	2.838		0.85	1	7.728			
			C	0.132	2.838		0.85	1	7.728			
T3	597.00	1310.64	A	0.132	2.839	41	0.85	1	7.716	1714.52	85.73	B
280.00-260.00			B	0.132	2.839		0.85	1	7.716			
			C	0.132	2.839		0.85	1	7.716			
T4	597.00	1310.64	A	0.132	2.839	40	0.85	1	7.716	1677.23	83.86	B
260.00-240.00			B	0.132	2.839		0.85	1	7.716			
			C	0.132	2.839		0.85	1	7.716			
T5	597.00	1310.64	A	0.132	2.839	39	0.85	1	7.716	1637.75	81.89	B
240.00-220.00			B	0.132	2.839		0.85	1	7.716			
			C	0.132	2.839		0.85	1	7.716			
T6	597.00	1684.58	A	0.149	2.776	38	0.85	1	8.755	1673.73	83.69	B
220.00-200.00			B	0.149	2.776		0.85	1	8.755			
			C	0.149	2.776		0.85	1	8.755			
T7	597.00	1884.52	A	0.156	2.75	37	0.85	1	9.220	1659.85	82.99	B
200.00-180.00			B	0.156	2.75		0.85	1	9.220			
			C	0.156	2.75		0.85	1	9.220			
T8	640.68	1884.52	A	0.156	2.75	36	0.85	1	9.220	1901.09	95.05	B
180.00-160.00			B	0.156	2.75		0.85	1	9.220			
			C	0.156	2.75		0.85	1	9.220			
T9	670.80	2105.51	A	0.163	2.725	35	0.85	1	9.688	2056.03	102.80	B
160.00-140.00			B	0.163	2.725		0.85	1	9.688			
			C	0.163	2.725		0.85	1	9.688			
T10	670.80	2105.51	A	0.163	2.725	33	0.85	1	9.688	1973.66	98.68	B
140.00-120.00			B	0.163	2.725		0.85	1	9.688			
			C	0.163	2.725		0.85	1	9.688			
T11	677.40	2105.51	A	0.163	2.725	32	0.85	1	9.688	1917.05	95.85	B
120.00-100.00			B	0.163	2.725		0.85	1	9.688			
			C	0.163	2.725		0.85	1	9.688			
T12	693.80	2105.51	A	0.163	2.725	30	0.85	1	9.688	1870.91	93.55	B
100.00-80.00			B	0.163	2.725		0.85	1	9.688			
			C	0.163	2.725		0.85	1	9.688			
T13	700.40	2347.54	A	0.17	2.7	28	0.85	1	10.158	1796.83	89.84	B
80.00-60.00			B	0.17	2.7		0.85	1	10.158			
			C	0.17	2.7		0.85	1	10.158			
T14	700.40	2152.49	A	0.16	2.733	25	0.85	1	9.581	1605.40	80.27	B
60.00-40.00			B	0.16	2.733		0.85	1	9.581			
			C	0.16	2.733		0.85	1	9.581			
T15	700.40	2152.49	A	0.16	2.733	22	0.85	1	9.581	1387.38	69.37	B
40.00-20.00			B	0.16	2.733		0.85	1	9.581			
			C	0.16	2.733		0.85	1	9.581			
T16	496.50	1629.55	A	0.163	2.726	22	0.85	1	7.282	947.86	63.19	B
20.00-5.00			B	0.163	2.726		0.85	1	7.282			
			C	0.163	2.726		0.85	1	7.282			
T17 5.00-0.00	0.00	769.05	A	0.657	1.78	22	0.85	1	7.568	251.11	50.22	C
			B	0.657	1.78		0.85	1	7.568			
			C	0.657	1.78		0.85	1	7.568			
Sum Weight:	10025.98	30766.83								27995.23		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	2079.00	A	0.775	1.799	8	1	1	28.313	426.85	25.11	C
347.00-330.00			B	0.775	1.799		1	1	28.313			
			C	0.775	1.799		1	1	28.313			
L2	48.62	1295.79	A	0.764	1.794	8	1	1	16.397	249.20	24.92	C
330.00-320.00			B	0.764	1.794		1	1	16.397			
			C	0.764	1.794		1	1	16.397			
T1	1641.40	3722.26	A	0.512	1.885	7	1	1	38.835	678.73	33.94	C
320.00-300.00			B	0.512	1.885		1	1	38.835			
			C	0.512	1.885		1	1	38.835			
T2	1950.96	3696.09	A	0.51	1.887	7	1	1	38.566	728.17	36.41	C
300.00-280.00			B	0.51	1.887		1	1	38.566			
			C	0.51	1.887		1	1	38.566			
T3	2254.94	3661.10	A	0.506	1.892	7	1	1	38.177	774.36	38.72	C
280.00-260.00			B	0.506	1.892		1	1	38.177			
			C	0.506	1.892		1	1	38.177			
T4	2237.70	3631.73	A	0.504	1.895	7	1	1	37.875	755.36	37.77	C
260.00-240.00			B	0.504	1.895		1	1	37.875			
			C	0.504	1.895		1	1	37.875			
T5	2219.27	3600.36	A	0.501	1.899	7	1	1	37.552	735.32	36.77	C
240.00-220.00			B	0.501	1.899		1	1	37.552			
			C	0.501	1.899		1	1	37.552			
T6	2199.42	4055.42	A	0.511	1.886	7	1	1	38.753	718.68	35.93	C
220.00-200.00			B	0.511	1.886		1	1	38.753			
			C	0.511	1.886		1	1	38.753			
T7	2177.91	4250.50	A	0.512	1.885	6	1	1	38.965	698.38	34.92	C
200.00-180.00			B	0.512	1.885		1	1	38.965			
			C	0.512	1.885		1	1	38.965			
T8	2529.56	4209.12	A	0.508	1.89	6	1	1	38.544	798.16	39.91	C
180.00-160.00			B	0.508	1.89		1	1	38.544			
			C	0.508	1.89		1	1	38.544			
T9	2825.97	4416.46	A	0.508	1.89	6	1	1	38.675	856.14	42.81	C
160.00-140.00			B	0.508	1.89		1	1	38.675			
			C	0.508	1.89		1	1	38.675			
T10	2786.14	4365.04	A	0.503	1.896	6	1	1	38.151	817.37	40.87	C
140.00-120.00			B	0.503	1.896		1	1	38.151			
			C	0.503	1.896		1	1	38.151			
T11	2862.36	4306.60	A	0.498	1.902	6	1	1	37.554	795.45	39.77	C
120.00-100.00			B	0.498	1.902		1	1	37.554			
			C	0.498	1.902		1	1	37.554			
T12	2969.55	4238.59	A	0.492	1.911	5	1	1	36.856	769.48	38.47	C
100.00-80.00			B	0.492	1.911		1	1	36.856			
			C	0.492	1.911		1	1	36.856			
T13	3009.36	4428.33	A	0.488	1.915	5	1	1	36.601	729.45	36.47	C
80.00-60.00			B	0.488	1.915		1	1	36.601			
			C	0.488	1.915		1	1	36.601			
T14	2909.45	4057.17	A	0.47	1.943	4	1	1	34.619	654.79	32.74	C
60.00-40.00			B	0.47	1.943		1	1	34.619			
			C	0.47	1.943		1	1	34.619			
T15	2767.46	3911.91	A	0.455	1.966	4	1	1	33.088	556.15	27.81	C
40.00-20.00			B	0.455	1.966		1	1	33.088			
			C	0.455	1.966		1	1	33.088			
T16	1695.89	2809.40	A	0.439	1.991	4	1	1	23.609	367.77	24.52	C
20.00-5.00			B	0.439	1.991		1	1	23.609			
			C	0.439	1.991		1	1	23.609			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T17 5.00-0.00	0.00	1262.31	A	0.856	1.868	4	1	1	12.353	74.68	14.94	C
			B	0.856	1.868		1	1	12.353			
			C	0.856	1.868		1	1	12.353			
Sum Weight:	39085.94	67997.18								12184.47		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	2079.00	A	0.775	1.799	8	0.8	1	28.313	426.85	25.11	C
347.00-330.00			B	0.775	1.799		0.8	1	28.313			
			C	0.775	1.799		0.8	1	28.313			
L2	48.62	1295.79	A	0.764	1.794	8	0.8	1	16.397	249.20	24.92	C
330.00-320.00			B	0.764	1.794		0.8	1	16.397			
			C	0.764	1.794		0.8	1	16.397			
T1	1641.40	3722.26	A	0.512	1.885	7	0.8	1	38.835	678.73	33.94	C
320.00-300.00			B	0.512	1.885		0.8	1	38.835			
			C	0.512	1.885		0.8	1	38.835			
T2	1950.96	3696.09	A	0.51	1.887	7	0.8	1	38.566	728.17	36.41	A
300.00-280.00			B	0.51	1.887		0.8	1	38.566			
			C	0.51	1.887		0.8	1	38.566			
T3	2254.94	3661.10	A	0.506	1.892	7	0.8	1	38.177	774.36	38.72	A
280.00-260.00			B	0.506	1.892		0.8	1	38.177			
			C	0.506	1.892		0.8	1	38.177			
T4	2237.70	3631.73	A	0.504	1.895	7	0.8	1	37.875	755.36	37.77	A
260.00-240.00			B	0.504	1.895		0.8	1	37.875			
			C	0.504	1.895		0.8	1	37.875			
T5	2219.27	3600.36	A	0.501	1.899	7	0.8	1	37.552	735.32	36.77	A
240.00-220.00			B	0.501	1.899		0.8	1	37.552			
			C	0.501	1.899		0.8	1	37.552			
T6	2199.42	4055.42	A	0.511	1.886	7	0.8	1	38.753	718.68	35.93	A
220.00-200.00			B	0.511	1.886		0.8	1	38.753			
			C	0.511	1.886		0.8	1	38.753			
T7	2177.91	4250.50	A	0.512	1.885	6	0.8	1	38.965	698.38	34.92	A
200.00-180.00			B	0.512	1.885		0.8	1	38.965			
			C	0.512	1.885		0.8	1	38.965			
T8	2529.56	4209.12	A	0.508	1.89	6	0.8	1	38.544	798.16	39.91	A
180.00-160.00			B	0.508	1.89		0.8	1	38.544			
			C	0.508	1.89		0.8	1	38.544			
T9	2825.97	4416.46	A	0.508	1.89	6	0.8	1	38.675	856.14	42.81	A
160.00-140.00			B	0.508	1.89		0.8	1	38.675			
			C	0.508	1.89		0.8	1	38.675			
T10	2786.14	4365.04	A	0.503	1.896	6	0.8	1	38.151	817.37	40.87	A
140.00-120.00			B	0.503	1.896		0.8	1	38.151			
			C	0.503	1.896		0.8	1	38.151			
T11	2862.36	4306.60	A	0.498	1.902	6	0.8	1	37.554	795.45	39.77	A
120.00-100.00			B	0.498	1.902		0.8	1	37.554			
			C	0.498	1.902		0.8	1	37.554			
T12	2969.55	4238.59	A	0.492	1.911	5	0.8	1	36.856	769.48	38.47	A
100.00-80.00			B	0.492	1.911		0.8	1	36.856			
			C	0.492	1.911		0.8	1	36.856			
T13	3009.36	4428.33	A	0.488	1.915	5	0.8	1	36.601	729.45	36.47	A

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
80.00-60.00			B	0.488	1.915		0.8	1	36.601			
			C	0.488	1.915		0.8	1	36.601			
T14	2909.45	4057.17	A	0.47	1.943	4	0.8	1	34.619	654.79	32.74	A
60.00-40.00			B	0.47	1.943		0.8	1	34.619			
			C	0.47	1.943		0.8	1	34.619			
T15	2767.46	3911.91	A	0.455	1.966	4	0.8	1	33.088	556.15	27.81	A
40.00-20.00			B	0.455	1.966		0.8	1	33.088			
			C	0.455	1.966		0.8	1	33.088			
T16	1695.89	2809.40	A	0.439	1.991	4	0.8	1	23.609	367.77	24.52	A
20.00-5.00			B	0.439	1.991		0.8	1	23.609			
			C	0.439	1.991		0.8	1	23.609			
T17 5.00-0.00	0.00	1262.31	A	0.856	1.868	4	0.8	1	11.103	67.12	13.42	C
			B	0.856	1.868		0.8	1	11.103			
			C	0.856	1.868		0.8	1	11.103			
Sum Weight:	39085.94	67997.18								12176.92		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	2079.00	A	0.775	1.799	8	0.85	1	28.313	426.85	25.11	C
347.00-330.00			B	0.775	1.799		0.85	1	28.313			
			C	0.775	1.799		0.85	1	28.313			
L2	48.62	1295.79	A	0.764	1.794	8	0.85	1	16.397	249.20	24.92	C
330.00-320.00			B	0.764	1.794		0.85	1	16.397			
			C	0.764	1.794		0.85	1	16.397			
T1	1641.40	3722.26	A	0.512	1.885	7	0.85	1	38.835	678.73	33.94	C
320.00-300.00			B	0.512	1.885		0.85	1	38.835			
			C	0.512	1.885		0.85	1	38.835			
T2	1950.96	3696.09	A	0.51	1.887	7	0.85	1	38.566	721.11	36.06	B
300.00-280.00			B	0.51	1.887		0.85	1	38.566			
			C	0.51	1.887		0.85	1	38.566			
T3	2254.94	3661.10	A	0.506	1.892	7	0.85	1	38.177	760.43	38.02	B
280.00-260.00			B	0.506	1.892		0.85	1	38.177			
			C	0.506	1.892		0.85	1	38.177			
T4	2237.70	3631.73	A	0.504	1.895	7	0.85	1	37.875	741.66	37.08	B
260.00-240.00			B	0.504	1.895		0.85	1	37.875			
			C	0.504	1.895		0.85	1	37.875			
T5	2219.27	3600.36	A	0.501	1.899	7	0.85	1	37.552	721.86	36.09	B
240.00-220.00			B	0.501	1.899		0.85	1	37.552			
			C	0.501	1.899		0.85	1	37.552			
T6	2199.42	4055.42	A	0.511	1.886	7	0.85	1	38.753	705.83	35.29	B
220.00-200.00			B	0.511	1.886		0.85	1	38.753			
			C	0.511	1.886		0.85	1	38.753			
T7	2177.91	4250.50	A	0.512	1.885	6	0.85	1	38.965	685.91	34.30	B
200.00-180.00			B	0.512	1.885		0.85	1	38.965			
			C	0.512	1.885		0.85	1	38.965			
T8	2529.56	4209.12	A	0.508	1.89	6	0.85	1	38.544	776.70	38.84	B
180.00-160.00			B	0.508	1.89		0.85	1	38.544			
			C	0.508	1.89		0.85	1	38.544			
T9	2825.97	4416.46	A	0.508	1.89	6	0.85	1	38.675	830.62	41.53	B
160.00-140.00			B	0.508	1.89		0.85	1	38.675			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.508	1.89		0.85	1	38.675			
T10	2786.14	4365.04	A	0.503	1.896	6	0.85	1	38.151	792.76	39.64	B
140.00-120.00			B	0.503	1.896		0.85	1	38.151			
			C	0.503	1.896		0.85	1	38.151			
T11	2862.36	4306.60	A	0.498	1.902	6	0.85	1	37.554	771.88	38.59	B
120.00-100.00			B	0.498	1.902		0.85	1	37.554			
			C	0.498	1.902		0.85	1	37.554			
T12	2969.55	4238.59	A	0.492	1.911	5	0.85	1	36.856	747.08	37.35	B
100.00-80.00			B	0.492	1.911		0.85	1	36.856			
			C	0.492	1.911		0.85	1	36.856			
T13	3009.36	4428.33	A	0.488	1.915	5	0.85	1	36.601	708.54	35.43	B
80.00-60.00			B	0.488	1.915		0.85	1	36.601			
			C	0.488	1.915		0.85	1	36.601			
T14	2909.45	4057.17	A	0.47	1.943	4	0.85	1	34.619	635.46	31.77	B
60.00-40.00			B	0.47	1.943		0.85	1	34.619			
			C	0.47	1.943		0.85	1	34.619			
T15	2767.46	3911.91	A	0.455	1.966	4	0.85	1	33.088	539.24	26.96	B
40.00-20.00			B	0.455	1.966		0.85	1	33.088			
			C	0.455	1.966		0.85	1	33.088			
T16	1695.89	2809.40	A	0.439	1.991	4	0.85	1	23.609	357.49	23.83	B
20.00-5.00			B	0.439	1.991		0.85	1	23.609			
			C	0.439	1.991		0.85	1	23.609			
T17 5.00-0.00	0.00	1262.31	A	0.856	1.868	4	0.85	1	11.415	69.01	13.80	C
			B	0.856	1.868		0.85	1	11.415			
			C	0.856	1.868		0.85	1	11.415			
Sum Weight:	39085.94	67997.18								11920.36		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	757.28	A	0.227	2.508	11	1	1	4.847	146.68	8.63	C
347.00-330.00			B	0.227	2.508		1	1	4.847			
			C	0.227	2.508		1	1	4.847			
L2	4.10	525.79	A	0.24	2.467	11	1	1	3.062	97.18	9.72	C
330.00-320.00			B	0.24	2.467		1	1	3.062			
			C	0.24	2.467		1	1	3.062			
T1	524.80	1312.52	A	0.132	2.838	11	1	1	7.728	347.84	17.39	C
320.00-300.00			B	0.132	2.838		1	1	7.728			
			C	0.132	2.838		1	1	7.728			
T2	560.90	1312.52	A	0.132	2.838	10	1	1	7.728	389.50	19.47	C
300.00-280.00			B	0.132	2.838		1	1	7.728			
			C	0.132	2.838		1	1	7.728			
T3	597.00	1310.64	A	0.132	2.839	10	1	1	7.716	428.63	21.43	C
280.00-260.00			B	0.132	2.839		1	1	7.716			
			C	0.132	2.839		1	1	7.716			
T4	597.00	1310.64	A	0.132	2.839	10	1	1	7.716	419.31	20.97	C
260.00-240.00			B	0.132	2.839		1	1	7.716			
			C	0.132	2.839		1	1	7.716			
T5	597.00	1310.64	A	0.132	2.839	10	1	1	7.716	409.44	20.47	C
240.00-220.00			B	0.132	2.839		1	1	7.716			
			C	0.132	2.839		1	1	7.716			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T6	597.00	1684.58	A	0.149	2.776	10	1	1	8.755	418.43	20.92	C
220.00-200.00			B	0.149	2.776		1	1	8.755			
			C	0.149	2.776		1	1	8.755			
T7	597.00	1884.52	A	0.156	2.75	9	1	1	9.220	414.96	20.75	C
200.00-180.00			B	0.156	2.75		1	1	9.220			
			C	0.156	2.75		1	1	9.220			
T8	640.68	1884.52	A	0.156	2.75	9	1	1	9.220	479.63	23.98	C
180.00-160.00			B	0.156	2.75		1	1	9.220			
			C	0.156	2.75		1	1	9.220			
T9	670.80	2105.51	A	0.163	2.725	9	1	1	9.688	520.47	26.02	C
160.00-140.00			B	0.163	2.725		1	1	9.688			
			C	0.163	2.725		1	1	9.688			
T10	670.80	2105.51	A	0.163	2.725	8	1	1	9.688	499.62	24.98	C
140.00-120.00			B	0.163	2.725		1	1	9.688			
			C	0.163	2.725		1	1	9.688			
T11	677.40	2105.51	A	0.163	2.725	8	1	1	9.688	485.18	24.26	C
120.00-100.00			B	0.163	2.725		1	1	9.688			
			C	0.163	2.725		1	1	9.688			
T12	693.80	2105.51	A	0.163	2.725	8	1	1	9.688	473.32	23.67	C
100.00-80.00			B	0.163	2.725		1	1	9.688			
			C	0.163	2.725		1	1	9.688			
T13	700.40	2347.54	A	0.17	2.7	7	1	1	10.158	454.41	22.72	C
80.00-60.00			B	0.17	2.7		1	1	10.158			
			C	0.17	2.7		1	1	10.158			
T14	700.40	2152.49	A	0.16	2.733	6	1	1	9.581	406.07	20.30	C
60.00-40.00			B	0.16	2.733		1	1	9.581			
			C	0.16	2.733		1	1	9.581			
T15	700.40	2152.49	A	0.16	2.733	5	1	1	9.581	350.93	17.55	C
40.00-20.00			B	0.16	2.733		1	1	9.581			
			C	0.16	2.733		1	1	9.581			
T16	496.50	1629.55	A	0.163	2.726	5	1	1	7.282	239.41	15.96	C
20.00-5.00			B	0.163	2.726		1	1	7.282			
			C	0.163	2.726		1	1	7.282			
T17 5.00-0.00	0.00	769.05	A	0.657	1.78	5	1	1	8.506	70.55	14.11	C
			B	0.657	1.78		1	1	8.506			
			C	0.657	1.78		1	1	8.506			
Sum Weight:	10025.98	30766.83								7051.56		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	757.28	A	0.227	2.508	11	0.8	1	4.847	146.68	8.63	C
347.00-330.00			B	0.227	2.508		0.8	1	4.847			
			C	0.227	2.508		0.8	1	4.847			
L2	4.10	525.79	A	0.24	2.467	11	0.8	1	3.062	97.18	9.72	C
330.00-320.00			B	0.24	2.467		0.8	1	3.062			
			C	0.24	2.467		0.8	1	3.062			
T1	524.80	1312.52	A	0.132	2.838	11	0.8	1	7.728	347.84	17.39	C
320.00-300.00			B	0.132	2.838		0.8	1	7.728			
			C	0.132	2.838		0.8	1	7.728			
T2	560.90	1312.52	A	0.132	2.838	10	0.8	1	7.728	389.50	19.47	A

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
300.00-280.00			B	0.132	2.838		0.8	1	7.728			
			C	0.132	2.838		0.8	1	7.728			
T3	597.00	1310.64	A	0.132	2.839	10	0.8	1	7.716	428.63	21.43	A
280.00-260.00			B	0.132	2.839		0.8	1	7.716			
			C	0.132	2.839		0.8	1	7.716			
T4	597.00	1310.64	A	0.132	2.839	10	0.8	1	7.716	419.31	20.97	A
260.00-240.00			B	0.132	2.839		0.8	1	7.716			
			C	0.132	2.839		0.8	1	7.716			
T5	597.00	1310.64	A	0.132	2.839	10	0.8	1	7.716	409.44	20.47	A
240.00-220.00			B	0.132	2.839		0.8	1	7.716			
			C	0.132	2.839		0.8	1	7.716			
T6	597.00	1684.58	A	0.149	2.776	10	0.8	1	8.755	418.43	20.92	A
220.00-200.00			B	0.149	2.776		0.8	1	8.755			
			C	0.149	2.776		0.8	1	8.755			
T7	597.00	1884.52	A	0.156	2.75	9	0.8	1	9.220	414.96	20.75	A
200.00-180.00			B	0.156	2.75		0.8	1	9.220			
			C	0.156	2.75		0.8	1	9.220			
T8	640.68	1884.52	A	0.156	2.75	9	0.8	1	9.220	479.63	23.98	A
180.00-160.00			B	0.156	2.75		0.8	1	9.220			
			C	0.156	2.75		0.8	1	9.220			
T9	670.80	2105.51	A	0.163	2.725	9	0.8	1	9.688	520.47	26.02	A
160.00-140.00			B	0.163	2.725		0.8	1	9.688			
			C	0.163	2.725		0.8	1	9.688			
T10	670.80	2105.51	A	0.163	2.725	8	0.8	1	9.688	499.62	24.98	A
140.00-120.00			B	0.163	2.725		0.8	1	9.688			
			C	0.163	2.725		0.8	1	9.688			
T11	677.40	2105.51	A	0.163	2.725	8	0.8	1	9.688	485.18	24.26	A
120.00-100.00			B	0.163	2.725		0.8	1	9.688			
			C	0.163	2.725		0.8	1	9.688			
T12	693.80	2105.51	A	0.163	2.725	8	0.8	1	9.688	473.32	23.67	A
100.00-80.00			B	0.163	2.725		0.8	1	9.688			
			C	0.163	2.725		0.8	1	9.688			
T13	700.40	2347.54	A	0.17	2.7	7	0.8	1	10.158	454.41	22.72	A
80.00-60.00			B	0.17	2.7		0.8	1	10.158			
			C	0.17	2.7		0.8	1	10.158			
T14	700.40	2152.49	A	0.16	2.733	6	0.8	1	9.581	406.07	20.30	A
60.00-40.00			B	0.16	2.733		0.8	1	9.581			
			C	0.16	2.733		0.8	1	9.581			
T15	700.40	2152.49	A	0.16	2.733	5	0.8	1	9.581	350.93	17.55	A
40.00-20.00			B	0.16	2.733		0.8	1	9.581			
			C	0.16	2.733		0.8	1	9.581			
T16	496.50	1629.55	A	0.163	2.726	5	0.8	1	7.282	239.41	15.96	A
20.00-5.00			B	0.163	2.726		0.8	1	7.282			
			C	0.163	2.726		0.8	1	7.282			
T17 5.00-0.00	0.00	769.05	A	0.657	1.78	5	0.8	1	7.256	60.19	12.04	C
			B	0.657	1.78		0.8	1	7.256			
			C	0.657	1.78		0.8	1	7.256			
Sum Weight:	10025.98	30766.83								7041.20		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	757.28	A	0.227	2.508	11	0.85	1	4.847	146.68	8.63	C
347.00-330.00			B	0.227	2.508		0.85	1	4.847			
			C	0.227	2.508		0.85	1	4.847			
L2	4.10	525.79	A	0.24	2.467	11	0.85	1	3.062	97.18	9.72	C
330.00-320.00			B	0.24	2.467		0.85	1	3.062			
			C	0.24	2.467		0.85	1	3.062			
T1	524.80	1312.52	A	0.132	2.838	11	0.85	1	7.728	347.84	17.39	C
320.00-300.00			B	0.132	2.838		0.85	1	7.728			
			C	0.132	2.838		0.85	1	7.728			
T2	560.90	1312.52	A	0.132	2.838	10	0.85	1	7.728	389.50	19.47	B
300.00-280.00			B	0.132	2.838		0.85	1	7.728			
			C	0.132	2.838		0.85	1	7.728			
T3	597.00	1310.64	A	0.132	2.839	10	0.85	1	7.716	428.63	21.43	B
280.00-260.00			B	0.132	2.839		0.85	1	7.716			
			C	0.132	2.839		0.85	1	7.716			
T4	597.00	1310.64	A	0.132	2.839	10	0.85	1	7.716	419.31	20.97	B
260.00-240.00			B	0.132	2.839		0.85	1	7.716			
			C	0.132	2.839		0.85	1	7.716			
T5	597.00	1310.64	A	0.132	2.839	10	0.85	1	7.716	409.44	20.47	B
240.00-220.00			B	0.132	2.839		0.85	1	7.716			
			C	0.132	2.839		0.85	1	7.716			
T6	597.00	1684.58	A	0.149	2.776	10	0.85	1	8.755	418.43	20.92	B
220.00-200.00			B	0.149	2.776		0.85	1	8.755			
			C	0.149	2.776		0.85	1	8.755			
T7	597.00	1884.52	A	0.156	2.75	9	0.85	1	9.220	414.96	20.75	B
200.00-180.00			B	0.156	2.75		0.85	1	9.220			
			C	0.156	2.75		0.85	1	9.220			
T8	640.68	1884.52	A	0.156	2.75	9	0.85	1	9.220	475.27	23.76	B
180.00-160.00			B	0.156	2.75		0.85	1	9.220			
			C	0.156	2.75		0.85	1	9.220			
T9	670.80	2105.51	A	0.163	2.725	9	0.85	1	9.688	514.01	25.70	B
160.00-140.00			B	0.163	2.725		0.85	1	9.688			
			C	0.163	2.725		0.85	1	9.688			
T10	670.80	2105.51	A	0.163	2.725	8	0.85	1	9.688	493.42	24.67	B
140.00-120.00			B	0.163	2.725		0.85	1	9.688			
			C	0.163	2.725		0.85	1	9.688			
T11	677.40	2105.51	A	0.163	2.725	8	0.85	1	9.688	479.26	23.96	B
120.00-100.00			B	0.163	2.725		0.85	1	9.688			
			C	0.163	2.725		0.85	1	9.688			
T12	693.80	2105.51	A	0.163	2.725	8	0.85	1	9.688	467.73	23.39	B
100.00-80.00			B	0.163	2.725		0.85	1	9.688			
			C	0.163	2.725		0.85	1	9.688			
T13	700.40	2347.54	A	0.17	2.7	7	0.85	1	10.158	449.21	22.46	B
80.00-60.00			B	0.17	2.7		0.85	1	10.158			
			C	0.17	2.7		0.85	1	10.158			
T14	700.40	2152.49	A	0.16	2.733	6	0.85	1	9.581	401.35	20.07	B
60.00-40.00			B	0.16	2.733		0.85	1	9.581			
			C	0.16	2.733		0.85	1	9.581			
T15	700.40	2152.49	A	0.16	2.733	5	0.85	1	9.581	346.85	17.34	B
40.00-20.00			B	0.16	2.733		0.85	1	9.581			
			C	0.16	2.733		0.85	1	9.581			
T16	496.50	1629.55	A	0.163	2.726	5	0.85	1	7.282	236.96	15.80	B
20.00-5.00			B	0.163	2.726		0.85	1	7.282			
			C	0.163	2.726		0.85	1	7.282			
T17 5.00-0.00	0.00	769.05	A	0.657	1.78	5	0.85	1	7.568	62.78	12.56	C
			B	0.657	1.78		0.85	1	7.568			
			C	0.657	1.78		0.85	1	7.568			
Sum Weight:	10025.98	30766.83								6998.81		

Force Totals (Does not include forces on guys)

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Torques lb-ft
Leg Weight	18488.65			
Bracing Weight	12278.18			
Total Member Self-Weight	30766.83			
Guy Weight	7893.24			
Total Weight	54698.55			
Wind 0 deg - No Ice		75.48	-37489.98	-10818.83
Wind 30 deg - No Ice		18717.19	-32403.14	6407.32
Wind 60 deg - No Ice		30265.39	-17500.34	20733.41
Wind 90 deg - No Ice		33259.66	-36.53	25503.54
Wind 120 deg - No Ice		30193.67	17363.33	27370.62
Wind 150 deg - No Ice		18581.41	32117.11	24507.90
Wind 180 deg - No Ice		-20.85	37319.80	10736.21
Wind 210 deg - No Ice		-18669.82	32283.27	-6467.79
Wind 240 deg - No Ice		-30253.72	17485.16	-20728.39
Wind 270 deg - No Ice		-33132.13	21.88	-25415.37
Wind 300 deg - No Ice		-30030.79	-17340.83	-27293.02
Wind 330 deg - No Ice		-18503.14	-32162.26	-24535.60
Member Ice	37230.35			
Guy Ice	24086.32			
Total Weight Ice	159007.42			
Wind 0 deg - Ice		115.51	-14808.39	-3491.17
Wind 30 deg - Ice		7345.51	-12594.06	2061.08
Wind 60 deg - Ice		12176.63	-7040.41	6370.21
Wind 90 deg - Ice		13776.57	-67.56	8272.46
Wind 120 deg - Ice		12175.17	6975.88	8707.20
Wind 150 deg - Ice		7213.81	12556.12	7523.36
Wind 180 deg - Ice		-10.34	14769.28	3597.54
Wind 210 deg - Ice		-7238.39	12610.29	-2013.93
Wind 240 deg - Ice		-12122.99	7079.12	-6451.01
Wind 270 deg - Ice		-13712.40	5.48	-8430.42
Wind 300 deg - Ice		-12077.35	-6971.15	-8732.78
Wind 330 deg - Ice		-7215.56	-12526.63	-7412.54
Total Weight	54698.55			
Wind 0 deg - Service		18.87	-9372.49	-2704.71
Wind 30 deg - Service		4679.30	-8100.78	1601.83
Wind 60 deg - Service		7566.35	-4375.09	5183.35
Wind 90 deg - Service		8314.92	-9.13	6375.88
Wind 120 deg - Service		7548.42	4340.83	6842.66
Wind 150 deg - Service		4645.35	8029.28	6126.98
Wind 180 deg - Service		-5.21	9329.95	2684.05
Wind 210 deg - Service		-4667.45	8070.82	-1616.95
Wind 240 deg - Service		-7563.43	4371.29	-5182.10
Wind 270 deg - Service		-8283.03	5.47	-6353.84
Wind 300 deg - Service		-7507.70	-4335.21	-6823.25
Wind 330 deg - Service		-4625.79	-8040.56	-6133.90

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy
5	1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy
6	1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy
7	1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy
8	1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy
9	1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy
10	1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy
11	1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy
12	1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy
13	1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy
14	1.2 Dead+1.0 Ice+1.0 Temp+Guy
15	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
16	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
17	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
18	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
19	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
20	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
21	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
22	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
23	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
24	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
25	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
26	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	347 - 330	Latticed Pole Leg	Max Tension	8	19769.27	2.15	-150.76
			Max. Compression	10	-20022.35	226.11	70.65
			Max. Mx	5	-15546.90	729.50	-598.22
			Max. My	6	6491.54	572.98	693.97
			Max. Vy	5	2961.46	-247.94	137.37
			Max. Vx	6	2686.81	-174.25	-191.04
		Latticed Pole Diagonal	Max Tension	5	6751.12	0.00	0.00
			Max. Compression	5	-6769.99	0.00	0.00
			Max. Mx	5	128.40	-13.71	0.99
			Max. My	5	-6762.41	-10.85	16.57
			Max. Vy	5	9.84	-13.71	0.99
			Max. Vx	5	-10.85	-10.85	16.57
		Latticed Pole Top Girt	Max Tension	2	19.98	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	12	-30.57	0.00	0.00
			Max. Mx	15	-7.57	3.96	0.00
			Max. My	6	-11.23	0.00	-0.00
			Max. Vy	14	-7.92	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Latticed Pole Bottom Girt	Max Tension	8	721.68	0.00	0.00
			Max. Compression	6	-804.98	0.00	0.00
			Max. Mx	15	75.64	3.96	0.00
			Max. My	6	193.95	0.00	-0.00
			Max. Vy	15	7.92	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
L2	330 - 320	Latticed Pole Leg	Max Tension	8	48679.83	-3.67	876.82
			Max. Compression	10	-49273.01	0.00	0.00
			Max. Mx	5	-40505.69	1475.64	-857.22
			Max. My	6	6428.85	-937.58	-1097.03
			Max. Vy	5	4428.29	0.00	0.00
			Max. Vx	4	-2902.99	0.00	0.00
		Latticed Pole Diagonal	Max Tension	5	10293.44	0.00	0.00
			Max. Compression	5	-10276.96	0.00	0.00
			Max. Mx	5	8290.44	-11.19	-8.03
			Max. My	5	-10263.42	-5.46	32.34
			Max. Vy	5	8.20	-11.19	-8.03
			Max. Vx	5	-21.10	-5.46	32.34
		Latticed Pole Top Girt	Max Tension	6	609.46	0.00	0.00
			Max. Compression	8	-496.69	0.00	0.00
			Max. Mx	15	-60.13	3.94	0.00
			Max. My	6	-126.64	0.00	-0.00
			Max. Vy	15	-7.88	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
T1	320 - 300	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	10	-22234.35	-12.72	11.07
			Max. Mx	11	-11833.04	-239.07	-6.31
			Max. My	4	-18311.28	-13.09	-199.38
			Max. Vy	11	1358.24	213.56	41.98
			Max. Vx	4	1098.59	-13.09	-199.38
		Diagonal	Max Tension	4	1967.30	0.00	0.00
			Max. Compression	10	-2017.39	0.00	0.00
			Max. Mx	25	-8.65	-9.00	-0.11
			Max. My	5	-1601.05	-7.59	1.98
			Max. Vy	25	14.33	-9.00	-0.11
			Max. Vx	5	-0.79	-7.59	1.98
		Top Girt	Max Tension	6	819.24	0.00	0.00
			Max. Compression	6	-380.64	0.00	0.00
			Max. Mx	15	5.94	27.77	0.00
			Max. My	6	-380.44	0.00	-0.00
			Max. Vy	15	22.22	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Bottom Girt	Max Tension	2	187.33	0.00	0.00
			Max. Compression	8	-99.35	0.00	0.00
			Max. Mx	14	83.84	27.77	0.00
			Max. My	6	35.60	0.00	-0.00
			Max. Vy	14	-22.22	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Guy A	Bottom Tension	8	28337.54		
			Top Tension	8	28850.27		
			Top Cable Vert	8	24406.83		
			Top Cable Norm	8	15383.25		
			Top Cable Tan	8	4.44		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Bot Cable Vert	8	-23154.54		
			Bot Cable Norm	8	16336.57		
			Bot Cable Tan	8	4.44		
		Guy B	Bottom Tension	12	27921.05		
			Top Tension	12	28430.78		
			Top Cable Vert	12	24014.53		
			Top Cable Norm	12	15218.79		
			Top Cable Tan	12	15.74		
			Bot Cable Vert	12	-22766.08		
			Bot Cable Norm	12	16164.48		
			Bot Cable Tan	12	15.74		
		Guy C	Bottom Tension	4	28270.62		
			Top Tension	4	28798.90		
			Top Cable Vert	4	24580.71		
			Top Cable Norm	4	15005.49		
			Top Cable Tan	4	12.89		
			Bot Cable Vert	4	-23309.73		
			Bot Cable Norm	4	15996.38		
			Bot Cable Tan	4	12.89		
		Index Plate	Max Tension	8	13297.00	-32753.62	180.11
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	10	4520.74	35105.11	-1868.23
			Max. My	12	7219.27	1605.61	4937.40
			Max. Vy	8	29752.02	1601.17	281.81
			Max. Vx	4	-4112.29	1606.93	-4899.70
T2	300 - 280	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-29329.63	-32.64	-12.84
			Max. Mx	5	-11182.66	795.16	255.66
			Max. My	2	-26667.28	-49.15	-653.14
			Max. Vy	5	2378.47	3.12	-7.09
			Max. Vx	2	-2058.34	-0.55	32.40
		Diagonal	Max Tension	5	3421.27	0.00	0.00
			Max. Compression	5	-3575.64	0.00	0.00
			Max. Mx	26	-357.76	-9.17	-0.10
			Max. My	5	-3554.49	-7.49	3.17
			Max. Vy	26	14.31	-9.17	-0.10
			Max. Vx	5	-1.23	-7.49	3.17
		Top Girt	Max Tension	6	125.81	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	79.72	27.55	0.00
			Max. My	6	27.54	0.00	-0.00
			Max. Vy	14	-22.04	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Bottom Girt	Max Tension	4	716.06	0.00	0.00
			Max. Compression	6	-665.94	0.00	0.00
			Max. Mx	26	256.89	27.55	0.00
			Max. My	6	438.14	0.00	-0.00
			Max. Vy	26	-22.04	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
T3	280 - 260	Leg	Max Tension	4	12499.93	157.80	-170.75
			Max. Compression	6	-60220.45	-46.53	-16.45
			Max. Mx	5	-28856.98	-819.27	238.39
			Max. My	2	-26668.30	47.75	718.46
			Max. Vy	5	2383.61	-790.66	-270.67
			Max. Vx	2	-2059.85	47.75	718.46
		Diagonal	Max Tension	5	4573.16	0.00	0.00
			Max. Compression	5	-4157.58	0.00	0.00
			Max. Mx	20	80.79	-9.73	0.05
			Max. My	5	-4132.92	-7.12	4.02
			Max. Vy	20	14.44	-9.73	0.05
			Max. Vx	5	-1.53	-7.12	4.02

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
		Top Girt	Max Tension	2	818.59	0.00	0.00
			Max. Compression	4	-552.00	0.00	0.00
			Max. Mx	26	-68.79	27.32	0.00
			Max. My	6	-241.04	0.00	-0.00
			Max. Vy	26	-21.86	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Bottom Girt	Max Tension	2	5852.08	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	16	3341.12	27.32	0.00
			Max. My	6	2757.60	0.00	-0.00
			Max. Vy	16	-21.86	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Guy A	Bottom Tension	8	23788.76		
			Top Tension	8	24209.87		
			Top Cable Vert	8	19148.65		
			Top Cable Norm	8	14813.74		
			Top Cable Tan	8	3.93		
			Bot Cable Vert	8	-18087.29		
			Bot Cable Norm	8	15451.71		
			Bot Cable Tan	8	3.93		
		Guy B	Bottom Tension	12	23275.13		
			Top Tension	12	23693.19		
			Top Cable Vert	12	18693.73		
			Top Cable Norm	12	14557.19		
			Top Cable Tan	12	12.03		
			Bot Cable Vert	12	-17636.72		
			Bot Cable Norm	12	15188.07		
			Bot Cable Tan	12	12.03		
		Guy C	Bottom Tension	4	23655.20		
			Top Tension	4	24091.97		
			Top Cable Vert	4	19326.02		
			Top Cable Norm	4	14384.99		
			Top Cable Tan	4	9.64		
			Bot Cable Vert	4	-18243.56		
			Bot Cable Norm	4	15057.92		
			Bot Cable Tan	4	9.64		
T4	260 - 240	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-62025.42	-58.07	-28.07
			Max. Mx	4	-35724.40	351.68	92.96
			Max. My	8	-5444.40	-71.64	431.40
			Max. Vy	13	1161.44	93.21	33.59
			Max. Vx	8	-1609.29	5.72	-104.52
		Diagonal	Max Tension	5	1654.39	0.00	0.00
			Max. Compression	5	-1946.33	0.00	0.00
			Max. Mx	25	89.66	-9.80	-0.06
			Max. My	5	-1153.37	-6.93	1.69
			Max. Vy	25	14.37	-9.80	-0.06
			Max. Vx	5	-0.68	-6.93	1.69
		Top Girt	Max Tension	2	686.80	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	16	478.40	27.07	0.00
			Max. My	6	433.39	0.00	-0.00
			Max. Vy	16	21.66	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Bottom Girt	Max Tension	3	359.32	0.00	0.00
			Max. Compression	2	-180.18	0.00	0.00
			Max. Mx	14	187.15	27.07	0.00
			Max. My	6	289.28	0.00	-0.00
			Max. Vy	14	21.66	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
T5	240 - 220	Leg	Max Tension	4	2878.62	470.78	68.28

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	6	-74200.45	-198.39	-12.90
			Max. Mx	5	-1351.37	499.93	217.19
			Max. My	3	-24712.02	189.56	-437.20
			Max. Vy	5	1874.04	-123.98	-67.69
			Max. Vx	2	-1673.53	4.04	190.94
		Diagonal	Max Tension	5	2738.10	0.00	0.00
			Max. Compression	5	-3009.88	0.00	0.00
			Max. Mx	25	395.84	-9.90	-0.08
			Max. My	5	-2986.17	-6.28	2.47
			Max. Vy	25	14.30	-9.90	-0.08
			Max. Vx	5	-0.96	-6.28	2.47
		Top Girt	Max Tension	2	252.49	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	120.35	26.81	0.00
			Max. My	6	58.43	0.00	-0.00
			Max. Vy	14	-21.45	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Bottom Girt	Max Tension	8	660.23	0.00	0.00
			Max. Compression	2	-516.90	0.00	0.00
			Max. Mx	14	208.14	26.81	0.00
			Max. My	6	436.91	0.00	-0.00
			Max. Vy	14	-21.45	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
T6	220 - 200	Leg	Max Tension	8	19852.07	-16.88	546.24
			Max. Compression	2	-97251.21	8.28	-45.19
			Max. Mx	12	-1484.85	1302.82	921.43
			Max. My	8	19840.79	80.81	-1665.66
			Max. Vy	12	3958.50	1302.82	921.43
			Max. Vx	8	-5184.87	80.82	-1665.64
		Diagonal	Max Tension	4	3938.60	0.00	0.00
			Max. Compression	4	-3785.28	0.00	0.00
			Max. Mx	12	2443.71	-13.67	-0.24
			Max. My	5	-3741.31	-8.94	4.37
			Max. Vy	25	16.43	-12.45	-0.04
			Max. Vx	5	-1.66	-8.94	4.37
		Top Girt	Max Tension	2	585.66	0.00	0.00
			Max. Compression	8	-212.25	0.00	0.00
			Max. Mx	14	170.39	29.85	0.00
			Max. My	6	-17.20	0.00	-0.00
			Max. Vy	14	-23.88	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Bottom Girt	Max Tension	2	8514.62	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	5905.01	29.85	0.00
			Max. My	6	3212.14	0.00	-0.00
			Max. Vy	14	-23.88	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Guy A	Bottom Tension	8	30371.63		
			Top Tension	8	30807.28		
			Top Cable Vert	8	21679.20		
			Top Cable Norm	8	21888.37		
			Top Cable Tan	8	5.58		
			Bot Cable Vert	8	-20614.84		
			Bot Cable Norm	8	22303.91		
			Bot Cable Tan	8	5.58		
		Guy B	Bottom Tension	12	29354.23		
			Top Tension	12	29785.78		
			Top Cable Vert	12	20869.92		
			Top Cable Norm	12	21251.79		
			Top Cable Tan	12	14.67		
			Bot Cable Vert	12	-19811.54		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Bot Cable Norm	12	21660.41		
			Bot Cable Tan	12	14.67		
		Guy C	Bottom Tension	4	29988.08		
			Top Tension	4	30444.64		
			Top Cable Vert	4	21940.92		
			Top Cable Norm	4	21106.21		
			Top Cable Tan	4	11.40		
			Bot Cable Vert	4	-20847.57		
			Bot Cable Norm	4	21556.06		
			Bot Cable Tan	4	11.40		
T7	200 - 180	Leg	Max Tension	8	116.72	-2.04	62.12
			Max. Compression	2	-97254.03	80.90	-1023.72
			Max. Mx	12	-1500.79	-1333.12	-1092.86
			Max. My	8	-2606.32	-84.54	1788.67
			Max. Vy	12	3954.04	-15.91	-85.59
			Max. Vx	8	-5181.40	-2.04	62.12
		Diagonal	Max Tension	9	4368.41	0.00	0.00
			Max. Compression	9	-4801.37	0.00	0.00
			Max. Mx	6	-1452.84	-12.32	1.08
			Max. My	10	-3912.56	-9.90	-3.02
			Max. Vy	20	16.10	-11.90	0.05
			Max. Vx	10	1.16	-9.90	-3.02
		Top Girt	Max Tension	7	1593.65	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	1096.83	29.54	0.00
			Max. My	6	1184.84	0.00	-0.00
			Max. Vy	14	-23.63	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Bottom Girt	Max Tension	2	846.36	0.00	0.00
			Max. Compression	8	-397.12	0.00	0.00
			Max. Mx	14	326.51	29.54	0.00
			Max. My	6	-48.50	0.00	-0.00
			Max. Vy	14	-23.63	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
T8	180 - 160	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-65933.07	-179.93	-41.97
			Max. Mx	5	-35751.92	825.10	115.34
			Max. My	8	-35407.73	-59.42	881.25
			Max. Vy	5	-2514.94	-11.23	58.10
			Max. Vx	2	2655.03	-1.76	102.22
		Diagonal	Max Tension	10	3337.52	0.00	0.00
			Max. Compression	10	-3782.51	0.00	0.00
			Max. Mx	26	33.67	-12.13	-0.14
			Max. My	5	-2331.93	-8.96	3.04
			Max. Vy	26	16.05	-12.13	-0.14
			Max. Vx	5	-1.18	-8.96	3.04
		Top Girt	Max Tension	8	811.93	0.00	0.00
			Max. Compression	2	-473.91	0.00	0.00
			Max. Mx	14	238.79	29.19	0.00
			Max. My	6	526.33	0.00	-0.00
			Max. Vy	14	-23.35	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Bottom Girt	Max Tension	8	663.47	0.00	0.00
			Max. Compression	2	-193.91	0.00	0.00
			Max. Mx	14	351.85	29.19	0.00
			Max. My	6	426.43	0.00	-0.00
			Max. Vy	14	-23.35	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
T9	160 - 140	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	2	-92039.21	-8.90	171.46
			Max. Mx	4	-25432.94	-1797.78	1369.45

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	8	-10752.47	15.05	-2418.45
			Max. Vy	4	-4411.10	-1797.78	1369.45
			Max. Vx	8	-6117.43	15.06	-2418.44
		Diagonal	Max Tension	12	4810.39	0.00	0.00
			Max. Compression	12	-4373.15	0.00	0.00
			Max. Mx	25	-172.72	-11.48	-0.16
			Max. My	5	-4291.93	-8.10	3.92
			Max. Vy	25	15.66	-11.48	-0.16
			Max. Vx	5	-1.49	-8.10	3.92
		Top Girt	Max Tension	2	565.82	0.00	0.00
			Max. Compression	8	-201.73	0.00	0.00
			Max. Mx	14	271.06	28.81	0.00
			Max. My	6	70.39	0.00	-0.00
			Max. Vy	14	-23.05	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Bottom Girt	Max Tension	2	7665.49	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	6230.17	28.81	0.00
			Max. My	7	4811.23	0.00	-0.00
			Max. Vy	14	-23.05	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
		Guy A	Bottom Tension	8	28382.04		
			Top Tension	8	28692.55		
			Top Cable Vert	8	16480.82		
			Top Cable Norm	8	23487.12		
			Top Cable Tan	8	5.79		
			Bot Cable Vert	8	-15670.76		
			Bot Cable Norm	8	23663.63		
			Bot Cable Tan	8	5.79		
		Guy B	Bottom Tension	12	26905.62		
			Top Tension	12	27212.00		
			Top Cable Vert	12	15505.42		
			Top Cable Norm	12	22362.35		
			Top Cable Tan	12	13.49		
			Bot Cable Vert	12	-14701.38		
			Bot Cable Norm	12	22534.01		
			Bot Cable Tan	12	13.49		
		Guy C	Bottom Tension	4	27575.77		
			Top Tension	4	27907.23		
			Top Cable Vert	4	16743.89		
			Top Cable Norm	4	22326.12		
			Top Cable Tan	4	10.19		
			Bot Cable Vert	4	-15904.48		
			Bot Cable Norm	4	22527.11		
			Bot Cable Tan	4	10.19		
T10	140 - 120	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	2	-92042.81	-27.48	-676.88
			Max. Mx	4	-25454.94	1141.41	-1076.25
			Max. My	8	-27173.84	30.57	1659.27
			Max. Vy	4	-4411.23	-328.24	147.12
			Max. Vx	8	-6119.23	22.28	-379.89
		Diagonal	Max Tension	7	4070.94	0.00	0.00
			Max. Compression	7	-4520.57	0.00	0.00
			Max. Mx	20	-332.93	-11.95	0.21
			Max. My	6	-3857.74	-10.32	3.33
			Max. Vy	20	15.66	-11.95	0.21
			Max. Vx	6	-1.28	-10.32	3.33
		Top Girt	Max Tension	15	1775.53	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	1709.28	28.39	0.00
			Max. My	7	1298.74	0.00	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vy	14	-22.71	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
		Bottom Girt	Max Tension	2	766.90	0.00	0.00
			Max. Compression	8	-193.33	0.00	0.00
			Max. Mx	14	413.60	28.39	0.00
			Max. My	7	306.64	0.00	-0.00
			Max. Vy	14	-22.71	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
T11	120 - 100	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	16	-87769.79	133.60	-79.94
			Max. Mx	5	-51054.40	785.49	113.72
			Max. My	13	-56336.33	-353.63	-846.48
			Max. Vy	5	-2385.34	9.98	89.01
			Max. Vx	7	-2419.96	188.01	746.85
		Diagonal	Max Tension	6	3282.75	0.00	0.00
			Max. Compression	6	-3805.58	0.00	0.00
			Max. Mx	26	-534.19	-11.98	-0.34
			Max. My	6	-3194.45	-9.22	3.60
			Max. Vy	26	15.48	-11.98	-0.34
			Max. Vx	6	-1.37	-9.22	3.60
		Top Girt	Max Tension	8	678.60	0.00	0.00
			Max. Compression	2	-165.52	0.00	0.00
			Max. Mx	14	354.01	27.91	0.00
			Max. My	7	265.96	0.00	-0.00
			Max. Vy	14	-22.33	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
		Bottom Girt	Max Tension	2	520.88	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	423.63	27.91	0.00
			Max. My	7	302.27	0.00	-0.00
			Max. Vy	14	-22.33	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
T12	100 - 80	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	17	-90852.23	74.44	-55.61
			Max. Mx	6	-61487.45	706.43	249.02
			Max. My	13	-70132.52	0.02	-655.60
			Max. Vy	6	-2118.94	706.43	249.02
			Max. Vx	13	-1962.55	92.41	47.78
		Diagonal	Max Tension	12	2648.19	0.00	0.00
			Max. Compression	12	-3165.68	0.00	0.00
			Max. Mx	26	-809.65	-11.93	-0.50
			Max. My	12	-3138.26	-9.22	-4.31
			Max. Vy	26	15.24	-11.93	-0.50
			Max. Vx	12	1.62	-9.22	-4.31
		Top Girt	Max Tension	21	420.02	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	361.39	27.35	0.00
			Max. My	7	281.40	0.00	-0.00
			Max. Vy	14	21.88	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
		Bottom Girt	Max Tension	20	529.79	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	523.47	27.35	0.00
			Max. My	7	353.21	0.00	-0.00
			Max. Vy	14	21.88	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
T13	80 - 60	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	17	-98944.94	101.04	-49.65
			Max. Mx	15	-94842.15	1326.71	676.52
			Max. My	21	-97289.18	3.81	-1505.71
			Max. Vy	6	-2606.40	-72.99	77.72

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	13	2533.80	-108.56	13.71
		Diagonal	Max Tension	12	5197.05	0.00	0.00
			Max. Compression	7	-4259.69	0.00	0.00
			Max. Mx	19	2994.25	-19.13	0.33
			Max. My	6	-4106.24	-7.30	5.13
			Max. Vy	19	17.57	-19.13	0.33
			Max. Vx	6	-1.91	-7.30	5.13
		Top Girt	Max Tension	15	489.74	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	392.45	26.68	0.00
			Max. My	7	315.44	0.00	-0.00
			Max. Vy	14	-21.35	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
		Bottom Girt	Max Tension	2	548.08	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	488.83	26.68	0.00
			Max. My	7	333.59	0.00	-0.00
			Max. Vy	14	-21.35	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
		Guy A	Bottom Tension	8	12352.51		
			Top Tension	8	12442.38		
			Top Cable Vert	8	4347.34		
			Top Cable Norm	8	11658.19		
			Top Cable Tan	8	2.34		
			Bot Cable Vert	8	-4025.07		
			Bot Cable Norm	8	11678.32		
			Bot Cable Tan	8	2.34		
		Guy B	Bottom Tension	25	11563.63		
			Top Tension	12	11665.14		
			Top Cable Vert	25	4401.81		
			Top Cable Norm	25	10802.76		
			Top Cable Tan	25	0.59		
			Bot Cable Vert	12	-3670.73		
			Bot Cable Norm	12	10965.55		
			Bot Cable Tan	12	5.12		
		Guy C	Bottom Tension	4	11845.60		
			Top Tension	4	11947.00		
			Top Cable Vert	4	4632.78		
			Top Cable Norm	4	11012.18		
			Top Cable Tan	4	3.83		
			Bot Cable Vert	4	-4293.96		
			Bot Cable Norm	4	11039.93		
			Bot Cable Tan	4	3.83		
T14	60 - 40	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	17	-101863.06	157.50	-91.24
			Max. Mx	6	-69840.70	796.79	290.21
			Max. My	13	-78499.99	-29.37	-831.21
			Max. Vy	6	-2610.02	796.78	290.23
			Max. Vx	13	2535.36	-29.37	-831.21
		Diagonal	Max Tension	7	3357.85	0.00	0.00
			Max. Compression	7	-3787.52	0.00	0.00
			Max. Mx	26	-850.76	-8.56	-0.54
			Max. My	6	-3229.38	-4.98	5.27
			Max. Vy	26	12.13	-8.56	-0.54
			Max. Vx	6	-1.94	-4.98	5.27
		Top Girt	Max Tension	21	447.02	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	399.24	22.62	0.00
			Max. My	7	301.87	0.00	-0.00
			Max. Vy	14	-18.09	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
		Bottom Girt	Max Tension	23	395.96	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	384.63	22.62	0.00
			Max. My	7	244.92	0.00	-0.00
			Max. Vy	14	-18.09	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
T15	40 - 20	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	17	-102290.55	88.56	-55.55
			Max. Mx	12	-78465.91	-864.43	492.85
			Max. My	13	-63231.31	-443.99	-928.38
			Max. Vy	6	-2390.09	802.66	120.63
			Max. Vx	7	2689.10	97.02	-52.03
		Diagonal	Max Tension	6	3882.53	0.00	0.00
			Max. Compression	12	-4338.93	0.00	0.00
			Max. Mx	26	-1059.59	-8.27	-0.66
			Max. My	12	-4318.41	-4.65	-7.03
			Max. Vy	26	11.56	-8.27	-0.66
			Max. Vx	12	2.57	-4.65	-7.03
		Top Girt	Max Tension	15	411.87	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	337.93	21.45	0.00
			Max. My	7	265.74	0.00	-0.00
			Max. Vy	14	17.16	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
		Bottom Girt	Max Tension	17	427.93	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	394.34	21.45	0.00
			Max. My	7	238.56	0.00	-0.00
			Max. Vy	14	17.16	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
T16	20 - 5	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	17	-101708.29	-33.62	-109.56
			Max. Mx	15	-99412.46	-7686.94	4341.09
			Max. My	21	-99161.80	-104.68	-8809.30
			Max. Vy	18	20659.72	-7576.07	4589.62
			Max. Vx	21	23400.41	-104.68	-8809.30
		Diagonal	Max Tension	12	6640.97	0.00	0.00
			Max. Compression	6	-4524.86	0.00	0.00
			Max. Mx	19	-607.50	-8.81	0.17
			Max. My	6	-4016.63	-0.67	7.09
			Max. Vy	19	11.05	-8.81	0.17
			Max. Vx	6	-2.59	-0.67	7.09
		Top Girt	Max Tension	2	458.89	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	332.47	19.68	0.00
			Max. My	7	263.47	0.00	-0.00
			Max. Vy	14	15.74	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
		Bottom Girt	Max Tension	15	11070.85	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	10893.59	19.68	0.00
			Max. My	7	7292.34	0.00	-0.00
			Max. Vy	14	15.74	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
T17	5 - 0	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	16	-115836.73	69.46	227.76
			Max. Mx	16	-98125.05	8872.00	-66.93
			Max. My	6	-69682.49	-741.41	12676.99
			Max. Vy	16	29666.47	-8253.12	-25.51
			Max. Vx	6	-15571.43	-728.16	12664.74
		Horizontal	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	15	-845.56	353.64	4.64
			Max. Mx	6	-522.94	-7839.82	-126.40
			Max. My	6	-574.46	-7832.88	-128.84
			Max. Vy	6	-5493.47	-7832.88	-128.84
			Max. Vx	6	-97.47	-7802.55	-127.89
		Top Girt	Max Tension	15	20363.99	-4489.53	-23.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	12	13413.99	-6351.13	-81.44
			Max. My	6	13900.28	-6326.13	-82.32
			Max. Vy	6	-1604.37	-6289.69	-81.68
			Max. Vx	6	-42.75	-6289.69	-81.68
		Bottom Girt	Max Tension	1	0.00	0.00	0.00
			Max. Compression	15	-909.97	-19.31	20.08
			Max. Mx	6	-660.99	-12064.87	-257.41
			Max. My	6	-660.99	-12064.87	-257.41
			Max. Vy	6	-22691.89	-11999.62	-256.03
			Max. Vx	6	-514.44	-11999.62	-256.03

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Mast	Max. Vert	19	296443.92	-834.69	-217.47
	Max. H_x	11	193629.81	2981.58	204.67
	Max. H_z	2	199585.19	-2.47	3821.82
	Max. M_x	1	0.00	-18.73	52.53
	Max. M_z	1	0.00	-18.73	52.53
	Max. Torsion	12	22555.07	2901.86	1745.89
	Min. Vert	1	143688.40	-18.73	52.53
	Min. H_x	5	194841.42	-2989.18	192.59
	Min. H_z	8	194385.38	-25.23	-3754.02
	Min. M_x	1	0.00	-18.73	52.53
	Min. M_z	1	0.00	-18.73	52.53
	Min. Torsion	6	-22914.65	-2907.13	-1625.82
Guy C @ 220 ft Elev -18 ft Azimuth 240 deg	Max. Vert	10	-7234.87	-5566.50	3218.39
	Max. H_x	10	-7234.87	-5566.50	3218.39
	Max. H_z	3	-80584.76	-72197.37	43224.63
	Min. Vert	4	-82599.30	-74655.80	43047.17
	Min. H_x	4	-82599.30	-74655.80	43047.17
	Min. H_z	10	-7234.87	-5566.50	3218.39
Guy B @ 220 ft Elev -6 ft Azimuth 120 deg	Max. Vert	6	-6343.93	5357.65	3099.83
	Max. H_x	12	-78586.45	74952.57	43203.39
	Max. H_z	12	-78586.45	74952.57	43203.39
	Min. Vert	12	-78586.45	74952.57	43203.39
	Min. H_x	6	-6343.93	5357.65	3099.83
	Min. H_z	6	-6343.93	5357.65	3099.83
Guy A @ 220 ft Elev -8 ft Azimuth 0 deg	Max. Vert	2	-5949.90	-2.37	-5370.05
	Max. H_x	11	-43312.11	2997.89	-46498.79
	Max. H_z	2	-5949.90	-2.37	-5370.05
	Min. Vert	8	-81552.49	22.09	-89434.14

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Min. H_x	5	-42489.56	-3004.35	-45645.99
	Min. H_z	8	-81552.49	22.09	-89434.14

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	143688.40	18.73	-52.53	0.00	0.00	0.29
1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy	199585.19	2.47	-3821.82	0.00	0.00	-10122.60
1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy	198797.01	1946.11	-3097.66	0.00	0.00	4933.29
1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy	194166.42	2914.42	-1723.67	0.00	0.00	16487.37
1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy	194841.42	2989.18	-192.59	0.00	0.00	19975.29
1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy	195963.97	2907.13	1625.82	0.00	0.00	22914.65
1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy	197999.32	1691.70	3162.37	0.00	0.00	21811.70
1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy	194385.38	25.23	3754.02	0.00	0.00	10016.61
1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy	197511.81	-1656.71	3158.15	0.00	0.00	-4979.76
1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy	194508.76	-2888.77	1619.41	0.00	0.00	-16441.48
1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy	193629.81	-2981.58	-204.67	0.00	0.00	-19701.64
1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy	193183.09	-2901.86	-1745.89	0.00	0.00	-22555.07
1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy	197536.84	-1939.39	-3125.59	0.00	0.00	-21802.33
1.2 Dead+1.0 Ice+1.0 Temp+Guy	293487.67	88.21	-217.14	0.00	0.00	3.66
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	296373.33	84.89	-1163.85	0.00	0.00	-1944.81
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	295867.16	526.57	-999.94	0.00	0.00	1325.78
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	295367.48	810.64	-634.01	0.00	0.00	3155.84
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	295867.55	903.70	-205.79	0.00	0.00	3750.56
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	296443.92	834.69	217.47	0.00	0.00	4449.98
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	295780.39	545.15	561.33	0.00	0.00	4359.95
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	295125.90	90.77	705.06	0.00	0.00	2013.41
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	295441.34	-366.67	559.84	0.00	0.00	-1259.86
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	295877.65	-659.27	214.41	0.00	0.00	-3155.57
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	295324.50	-731.42	-211.70	0.00	0.00	-3826.11
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy	294954.24	-639.90	-640.23	0.00	0.00	-4490.72

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy	295642.66	-357.83	-1003.23	0.00	0.00	-4323.69
Dead+Wind 0 deg - Service+Guy	144521.41	15.23	-697.14	0.00	0.00	-1744.91
Dead+Wind 30 deg - Service+Guy	144357.10	328.61	-594.73	0.00	0.00	969.88
Dead+Wind 60 deg - Service+Guy	144216.69	498.82	-329.97	0.00	0.00	2968.07
Dead+Wind 90 deg - Service+Guy	144364.74	532.54	-50.77	0.00	0.00	3537.24
Dead+Wind 120 deg - Service+Guy	144538.49	510.15	235.12	0.00	0.00	4045.23
Dead+Wind 150 deg - Service+Guy	144384.20	329.18	491.63	0.00	0.00	3886.04
Dead+Wind 180 deg - Service+Guy	144229.22	16.35	580.19	0.00	0.00	1732.55
Dead+Wind 210 deg - Service+Guy	144357.99	-297.24	491.86	0.00	0.00	-975.79
Dead+Wind 240 deg - Service+Guy	144516.69	-478.70	234.39	0.00	0.00	-2955.55
Dead+Wind 270 deg - Service+Guy	144371.17	-500.87	-52.27	0.00	0.00	-3514.35
Dead+Wind 300 deg - Service+Guy	144242.10	-467.21	-330.69	0.00	0.00	-4029.67
Dead+Wind 330 deg - Service+Guy	144386.29	-297.58	-594.08	0.00	0.00	-3888.17

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-54697.76	0.00	1.95	54697.77	-0.12	0.004%
2	165.01	-64683.51	-71729.48	-164.89	64683.39	71725.62	0.004%
3	35852.03	-64100.73	-62034.60	-35852.54	64100.62	62030.51	0.004%
4	58643.40	-63510.89	-33910.08	-58643.32	63510.93	33913.67	0.004%
5	64972.83	-64109.14	-81.56	-64969.82	64109.04	83.85	0.004%
6	58487.68	-64699.05	33616.11	-58484.25	64698.92	-33614.27	0.004%
7	35564.01	-64067.24	61500.58	-35559.97	64067.13	-61499.10	0.004%
8	-77.59	-63434.14	71457.19	80.41	63434.17	-71458.40	0.003%
9	-35776.24	-64016.92	61842.81	35772.21	64016.81	-61841.20	0.005%
10	-58624.73	-64606.76	33885.78	58621.48	64606.64	-33883.89	0.004%
11	-64768.79	-64008.51	58.12	64765.91	64008.41	-55.81	0.004%
12	-58227.06	-63418.60	-33580.11	58230.76	63418.69	33580.83	0.004%
13	-35438.78	-64050.41	-61572.81	35439.49	64050.31	61568.92	0.004%
14	0.00	-168365.25	0.00	3.52	168365.25	2.16	0.002%
15	141.35	-168675.82	-20827.59	-140.87	168675.82	20824.45	0.002%
16	10375.70	-168382.18	-17818.98	-10375.12	168382.18	17818.38	0.000%
17	17418.30	-168086.22	-10072.30	-17417.37	168086.21	10072.03	0.001%
18	19805.31	-168385.62	-82.03	-19804.29	168385.62	82.13	0.001%
19	17391.22	-168682.29	9963.13	-17387.44	168682.28	-9961.20	0.002%
20	10201.50	-168368.69	17736.38	-10200.89	168368.68	-17735.71	0.001%
21	-36.18	-168054.67	20788.48	36.39	168054.66	-20787.22	0.001%
22	-10268.59	-168348.31	17835.21	10268.05	168348.31	-17834.08	0.001%
23	-17364.66	-168644.28	10111.01	17361.95	168644.27	-10109.11	0.002%
24	-19741.14	-168344.87	19.95	19739.93	168344.87	-19.81	0.001%
25	-17293.39	-168048.20	-9958.41	17292.34	168048.20	9957.98	0.001%
26	-10203.25	-168361.81	-17706.89	10200.91	168361.79	17702.91	0.003%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
27	25.78	-54795.37	-11207.73	-25.63	54795.37	11206.58	0.002%
28	5601.88	-54704.31	-9692.91	-5600.97	54704.31	9691.85	0.003%
29	9163.03	-54612.15	-5298.45	-9161.49	54612.14	5297.72	0.003%
30	10152.01	-54705.62	-12.74	-10150.54	54705.62	12.64	0.003%
31	9138.70	-54797.80	5252.52	-9137.54	54797.80	-5251.96	0.002%
32	5556.88	-54699.08	9609.47	-5556.07	54699.08	-9608.36	0.002%
33	-12.12	-54600.15	11165.19	12.30	54600.15	-11163.75	0.003%
34	-5590.04	-54691.21	9662.94	5589.52	54691.21	-9661.79	0.002%
35	-9160.11	-54783.38	5294.65	9159.17	54783.38	-5294.04	0.002%
36	-10120.12	-54689.90	9.08	10118.92	54689.90	-9.11	0.002%
37	-9097.98	-54597.73	-5246.89	9096.83	54597.72	5246.20	0.002%
38	-5537.31	-54696.45	-9620.75	5536.76	54696.45	9619.67	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	12	0.00000001	0.00002874
2	Yes	32	0.00007853	0.00005552
3	Yes	31	0.00009126	0.00006090
4	Yes	19	0.00008818	0.00005290
5	Yes	31	0.00008738	0.00005713
6	Yes	32	0.00008102	0.00005740
7	Yes	31	0.00009818	0.00006376
8	Yes	20	0.00007943	0.00004448
9	Yes	30	0.00009842	0.00006504
10	Yes	31	0.00007954	0.00005669
11	Yes	30	0.00008856	0.00005680
12	Yes	18	0.00008190	0.00006580
13	Yes	31	0.00009183	0.00005897
14	Yes	14	0.00010000	0.00003920
15	Yes	19	0.00010000	0.00003404
16	Yes	22	0.00000001	0.00000956
17	Yes	22	0.00000001	0.00001115
18	Yes	22	0.00000001	0.00001173
19	Yes	19	0.00010000	0.00004579
20	Yes	22	0.00000001	0.00001037
21	Yes	21	0.00000001	0.00001470
22	Yes	21	0.00000001	0.00001413
23	Yes	19	0.00010000	0.00003567
24	Yes	21	0.00000001	0.00001382
25	Yes	21	0.00000001	0.00001303
26	Yes	18	0.00010000	0.00004969
27	Yes	14	0.00000001	0.00002285
28	Yes	14	0.00000001	0.00002791
29	Yes	14	0.00000001	0.00003435
30	Yes	14	0.00000001	0.00002975
31	Yes	14	0.00000001	0.00002594
32	Yes	14	0.00000001	0.00002809
33	Yes	14	0.00000001	0.00002991
34	Yes	14	0.00000001	0.00002553
35	Yes	14	0.00000001	0.00002240
36	Yes	14	0.00000001	0.00002452
37	Yes	14	0.00000001	0.00002782
38	Yes	14	0.00000001	0.00002473

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	347 - 330	2.576	33	0.1136	0.9473
L2	330 - 320	2.205	29	0.0983	0.8529
T1	320 - 300	2.053	29	0.0673	0.7089
T2	300 - 280	1.821	29	0.0641	0.6872
T3	280 - 260	1.561	29	0.0650	0.6640
T4	260 - 240	1.300	29	0.0546	0.6355
T5	240 - 220	1.094	29	0.0452	0.6098
T6	220 - 200	0.920	29	0.0346	0.5798
T7	200 - 180	0.801	28	0.0189	0.5539
T8	180 - 160	0.762	28	0.0136	0.5346
T9	160 - 140	0.708	28	0.0155	0.5117
T10	140 - 120	0.648	28	0.0100	0.4837
T11	120 - 100	0.632	28	0.0077	0.4593
T12	100 - 80	0.599	28	0.0123	0.4283
T13	80 - 60	0.531	28	0.0193	0.3912
T14	60 - 40	0.440	28	0.0242	0.3507
T15	40 - 20	0.326	28	0.0314	0.2955
T16	20 - 5	0.175	28	0.0382	0.2350
T17	5 - 0	0.044	28	0.0409	0.1823

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
350.00	Flash Beacon Lighting	33	2.576	0.1136	0.9473	106571
345.00	DCR-M 4 bay FM with radomes	33	2.527	0.1136	0.9451	106571
340.00	DCR-M 4 bay FM with radomes	33	2.406	0.1125	0.9346	76122
335.00	DCR-M 4 bay FM with radomes	33	2.290	0.1082	0.9077	44404
330.00	DCR-M 4 bay FM with radomes	29	2.205	0.0983	0.8529	31662
325.00	DCR-M 4 bay FM with radomes	29	2.126	0.0824	0.7786	25401
320.00	Guy	29	2.053	0.0673	0.7089	23260
300.00	(2) 18' Whip	29	1.821	0.0641	0.6872	63637
290.00	2'x8' Grid Dish	29	1.696	0.0670	0.6846	94118
260.33	Guy	29	1.304	0.0548	0.6358	57839
200.33	Guy	28	0.802	0.0191	0.5543	49035
180.00	Sidemarker	28	0.762	0.0136	0.5346	118949
173.00	(2) KMW EPBQ-654L8H8-L2	28	0.746	0.0144	0.5274	126738
160.00	2'x8' Grid Dish	28	0.708	0.0155	0.5117	250295
140.33	Guy	28	0.649	0.0101	0.4841	69714
120.00	(2) 2.5' dish with radome	28	0.632	0.0077	0.4593	161212
100.00	3' Dish w/ Radome	28	0.599	0.0123	0.4283	123055
80.00	2'x8' Grid Dish	28	0.531	0.0193	0.3912	221618
70.00	Guy	28	0.488	0.0218	0.3722	239574

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	347 - 330	32.945	6	1.1952	5.4073
L2	330 - 320	28.951	2	1.1335	4.8009
T1	320 - 300	26.773	2	0.9841	3.7753
T2	300 - 280	22.934	2	0.9691	3.6651
T3	280 - 260	19.018	2	0.9508	3.5467
T4	260 - 240	15.259	2	0.8377	3.3987
T5	240 - 220	12.106	2	0.7001	3.2863
T6	220 - 200	9.484	2	0.5351	3.1449
T7	200 - 180	7.572	2	0.3486	3.0185
T8	180 - 160	6.527	3	0.2467	2.9358
T9	160 - 140	5.625	3	0.2055	2.8292
T10	140 - 120	4.851	3	0.1365	2.6891
T11	120 - 100	4.475	3	0.0969	2.5706
T12	100 - 80	4.095	3	0.1117	2.4089
T13	80 - 60	3.558	3	0.1451	2.2084
T14	60 - 40	2.907	3	0.1693	1.9854
T15	40 - 20	2.132	3	0.2107	1.6783
T16	20 - 5	1.140	3	0.2511	1.3372
T17	5 - 0	0.284	3	0.2677	1.0370

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
350.00	Flash Beacon Lighting	6	32.945	1.1952	5.4073	26878
345.00	DCR-M 4 bay FM with radomes	6	32.438	1.1969	5.3938	26878
340.00	DCR-M 4 bay FM with radomes	2	31.255	1.1961	5.3281	19199
335.00	DCR-M 4 bay FM with radomes	2	30.093	1.1789	5.1558	11199
330.00	DCR-M 4 bay FM with radomes	2	28.951	1.1335	4.8009	7639
325.00	DCR-M 4 bay FM with radomes	2	27.838	1.0574	4.2484	5258
320.00	Guy	2	26.773	0.9841	3.7753	4376
300.00	(2) 18' Whip	2	22.934	0.9691	3.6651	12524
290.00	2'x8' Grid Dish	2	20.993	0.9763	3.6648	23624
260.33	Guy	2	15.317	0.8399	3.4005	6296
200.33	Guy	2	7.596	0.3512	3.0202	4948
180.00	Sidemarker	3	6.527	0.2467	2.9358	45825
173.00	(2) KMW EPBQ-654L8H8-L2	3	6.213	0.2313	2.9038	46985
160.00	2'x8' Grid Dish	3	5.625	0.2055	2.8292	36498
140.33	Guy	3	4.860	0.1376	2.6913	8371
120.00	(2) 2.5' dish with radome	3	4.475	0.0969	2.5706	41719
100.00	3' Dish w/ Radome	3	4.095	0.1117	2.4089	23713
80.00	2'x8' Grid Dish	3	3.558	0.1451	2.2084	37163
70.00	Guy	3	3.245	0.1568	2.1045	39286

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load / Allowable	Allowable Ratio	Criteria
L1	347	Latticed Pole	A325N	1.0000	4	4942.32	53014.40	0.093 ✔	1	Bolt Tension

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load / Allowable	Allowable Ratio	Criteria
L2	330	Leg Latticed Pole Leg	A325N	1.5000	4	12170.00	119282.00	0.102 ✔	1	Bolt Tension
T1	320	Leg	A325N	0.7500	3	2315.39	29820.60	0.078 ✔	1	Bolt Tension
T2	300	Leg	A325N	0.7500	3	3258.85	29820.60	0.109 ✔	1	Bolt Tension
T3	280	Leg	A325N	0.7500	3	6691.16	29820.60	0.224 ✔	1	Bolt Tension
T4	260	Leg	A325N	0.7500	3	6891.71	29820.60	0.231 ✔	1	Bolt Tension
T5	240	Leg	A325N	0.7500	3	8244.49	29820.60	0.276 ✔	1	Bolt Tension
T6	220	Leg	A325N	0.7500	3	10805.70	29820.60	0.362 ✔	1	Bolt Tension
T7	200	Leg	A325N	0.7500	3	7130.97	29820.60	0.239 ✔	1	Bolt Tension
T8	180	Leg	A325N	1.0000	3	7325.90	53014.40	0.138 ✔	1	Bolt Tension
T9	160	Leg	A325N	1.0000	3	10226.60	53014.40	0.193 ✔	1	Bolt Tension
T10	140	Leg	A325N	1.0000	3	9041.42	53014.40	0.171 ✔	1	Bolt Tension
T11	120	Leg	A325N	1.0000	3	9752.20	53014.40	0.184 ✔	1	Bolt Tension
T12	100	Leg	A325N	1.0000	3	10094.70	53014.40	0.190 ✔	1	Bolt Tension
T13	80	Leg	A325N	1.0000	3	10993.90	53014.40	0.207 ✔	1	Bolt Tension
T14	60	Leg	A325N	1.0000	3	11318.10	53014.40	0.213 ✔	1	Bolt Tension
T15	40	Leg	A325N	1.0000	3	11298.50	53014.40	0.213 ✔	1	Bolt Tension
T16	20	Leg	A325N	1.0000	3	11083.30	53014.40	0.209 ✔	1	Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.
T1	320.00 (A) (996)	7/8 EHS	7970.00	79699.84	28850.30	47820.00	1.000	1.658 ✔
	320.00 (B) (995)	7/8 EHS	7970.00	79699.84	28430.80	47820.00	1.000	1.682 ✔
	320.00 (C) (994)	7/8 EHS	7970.00	79699.84	28798.90	47820.00	1.000	1.660 ✔
T3	260.33 (A) (999)	7/8 EHS	7970.00	79699.84	24209.90	47820.00	1.000	1.975 ✔
	260.33 (B) (998)	7/8 EHS	7970.00	79699.84	23693.20	47820.00	1.000	2.018 ✔
	260.33 (C) (997)	7/8 EHS	7970.00	79699.84	24092.00	47820.00	1.000	1.985 ✔
T6	200.33 (A) (1002)	1 BS	12200.00	121999.80	30807.30	73200.00	1.000	2.376 ✔
	200.33 (B) (1001)	1 BS	12200.00	121999.80	29785.80	73200.00	1.000	2.458 ✔
	200.33 (C) (1000)	1 BS	12200.00	121999.80	30444.60	73200.00	1.000	2.404 ✔
T9	140.33 (A) (1005)	1 BS	12200.00	121999.80	28692.60	73200.00	1.000	2.551 ✔
	140.33 (B)	1 BS	12200.00	121999.80	27212.00	73200.00	1.000	2.690 ✔

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.
	(1004)							
	140.33 (C)	1 BS	12200.00	121999.80	27907.20	73200.00	1.000	2.623 ✔
	(1003)							
T13	70.00 (A)	3/4 EHS	5830.00	58299.91	12442.40	34980.00	1.000	2.811 ✔
	(1008)							
	70.00 (B)	3/4 EHS	5830.00	58299.91	11665.10	34980.00	1.000	2.999 ✔
	(1007)							
	70.00 (C)	3/4 EHS	5830.00	58299.91	11947.00	34980.00	1.000	2.928 ✔
	(1006)							

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	347 - 330	2	17.00	2.33	56.0 K=1.00	3.1416	1.00	-16989.50	112404.00	0.151 [1] ✔
L2	330 - 320	2 1/4	10.00	2.33	49.8 K=1.00	3.9761	1.00	-44824.00	149274.00	0.300 [1] ✔
T1	320 - 300	2	20.00	2.46	59.0 K=1.00	3.1416	1.00	-22234.30	109604.00	0.203 [1] ✔
T2	300 - 280	2	20.00	2.46	59.0 K=1.00	3.1416	1.00	-27580.90	109604.00	0.252 [1] ✔
T3	280 - 260	2	20.00	2.42	58.0 K=1.00	3.1416	1.00	-56563.20	110545.00	0.512 [1] ✔
T4	260 - 240	2	20.00	2.42	58.0 K=1.00	3.1416	1.00	-61392.80	110545.00	0.555 [1] ✔
T5	240 - 220	2	20.00	2.42	58.0 K=1.00	3.1416	1.00	-72877.10	110545.00	0.659 [1] ✔
T6	220 - 200	2 1/4	20.00	2.42	51.6 K=1.00	3.9761	1.00	-95208.60	147321.00	0.646 [1] ✔
T7	200 - 180	2 1/2	20.00	2.42	46.4 K=1.00	4.9087	1.00	-94211.00	188719.00	0.499 [1] ✔
T8	180 - 160	2 1/2	20.00	2.42	46.4 K=1.00	4.9087	1.00	-64509.80	188719.00	0.342 [1] ✔
T9	160 - 140	2 3/4	20.00	2.42	42.2 K=1.00	5.9396	1.00	-89944.10	234675.00	0.383 [1] ✔
T10	140 - 120	2 3/4	20.00	2.42	42.2 K=1.00	5.9396	1.00	-89197.70	234675.00	0.380 [1] ✔
T11	120 - 100	2 3/4	20.00	2.42	42.2 K=1.00	5.9396	1.00	-87170.10	234675.00	0.371 [1] ✔
T12	100 - 80	2 3/4	20.00	2.42	42.2 K=1.00	5.9396	1.00	-90842.90	234675.00	0.387 [1] ✔
T13	80 - 60	3	20.00	2.42	38.7 K=1.00	7.0686	1.00	-98851.80	285147.00	0.347 [1] ✔
T14	60 - 40	3	20.00	2.42	38.7	7.0686	1.00	-101789.00	285147.00	0.357 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
					K=1.00					✓
T15	40 - 20	3	20.00	2.42	38.7 K=1.00	7.0686	1.00	-102291.00	285147.00	0.359 [1] ✓
T16	20 - 5	3	15.00	2.39	38.2 K=1.00	7.0686	1.00	-101706.00	285860.00	0.356 [1] ✓
T17	5 - 0	3	5.77	2.02	32.3 K=1.00	7.0686	0.99	-115837.00	290668.00	0.399 [1] ✓

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	347 - 330	3/4	3.07	1.41	90.1 K=1.00	0.4418	-6769.99	10974.30	0.617 [1] ✓
L2	330 - 320	3/4	3.07	1.39	89.1 K=1.00	0.4418	-10277.00	11122.60	0.924 [1] ✓
T1	320 - 300	7/8	5.57	2.69	133.0 K=0.90	0.6013	-2017.39	7684.78	0.263 [1] ✓
T2	300 - 280	7/8	5.57	2.69	133.0 K=0.90	0.6013	-3575.64	7684.78	0.465 [1] ✓
T3	280 - 260	7/8	5.55	2.68	132.5 K=0.90	0.6013	-4157.58	7735.40	0.537 [1] ✓
T4	260 - 240	7/8	5.55	2.68	132.5 K=0.90	0.6013	-1946.33	7735.40	0.252 [1] ✓
T5	240 - 220	7/8	5.55	2.68	132.5 K=0.90	0.6013	-3009.88	7735.40	0.389 [1] ✓
T6	220 - 200	1	5.55	2.67	115.5 K=0.90	0.7854	-3785.28	13310.70	0.284 [1] ✓
T7	200 - 180	1	5.55	2.66	115.0 K=0.90	0.7854	-4801.37	13426.70	0.358 [1] ✓
T8	180 - 160	1	5.55	2.66	115.0 K=0.90	0.7854	-3782.51	13426.70	0.282 [1] ✓
T9	160 - 140	1	5.55	2.65	114.5 K=0.90	0.7854	-4373.15	13544.30	0.323 [1] ✓
T10	140 - 120	1	5.55	2.65	114.5 K=0.90	0.7854	-4520.57	13544.30	0.334 [1] ✓
T11	120 - 100	1	5.55	2.65	114.5 K=0.90	0.7854	-3805.58	13544.30	0.281 [1] ✓
T12	100 - 80	1	5.55	2.65	114.5 K=0.90	0.7854	-3165.68	13544.30	0.234 [1] ✓
T13	80 - 60	1	5.55	2.64	114.0 K=0.90	0.7854	-4259.69	13663.30	0.312 [1] ✓
T14	60 - 40	7/8	5.55	2.64	130.2 K=0.90	0.6013	-3787.52	8009.20	0.473 [1] ✓
T15	40 - 20	7/8	5.55	2.64	130.2 K=0.90	0.6013	-4338.93	8009.20	0.542 [1] ✓

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T16	20 - 5	7/8	5.54	2.63	130.0 K=0.90	0.6013	-4524.86	8044.01	0.563 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T17	5 - 0	10x3/8	2.75	2.50	277.1 K=1.00	3.7500	-845.56	11030.90	0.077 [1] ✔
		KL/R > 200 (C) - 991							

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	347 - 330	3/4	2.00	1.83	117.3 K=1.00	0.4418	-30.57	7249.52	0.004 [1] ✔
L2	330 - 320	3/4	2.00	1.81	116.0 K=1.00	0.4418	-496.69	7417.14	0.067 [1] ✔
T1	320 - 300	7/8	5.00	4.83	185.6 K=0.70	0.6013	-380.64	3943.57	0.097 [1] ✔
T3	280 - 260	7/8	5.00	4.83	185.6 K=0.70	0.6013	-552.00	3943.57	0.140 [1] ✔
T6	220 - 200	1	5.00	4.81	161.7 K=0.70	0.7854	-212.25	6785.94	0.031 [1] ✔
T8	180 - 160	1	5.00	4.79	161.0 K=0.70	0.7854	-473.91	6845.07	0.069 [1] ✔
T9	160 - 140	1	5.00	4.77	160.3 K=0.70	0.7854	-201.73	6904.98	0.029 [1] ✔
T11	120 - 100	1	5.00	4.77	160.3 K=0.70	0.7854	-165.52	6904.98	0.024 [1] ✔

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	347 - 330	3/4	2.00	1.83	117.3 K=1.00	0.4418	-804.98	7249.52	0.111 [1] ✓
T1	320 - 300	7/8	5.00	4.83	185.6 K=0.70	0.6013	-99.35	3943.57	0.025 [1] ✓
T2	300 - 280	7/8	5.00	4.83	185.6 K=0.70	0.6013	-665.94	3943.57	0.169 [1] ✓
T4	260 - 240	7/8	5.00	4.83	185.6 K=0.70	0.6013	-180.18	3943.57	0.046 [1] ✓
T5	240 - 220	7/8	5.00	4.83	185.6 K=0.70	0.6013	-516.90	3943.57	0.131 [1] ✓
T7	200 - 180	1	5.00	4.79	161.0 K=0.70	0.7854	-397.12	6845.07	0.058 [1] ✓
T8	180 - 160	1	5.00	4.79	161.0 K=0.70	0.7854	-193.91	6845.07	0.028 [1] ✓
T10	140 - 120	1	5.00	4.77	160.3 K=0.70	0.7854	-193.33	6904.98	0.028 [1] ✓
T17	5 - 0	10x3/8	1.00	0.75	83.1 K=1.00	3.7500	-909.97	84439.60	0.011 [1] ✓

[1] $P_u / \phi P_n$ controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	347 - 330	2	17.00	0.33	8.0	3.1416	19769.30	141372.00	0.140 [1] ✓
L2	330 - 320	2 1/4	10.00	0.33	7.1	3.9761	48679.80	178924.00	0.272 [1] ✓
T3	280 - 260	2	20.00	2.42	58.0	3.1416	12499.90	141372.00	0.088 [1] ✓
T5	240 - 220	2	20.00	0.33	8.0	3.1416	2878.62	141372.00	0.020 [1] ✓
T6	220 - 200	2 1/4	20.00	2.42	51.6	3.9761	19852.10	178924.00	0.111 [1] ✓
T7	200 - 180	2 1/2	20.00	0.33	6.4	4.9087	116.72	220893.00	0.001 [1] ✓

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	347 - 330	3/4	3.07	1.41	90.1	0.4418	6751.12	19880.40	0.340 [1] ✔
L2	330 - 320	3/4	3.07	1.39	89.1	0.4418	10293.40	19880.40	0.518 [1] ✔
T1	320 - 300	7/8	5.57	2.69	147.7	0.6013	1967.30	27059.40	0.073 [1] ✔
T2	300 - 280	7/8	5.57	2.69	147.7	0.6013	3421.27	27059.40	0.126 [1] ✔
T3	280 - 260	7/8	5.55	2.68	147.2	0.6013	4573.16	27059.40	0.169 [1] ✔
T4	260 - 240	7/8	5.55	2.68	147.2	0.6013	1654.39	27059.40	0.061 [1] ✔
T5	240 - 220	7/8	5.55	2.68	147.2	0.6013	2738.10	27059.40	0.101 [1] ✔
T6	220 - 200	1	5.55	2.67	128.3	0.7854	3938.60	35342.90	0.111 [1] ✔
T7	200 - 180	1	5.55	2.66	127.7	0.7854	4368.41	35342.90	0.124 [1] ✔
T8	180 - 160	1	5.55	2.66	127.7	0.7854	3337.52	35342.90	0.094 [1] ✔
T9	160 - 140	1	5.55	2.65	127.2	0.7854	4810.39	35342.90	0.136 [1] ✔
T10	140 - 120	1	5.55	2.65	127.2	0.7854	4070.94	35342.90	0.115 [1] ✔
T11	120 - 100	1	5.55	2.65	127.2	0.7854	3282.75	35342.90	0.093 [1] ✔
T12	100 - 80	1	5.55	2.65	127.2	0.7854	2648.19	35342.90	0.075 [1] ✔
T13	80 - 60	1	5.55	2.64	126.6	0.7854	5197.05	35342.90	0.147 [1] ✔
T14	60 - 40	7/8	5.55	2.64	144.7	0.6013	3357.85	27059.40	0.124 [1] ✔
T15	40 - 20	7/8	5.55	2.64	144.7	0.6013	3882.53	27059.40	0.143 [1] ✔
T16	20 - 5	7/8	5.54	2.63	144.4	0.6013	6640.97	27059.40	0.245 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	347 - 330	3/4	2.00	1.83	117.3	0.4418	19.98	19880.40	0.001 [1] ✔
L2	330 - 320	3/4	2.00	1.81	116.0	0.4418	609.46	19880.40	0.031 [1] ✔
T1	320 - 300	7/8	5.00	4.83	265.1	0.6013	819.24	27059.40	0.030 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	300 - 280	7/8	5.00	4.83	265.1	0.6013	125.81	27059.40	0.005 [1] ✔
T3	280 - 260	7/8	5.00	4.83	265.1	0.6013	818.59	27059.40	0.030 [1] ✔
T4	260 - 240	7/8	5.00	4.83	265.1	0.6013	686.80	27059.40	0.025 [1] ✔
T5	240 - 220	7/8	5.00	4.83	265.1	0.6013	252.49	27059.40	0.009 [1] ✔
T6	220 - 200	1	5.00	4.81	231.0	0.7854	585.66	35342.90	0.017 [1] ✔
T7	200 - 180	1	5.00	4.79	230.0	0.7854	1593.65	35342.90	0.045 [1] ✔
T8	180 - 160	1	5.00	4.79	230.0	0.7854	811.93	35342.90	0.023 [1] ✔
T9	160 - 140	1	5.00	4.77	229.0	0.7854	565.82	35342.90	0.016 [1] ✔
T10	140 - 120	1	5.00	4.77	229.0	0.7854	1775.53	35342.90	0.050 [1] ✔
T11	120 - 100	1	5.00	4.77	229.0	0.7854	678.60	35342.90	0.019 [1] ✔
T12	100 - 80	1	5.00	4.77	229.0	0.7854	420.02	35342.90	0.012 [1] ✔
T13	80 - 60	1	5.00	4.75	228.0	0.7854	489.74	35342.90	0.014 [1] ✔
T14	60 - 40	7/8	5.00	4.75	260.6	0.6013	447.02	27059.40	0.017 [1] ✔
T15	40 - 20	7/8	5.00	4.75	260.6	0.6013	411.87	27059.40	0.015 [1] ✔
T16	20 - 5	7/8	5.00	4.75	260.6	0.6013	458.89	27059.40	0.017 [1] ✔
T17	5 - 0	10x3/8	4.50	4.25	471.1	3.7500	20364.00	121500.00	0.168 [1] ✔

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	347 - 330	3/4	2.00	1.83	117.3	0.4418	721.68	19880.40	0.036 [1] ✔
T1	320 - 300	7/8	5.00	4.83	265.1	0.6013	187.33	27059.40	0.007 [1] ✔
T2	300 - 280	7/8	5.00	4.83	265.1	0.6013	716.06	27059.40	0.026 [1] ✔
T3	280 - 260	7/8	5.00	4.83	265.1	0.6013	5852.08	27059.40	0.216 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T4	260 - 240	7/8	5.00	4.83	265.1	0.6013	359.32	27059.40	0.013 [1] ✓
T5	240 - 220	7/8	5.00	4.83	265.1	0.6013	660.22	27059.40	0.024 [1] ✓
T6	220 - 200	1	5.00	4.81	231.0	0.7854	8514.62	35342.90	0.241 [1] ✓
T7	200 - 180	1	5.00	4.79	230.0	0.7854	846.36	35342.90	0.024 [1] ✓
T8	180 - 160	1	5.00	4.79	230.0	0.7854	663.47	35342.90	0.019 [1] ✓
T9	160 - 140	1	5.00	4.77	229.0	0.7854	7665.49	35342.90	0.217 [1] ✓
T10	140 - 120	1	5.00	4.77	229.0	0.7854	766.90	35342.90	0.022 [1] ✓
T11	120 - 100	1	5.00	4.77	229.0	0.7854	520.88	35342.90	0.015 [1] ✓
T12	100 - 80	1	5.00	4.77	229.0	0.7854	529.79	35342.90	0.015 [1] ✓
T13	80 - 60	1	5.00	4.75	228.0	0.7854	548.08	35342.90	0.016 [1] ✓
T14	60 - 40	7/8	5.00	4.75	260.6	0.6013	395.96	27059.40	0.015 [1] ✓
T15	40 - 20	7/8	5.00	4.75	260.6	0.6013	427.93	27059.40	0.016 [1] ✓
T16	20 - 5	7/8	5.00	4.75	260.6	0.6013	11070.80	27059.40	0.409 [1] ✓

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	347 - 330	Latticed Pole Leg	2	1	-16989.50	112404.00	15.1	Pass
L2	330 - 320	Latticed Pole Leg	2 1/4	52	-44824.00	149274.00	30.0	Pass
L1	347 - 330	Latticed Pole Diagonal	3/4	11	-6769.99	10974.30	61.7	Pass
L2	330 - 320	Latticed Pole Diagonal	3/4	59	-10277.00	11122.60	92.4	Pass
L1	347 - 330	Latticed Pole Top Girt	3/4	6	-30.57	7249.52	0.4	Pass
L2	330 - 320	Latticed Pole Top Girt	3/4	55	-496.69	7417.14	6.7	Pass
L1	347 - 330	Latticed Pole Bottom Girt	3/4	9	-804.98	7249.52	11.1	Pass
T1	320 - 300	Leg	2	82	-22234.30	109604.00	20.3	Pass
T2	300 - 280	Leg	2	140	-27580.90	109604.00	25.2	Pass
T3	280 - 260	Leg	2	197	-56563.20	110545.00	51.2	Pass
T4	260 - 240	Leg	2	254	-61392.80	110545.00	55.5	Pass
T5	240 - 220	Leg	2	311	-72877.10	110545.00	65.9	Pass
T6	220 - 200	Leg	2 1/4	369	-95208.60	147321.00	64.6	Pass
T7	200 - 180	Leg	2 1/2	426	-94211.00	188719.00	49.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T8	180 - 160	Leg	2 1/2	482	-64509.80	188719.00	34.2	Pass
T9	160 - 140	Leg	2 3/4	540	-89944.10	234675.00	38.3	Pass
T10	140 - 120	Leg	2 3/4	597	-89197.70	234675.00	38.0	Pass
T11	120 - 100	Leg	2 3/4	652	-87170.10	234675.00	37.1	Pass
T12	100 - 80	Leg	2 3/4	709	-90842.90	234675.00	38.7	Pass
T13	80 - 60	Leg	3	766	-98851.80	285147.00	34.7	Pass
T14	60 - 40	Leg	3	823	-101789.00	285147.00	35.7	Pass
T15	40 - 20	Leg	3	880	-102291.00	285147.00	35.9	Pass
T16	20 - 5	Leg	3	937	-101706.00	285860.00	35.6	Pass
T17	5 - 0	Leg	3	982	-115837.00	290668.00	39.9	Pass
T1	320 - 300	Diagonal	7/8	137	-2017.39	7684.78	26.3	Pass
T2	300 - 280	Diagonal	7/8	149	-3575.64	7684.78	46.5	Pass
T3	280 - 260	Diagonal	7/8	212	-4157.58	7735.40	53.7	Pass
T4	260 - 240	Diagonal	7/8	263	-1946.33	7735.40	25.2	Pass
T5	240 - 220	Diagonal	7/8	320	-3009.88	7735.40	38.9	Pass
T6	220 - 200	Diagonal	1	383	-3785.28	13310.70	28.4	Pass
T7	200 - 180	Diagonal	1	479	-4801.37	13426.70	35.8	Pass
T8	180 - 160	Diagonal	1	536	-3782.51	13426.70	28.2	Pass
T9	160 - 140	Diagonal	1	553	-4373.15	13544.30	32.3	Pass
T10	140 - 120	Diagonal	1	649	-4520.57	13544.30	33.4	Pass
T11	120 - 100	Diagonal	1	706	-3805.58	13544.30	28.1	Pass
T12	100 - 80	Diagonal	1	718	-3165.68	13544.30	23.4	Pass
T13	80 - 60	Diagonal	1	790	-4259.69	13663.30	31.2	Pass
T14	60 - 40	Diagonal	7/8	877	-3787.52	8009.20	47.3	Pass
T15	40 - 20	Diagonal	7/8	889	-4338.93	8009.20	54.2	Pass
T16	20 - 5	Diagonal	7/8	953	-4524.86	8044.01	56.3	Pass
T17	5 - 0	Horizontal	10x3/8	991	-845.56	11030.90	7.7	Pass
T1	320 - 300	Top Girt	7/8	86	-380.64	3943.57	9.7	Pass
T2	300 - 280	Top Girt	7/8	144	125.81	27059.40	0.5	Pass
T3	280 - 260	Top Girt	7/8	200	-552.00	3943.57	14.0	Pass
T4	260 - 240	Top Girt	7/8	256	686.80	27059.40	2.5	Pass
T5	240 - 220	Top Girt	7/8	313	252.49	27059.40	0.9	Pass
T6	220 - 200	Top Girt	1	370	-212.25	6785.94	3.1	Pass
T7	200 - 180	Top Girt	1	427	1593.65	35342.90	4.5	Pass
T8	180 - 160	Top Girt	1	484	-473.91	6845.07	6.9	Pass
T9	160 - 140	Top Girt	1	541	-201.73	6904.98	2.9	Pass
T10	140 - 120	Top Girt	1	598	1775.53	35342.90	5.0	Pass
T11	120 - 100	Top Girt	1	655	-165.52	6904.98	2.4	Pass
T12	100 - 80	Top Girt	1	712	420.02	35342.90	1.2	Pass
T13	80 - 60	Top Girt	1	769	489.74	35342.90	1.4	Pass
T14	60 - 40	Top Girt	7/8	826	447.02	27059.40	1.7	Pass
T15	40 - 20	Top Girt	7/8	883	411.87	27059.40	1.5	Pass
T16	20 - 5	Top Girt	7/8	940	458.89	27059.40	1.7	Pass
T17	5 - 0	Top Girt	10x3/8	985	20364.00	121500.00	16.8	Pass
T1	320 - 300	Bottom Girt	7/8	88	-99.35	3943.57	2.5	Pass
T2	300 - 280	Bottom Girt	7/8	147	-665.94	3943.57	16.9	Pass
T3	280 - 260	Bottom Girt	7/8	202	5852.08	27059.40	21.6	Pass
T4	260 - 240	Bottom Girt	7/8	259	-180.18	3943.57	4.6	Pass
T5	240 - 220	Bottom Girt	7/8	316	-516.90	3943.57	13.1	Pass
T6	220 - 200	Bottom Girt	1	373	8514.62	35342.90	24.1	Pass
T7	200 - 180	Bottom Girt	1	430	-397.12	6845.07	5.8	Pass
T8	180 - 160	Bottom Girt	1	487	-193.91	6845.07	2.8	Pass
T9	160 - 140	Bottom Girt	1	544	7665.49	35342.90	21.7	Pass
T10	140 - 120	Bottom Girt	1	601	-193.33	6904.98	2.8	Pass
T11	120 - 100	Bottom Girt	1	658	520.88	35342.90	1.5	Pass
T12	100 - 80	Bottom Girt	1	716	529.79	35342.90	1.5	Pass
T13	80 - 60	Bottom Girt	1	772	548.08	35342.90	1.6	Pass
T14	60 - 40	Bottom Girt	7/8	830	395.96	27059.40	1.5	Pass
T15	40 - 20	Bottom Girt	7/8	887	427.93	27059.40	1.6	Pass
T16	20 - 5	Bottom Girt	7/8	943	11070.80	27059.40	40.9	Pass
T17	5 - 0	Bottom Girt	10x3/8	988	-909.97	84439.60	31.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	320 - 300	Guy A@320	7/8	996	28850.30	47820.00	60.3	Pass
T3	280 - 260	Guy A@260.333	7/8	999	24209.90	47820.00	50.6	Pass
T6	220 - 200	Guy A@200.333	1	1002	30807.30	73200.00	42.1	Pass
T9	160 - 140	Guy A@140.333	1	1005	28692.60	73200.00	39.2	Pass
T13	80 - 60	Guy A@70	3/4	1008	12442.40	34980.00	35.6	Pass
T1	320 - 300	Guy B@320	7/8	995	28430.80	47820.00	59.5	Pass
T3	280 - 260	Guy B@260.333	7/8	998	23693.20	47820.00	49.5	Pass
T6	220 - 200	Guy B@200.333	1	1001	29785.80	73200.00	40.7	Pass
T9	160 - 140	Guy B@140.333	1	1004	27212.00	73200.00	37.2	Pass
T13	80 - 60	Guy B@70	3/4	1007	11665.10	34980.00	33.3	Pass
T1	320 - 300	Guy C@320	7/8	994	28798.90	47820.00	60.2	Pass
T3	280 - 260	Guy C@260.333	7/8	997	24092.00	47820.00	50.4	Pass
T6	220 - 200	Guy C@200.333	1	1000	30444.60	73200.00	41.6	Pass
T9	160 - 140	Guy C@140.333	1	1003	27907.20	73200.00	38.1	Pass
T13	80 - 60	Guy C@70	3/4	1006	11947.00	34980.00	34.2	Pass
							Summary	
							Latticed Pole Leg (L2) 30.0	Pass
							Latticed Pole Diagonal (L2) 92.4	Pass
							Latticed Pole Top Girt (L2) 6.7	Pass
							Latticed Pole Bottom Girt (L1) 11.1	Pass
							Leg (T5) 65.9	Pass
							Diagonal (T16) 56.3	Pass
							Horizontal (T17) 7.7	Pass
							Top Girt (T17) 16.8	Pass
							Bottom Girt (T16) 40.9	Pass
							Guy A (T1) 60.3	Pass
							Guy B (T1) 59.5	Pass
							Guy C (T1) 60.2	Pass
							Bolt Checks 36.2	Pass
							RATING = 92.4	**Pass**

Guyed Tower Foundation Analysis

PAD AND PIER BASE FOUNDATION

GUY SHAFT AND DEAD MAN ANCHOR BLOCKS

Site No:	CT1837S	**Fullerton Engineering Consultants, Inc.**	**Date:** 3/11/2019
Site Name:	Ledyard Colonel Ledyard Highway	1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 (847) 908-8400	
Prepared By:	VY		
Checked By:	AJR		

Pad and Pier Foundation at Tower Base

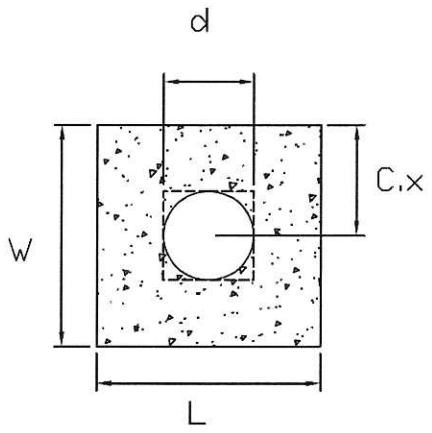
Factored Tower Reactions (based on Tnx calculations):

$P_{u\_base} := 296444 \cdot lbf$ — *Max. Axial Reaction*

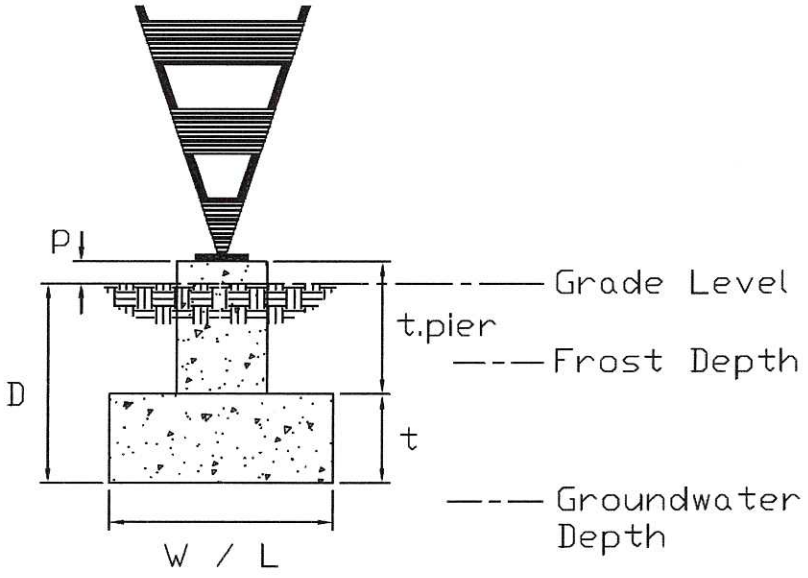
$V_{u\_base} := 3822 \cdot lbf$ — *Max. Shear Reaction*

$M_{u\_base} := 0 \cdot kip \cdot ft$ — *Max. Moment Reaction*

Foundation Dimensions and Properties:



Plan



Elevation

$W := 9.5 \cdot ft$ — *Width of pad*

$L := 9.5 \cdot ft$ — *Length of pad*

$d := 3.5 \cdot ft$ — *Diameter of pier*

$C_x := \min\left(\frac{W}{2}, \frac{L}{2}\right) = 4.75\ ft$ — *Minimum distance to center of gravity of tower from outer edge of pad foundation (based on foundation drawings)*

$p := 0.5 \cdot ft$ — *Projection of pier above grade*

$D := 5 \cdot ft$ — *Distance from top of grade to bottom of pad*

$t := 1.5 \cdot ft$ — *Thickness of pad*

$t_{pier} := D + p - t = 4\ ft$ — *Length of pier*

Pier_Type := (◉) "Circular" ( ) "Square"

$\gamma_{conc} := 150 \cdot pcf$ — *Unit weight of concrete*

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Checked By:	AJR		

Soil Properties based on Geotechnical Report and TIA Recommendations:

$\gamma_{soil} := 130 \cdot pcf$

$\gamma_{H20} := 62.4pcf$

$Bearing_{allowable} := 6 \cdot ksf$ *Allowable bearing pressure*

Bearing_Type :=
- ○ "Gross"
- ◉ "Net"

$SF_{Bearing} := 2$ *Minimum safety factor for allowable bearing for shallow foundation*

$Bearing_{Ult} := Bearing_{allowable} \cdot SF_{Bearing} = 12 \cdot ksf$ *Ultimate bearing pressure*

$\phi_{soil} := 34 \cdot deg$ *Angle of internal friction*

$\mu := 0.55$ *Coefficient of friction*

$H_{frost} := 3.5 \cdot ft$ *Frost depth*

$H_{water} := 8.5ft$ *Depth of ground water per Geotechnical Report*

$\phi_b := 0.6$ *Strength reduction factor for bearing of guyed masts*

$\phi_o := 0.75$ *Strength reduction factor for overturning*

$\phi_f := 0.75$ *Strength reduction factor for friction resistance*

$\phi_{lat} := 0.75$ *Strength reduction factor for lateral resistance*

$\phi_s := 0.75$ *Strength reduction factor for uplift resistance*

$A_{pad} := W \cdot L$ $A_{pad} = 90.25\ ft^2$ *Area of pad*

$A_{pier} := \begin{cases} \pi \frac{d^2}{4} & \text{if Pier\_Type = "Circular"} \\ d^2 & \text{if Pier\_Type = "Square"} \end{cases}$ $A_{pier} = 9.62\ ft^2$ *Area of pier*

$S := \frac{A_{pad} \cdot \min(W, L)}{6}$ $S = 142.9 \cdot ft^3$ *Section modulus of pad base*

$Wt_{pad} = 2.71 \cdot kip$ *Weight of concrete pad*

$Wt_{pier} = 1.4 \cdot kip$ *Weight of concrete pier*

$Wt_{soils} = 0 \cdot kip$ *Weight of soil is ignored if net bearing pressure is given*

$Wt_{total} := 1.2Wt_{pad} + 1.2Wt_{pier} + 1.2Wt_{soils}$ $Wt_{total} = 4.92 \cdot kip$ *Total factored weight of foundation*

$M_v := V_{u\_base} \cdot (D + p)$ $M_v = 21.02 \cdot kip \cdot ft$ *Moment due to shear*

Base Foundation Overturning Check:

$M_{OTM} := M_v + M_{u\_base}$ *Total Overturning Moment (Required strength)*

$M_{res} := (P_{u\_base} + Wt_{total}) \cdot C_x$ *Total Resisting Moment*

$\phi M_{res} := \phi_o \cdot M_{res}$ *Resisting moment (Ultimate strength)*

$\frac{M_{OTM}}{\phi M_{res}} = 0.0196$ *<1. OK*

OTMCheck = "Foundation is adequate for overturning moment"

Base foundation soil bearing check:

$R_u := \frac{(P_{u\_base} + Wt_{total})}{A_{pad}} + \frac{M_{OTM} + \left[P_{u\_base} \cdot \left(\frac{\min(L, W)}{2} - C_x\right)\right]}{S}$ $R_u = 3.49 \cdot ksf$ *Required bearing strength*

$\phi R_s := \phi_b \cdot Bearing_{Ult}$ $\phi R_s = 7.2 \cdot ksf$ *Ultimate bearing strength of soil based on soil properties*

$\frac{R_u}{\phi R_s} = 0.48$ *<1. OK*

BearingCheck = "Tower base foundation is adequate for bearing capacity of soil."

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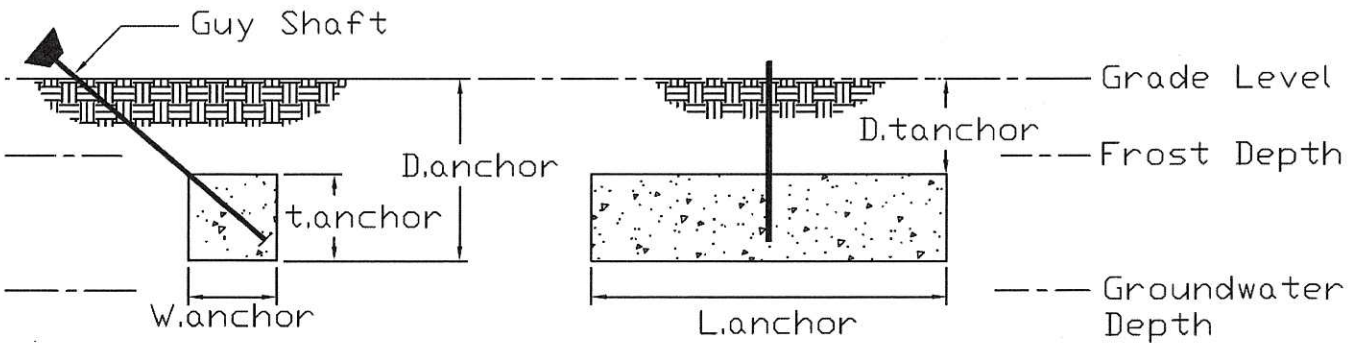
Guy Anchor Rod and Anchor Block Foundation Check



220 ft. Guy Anchorage Radius:

Anchor Block Foundation Dimensions and Properties:

$D_{anchor} := 8.5 \cdot ft$	*Depth to bottom of anchor block*
$W_{anchor} := 4 \cdot ft$	*Width of anchor block*
$t_{anchor} := 4 \cdot ft$	*Thickness of anchor block*
$L_{anchor} := 36 \cdot ft$	*Length of anchor block*

Factored Reactions (based on Tnx calculations):

$V := 81522 \cdot lbf$	*Max factored vertical reaction at this radius*
$H := 89434 \cdot lbf$	*Max factored horizontal reaction at this radius*
$T := 121034 \cdot lbf$	*Max factored tensile reaction at this radius*

Site No: CT1837S **Site Name:** Ledyard Colonel Ledyard Highway **Prepared By:** VY **Checked By:** AJR	**Fullerton Engineering Consultants, Inc.** 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 (847) 908-8400		**Date:** 3/11/2019

Soil Properties based on Geotechnical Report and TIA Recommendations:

Passive_Pressure_Listed_in_GeoReport := ◉ "Yes" ○ "No"

Passive_Pressure_per_GeoReport := ◉ "Allowable" ○ "Ultimate"

Soil_Type := ○ "Cohesive" ◉ "Sandy"

Note: "0" indicates value not listed in Geotechnical Report. This note does not apply to safety factors.

$\gamma_{soil} := 130 \cdot pcf$ *Unit weight of soil*

$H_{water} := 8.5 \cdot ft$ *Depth of ground water per Geotechnical Report*

$\mu := 0.55$ *Coefficient of friction*

$c := 0 \cdot psf$ *Cohesion.*

$\phi_{soil} := 34 \cdot deg$ *Angle of internal friction. "0" indicates value not listed in Geotech.Report*

$D := D_{anchor} - 0.5 \cdot t_{anchor} = 6.5\,ft$ *Distance from top of grade to center of anchor block*

$P_{P\_allow} := 150 \cdot psf$ *Allowable passive pressure per Geotechnical Report. "0" indicates value not listed in Geotech.Report*

$SF_{Pp} := 2$ *Safety factor for passive pressure*

$P_{ult} := 0 \cdot ksf$ *Ultimate passive pressure per Geotechnical Report. "0" indicates value not listed in Geotech.Report*

$$P_p := \begin{cases} P_{P\_allow} \cdot SF_{Pp} & \text{if Passive\_Pressure\_per\_GeoReport} = \text{"Allowable"} \\ P_{ult} & \text{if Passive\_Pressure\_per\_GeoReport} = \text{"Ultimate"} \end{cases}$$

$$K_p := \frac{1 + \sin(\phi_{soil})}{1 - \sin(\phi_{soil})}$$

$$P_p := \begin{cases} \text{if Soil\_Type} = \text{"Sandy"} \\ \quad \begin{cases} P_p & \text{if Passive\_Pressure\_Listed\_in\_GeoReport} = \text{"Yes"} \\ K_p \cdot \gamma_{soil} \cdot (D) \cdot SF_{Pp} & \text{if Passive\_Pressure\_Listed\_in\_GeoReport} = \text{"No"} \end{cases} \\ \text{if Soil\_Type} = \text{"Cohesive"} \\ \quad \begin{cases} P_p & \text{if Passive\_Pressure\_Listed\_in\_GeoReport} = \text{"Yes"} \\ \left[K_p \cdot \gamma_{soil} \cdot (D) + 2 \cdot c \cdot \sqrt{K_p}\right] \cdot SF_{Pp} & \text{if Passive\_Pressure\_Listed\_in\_GeoReport} = \text{"No"} \end{cases} \end{cases}$$

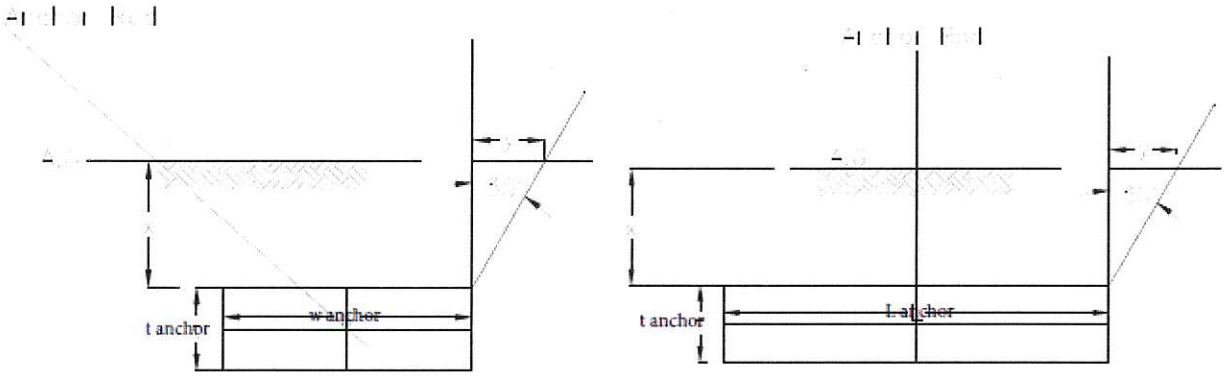
$P_u := P_p$ $\quad P_u = 0.3 \cdot ksf$ *Ultimate Passive Pressure*

Site No:	CT1837S	**Fullerton Engineering Consultants, Inc.**	**Date:** 3/11/2019
Site Name:	Ledyard Colonel Ledyard Highway	1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 (847) 908-8400	
Prepared By:	VY		
Checked By:	AJR		

Anchor Block Foundation Check:

$V_{conc} := W_{anchor} \cdot t_{anchor} \cdot L_{anchor}$ $\quad V_{conc} = 576 \cdot ft^3$ *Volume of concrete anchor block*

$Wt_{conc} := \begin{cases} 1.2 \cdot (V_{conc} \cdot \gamma_{conc}) & \text{if } H_{water} > D_{anchor} \\ 1.2 \cdot (V_{conc} \cdot \gamma_{conc\_sub}) & \text{otherwise} \end{cases}$ $\quad Wt_{conc} = 60.55 \cdot kip$ *Weight of anchor block*



Uplift Resistance Check:

$x := D_{anchor} - t_{anchor}$ $\quad x = 4.5\,ft$

$y := \tan(30°) \cdot x$ $\quad y = 2.6\,ft$

$A_{bottom} := (W_{anchor}) \cdot (L_{anchor})$ $\quad A_{bottom} = 144\,ft^2$ *Area of block foundation (soil pyramid lower base)*

$A_{top} := [2 \cdot y + (W_{anchor})] \cdot [2 \cdot y + (L_{anchor})]$ $\quad A_{top} = 378.85\,ft^2$ *Area of soil at ground level (soil pyramid upper base)*

$V_{cone} := \frac{x}{3} \cdot (A_{top} + A_{bottom} + \sqrt{A_{top} \cdot A_{bottom}})$ $\quad V_{cone} = 1134.62 \cdot ft^3$ *Total volume of soil pyramid*

$Wt_{soil} := 1.2 \cdot V_{cone} \cdot \gamma_{soil}$ $\quad Wt_{soil} = 177 \cdot kip$ *Factored weight of soil pyramid*

$Wt_{soil} := \begin{cases} 1.2 \cdot (V_{cone} \cdot \gamma_{soil}) & \text{if } H_{water} > x \\ 1.2 \cdot (V_{cone} \cdot \gamma_{soil\_sub}) & \text{otherwise} \end{cases}$ $\quad Wt_{soil} = 177 \cdot kip$ *Weight of concrete anchor block*

$U_{resistance} := 0.9 \cdot (Wt_{conc} + Wt_{soil})$ $\quad U_{resistance} = 213.79 \cdot kip$ *Nominal uplift resistance based on weight of concrete anchor block and soil pyramid*

$\phi U_{resistance} := \phi_s \cdot U_{resistance}$ $\quad \phi U_{resistance} = 160.35 \cdot kip$ *Ultimate uplift resistance based on weight of concrete anchor block and soil pyramid*

$U_{req} := V$ $\quad U_{req} = 81.52 \cdot kip$ *Required strength*

$\frac{U_{req}}{\phi U_{resistance}} = 0.51$ *<1. OK.*

UpliftCheck = "Uplift resistance is adequate."

Lateral Resistance Check:

$F_{friction} := 0.9 \cdot (Wt_{conc} + Wt_{soil}) \cdot \mu$ $\quad F_{friction} = 117.59 \cdot kip$ *Nominal friction resistance based on weight of concrete and soil*

$P_{front} := P_u \cdot (L_{anchor} \cdot t_{anchor})$ $\quad P_{front} = 43.2 \cdot kip$ *Nominal lateral resistance based on soil passive pressure*

$\phi P_{res} := \phi_{lat} \cdot P_{front} + \phi_f \cdot F_{friction}$ $\quad \phi P_{res} = 120.59 \cdot kip$ *Ultimate lateral resistance*

$P_{req} := H$ $\quad P_{req} = 89.43 \cdot kip$ *Required strength*

$\frac{H}{\phi P_{res}} = 0.74$ *<1 OK.*

LateralResistanceCheck = "Lateral Pressure resistance is adequate."

Attachment 3

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

Calculated Radio Frequency Exposure

CT1873

Ledyard Colonel Ledyard Highway

581 Colonel Ledyard Highway, Ledyard, CT 06339

March 22, 2019

Table of Contents

List of Tables

List of Figures

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed installation of AT&T antenna arrays to be mounted on the existing guyed tower located at 581 Colonel Ledyard Highway in Ledyard, CT. The coordinates of the tower are 41° 26' 2.58" N, 72° 0' 6.07" W.

AT&T is proposing the following:

1) Install nine (9) multi-band antennas (three per sector) to support its commercial LTE network and the FirstNet National Public Safety Broadband Network ("NPSBN").

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

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

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

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

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

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

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

[1] As referenced in the Fullerton Engineering Design construction drawings dated 2/25/2019.

3. RF Exposure Calculation Methods

The power density calculation results were generated using the following formula as outlined in FCC bulletin OET 65, and Connecticut Siting Council recommendations:

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

Where:

EIRP = Effective Isotropic Radiated Power = 1.64 x ERP

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

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

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

4. Calculation Results

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

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	% MPE
AT&T	173	716	1	1730	0.0022	0.4773	0.47%
AT&T	173	734	1	3794	0.0049	0.4893	1.00%
AT&T	173	758	1	3794	0.0049	0.5053	0.97%
AT&T	173	880	1	4066	0.0052	0.5867	0.89%
AT&T	173	1900	1	5743	0.0074	1.0000	0.74%
AT&T	173	2100	1	8614	0.0111	1.0000	1.11%
AT&T	173	2300	1	6153	0.0079	1.0000	0.79%
						Total	**5.98%**

Table 1: Proposed AT&T Information [2] [3] [4]

[2] The CSC power density database (12/12/2018) does not include information related to this existing facility. However, a search of the FCC database and other public resources identified active operators transmitting at this site. A preliminary analysis of the FCC licenses associated with this location for the Town of Ledyard and City of Groton results in only 0.03% MPE. No broadcast licenses were found to be associated with this location. Any dish antennas on the tower have been omitted due to limited information available and their highly directional antenna characteristics.

[3] In the case where antenna models are not uniform across all 3 sectors for the same frequency band, the antenna model with the highest gain was used for the calculations to present a worse-case scenario.

[4] Antenna height listed for AT&T is in reference to the Fullerton Engineering Design Construction Drawing dated 2/25/2019.

5. Conclusion

The above analysis verifies that RF exposure at ground level from the proposed site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using conservative calculation methods, the cumulative power density from the proposed AT&T transmit antennas is well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at ground level from AT&T's proposed installation is **5.98% of the FCC General Population/Uncontrolled limit**.

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

6. Statement of Certification

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

Keith Vellante

March 22, 2019
Date

Report Prepared By: Keith Vellante
Director of RF Services
C Squared Systems, LLC

Attachment A: References

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

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

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

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

(A) Limits for Occupational/Controlled Exposure[5]

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

(B) Limits for General Population/Uncontrolled Exposure[6]

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

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

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

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

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

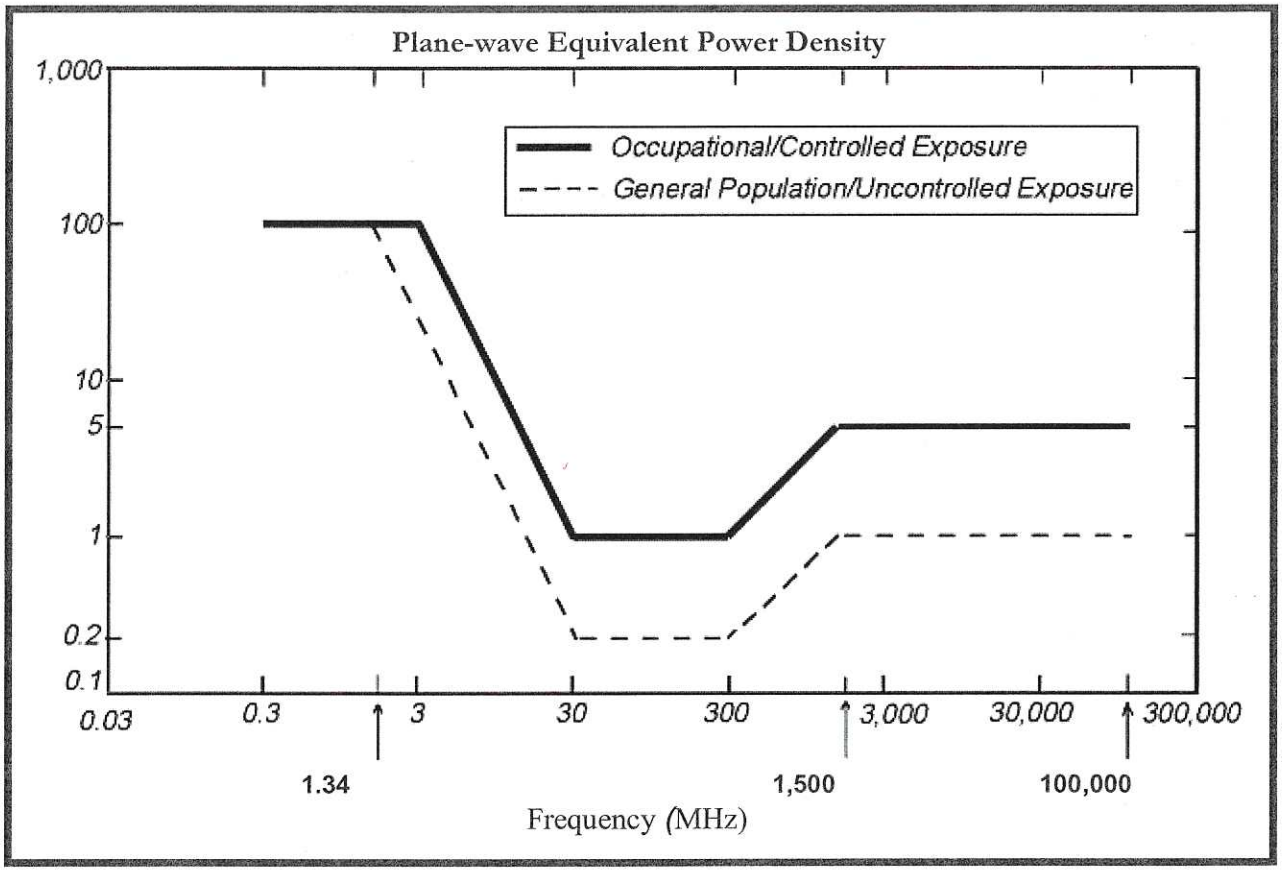
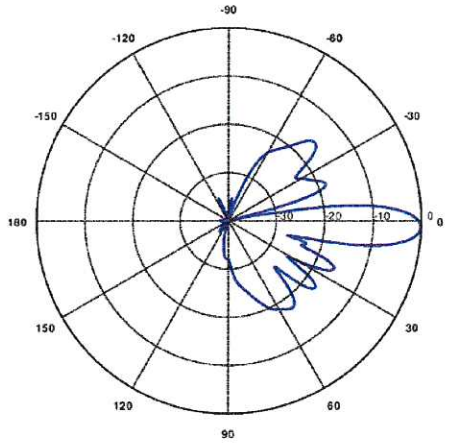


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

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

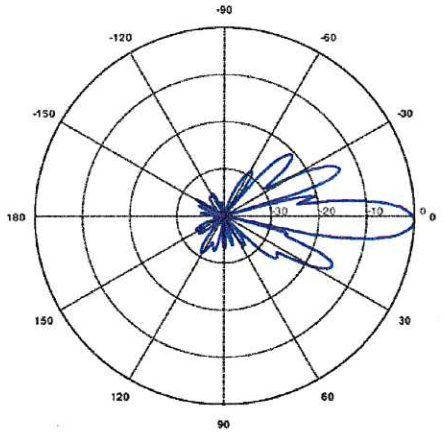
716 MHz

Manufacturer:	CCI
Model #:	HPA65R-BU8A
Frequency Band:	698-806 MHz
Gain:	15.5 dBi
Vertical Beamwidth:	9.7°
Horizontal Beamwidth:	67°
Polarization:	±45°
Dimensions (L x W x D):	96.0" x 11.7" x 7.6"



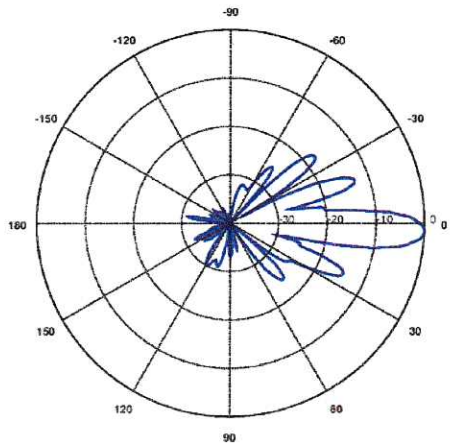
734/758 MHz

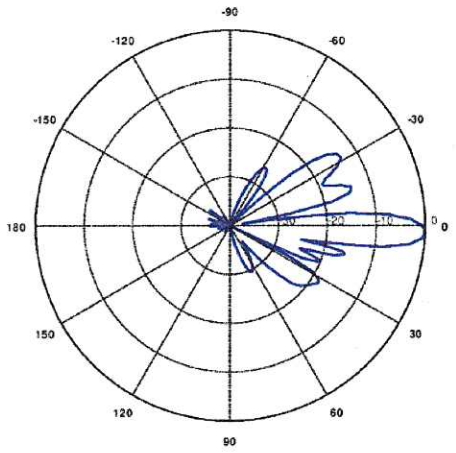
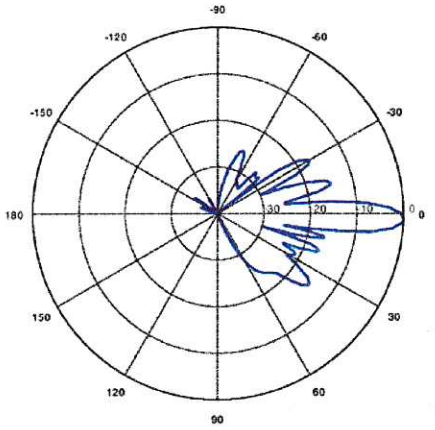
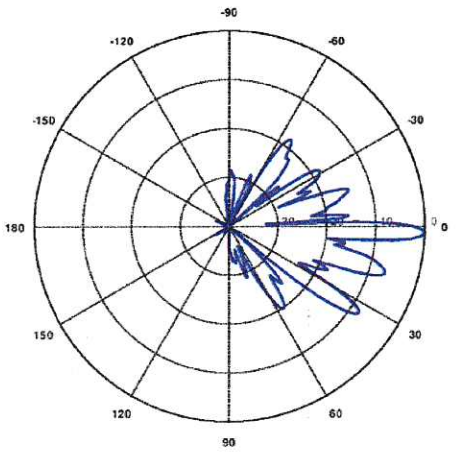
Manufacturer:	KMW
Model #:	EPBQ-654L8H8-L2
Frequency Band:	698-806 MHz
Gain:	15.9 dBi
Vertical Beamwidth:	9.3°
Horizontal Beamwidth:	67°
Polarization:	±45°
Dimensions (L x W x D):	96.0" x 21.0" x 6.3"



880 MHz

Manufacturer:	KMW
Model #:	EPBQ-654L8H8-L2
Frequency Band:	806-894 MHz
Gain:	16.2 dBi
Vertical Beamwidth:	8.7°
Horizontal Beamwidth:	66°
Polarization:	±45°
Dimensions (L x W x D):	96.0" x 21.0" x 6.3"



1900 MHz Manufacturer: KMW Model #: EPBQ-654L8H8-L2 Frequency Band: 1910-2180 MHz Gain: 17.7 dBi Vertical Beamwidth: 7.4° Horizontal Beamwidth: 60° Polarization: ±45° Dimensions (L x W x D): 96.0" x 21.0" x 6.3"	
2100 MHz Manufacturer: KMW Model #: EPBQ-654L8H8-L2 Frequency Band: 1910-2180 MHz Gain: 17.7 dBi Vertical Beamwidth: 7.4° Horizontal Beamwidth: 60° Polarization: ±45° Dimensions (L x W x D): 96.0" x 21.0" x 6.3"	
2300 MHz Manufacturer: CCI Model #: HPA65R-BU8A Frequency Band: 2300-2400 MHz Gain: 18.0 dBi Vertical Beamwidth: 4.0° Horizontal Beamwidth: 60° Polarization: ±45° Dimensions (L x W x D): 96.0" x 11.7" x 7.6"	

Attachment 4

Date: 3/18/19

Mind Reader Research, Inc.
758 Colonel Ledyard Highway
Ledyard, CT 06339
Attn: John J. Fuller

RE: **Letter of Authorization**
581 Colonel Ledyard Highway
Ledyard, CT 06339
AT&T Site Name: Ledyard-Colonel -Ledyard Hwy
AT&T Site No.: CT1837 / FA #: 12685510

Mind Reader Research, Inc. ("Property Owner") does hereby appoint **New Cingular Wireless PCS, LLC (AT&T)** ("Carrier") and its authorized contractors/agents including but not limited to **Smartlink, LLC** to act as "Applicant/Agent" for the purpose of preparing and filing any application or document necessary to ensure Carrier's ability to use the Property as a telecommunications facility. The Property Owner understands and agrees that this application may be denied, modified, or approved with conditions and that such conditions or modifications must be complied with prior to the issuance of building permits. It is understood by both Property Owner and Carrier that the authorization given herein does not constitute a commitment by the Property Owner to Carrier or otherwise convey right to the Property to Carrier, and that such conveyance shall only be accomplished by the execution of a further agreement by both parties.

By: _____

Printed Name: JOHN J. FULLER

Title: President

Date: April 24 - 2019

Smartlink, LLC
85 Rangeway Road, Building 3, Suite 102
Billerica, MA 01862