Northeast Site Solutions
Victoria Masse
420 Main St Unit 1 Box 2
Sturbridge, MA 01566
victoria@northeastsitesolutions.com

August 9, 2022

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Tower Share Application
126 Parker Road, East Haddam, CT 06423
Latitude: 41.46091000 N
Longitude: -72.39522000 W
Site#: CTHA346A

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of T-Mobile. T-Mobile plans to install antennas and related equipment to the tower site located at 126 Parker Road, East Haddam, Connecticut.

T-Mobile proposes to install nine (9) 600/700/1900/2100/2500 5G MHz antenna, six (6) RRUs and one (1) Dish at the 175-foot level of the existing 300-foot guyed tower, two (3) hybrid cable will also be installed. T-Mobile equipment cabinets will be placed within 10x20 lease area. Included are plans by Trylon, dated August 4, 2022, Exhibit C. Also included is a structural analysis prepared by Engineered Tower Solutions, dated June 17, 2022 confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. This facility was approved by the Connecticut Siting Council, Docket No. 76 on August 4, 1987. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of T-Mobile intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Irene M. Haines, First Selectman, James F. Ventres, Zoning Enforcement Officer, as well as the property owner and tower owner.

The planned modifications of the facility fall squarely within those activities explicitly provided for in R.C.S.A. 16-50j-89.

1. The proposed modifications will not result in an increase in the height of the existing structure. The top of the tower is 300-feet; T-Mobile proposed antennas will be located at a center line height of 175-feet.

2.The proposed modification will not result in the increase of the site boundary as depicted on the attached site plan.

3.The proposed modification will not increase the noise levels at the facility by six decibels or more, or to levels that exceed local and state criteria. The incremental effect of the proposed changes will be negligent.

4.The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total density of 7.35% as evidenced by Exhibit F.

Connecticut General Statutes 16-50-aa indicates that the Council must approve the shared use of a telecommunications facility provided it finds the shared use is technically, legally, environmentally, and economically feasible and meets public safety concerns. As demonstrated in this letter, T-Mobile respectfully indicates that the shared use of this facility satisfies these criteria.

A. Technical Feasibility. The existing monopole has been deemed structurally capable of supporting T-Mobile proposed loading. The structural analysis is included in Exhibit D.

B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this Guyed Tower in East Haddam. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit T-Mobile to obtain a building permit for the proposed installation. Further, a letter of Authorization is included as Exhibit G, authorizing T-Mobile to file this application for shared use.

C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of T-Mobile equipment at the 175-foot level of the existing 300-foot tower would have an insignificant visual impact on the area around the Guyed Tower. T-Mobile ground equipment would be installed within the existing facility compound. T-Mobile shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

D. Economic Feasibility. T-Mobile will be entering into an agreement with the owner of this facility to mutually agreeable terms. As previously mentioned, the Letter of Authorization has been provided by the owner to assist T-Mobile with this tower share application.

E. Public Safety Concerns. As discussed above, the tower is structurally capable of supporting T-Mobile proposed loading. T-Mobile is not aware of any public safety concerns relative to the proposed sharing of the existing tower. T-Mobile intentions of providing new and improved wireless service through the shared use of this facility is expected to enhance the safety and welfare of local residents and individuals traveling through East Haddam.

Sincerely,

Victoria Masse
Mobile: 860-306-2326
Fax: 413-521-0558
Office: 420 Main Street, Unit 1 Box 2, Sturbridge, MA 01566
Email: victoria@northeastsitesolutions.com

Attachments
Cc:
Irene M. Haines, First Selectman
East Haddam
Municipal Office Complex
1 Plains Road
P.O. Box 385
Moodus, CT 06469

James F. Ventres, Zoning Enforcement Officer
East Haddam
Municipal Office Complex
1 Plains Road
P.O. Box 385
Moodus, CT 06469

Bridget & Scott Erlandson, Property Owner
126 PARKER RD
EAST HADDAM, CT 06423

CTI Towers Assets II LLC, Tower Owners
3300 Paramount Pkwy. Ste 110
Morrisville, NC 27560

Exhibit A

ORIGINAL

DOCKET NO. 76

AN APPLICATION OF CENTURY CABLE MANAGEMENT CORPORATION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE CONSTRUCTION OF A COMMUNITY ANTENNA TELEVISION TOWER IN THE TOWN OF EAST HADDAM, CONNECTICUT.

CONNECTICUT SITING COUNCIL

August 4, 1987

DECISION AND ORDER

Pursuant to the foregoing opinion, the Connecticut Siting Council (Council) hereby directs that a Certificate of Environmental Compatibility and Public Need, as provided by Section 16-50k of the General Statutes of Connecticut (CGS), be issued to Century Cable Management Corporation (Century) for the construction, operation, and maintenance of a community antenna television (CATV) head-end site in the Town of East Haddam, Connecticut.

The facility shall be constructed, operated, and maintained as specified in the Council's record on this matter, subject to the following conditions.

1. The tower shall be no higher than necessary to provide the proposed service, and in no event shall exceed 300 feet.
2. The certificate holder shall notify the Council, in advance, of any plans to add equipment to the tower other than that described in the Council's findings of fact on this matter, even if, in the certificate holder's opinion, no Council action is required.
3. The facility shall be constructed in accordance with all applicable federal, State, and municipal laws and regulations.
4. The certificate holder shall submit a development and management (D&M) plan pursuant to sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies.
5. The certificate holder shall submit a copy of a draft D&M plan to the Office of the State Historic Preservation Officer for review and comment prior to submittal to the Council. The certificate holder shall provide the Council a copy of the comments of the State Historic Preservation Officer at the time it submits the D&M plan.
6. The position of the tower shall be as specified in the D&M plan approved by the Council.

7. At any time this facility permanently ceases to provide CATV service, this Decision and Order shall be void, and all equipment in the application shall be dismantled or removed, or reapplication for such use shall be made before any such new use is made.

8. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the issuance of this Decision and Order, or within three years of the completion of any appeal taken in this Decision.

Pursuant to CGS Section 16-50p, we hereby direct that a copy of the Decision and Order be served on each person listed below. A notice of the issuance of this decision shall be published in the Middletown Press.

The parties to the proceeding are:

Century Cable Management Corporation (Applicant)
1 Hilltop Road
Norwich, Connecticut

Milton L. Jacobson (Its Attorney)
Attorney at Law
Brown, Jacobson, Jewett and
Laudone, P.C.
22 Courthouse Square
Norwich, Connecticut 06360

Raymond Condon
159 Sheepskin Hollow Road
East Haddam, Connecticut 06423 (SERVICE WAIVED)

C E R T I F I C A T I O N

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case or read the record thereof, and that we voted as follows:

Dated at New Britain, Connecticut, the 4th day of August, 1987.

Council Members	Vote Cast
Gloria Dibble Pond Gloria Dibble Pond Chairperson	Yes
Patricia J. Austin Commissioner Peter Boucher Designee: Patricia J. Austin	Yes
Brian J. Emerick Commissioner Leslie Carothers Designee: Brian Emerick	Yes
Owen L. Clark Owen L. Clark	Yes
Fred J. Doocy Fred J. Doocy	Yes
Mortimer A. Gelston Mortimer A. Gelston	Abstain
James G. Horsfall	Absent
William H. Smith	Absent
Colin C. Tait Colin C. Tait	No

0146E-5

STATE OF CONNECTICUT)
: ss. New Britain, August 5, 1987
COUNTY OF HARTFORD)

I hereby certify that the foregoing is a true and correct copy of the decision and order issued by the Connecticut Siting Council, State of Connecticut.

ATTEST:

John C. Kelly
Executive Director
Connecticut Siting Council

I certify that a copy of the opinion and decision and order have been forwarded by mail to all parties of record on August 5, 1987.

ATTEST:

Robert K. Erling
Siting Analyst
Connecticut Siting Council

0146E-4

Exhibit B

126 PARKER RD

Location	126 PARKER RD	**Mblu**	M29/ / L020/ /
Acct#	00094600	**Owner**	ERLANDSON BRIDGET & SCOTT
Assessment	$384,200	**Appraisal**	$562,960
PID	1113	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$433,200	$129,760	$562,960

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$303,240	$80,960	$384,200

Owner of Record

Owner	ERLANDSON BRIDGET & SCOTT	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	126 PARKER RD EAST HADDAM, CT 06423	**Book & Page**	960/ 164
		Sale Date	03/31/2014
		Instrument	28

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
ERLANDSON BRIDGET & SCOTT	$0		960/ 164	28	03/31/2014
ERLANDSON BRIDGET & SCOTT	$0		960/ 161	28	03/31/2014
DEAN PETER W & ERLANDSON BRIDGET	$0		960/ 159	00	03/31/2014
DEAN PETER W & ERLANDSON BRIDGET	$0		927/ 069	00	12/10/2012
DEAN PETER W	$0		699/ 317	29	06/06/2005

Building Information

Building 1 : Section 1

Building Photo

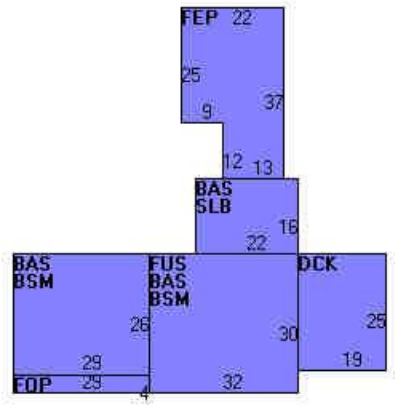
Year Built: 1790
Living Area: 3,026
Replacement Cost: $467,977
Building Percent Good: 64
Replacement Cost Less Depreciation: $299,500

Building Attributes	
Field	**Description**
Style	Colonial
Model	Residential
Grade:	A-
Stories	2.00
Occupancy	1
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Arch Shingles
Interior Wall 1	Drywall
Interior Wall 2	Plaster
Interior Flr 1	Pine/Soft Wood
Interior Flr 2	
Heat Fuel	Oil
Heat Type	Forced Hot Air
AC Type	None
Bedrooms	4 Bedrooms
Full Baths	2
Half Baths	1
Extra Fixtures	0
Total Rooms	12
Bath Style	Average
Kitchen Style	Average
Fireplace(s)	1
Extra Openings	2
Gas Fireplace(s)	0
Bsmt Garage(s)	0
Foundation	Stone/Brick
Fin Bsmnt	0
FBM Quality	
Int Vs Ext	Same

Building Photo

(http://images.vgsi.com/photos/EastHaddamCTPhotos//\00\00\57/27.jpg)

Building Layout



(http://images.vgsi.com/photos/EastHaddamCTPhotos//Sketches/1113_111

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	2,066	2,066
FUS	Finished Upper Story	960	960
BSM	Basement	1,714	0
DCK	Deck	475	0
FEP	Finished Enclosed Porch	706	0
FOP	Open Porch	116	0
SLB	Slab	352	0
		6,389	3,026

Extra Features

Extra Features	Legend

No Data for Extra Features

Land

Land Use

Use Code	101
Description	Res Dwelling
Zone	R2
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	5
Frontage	
Depth	
Assessed Value	$80,960
Appraised Value	$129,760

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FGR1	Garage			540 S.F.	$6,800	1
BRN1	1 Story Barn			840 S.F.	$7,600	1
SHD1	Shed			224 S.F.	$1,500	1
SPL1	Inground Pool - Typical			800 S.F.	$14,800	1
BRN3	1S Barn W/Loft			1120 S.F.	$12,300	1
BRN8	Pole Barn			8400 S.F.	$90,700	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$433,200	$129,760	$562,960
2017	$433,200	$129,760	$562,960
2016	$318,100	$138,750	$456,850

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$303,240	$80,960	$384,200
2017	$303,240	$80,960	$384,200
2016	$222,670	$87,260	$309,930

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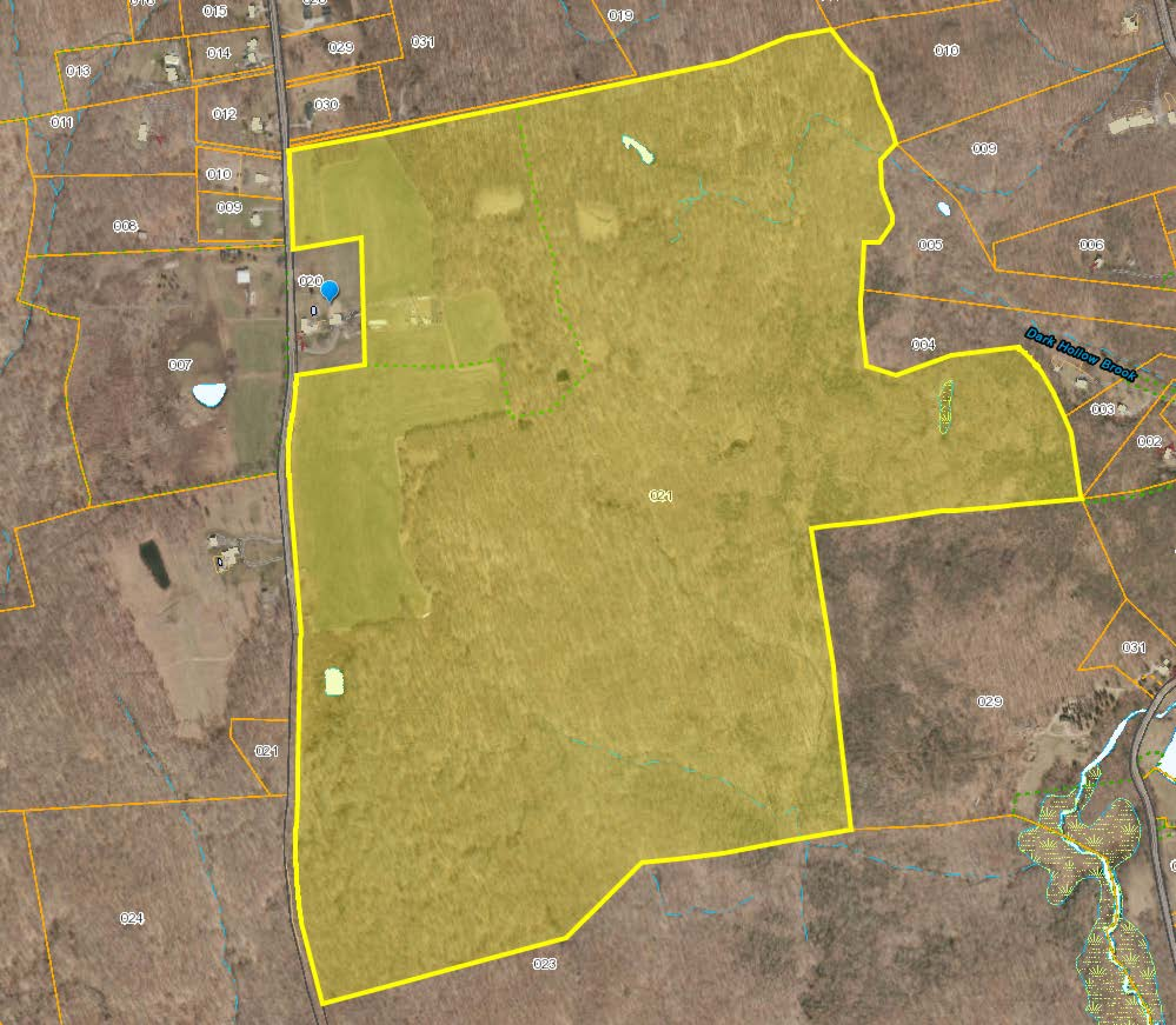
015
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Dark Hollow Brook
003
002
021
031
029
021
024
023

Exhibit C

T-MOBILE NORTHEAST LLC

UPGRADE:

COVERAGE STRATEGY

RAN TEMPLATE:

67E5D998E 6160

LOCATION MAP

SITE NAME:

CTI PARKER ROAD EAST HADDAM

SITE NUMBER:

CTHA346A

SITE ADDRESS:

126 PARKER ROAD
EAST HADDAM, CT 06423

PROJECT INFORMATION

SITE ADDRESS:	126 PARKER ROAD EAST HADDAM, CT 06423
COUNTY	MIDDLESEX
JURISDICTION:	COUNTY OF MIDDLESEX
LATITUDE:	41° 27' 39.3" N
LONGITUDE:	-72° 23' 42.8" W
PARCEL/APN #	TBD
ZONING	TBD
GROUND ELEVATION:	295 FT AMSL
TOWER TYPE:	GUYED TOWER
TOWER HEIGHT	300'-0"
PROPERTY OWNER:	TBD TBD TBD
APPLICANT:	T-MOBILE 35 GRIFFIN ROAD BLOOMFIELD, CT 06002
ENGINEER:	TRYLON TSF 1825 W. WALNUT HILL LANE, SUITE 302 IRVING, TX 75038
CONTACT: EMAIL:	MIKE MOORE MIKE.MOORE@TRYLON.COM
PROJECT MANAGER:	NORTHEAST SITE SOLUTIONS 420 MAIN STREET, BLDG 4 STURBRIDGE, MA 01566
CONTACT: EMAIL:	MIKE MOORE MIKE.MOORE@TRYLON.COM

APPLICABLE CODES/REFERENCE DOCUMENTS

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING	2015 IBC
MECHANICAL	2015 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	BY OTHERS
DATED:	
MOUNT ANALYSIS:	BY OTHERS
DATED:	
RFDS REVISION:	1
DATED:	02-28-2022

CALL CONNECTICUT ONE CALL
(800) 922-4455 CBYD.COM
CALL 2 WORKING DAYS
BEFORE YOU DIG!

GENERAL NOTES

OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PLUMBING REQUIREMENTS:	FACILITY HAS NO SANITARY OR POTABLE WATER.

SCOPE OF WORK

TOWER SCOPE:

- INSTALL (3) NEW VFA12-HD SECTOR FRAME MOUNTS
- INSTALL (3) NEW AIR 6419 B41 ANTENNAS (1) PER SECTOR
- INSTALL (3) NEW APXVAALL24_43-U-NA20 ANTENNAS (1) PER SECTOR
- INSTALL (3) NEW VV-65A-R1 ANTENNAS (1) PER SECTOR
- INSTALL (3) NEW 4480 B71+B85 RADIOS (1) PER SECTOR
- INSTALL (3) NEW 4460 B25+B66 RADIOS (1) PER SECTOR

GROUND SCOPE:

- INSTALL 10'-0"x20'-0" CONCRETE PAD
- INSTALL (1) NEW Enclosure 6160 AC V1 CABINET
- INSTALL (1) NEW B160 BATTERY CABINET
- INSTALL (1) NEW RBS 6601 CHASSIS
- INSTALL (2) NEW RP 6651 BASEBAND
- INSTALL (1) NEW DUG20 BASEBAND
- INSTALL (2) NEW PSU 4813 vR4A (Kit)
- INSTALL (1) NEW CSR IXRe V2 (Gen2)
- INSTALL (3) NEW Ericsson Hybrid Trunk 6/24 4AWG
- INSTALL (1) NEW H-FRAME
- INSTALL (1) GENERAC RD048 DIESEL GENERATOR
- INSTALL (1) AUTOMATIC TRANSFER SWITCH
- INSTALL (1) PPC

APPROVALS

T-MOBILE CONSTRUCTION MANAGER

T-MOBILE RF ENGINEER

LAND USE PLANNER

NETWORK OPERATION

PROPERTY OWNER

CONTRACTOR

SHEET INDEX

SHEET #	DESCRIPTION	REVISION #
T-1	TITLE SHEET	0
T-2	GENERAL NOTES	0
C-1.1	OVERALL SITE PLAN	0
C-1.2	SITE PLAN & EQUIPMENT PLAN	0
C-2	FINAL ELEVATION & ANTENNA PLANS	0
C-3	EQUIPMENT SPECS	0
C-4	EQUIPMENT SPECS	0
C-5	EQUIPMENT SPECS	0
C-6	EQUIPMENT SPECS	0
C-7	EQUIPMENT SPECS	0
E-1	AC PANEL SCHEDULES & ONE LINE DIAGRAM	0
G-1	ANTENNA GROUNDING DIAGRAM	0
G-2	GROUNDING DETAILS	0
G-3	GROUNDING DETAILS	0

T-Mobile
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

NORTHEAST SITE SOLUTIONS
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
203-275-6669

Trylon
Speed, Quality, Credibility
1825 W. WALNUT HILL LANE, SUITE 120
IRVING, TEXAS 75038

T-MOBILE SITE NUMBER:
CTHA346A

126 PARKER ROAD
EAST HADDAM, CT 06423

EXISTING 300'-0" GUYED TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	07/29/2022	RC	PRELIMINARY	AMC
0	08/04/2022	CP	ISSUE FOR CONSTRUCTION	AMC

STATE OF CONNECTICUT
CLIFF ABERNATHY
No. 31022
8-4-22
LICENSED
PROFESSIONAL ENGINEER

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: T-1

REVISION: 0

GENERAL NOTES:

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.

2. THE ARCHITECT/ENGINEER HAS MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.

3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE CLIENT'S REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK.

5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS.

6. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S / VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.

7. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS DURING CONSTRUCTION.

8. THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT SECTIONS OF THE BASIC STATE BUILDING CODE, LATEST EDITION, AND ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT

9. THE CONTRACTOR SHALL NOTIFY THE CLIENT'S REPRESENTATIVE IN WRITING WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE CLIENT'S REPRESENTATIVE.

10. THE WORK SHALL CONFORM TO THE CODES AND STANDARDS OF THE FOLLOWING AGENCIES AS FURTHER CITED HEREIN:

    A. ASTM: AMERICAN SOCIETY FOR TESTING AND MATERIALS, AS PUBLISHED IN "COMPILATION OF ASTM STANDARDS BUILDING CODES" OR LATEST EDITION.

    B. AWS: AMERICAN WELDING SOCIETY INC. AS PUBLISHED IN "STANDARD D1.1–08, STRUCTURAL WELDING CODE" OR LATEST EDITION.

    C. AISC: AMERICAN INSTITUTE FOR STEEL CONSTRUCTION AS PUBLISHED IN "CODE FOR STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"; "SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS" (LATEST EDITION).

11. BOLTING:

    A. BOLTS SHALL BE CONFORMING TO ASTM A325 HIGH STRENGTH, HOT DIP GALVANIZED WITH ASTM A153 HEAVY HEX TYPE NUTS.

    B. BOLTS SHALL BE 3/4"ø MINIMUM (UNLESS OTHERWISE NOTED)

    C. ALL CONNECTIONS SHALL BE 2 BOLTS MINIMUM.

12. FABRICATION:

    A. FABRICATION OF STEEL SHALL CONFORM TO THE AISC AND AWS STANDARDS AND CODES (LATEST EDITION).

    B. ALL STRUCTURAL STEEL SHALL BE HOT–DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 (LAST EDITION), UNLESS OTHERWISE NOTED.

13. ERECTION OF STEEL:

    A. PROVIDE ALL ERECTION EQUIPMENT, BRACING, PLANKING, FIELD BOLTS, NUTS, WASHERS, DRIFT PINS, AND SIMILAR MATERIALS WHICH DO NOT FORM A PART OF THE COMPLETED CONSTRUCTION BUT ARE NECESSARY FOR ITS PROPER ERECTION. ERECT AND ANCHOR ALL STRUCTURAL STEEL IN ACCORDANCE WITH AISC REFERENCE STANDARDS. ALL WORK SHALL BE ACCURATELY SET TO ESTABLISHED LINES AND ELEVATIONS AND RIGIDLY FASTENED IN PLACE WITH SUITABLE ATTACHMENTS TO THE CONSTRUCTION OF THE BUILDING.

    B. TEMPORARY BRACING, GUYING AND SUPPORT SHALL BE PROVIDED TO KEEP THE STRUCTURE SAFE AND ALIGNED AT ALL TIMES DURING CONSTRUCTION, AND TO PREVENT DANGER TO PERSONS AND PROPERTY. CHECK ALL TEMPORARY LOADS AND STAY WITHIN SAFE CAPACITY OF ALL BUILDING COMPONENTS.

14. ANTENNA INSTALLATION:

    A. INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND CLIENT'S REPRESENTATIVE SPECIFICATIONS.

    B. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.

    C. INSTALL COAXIAL / FIBER CABLES AND TERMINATIONS BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTORS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS.

15. ANTENNA AND COAXIAL / FIBER CABLE GROUNDING:

    A. ALL EXTERIOR #6 GREEN GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED WITH ANDREWS CONNECTOR/SPLICE WEATHERPROOFING KIT TYPE #221213 OR EQUAL.

    B. ALL COAXIAL / FIBER CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL / FIBER CABLE (NOT WITHIN BENDS).

16. RELATED WORK, FURNISH THE FOLLOWING WORK AS SPECIFIED UNDER CONSTRUCTION DOCUMENTS, BUT COORDINATE WITH OTHER TRADES PRIOR TO BID:

    A. FLASHING OF OPENING INTO OUTSIDE WALLS

    B. SEALING AND CAULKING ALL OPENINGS

    C. PAINTING

    D. CUTTING AND PATCHING

17. REQUIREMENTS OF REGULATORY AGENCIES:

    A. FURNISH U.L. LISTED EQUIPMENT WHERE SUCH LABEL IS AVAILABLE. INSTALL IN CONFORMANCE WITH U.L. STANDARDS WHERE APPLICABLE.

    B. INSTALL ANTENNA, ANTENNA CABLES, GROUNDING SYSTEM IN ACCORDANCE WITH DRAWINGS AND SPECIFICATION IN EFFECT AT PROJECT LOCATION AND RECOMMENDATIONS OF STATE AND LOCAL BUILDING CODES, AND SPECIAL CODES HAVING JURISDICTION OVER SPECIFIC PORTIONS OF WORK. THIS WORK INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:

    C. TIA–EIA – 222 (LATEST EDITION). STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES.

    D. FAA – FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR AC 70/7460–IH, OBSTRUCTION MARKING AND LIGHTING.

    E. FCC – FEDERAL COMMUNICATIONS COMMISSION RULES AND REGULATIONS FORM 715, OBSTRUCTION MARKING AND LIGHTING SPECIFICATION FOR ANTENNA STRUCTURES AND FORM 715A, HIGH INTENSITY OBSTRUCTION LIGHTING SPECIFICATIONS FOR ANTENNA STRUCTURES.

    F. AISC – AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS (LATEST EDITION).

    G. NEC – NATIONAL ELECTRICAL CODE – ON TOWER LIGHTING KITS.

    H. UL – UNDERWRITER'S LABORATORIES APPROVED ELECTRICAL PRODUCTS.

    I. IN ALL CASES, PART 77 OF THE FAA RULES AND PARTS 17 AND 22 OF THE FCC RULES ARE APPLICABLE AND IN THE EVENT OF CONFLICT, SUPERSEDE ANY OTHER STANDARDS OR SPECIFICATIONS.

18. J. 2009 LIFE SAFETY CODE NFPA – 101.

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

NORTHEAST SITE SOLUTIONS
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
203-275-6669

Trylon
Speed, Quality, Credibility
1825 W. WALNUT HILL LANE, SUITE 120
IRVING, TEXAS 75038

T-MOBILE SITE NUMBER:
CTHA346A

126 PARKER ROAD
EAST HADDAM, CT 06423

EXISTING 300'-0" GUYED TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	07/29/2022	RC	PRELIMINARY	AMC
0	08/04/2022	CP	ISSUE FOR CONSTRUCTION	AMC

STATE OF CONNECTICUT
CLIFFORD ABERNATHY
No. 31022
8-4-22
LICENSED
PROFESSIONAL ENGINEER

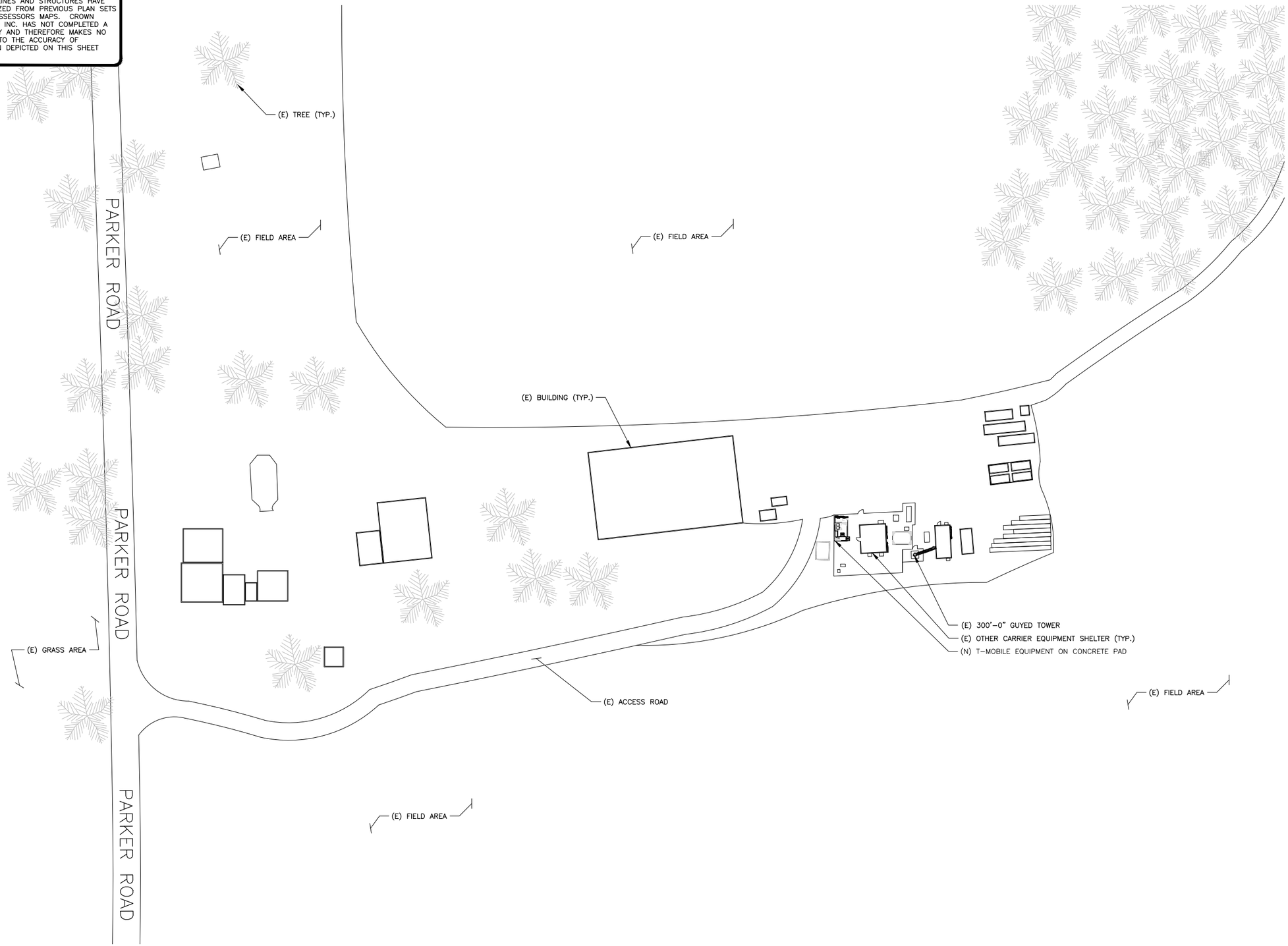
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: T-2

REVISION: 0

SITE PLAN DISCLAIMER:

PROPERTY LINES AND STRUCTURES HAVE BEEN DIGITIZED FROM PREVIOUS PLAN SETS OR FROM ASSESSORS MAPS. CROWN CASTLE USA INC. HAS NOT COMPLETED A SITE SURVEY AND THEREFORE MAKES NO CLAIMS AS TO THE ACCURACY OF INFORMATION DEPICTED ON THIS SHEET



1 OVERALL SITE PLAN
SCALE: 40' 20' 0 40' 1"=40'-0" (FULL SIZE) 1"=80'-0" (11x17)

N

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

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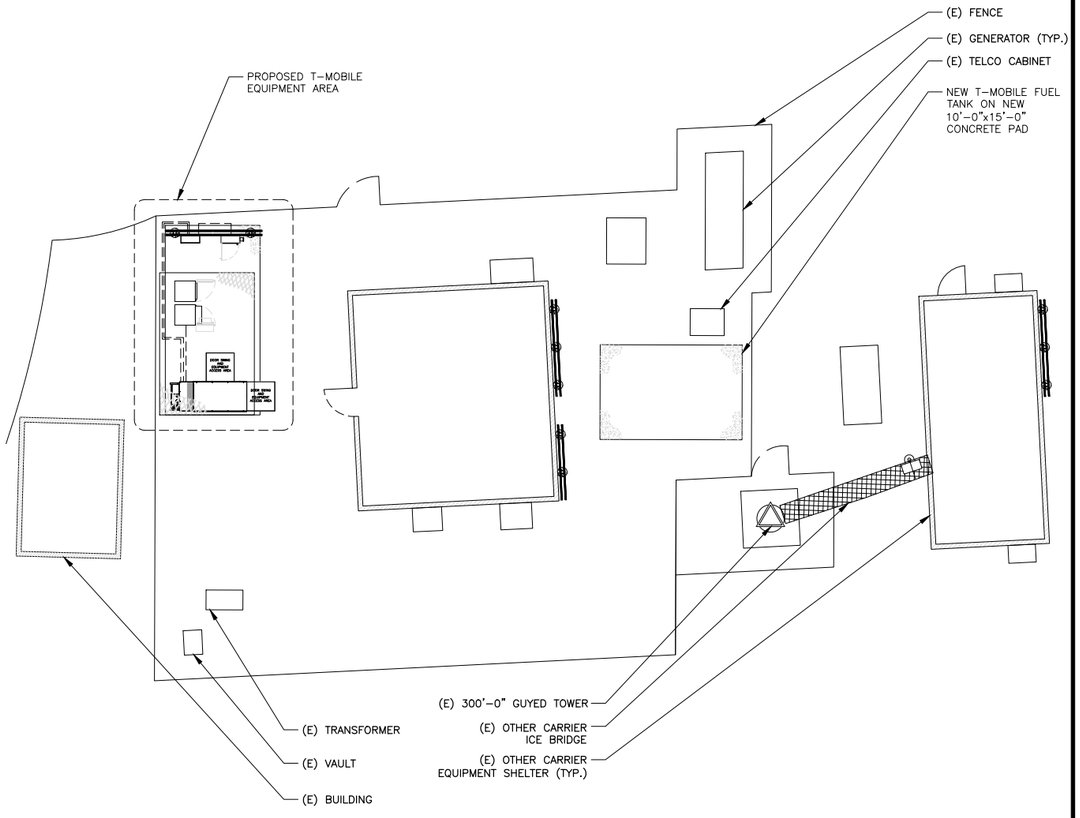
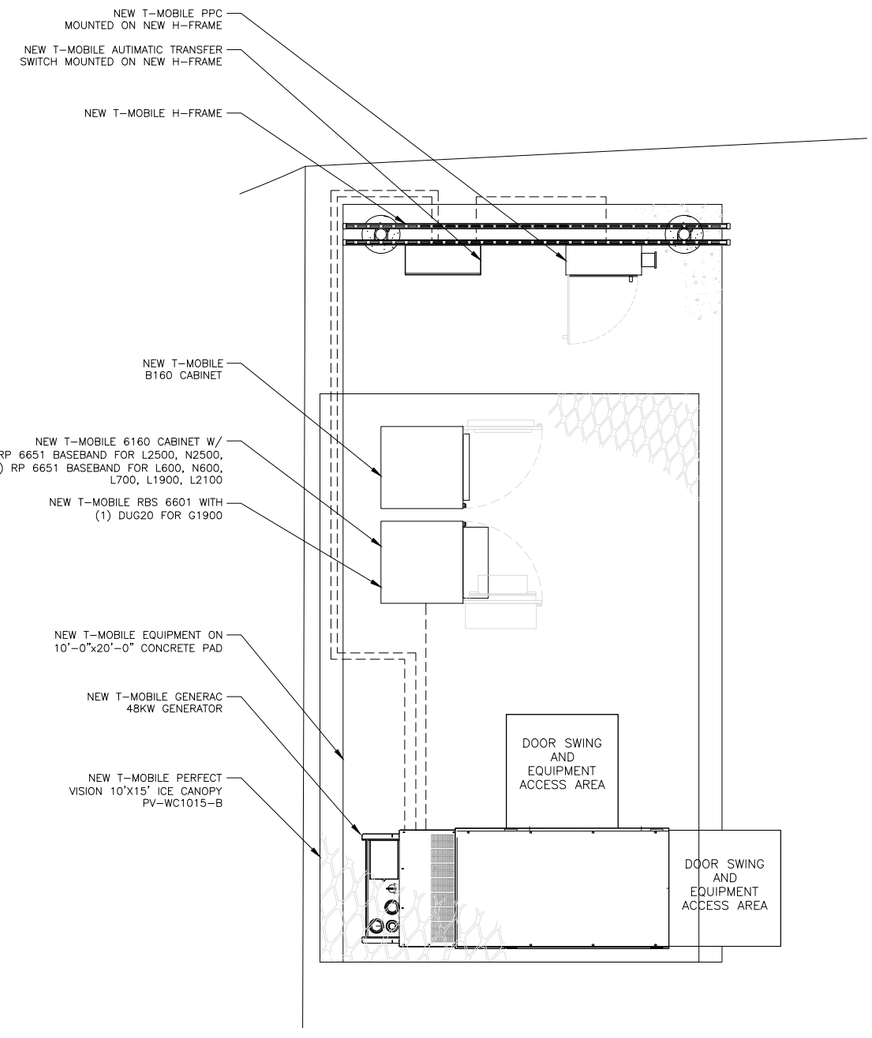
SHEET NUMBER: C-1.1

REVISION: 0



1 SITE PLAN
SCALE: 8' 6' 4' 2' 0 8' 1/8"=1'-0" (FULL SIZE) 1/16"=1'-0" (11x17)

N



2 EQUIPMENT PLAN
SCALE: 8' 6' 4' 2' 0 8' 1/8"=1'-0" (FULL SIZE) 1/16"=1'-0" (11x17)

N

T-Mobile
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

NORTHEAST SITE SOLUTIONS
420 MAIN STREET, BLDG 4
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Trylon
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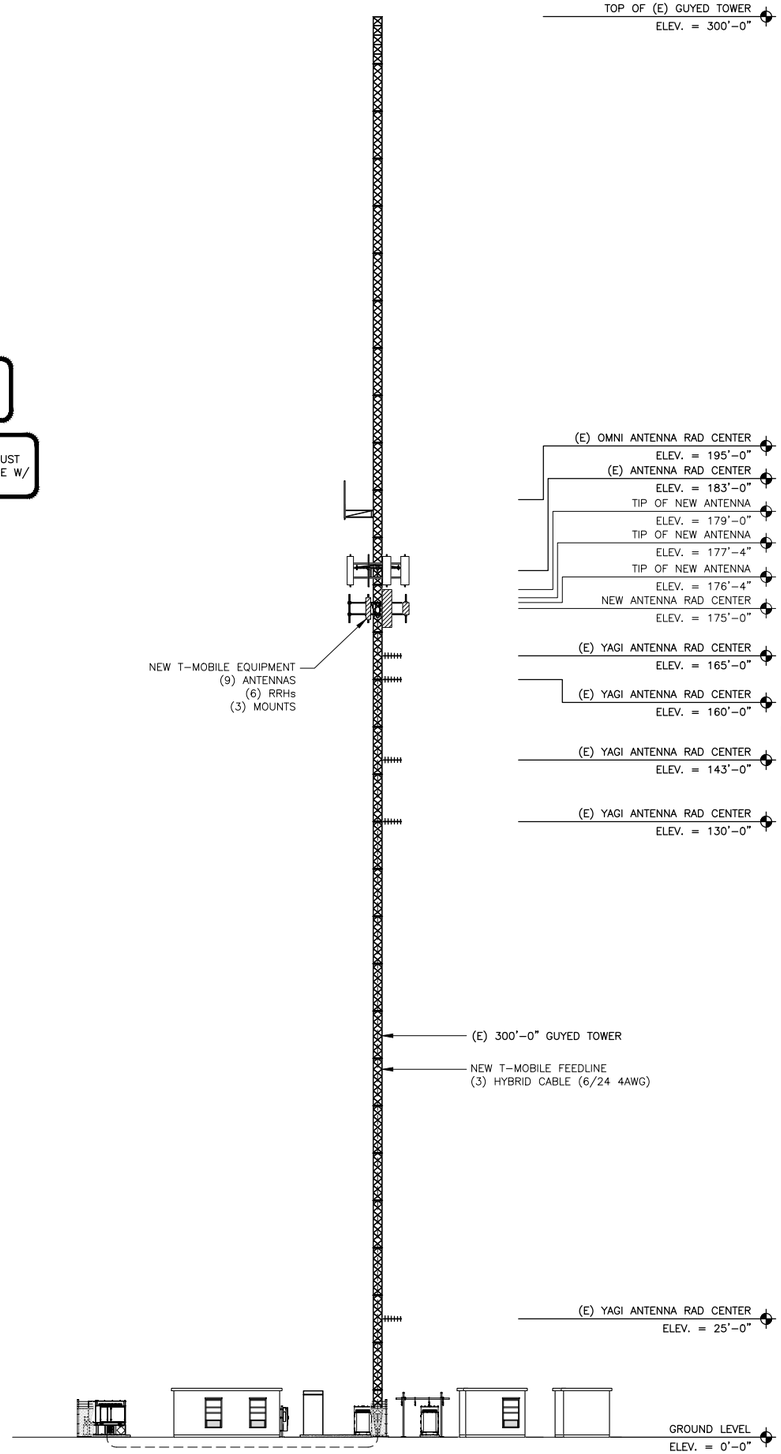
REVISION: 0

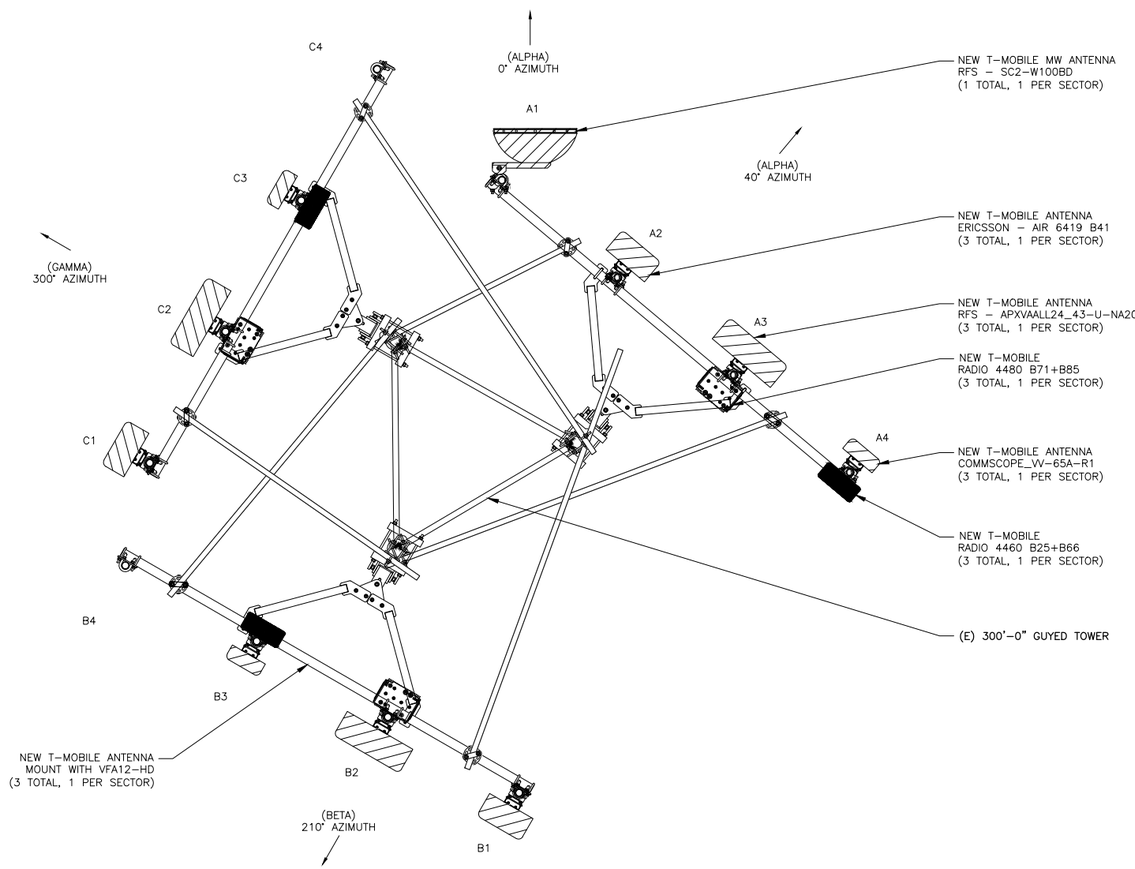
T–MOBILE EQUIPMENT

ANTENNA CL: 175'–0"
MOUNT CL: 175'–0"

ANY AND ALL TOWER MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ EXISTING SAFETY CLIMB



1 FINAL ELEVATION
SCALE: NOT TO SCALE



2 FINAL ANTENNA LAYOUT
SCALE: NOT TO SCALE

N

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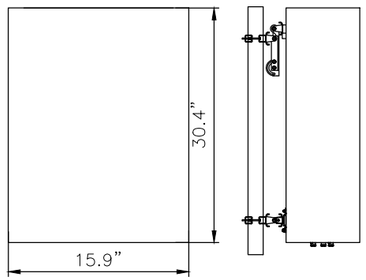
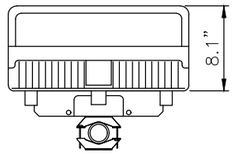
SHEET NUMBER: C-2

REVISION: 0

ERICSSON – AIR6419 B41	
RADOME MATERIAL	FIBERGLASS
RADOME COLOR	LIGHT GRAY
BAND	41
DIMENSIONS (HxWxD)	30.4"x15.9"x8.1"
WEIGHT W/O MOUNTING KIT	103 LBS.



FRONT VIEW SIDE VIEW

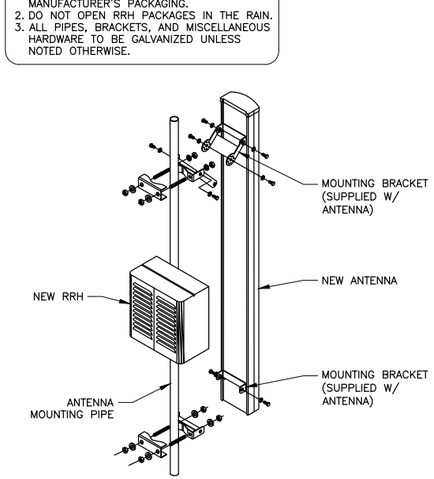


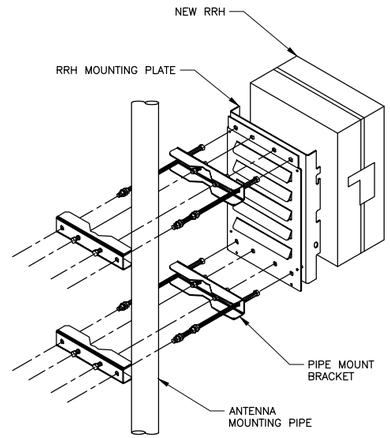
BOTTOM VIEW

1 AIR 6419 B41 ANTENNA DETAIL
SCALE: NOT TO SCALE

INSTALLER NOTES:

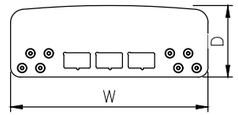
1. COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRHs RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING.
2. DO NOT OPEN RRH PACKAGES IN THE RAIN.
3. ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.



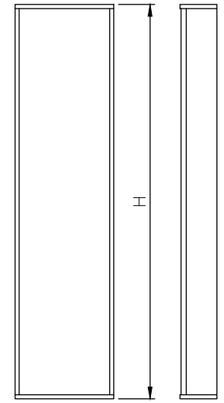


2 ANTENNA WITH RRH MOUNTING DETAIL
SCALE: NOT TO SCALE

RFS – APXVAALL24-43-U-NA20	
HEIGHT (H)	95.9"
WIDTH (W)	24"
DEPTH (D)	8.7"
WEIGHT (ANTENNA ONLY)	128 LBS
WEIGHT OF MOUNTING HARDWARE	25.3 LBS
SURVIVAL WIND SPEED:	150.0 MPH
CONNECTOR:	(8) 4.3–10 DIN FEMALE – BOTTOM
MOUNTING POLE:	2.36 – 4.72 INCHES



BOTTOM VIEW



FRONT VIEW SIDE VIEW

3 RFS APXVAALL24_43-U-NA20 ANTENNA DETAIL
SCALE: NOT TO SCALE

VV-65A-R1

4-port sector antenna, 4x 1695–2690 MHz, 65° HPBW, 1x RET, The two high band arrays utilize a common tilt.

- The RET interface comprises one pair of AISG input/output ports

General Specifications

Antenna Type	Sector
Band	Single band
Color	Light gray
Grounding Type	RF connector inner conductor and body grounded to reflector and mounting brackets
Performance Note	Outdoor usage
Radome Material	PVC, UV resistant
Reflector Material	Aluminum
RF Connector Interface	4.3-10 Female
RF Connector Location	Bottom
RF Connector Quantity, high band	4
RF Connector Quantity, total	4

Remote Electrical Tilt (RET) Information

RET Hardware	CommRET v2
RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	1 female | 1 male
Input Voltage	10–30 Vdc
Internal RET	High band (1)
Power Consumption, idle state, maximum	2 W
Power Consumption, normal conditions, maximum	10 W
Protocol	3GPP/AISG 2.0

Dimensions

Width	307 mm | 12.087 in
Depth	118 mm | 4.646 in
Length	1390 mm | 54.724 in

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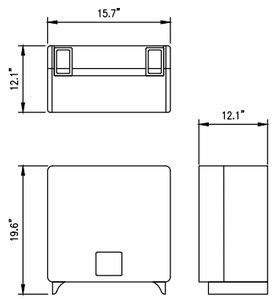
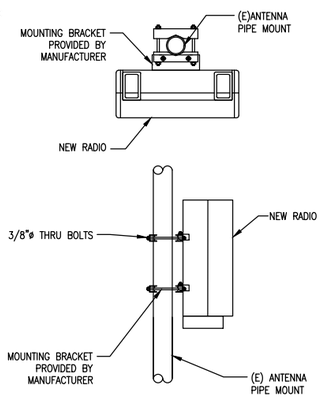
COMMSCOPE®

4 COMMSCOPE VV-65A-R1
SCALE: NOT TO SCALE

ERICSSON RADIO 4460

DIMENSIONS, WxDxH:	15.7"x12.1"x19.6"
TOTAL WEIGHT:	109 lbs
TEMPERATURE:	–40° TO 55° C

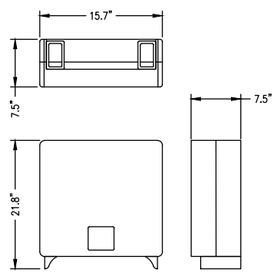


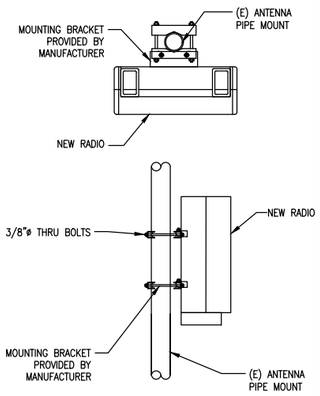


5 ERICSSON RRUS 4460 B25+B66 DETAIL
SCALE: NOT TO SCALE

ERICSSON RADIO 4480 B71+B85

DIMENSIONS, WxDxH:	15.2"x7.5"x19.2"
TOTAL WEIGHT:	92.5 lbs
TEMPERATURE:	–40° TO 55° C





6 ERICSSON RRUS 4480 B71+B85 DETAIL
SCALE: NOT TO SCALE

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35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

NORTHEAST SITE SOLUTIONS
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
203-275-6669

Trylon
Speed, Quality, Credibility
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IRVING, TEXAS 75038

T-MOBILE SITE NUMBER:
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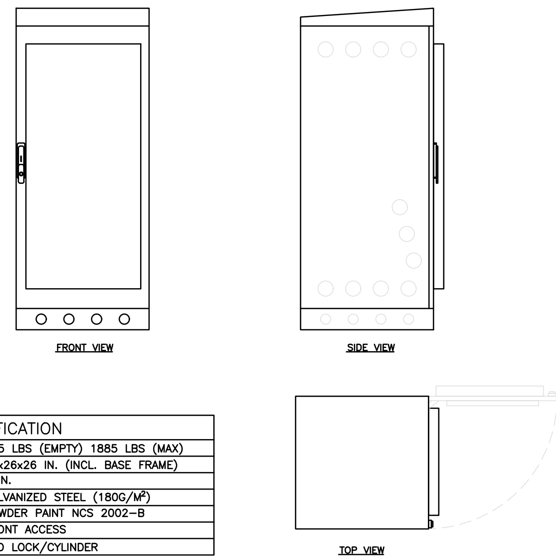
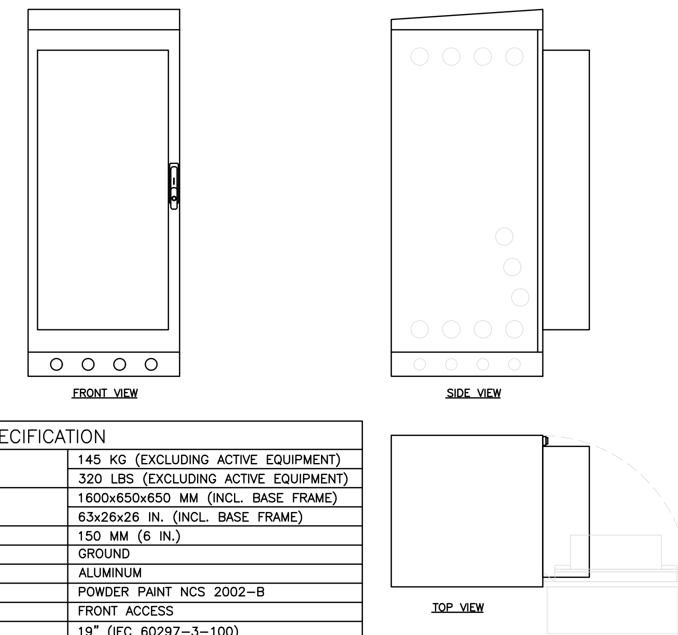
SHEET NUMBER: C-3

REVISION: 0



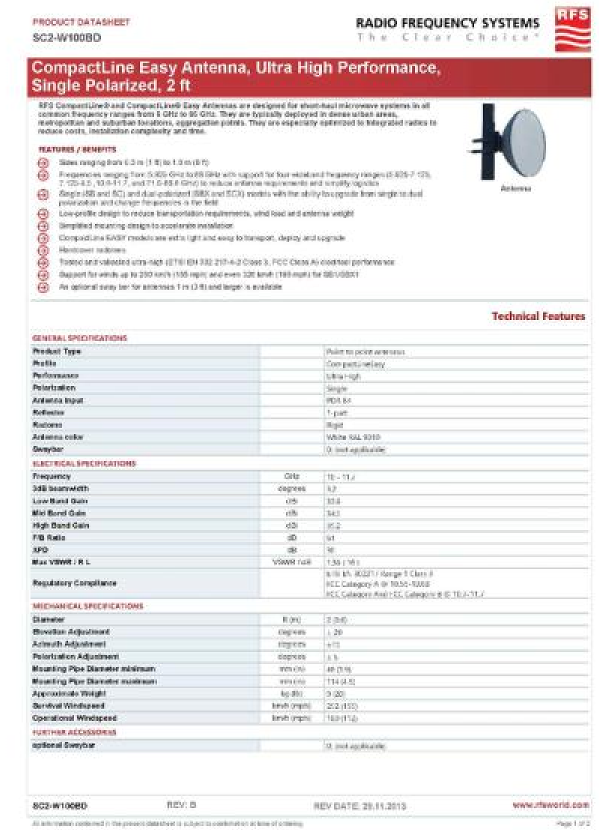
MECHANICAL SPECIFICATION	
WEIGHT	295 LBS (EMPTY) 1885 LBS (MAX)
DIMENSION	63x26x26 IN. (INCL. BASE FRAME)
BASE FRAME HEIGHT	6 IN.
MATERIAL	GALVANIZED STEEL (180G/M²)
COLOUR	POWDER PAINT NCS 2002–B
DOOR	FRONT ACCESS
LOCKING TYPE	PAD LOCK/CYLINDER

1 ERICSSON B160 CABINET DETAIL
SCALE: NOT TO SCALE

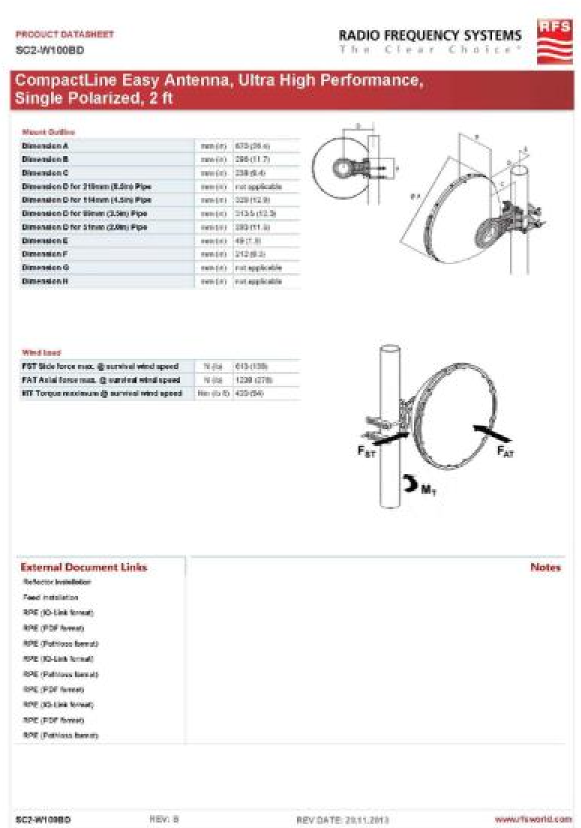


MECHANICAL SPECIFICATION	
	145 KG (EXCLUDING ACTIVE EQUIPMENT)
	320 LBS (EXCLUDING ACTIVE EQUIPMENT)
DIMENSION (HxWxD)	1600x650x650 MM (INCL. BASE FRAME)
	63x26x26 IN. (INCL. BASE FRAME)
BASE FRAME HEIGHT	150 MM (6 IN.)
MOUNTING POSITION	GROUND
ENCLOSURE MATERIAL	ALUMINUM
	POWDER PAINT NCS 2002–B
	FRONT ACCESS
RACK TYPE	19" (IEC 60297–3–100)
LOCKING TYPE	PAD LOCK OR CYLINDER

2 ERICSSON 6160 CABINET DETAIL
SCALE: NOT TO SCALE


PRODUCT DATASHEET
SC2-W100BD
RADIO FREQUENCY SYSTEMS
CompactLine Easy Antenna, Ultra High Performance, Single Polarized, 2 ft
Technical Features

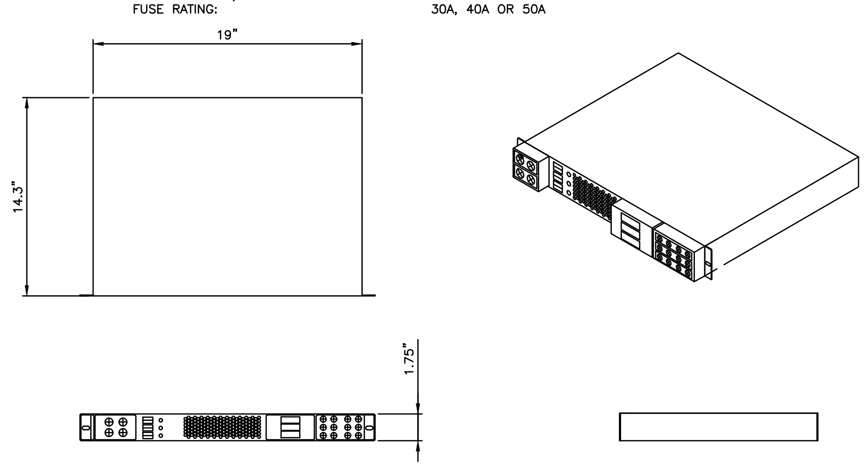
3 SC2–W100BD DISH ANTENNA DETAIL
SCALE: NOT TO SCALE


PRODUCT DATASHEET
SC2-W100BD
RADIO FREQUENCY SYSTEMS
CompactLine Easy Antenna, Ultra High Performance, Single Polarized, 2 ft
External Document Links
Notes

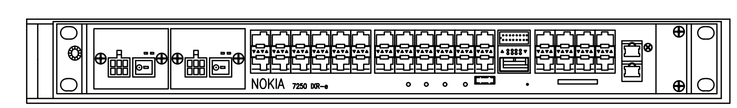
4 PSU 4813 VOLTAGE BOOSTER DETAIL
SCALE: NOT TO SCALE

PSU 4813 VOLTAGE BOOSTER

DIMENSIONS, WxDxH:	(19"x14.3"x1.7")
OPERATING TEMPERATURE:	–40 TO +60°C
INPUT VOLTAGE:	–38 TO –58.5 VOLTS
INPUT CURRENT, MAX:	200A
FUSE RATING:	30A, 40A OR 50A



5 PSU 4813 VOLTAGE BOOSTER DETAIL
SCALE: NOT TO SCALE



NOKIA – IXRe
WEIGHT (WITHOUT MOUNTING HARDWARE): TBD
SIZE (HxWxD): 17.25x10.0x1.75 IN.

6 NOKIA – IXR–E DETAIL
SCALE: NOT TO SCALE

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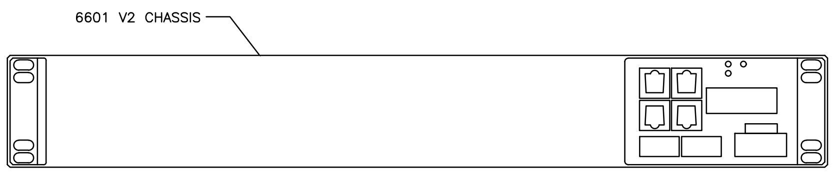
SHEET NUMBER: C-4
REVISION: 0

ERICSSON INDOOR RBS 6601V2 CHASSIS

DC POWER SUPPLY

NOMINAL VOLTAGE:	−48VDC
OPERATING VOLTAGE RANGE:	−40.0 TO −57.6VDC
NON-DESTRUCTIVE VOLTAGE RANGE	0 TO −60VDC
POWER CONSUMPTION:	250W



1 RBS 6601 DETAIL
SCALE: NOT TO SCALE

RD048 | 3.4L | 48 kW
INDUSTRIAL DIESEL GENERATOR SET
EPA Certified Stationary Emergency

GENERAC INDUSTRIAL POWER

Standby Power Rating
48 kW, 60 kVA, 60 Hz

Codes and Standards

Not all codes and standards apply to all configurations. Contact factory for details.

- UL2200, UL508, UL489, UL142
- CSA 22.2
- BS5514 and DIN 6271
- SAE J1349
- NFPA 37, 70, 99
- ISO 3046, 8528, 9001
- NEMA ICS1, ICS10, MG1, 250, ICS6, AB1
- ANSI/IEEE C62.41

Powering Ahead

For over 50 years, Generac has led the industry with innovative design and superior manufacturing.

Generac ensures superior quality by designing and manufacturing most of its generator components, including alternators, enclosures and base tanks, control systems and communications software.

Generac's gensets utilize a wide variety of options, configurations and arrangements, allowing us to meet the standby power needs of practically every application.

Generac searched globally to ensure the most reliable engines power our generators. We choose only engines that have already been proven in heavy-duty industrial application under adverse conditions.

Generac is committed to ensuring our customers' service support continues after their generator purchase.

SPEC SHEET 1 of 5

2 RD048 GENERATOR DETAIL
SCALE: NOT TO SCALE

RD048 | 3.4L | 48 kW
INDUSTRIAL DIESEL GENERATOR SET
EPA Certified Stationary Emergency

Standard Features

ENGINE SYSTEM
- Cold Weather Kit
- Oil Drain Extension
- Fan Guard
- Stainless Steel Flexible Exhaust Connection
- Factory Filled Oil & Coolant

Fuel System
- Primary Fuel Filter

Cooling System
- Closed Coolant Recovery System
- Factory-Installed Radiator
- 50/50 Ethylene Glycol Antifreeze
- Radiator Drain Extension
- Can Operate up to 122°F (50°C) Ambient Temperature

Electrical System
- Battery Charging Alternator
- Battery Cables
- Battery Tray
- Rubber-Booted Engine Electrical Connections
- Solenoid Activated Starter Motor
- Smart Battery Charger

ALTERNATOR SYSTEM
- Class H Insulation Material
- 2/3 Pitch
- Skewed Stator
- Sealed Bearings
- Low Temperature Rise (<120°C)
- Low THD (<5%)

GENERATOR SET
- Sound Attenuated Aluminum Enclosure
- Internal Genset Vibration Isolation
- Separation of Circuits - High/Low Voltage
- Wrapped Exhaust Piping
- Standard Factory Testing
- 5 Year Limited Warranty
- Ready to Accept Full Load in <10 Seconds
- E-Stop

TANKS
- 48 Hour Run Time Tank
- UL 142 Listed Tank

CONTROL SYSTEM

Evolution™ Controller
- Two-Line Plain Text LCD Display
- Programmable Start Delay Between 10-30 seconds
- 10 second Engine Start Sequence
- 5 second Engine Warm Up
- 1 minute Engine Cool Down
- Starter Lock-Out
- Smart Battery Charger
- Automatic Voltage Regulation with Over and Under Protection
- Automatic Low Oil Pressure Shutdown
- Overspeed Shutdown
- High Temperature Shutdown
- Overcrank Protection
- Safety Fuses
- Failure to Transfer Protection
- Low Battery Protection
- 50 Event Run Log
- Future Set Capable Controller
- Incorrect Wiring Protection
- Internal Fault Protection
- Common External Fault Capability
- Governor Failure Protection

Optional Shipped Loose and Field Install Kits

GENERATOR SET
- Paint Kit
- Scheduled Maintenance Kit

CONTROL SYSTEM
- Mobile Link™ and Adapter Kit

TANKS
- Drip Box
- 90% Fuel Alarm
- Tank Risers
- Drip Box Drainback Kit
- Vent Extension Support Kit
- 5 Day Run Time Tank
- Overfill Prevention Valve
- Fuel Fill Drop Tube
- Lockable Fuel Cap

SPEC SHEET 2 of 5

3 RD048 GENERATOR DETAIL
SCALE: NOT TO SCALE

RD048 | 3.4L | 48 kW
INDUSTRIAL DIESEL GENERATOR SET
EPA Certified Stationary Emergency

APPLICATION AND ENGINEERING DATA

ENGINE SPECIFICATIONS

General

Make	Generac
Cylinder #	4
Type	In-Line
Displacement - in³ (L)	3.4 (207.40)
Bore - in (mm)	3.86 (98)
Stroke - in (mm)	4.45 (113)
Compression Ratio	19.5:1
Intake Air Method	Turbocharged/Aftercooled
Cylinder Head	Cast Iron OHV
Piston Type	Aluminum

Engine Governing

Governor	Electronic
Frequency Regulation (Steady State)	±0.25%

Lubrication System

Oil Pump Type	Gear
Oil Filter Type	Full Flow Spin On Cartridge
Crankcase Capacity with Filters - qt (L)	7.4 (7.0)

Cooling System

Cooling System Type	Closed Recovery
Fan Type	Pusher
Fan Speed - rpm	2,029
Fan Diameter - in (mm)	22 (559)

Fuel System

Fuel Type	Ultra Low Sulfur Diesel Fuel
Fuel Specification	ASTM
Fuel Pump Type	Mechanical Engine Driven Gear
Injector Type	Mechanical
Fuel Supply Line (mm/in)	7.94/0.31 (ID)
Fuel Return Line (mm/in)	7.94/0.31 (ID)
Fuel Filtering (microns)	25

Engine Electrical System

System Voltage	12 VDC
Battery Charger Alternator	Standard
Battery Size	Group 27F
Battery Voltage	12 VDC
Ground Polarity	Negative

ALTERNATOR SPECIFICATIONS

Standard Model	Generac
Poles	4
Field Type	Rotating
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	<5%
Telephone Interference Factor (TIF)	<50
Standard Excitation	Direct
Bearings	Single Sealed
Coupling	Flexible Disc
Prototype Short Circuit Test	Yes
Voltage Regulator Type	Full Digital
Number of Sensed Phases	2
Regulation Accuracy (Steady State)	±1.0%

SPEC SHEET 3 of 5

4 RD048 GENERATOR DETAIL
SCALE: NOT TO SCALE

RD048 | 3.4L | 48 kW
INDUSTRIAL DIESEL GENERATOR SET
EPA Certified Stationary Emergency

OPERATING DATA

POWER RATINGS

		Standby
Single-Phase 120/480 VAC @0.1pf	48 kW	Amps: 200

MOTOR STARTING CAPABILITIES (skVA)

skVA vs. Voltage Dip at 30%

120/240 V, Single-Phase at 0.4pf	109

FUEL CONSUMPTION RATES*

Percent Load	Diesel gal/hr (L/hr)
25%	1.35 (5.11)
50%	2.15 (8.14)
75%	3.08 (11.66)
100%	3.98 (15.07)

* Fuel supply installation must accommodate fuel consumption rates at 100% load.

COOLING

		Standby
Air Flow (Radiator and Alternator)	ft³/min (m³/min)	2824 (80)
Coolant System Capacity	gal (L)	2.8 (10.6)
Heat Rejection to Coolant	BTU/hr (MJ/hr)	135,300 (143.4)
Temperature Deration	3% for every 5°C above 25°C or 1.7% for every 5°F over 77°F	
Altitude Deration	1% for every 100 m above 915 or 3% for every 1000 ft over 3000 ft	
Maximum Radiator Backpressure	in H_2O (kPa)	0.50 (0.12)

COMBUSTION AIR REQUIREMENTS

	Standby
Flow at Rated Power ft³/min (m³/min)	190 (5.38)

ENGINE

		Standby
Rated Engine Speed	rpm	1,800
Horsepower at rated kW	HP	85

EXHAUST

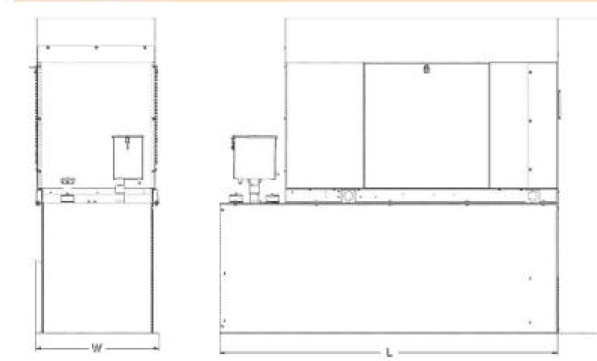
		Standby
Exhaust Flow (Rated Output)	ft³/min (m³/min)	440 (12.7)
Exhaust Temp (Rated Output - Post Silencer)	°F (°C)	1120 (604.4)

SPEC SHEET 4 of 5

5 RD048 GENERATOR DETAIL
SCALE: NOT TO SCALE

RD048 | 3.4L | 48 kW
INDUSTRIAL DIESEL GENERATOR SET
EPA Certified Stationary Emergency

DIMENSIONS AND WEIGHTS*



ENCLOUSED UNIT with 48hour Tank

L x W x H in (mm)	95.4 (2,422) x 35.0 (889) x 88.0 (2,235)
Sound output in dB(A) at 23 m with generator operating at normal load	55

* All measurements are approximate and for estimation purposes only.

YOUR FACTORY RECOGNIZED GENERAC INDUSTRIAL DEALER

Generac Power Systems, Inc. | P.O. Box 8 | Waukesha, WI 53189

SPEC SHEET 5 of 5

6 RD048 GENERATOR DETAIL
SCALE: NOT TO SCALE

T-Mobile
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

NORTHEAST SITE SOLUTIONS
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
203-275-6669

Trylon
Speed, Quality, Credibility
1825 W. WALNUT HILL LANE, SUITE 120
IRVING, TEXAS 75038

T-MOBILE SITE NUMBER:
CTHA346A

126 PARKER ROAD
EAST HADDAM, CT 06423

EXISTING 300'-0" GUYED TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	07/29/2022	RC	PRELIMINARY	AMC
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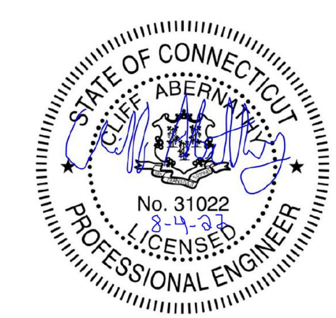

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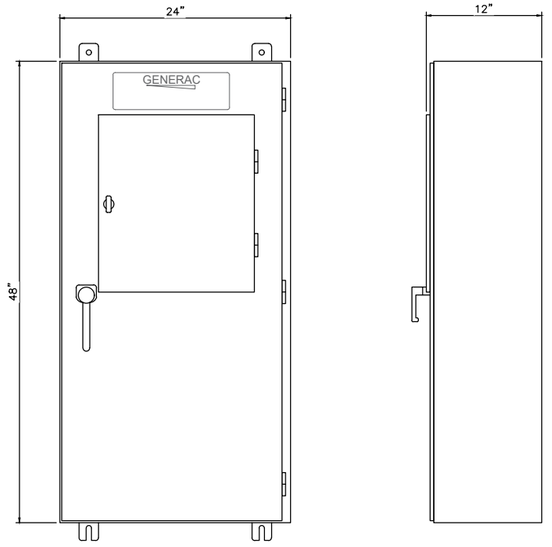
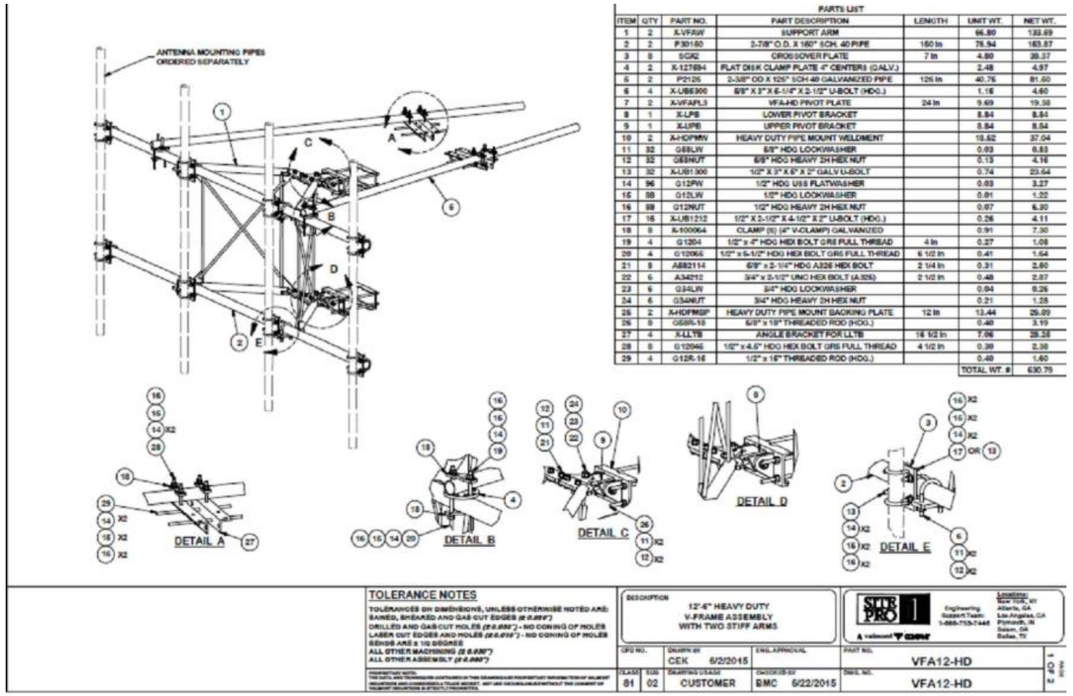
SHEET NUMBER:	REVISION:
C-5	0

MANUFACTURER: GENERAC
MODEL: TTS SERIES
RATING: 120/240V, 100-400A, 600VCA, 1P
DIMENSIONS: 48" H x 24" W x 12" D
WEIGHT: 210 LBS

NOTE: ATS INCLUDES CAMLOCK



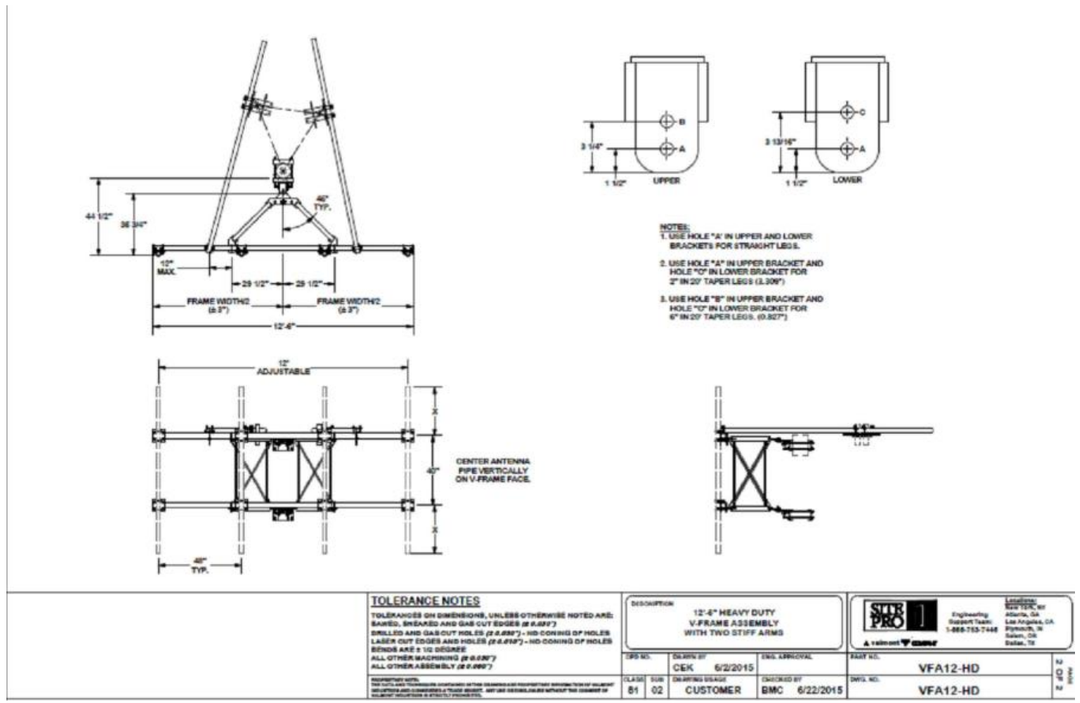
1 AUTOMATIC TRANSFER SWITCH DETAIL
SCALE: NOT TO SCALE



PARTS LIST

ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	2	X-VFAW	SUPPORT ARM		66.80	133.59
2	2	P30160	3.738" O.D. X 160" SCH. 40 PIPE	160 in	78.94	163.87
3	3	SCX2	CROSSOVER PLATE	7 in	4.80	28.37
4	2	X-127684	FLAT DISK CLAMP PLATE 4" CENTERS (GALV.)		2.48	4.97
5	2	P2126	2-3/8" OD X 125" SCH 40 GALVANIZED PIPE	126 in	40.76	81.50
6	4	X-UBS300	5/8" X 3" X 6-1/4" X 2-1/2" U-BOLT (HDG.)		1.16	4.60
7	2	X-VFAPL3	VFA-HD PIVOT PLATE	24 in	9.69	19.38
8	1	X-LPB	LOWER PIVOT BRACKET		8.84	8.84
9	1	X-UPB	UPPER PIVOT BRACKET		8.84	8.84
10	2	A-HDFMW	HEAVY DUTY PIPE MOUNT WELDMENT		18.52	37.04
11	32	G5SLW	5/8" HDG LOCKWASHER		0.03	0.83
12	32	G5NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	4.16
13	32	X-UB1300	1/2" X 3" X 6" X 2" GALV U-BOLT		0.74	23.64
14	96	G12FW	1/2" HDG USS FLATWASHER		0.03	3.27
15	88	G12LW	1/2" HDG LOCKWASHER		0.01	1.22
16	88	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	6.30
17	16	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.26	4.11
18	8	A-100064	CLAMP (6) (4" V-CLAMP) GALVANIZED		0.91	7.30
19	4	G1204	1/2" x 4" HDG HEX BOLT GR5 FULL THREAD	4 in	0.27	1.08
20	4	G12066	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	6 1/2 in	0.41	1.64
21	9	AB82114	5/8" x 2-1/4" HDG A325 HEX BOLT	2 1/4 in	0.31	2.80
22	6	A34212	3/4" x 2-1/2" UNC HEX BOLT (A-325)	2 1/2 in	0.48	2.87
23	9	G3/4LW	3/4" HDG LOCKWASHER		0.04	0.26
24	6	G3/4NUT	3/4" HDG HEAVY 2H HEX NUT		0.21	1.28
25	2	X-HDFMSP	HEAVY DUTY PIPE MOUNT BACKING PLATE	12 in	12.44	25.89
26	8	G58R-18	5/8" x 18" THREADED ROD (HDG.)		0.40	3.19
27	4	X-LLTB	ANGLE BRACKET FOR LLTB	16 1/2 in	7.06	28.38
28	8	G12066	1/2" x 4.5" HDG HEX BOLT GR5 FULL THREAD	4 1/2 in	0.39	3.36
29	4	G12R-16	1/2" x 16" THREADED ROD (HDG.)		0.40	1.60
				TOTAL WT. #		630.75

2 ANTENNA MOUNT DETAIL
SCALE: NOT TO SCALE



3 ANTENNA MOUNT DETAIL
SCALE: NOT TO SCALE

4 NOT USED
SCALE: NOT TO SCALE

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

NORTHEAST SITE SOLUTIONS
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
203-275-6669

Trylon
Speed, Quality, Credibility
1825 W. WALNUT HILL LANE, SUITE 120
IRVING, TEXAS 75038

T-MOBILE SITE NUMBER:
CTHA346A

126 PARKER ROAD
EAST HADDAM, CT 06423

EXISTING 300'-0" GUYED TOWER

ISSUED FOR:

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0	08/04/2022	CP	ISSUE FOR CONSTRUCTION	AMC

STATE OF CONNECTICUT
CLIFF ABERNATHY
No. 31022
8-4-22
LICENSED PROFESSIONAL ENGINEER

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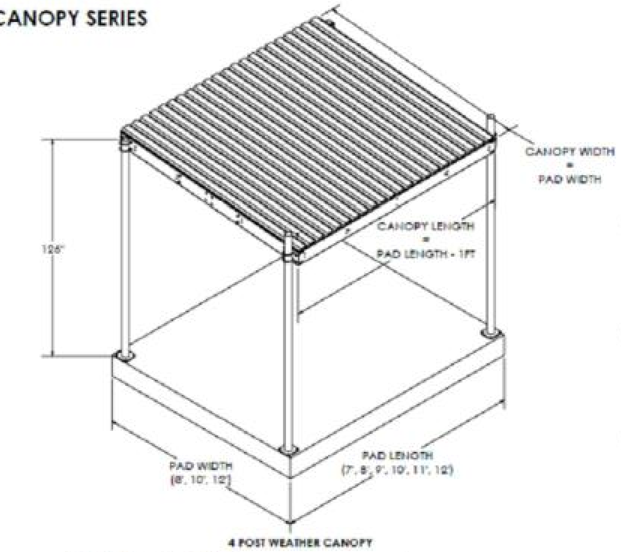
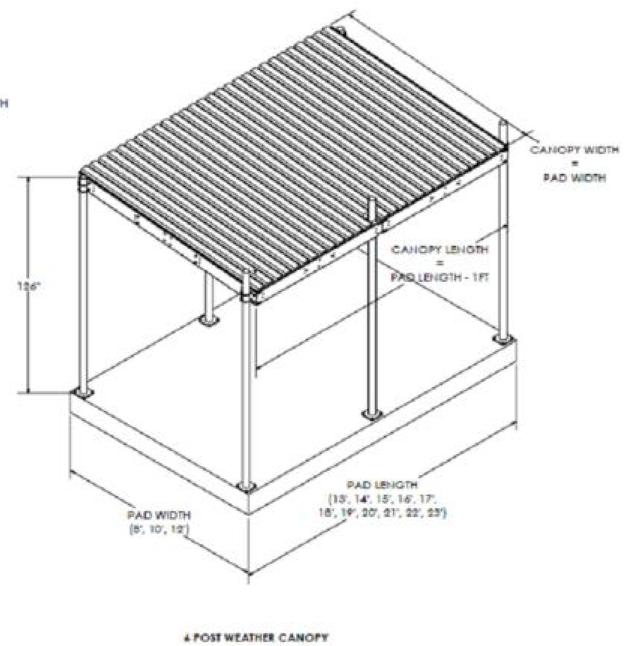
SHEET NUMBER: C-6

REVISION: 0

WEATHER CANOPY SERIES

SERIES OVERVIEW





Weather Canopy Size Options

		Pad Width (Roof Slope Direction)					
		8'		10'		12'	
Pad Length	7'	PV-EQ0807-6	655 lbs	PV-EQ1007-6	830 lbs	PV-EQ1207-6	1005 lbs
	8'	PV-EQ0808-6	735 lbs	PV-EQ1008-6	920 lbs	PV-EQ1208-6	1125 lbs
	9'	PV-EQ0809-6	815 lbs	PV-EQ1009-6	1035 lbs	PV-EQ1209-6	1255 lbs
	10'	PV-EQ0810-6	895 lbs	PV-EQ1010-6	1135 lbs	PV-EQ1210-6	1375 lbs
	11'	PV-EQ0811-6	975 lbs	PV-EQ1011-6	1233 lbs	PV-EQ1211-6	1495 lbs
	12'	PV-EQ0812-6	1055 lbs	PV-EQ1012-6	1340 lbs	PV-EQ1212-6	1625 lbs
	13'	PV-EQ0813-6	1221 lbs	PV-EQ1013-6	1549 lbs	PV-EQ1213-6	1878 lbs
	14'	PV-EQ0814-6	1229 lbs	PV-EQ1014-6	1649 lbs	PV-EQ1214-6	1999 lbs
	15'	PV-EQ0815-6	1382 lbs	PV-EQ1015-6	1755 lbs	PV-EQ1215-6	2128 lbs
	16'	PV-EQ0816-6	1460 lbs	PV-EQ1016-6	1854 lbs	PV-EQ1216-6	2249 lbs
	17'	PV-EQ0817-6	1538 lbs	PV-EQ1017-6	1954 lbs	PV-EQ1217-6	2370 lbs
	18'	PV-EQ0818-6	1620 lbs	PV-EQ1018-6	2059 lbs	PV-EQ1218-6	2499 lbs
	19'	PV-EQ0819-6	1698 lbs	PV-EQ1019-6	2159 lbs	PV-EQ1219-6	2619 lbs
	20'	PV-EQ0820-6	1776 lbs	PV-EQ1020-6	2258 lbs	PV-EQ1220-6	2741 lbs
	21'	PV-EQ0821-6	1859 lbs	PV-EQ1021-6	2364 lbs	PV-EQ1221-6	2869 lbs
	22'	PV-EQ0822-6	1937 lbs	PV-EQ1022-6	2464 lbs	PV-EQ1222-6	2991 lbs
	23'	PV-EQ0823-6	2016 lbs	PV-EQ1023-6	2564 lbs	PV-EQ1223-6	3113 lbs

1 OF 12 — 11/25/2019 — SCALE 1:40

DIMENSIONS ARE IN INCHES. TOLERANCES U.N.O.: HOLES: +1/16", -1/32"; ANGULAR: PROFILE ±1/4", BEND ±2°; ALL OTHERS: ±1/16"

07_Equipment Platforms & Canopies — 01_Equipment Platforms & Canopies — PV-WC / PV-EQ Series — DJN — SJS — APPROVED

PERFECTVISION — WCEQ-ENG-01-R6 — 6

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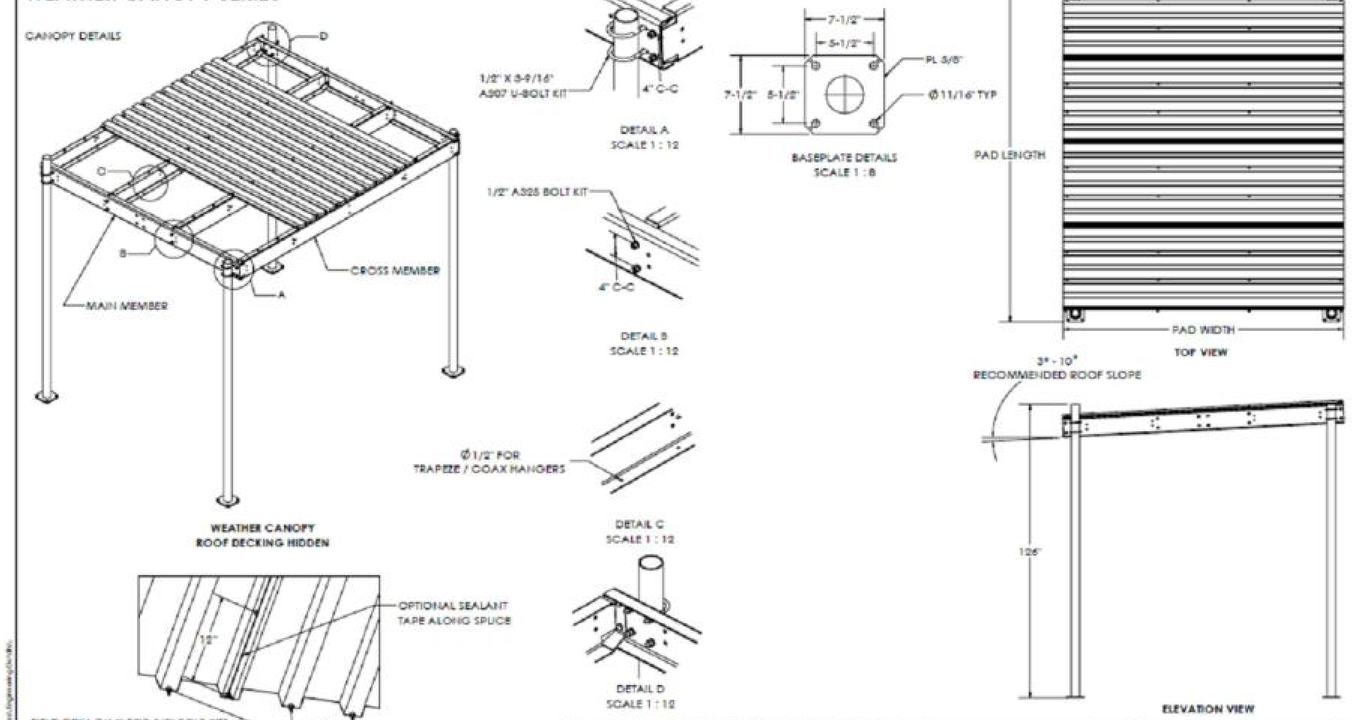
WEATHER CANOPY SERIES

CANOPY DETAILS



- 6" C-C MAX SPACING ALONG ALL CROSS MEMBERS
- 12" C-C MAX SPACING ALONG EXTERIOR MAIN MEMBERS
- 12" C-C MAX SPACING ALONG SPLICES

ROOF DECKING DETAIL
SCALE 1 : 8

2 OF 12 — 11/25/2019 — SCALE 1:56

DIMENSIONS ARE IN INCHES. TOLERANCES U.N.O.: HOLES: +1/16", -1/32"; ANGULAR: PROFILE ±1/4", BEND ±2°; ALL OTHERS: ±1/16"

07_Equipment Platforms & Canopies — 01_Equipment Platforms & Canopies — PV-WC / PV-EQ Series — DJN — SJS — APPROVED

PERFECTVISION — WCEQ-ENG-01-R6 — 6

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1 ICE CANOPY DETAILS
SCALE: NOT TO SCALE

T-Mobile
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
203-275-6669

Trylon
Speed, Quality, Credibility
1825 W. WALNUT HILL LANE, SUITE 120
IRVING, TEXAS 75038

T-MOBILE SITE NUMBER:
CTHA346A

126 PARKER ROAD
EAST HADDAM, CT 06423

EXISTING 300'-0" GUYED TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	07/29/2022	RC	PRELIMINARY	AMC
0	08/04/2022	CP	ISSUE FOR CONSTRUCTION	AMC

STATE OF CONNECTICUT — CLIFF ABERNATHY — No. 31022 — LICENSED PROFESSIONAL ENGINEER — 8-4-22

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SHEET NUMBER: **C-7**

REVISION: **0**

T-MOBILE PANEL SCHEDULE

MAIN: 200 AMP MAIN BREAKER			**VOLTAGE/PHASE**: 120/240V, 1-PHASE, 3-WIRE					**SHORT CIRCUIT CURRENT RATING**: ----			
MOUNTING: INSIDE PPC ENCLOSURE			**ENCLOSURE**: NEMA 3R					**SURGE PROTECTION DEVICE**: YES			
DESCRIPTION	LOAD (VA)	C or NC	C/B	CIR No.	LOAD (VA) A-PHASE	LOAD (VA) B-PHASE	CIR No.	C/B	C or NC	LOAD (VA)	DESCRIPTION
SURGE PROTECTION DEVICE	0	NC	60	1	180		2	20	NC	180	RECEPTACLE
	0	NC		3		200	4	20	NC	200	LIGHT
BTS CABINET **	**4800**	**C**	**100**	5	4800		6				
	4800	**C**		7		4800	8				
BLANK				9	0		10				BLANK
				11		0	12				
				13	0		14				
				15		0	16				
				17	0		18				
				19		0	20				
				21	0		22				
				23		0	24				
BASE LOAD (VA) =					4980	5000					
25% OF CONTINUOUS LOAD (VA) =					1200	1200					
TOTAL LOAD (VA) =					6180	6200					
TOTAL LOAD (A) =					52	52					

C = CONTINUOUS LOAD; NC = NON-CONTINUOUS LOAD

** INDICATES NEW LOAD. ALL OTHER LOADS ARE EXISTING.
NEW BREAKER TO BE SAME TYPE AND HAVE SAME AIC RATING AS EXISTING.
CUSTOMER HAS NOT PROVIDED LOADS FOR EQUIPMENT CABINETS THEREFORE THE CABINET LOADS SHOWN ARE ESTIMATED VALUES.

1 AC PANEL SCHEDULE
SCALE: NOT TO SCALE

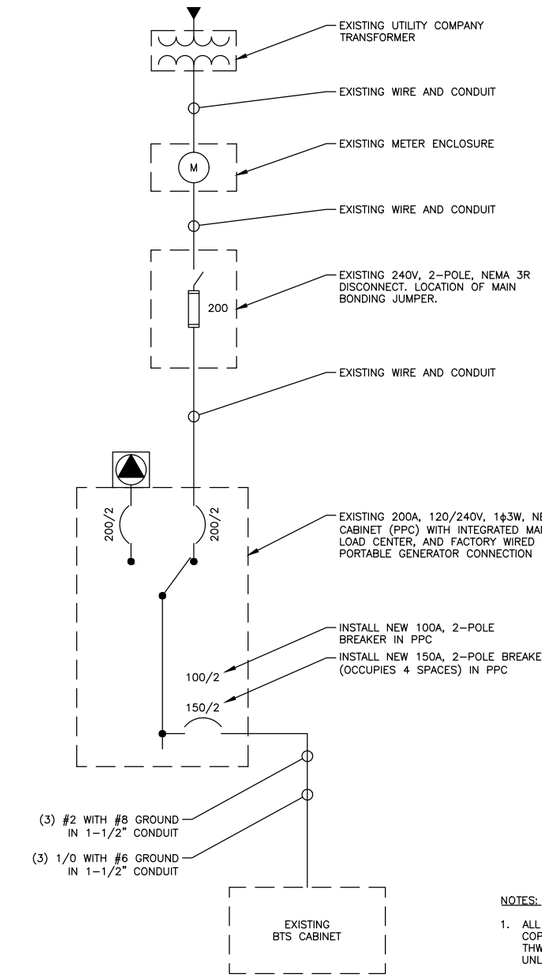
T-MOBILE PANEL SCHEDULE

MAIN: 200 AMP MAIN BREAKER			**VOLTAGE/PHASE**: 120/240V, 1-PHASE, 3-WIRE					**SHORT CIRCUIT CURRENT RATING**: ----			
MOUNTING: INSIDE PPC ENCLOSURE			**ENCLOSURE**: NEMA 3R					**SURGE PROTECTION DEVICE**: YES			
DESCRIPTION	LOAD (VA)	C or NC	C/B	CIR No.	LOAD (VA) A-PHASE	LOAD (VA) B-PHASE	CIR No.	C/B	C or NC	LOAD (VA)	DESCRIPTION
SURGE PROTECTION DEVICE	0	NC	60	1	180		2	20	NC	180	RECEPTACLE
	0	NC		3		200	4	20	NC	200	LIGHT
BTS CABINET **	**3600**	**C**	**150**	5	3600		6				
	3600	**C**		7		3600	8				
	3600	**C**		9	3600		10				
	3600	**C**		11		3600	12				
BLANK				13	0		14				BLANK
				15		0	16				
				17	0		18				
				19		0	20				
				21	0		22				
				23		0	24				
BASE LOAD (VA) =					7380	7400					
25% OF CONTINUOUS LOAD (VA) =					1800	1800					
TOTAL LOAD (VA) =					9180	9200					
TOTAL LOAD (A) =					77	77					

C = CONTINUOUS LOAD; NC = NON-CONTINUOUS LOAD

** INDICATES NEW LOAD. ALL OTHER LOADS ARE EXISTING.
NEW BREAKER TO BE SAME TYPE AND HAVE SAME AIC RATING AS EXISTING.
CUSTOMER HAS NOT PROVIDED LOADS FOR EQUIPMENT CABINETS THEREFORE THE CABINET LOADS SHOWN ARE ESTIMATED VALUES.

2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE



NOTES:

1. ALL NEW CONDUCTORS TO BE INSTALLED SHALL BE COPPER. ALL CONDUCTORS SHALL BE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 UNLESS NOTED OTHERWISE.
2. CONTRACTOR IS TO FIELD VERIFY ALL EXISTING ITEMS SHOWN ON THE ELECTRICAL ONE-LINE DIAGRAM AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
3. ALL GROUNDING AND BONDING PER THE NEC.

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

NORTHEAST SITE SOLUTIONS
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
203-275-6669

Trylon
Speed, Quality, Credibility
1825 W. WALNUT HILL LANE, SUITE 120
IRVING, TEXAS 75038

T-MOBILE SITE NUMBER:
CTHA346A

126 PARKER ROAD
EAST HADDAM, CT 06423

EXISTING 300'-0" GUYED TOWER

ISSUED FOR:

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STATE OF CONNECTICUT
CLIFF ABERNATHY
No. 31022
8-4-22
LICENSED PROFESSIONAL ENGINEER

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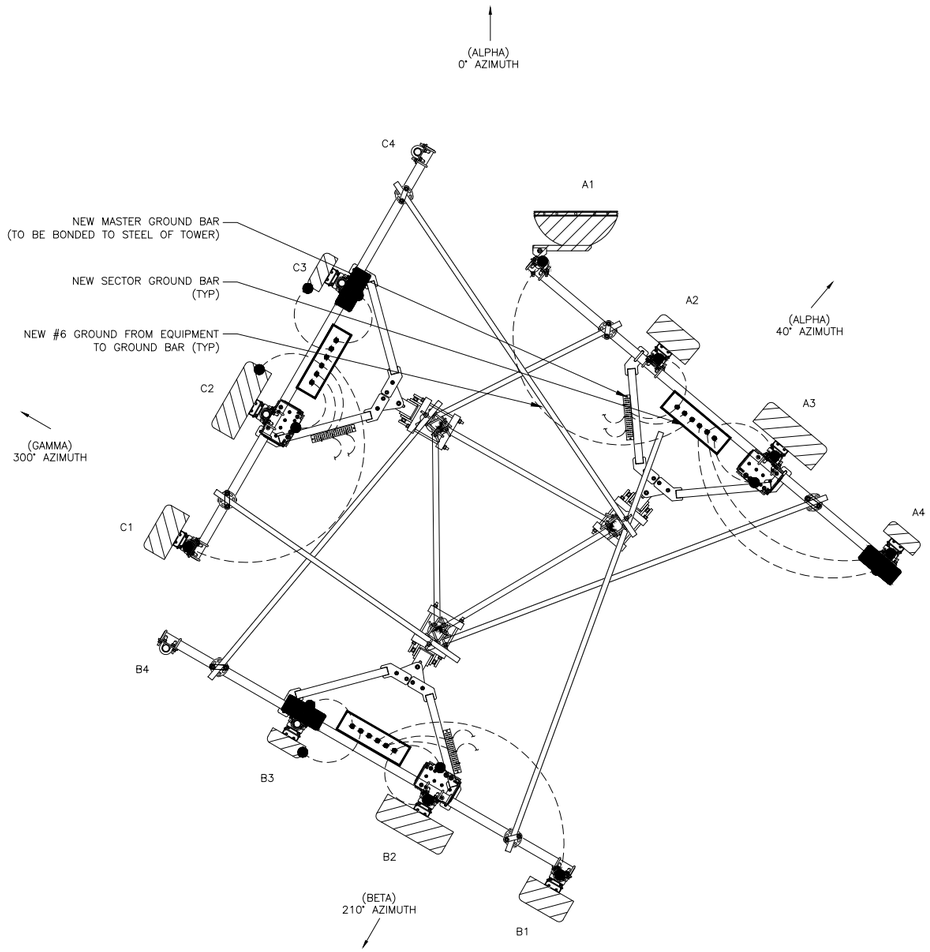
SHEET NUMBER: E-1

REVISION: 0



1 ANTENNA GROUNDING PLAN
SCALE: NOT TO SCALE

GROUNDING LEGEND

– – – – – –	#6 STRANDED & INSULATED
●●●●●●	GROUND BUS BAR
●	MECHANICAL CONNECTION

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

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420 MAIN STREET, BLDG 4
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STATE OF CONNECTICUT
CLIFF ABERNATHY
No. 31022
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LICENSED
PROFESSIONAL ENGINEER

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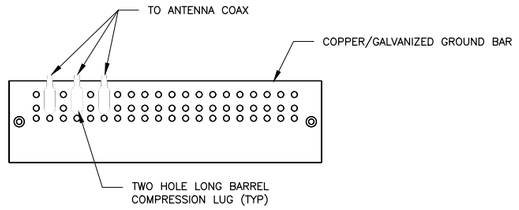
SHEET NUMBER: G-1

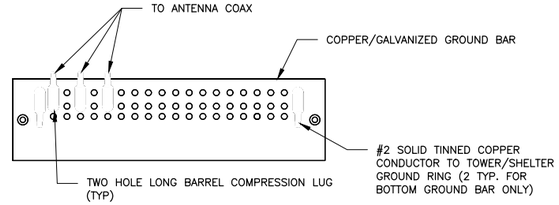
REVISION: 0



NOTES:

1. DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
3. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO ANTENNA MOUNT STEEL.

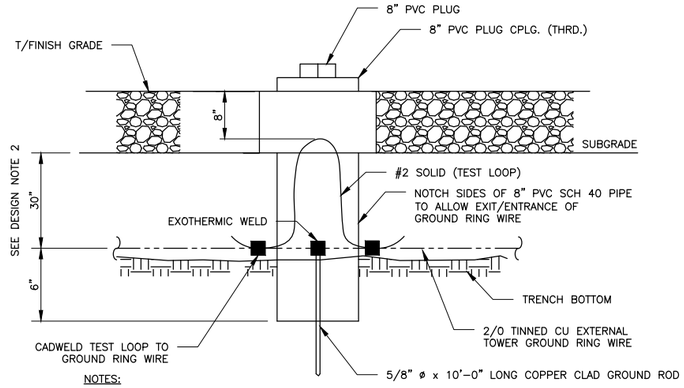
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
2. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
3. GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

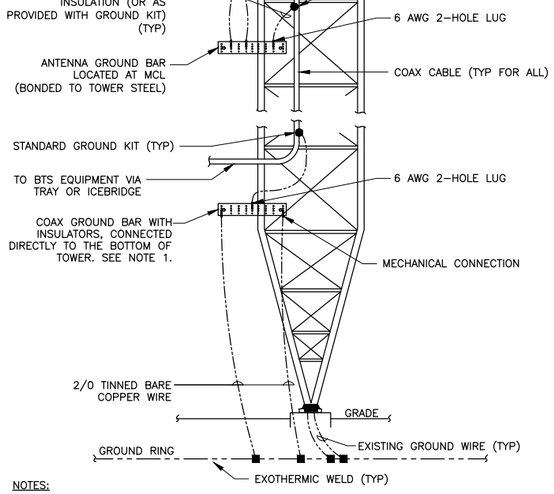
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

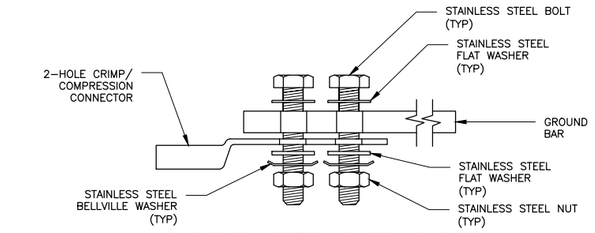
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



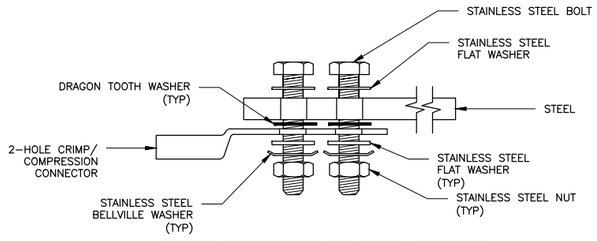
NOTES:

1. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. COAXIAL CABLES EXCEEDING 200 FEET ON THE TOWER SHALL HAVE GROUND KITS AT THE MIDPOINT. PROVIDE AS REQUIRED.
2. ONLY MECHANICAL CONNECTIONS ARE ALLOWED TO BE MADE TO CROWN CASTLE USA INC. TOWERS. ALL MECHANICAL CONNECTIONS SHALL BE TREATED WITH AN ANTI-OXIDANT COATING.
3. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE RECOGNIZED EDITION OF ANSI/TIA 222 AND NFPA 780.

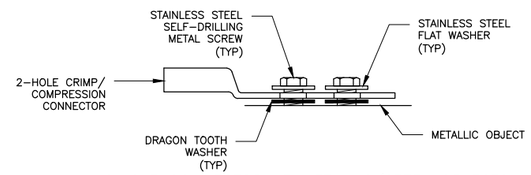
4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

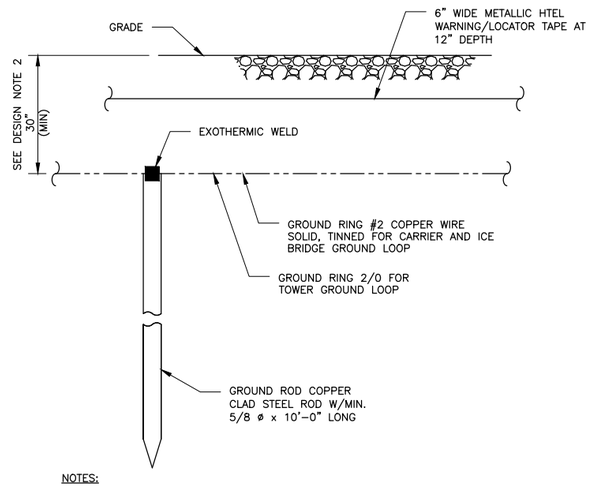


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

T-Mobile
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

NORTHEAST SITE SOLUTIONS
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
203-275-6669

Trylon
Speed, Quality, Credibility
1825 W. WALNUT HILL LANE, SUITE 120
IRVING, TEXAS 75038

T-MOBILE SITE NUMBER:
CTHA346A

126 PARKER ROAD
EAST HADDAM, CT 06423

EXISTING 300'-0" GUYED TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	07/29/2022	RC	PRELIMINARY	AMC
0	08/04/2022	CP	ISSUE FOR CONSTRUCTION	AMC

STATE OF CONNECTICUT
CLIFF ABERNATHY
No. 31022
8-4-22
LICENSED
PROFESSIONAL ENGINEER

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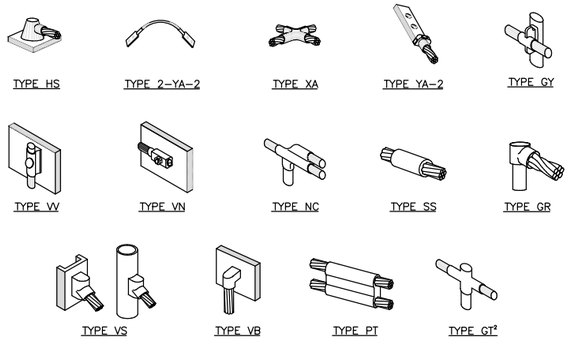
SHEET NUMBER: G-2

REVISION: 0

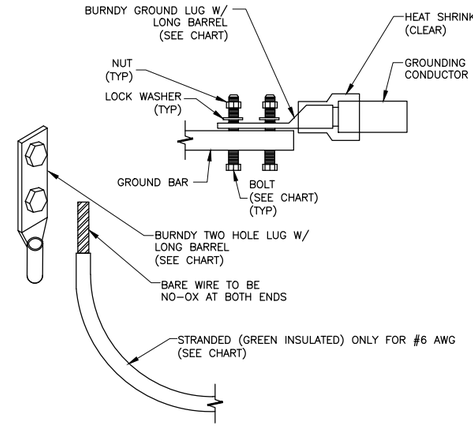


NOTE:

1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.
2. MOLD TYPE ONLY TO BE USED BELOW GRADE WHEN CONNECTING GROUND RING TO GROUND ROD.

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

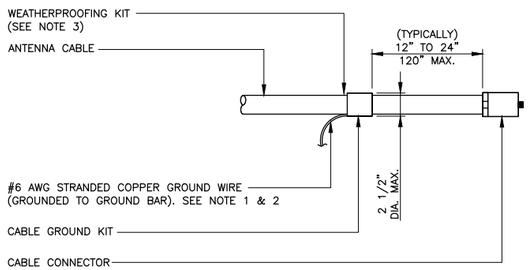
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



NOTES:

1. ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER,GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

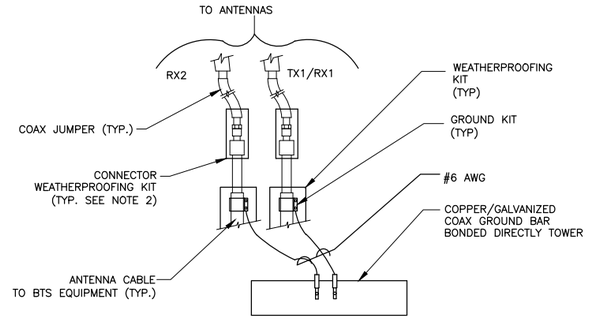
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

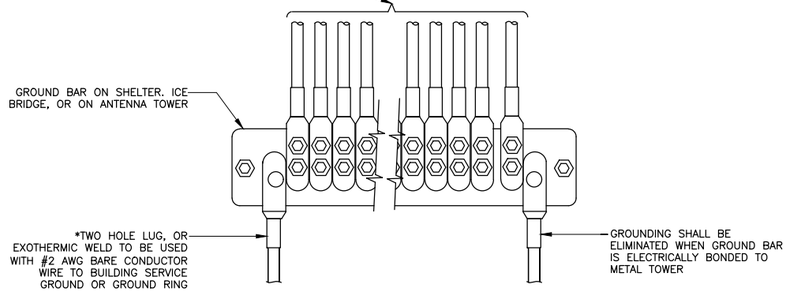
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



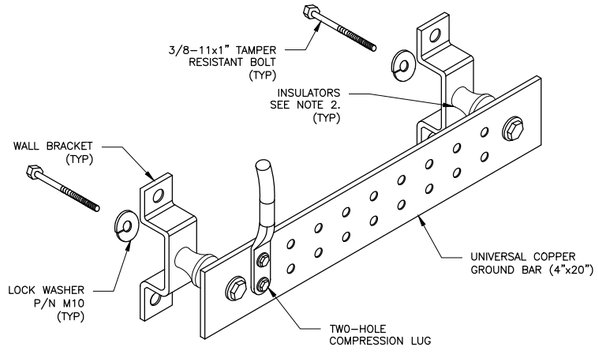
NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



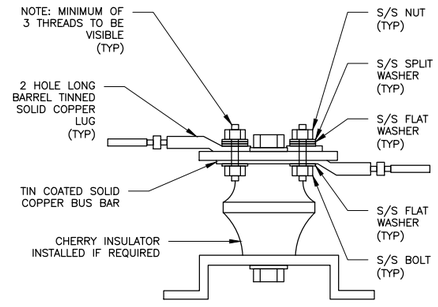
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



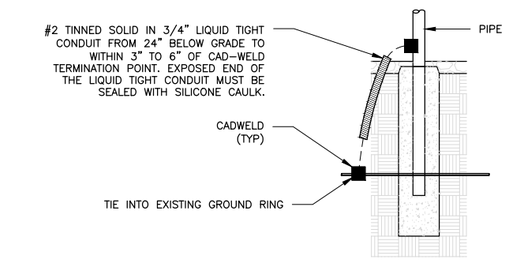
NOTES:

1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

NORTHEAST SITE SOLUTIONS
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
203-275-6669

Trylon
Speed, Quality, Credibility
1825 W. WALNUT HILL LANE, SUITE 120
IRVING, TEXAS 75038

T-MOBILE SITE NUMBER:
CTHA346A

126 PARKER ROAD
EAST HADDAM, CT 06423

EXISTING 300'-0" GUYED TOWER

ISSUED FOR:

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STATE OF CONNECTICUT
CLIFF ABERNATHY
No. 31022
8-4-22
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SHEET NUMBER: G-3

REVISION: 0

Exhibit D

Date: **June 17, 2022**

Kat Curtis
CTI Towers, Inc
5000 CentreGreen Way, Suite 325
Cary, NC 27513

Engineered Tower Solutions
3227 Wellington Court
Raleigh, NC 27615
(919) 782-2710

Subject:	**Feasibility Structural Analysis Report**	
Carrier Designation:	***T-Mobile Co*-Locate** **Carrier Site Name:**	 East Haddam
CTI Towers Designation:	**CTI Towers Site Name:** **CTI Towers Site Number:**	East Haddam 10108
Engineering Firm Designation:	**ETS, PLLC Job Number:**	22108236.STR.8128
Site Data:	**126 Parker Road, East Haddam, Middlesex County, CT 06243** **Latitude 41° 27' 39.27", Longitude -72° 23' 42.8"** **300.0 Foot - Guyed Tower**	

Dear Kat Curtis,

Engineered Tower Solutions, PLLC is pleased to submit this **"Feasibility Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

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

Existing + Proposed Equipment Configuration	**Tower:**	**64.1%Sufficient Capacity**
	Foundations:	**Not Analyzed**

This analysis utilizes an ultimate 3-second gust wind speed of 130 mph as required by the 2018 Connecticut State Building Code (2015 IBC). Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by:

Amrita Chakraborty
Structural Engineer I

Respectfully submitted by:

F. Geoffrey Bost, PE, CWI, GC
Owner/President

STATE OF CONNECTICUT
FREDERIC BOST
PEN.0029529
LICENSED
PROFESSIONAL ENGINEER

6/17/2022

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 300 ft Guyed tower. The manufacturer of the tower is unknown. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

The Structural Analysis report is prepared based on the data obtained from the documents and information provided to ETS, PLLC by CTI Towers.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	130 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
175.0 (T-Mobile)	175.0	3	Commscope	VV-65A-R	4 1	4 AWG 1/2
		3	Ericsson	AIR 6419 B41		
		3	RFS	APXVAALL24		
		3	Ericsson	RRU 4480 B71+B85		
		3	Ericsson	RRU 4460 B25+B66		
		1	RFS	SC2-W100BD		
		1	Tower Mount	6-ft Pipe Mount		
		3	Tower Mount	12.5-ft Sector Mount (Assumed)		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
195.0	198.0	1	Unknown	Omni 3"x6'	-	-
	195.0	1	Pirod	4' Side Mount Standoff	-	-
180.5	185.0	3	CCI Antennas	OPA65R-BU6A	12 4 2 1	1-5/8 3/4 1/2 3” Conduit
		3	Ericsson	RRUS 4449 B5/B12		
		3	Ericsson	RRUS 8843 B2/B66A		
		3	Kaelus	DBCT108F1V92-1		
		3	Kathrein	800-10965		
		3	Powerwave	7770.00		
		6	Powerwave	LGP 21401		
		1	Raycap	DC6-48-60-0-8C		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		1	Raycap	DC6-48-60-18-8F		
	182.5	3	Site Pro1	SFR-K-L		
	180.5	3	Tower Mounts	12.5 ft Sector Frame		
165.0	165.0	1	Unknown	4' Yagi Antenna	--	--
160.0	160.0	1	Unknown	4' Yagi Antenna	--	--
143.0	143.0	1	Unknown	4' Yagi Antenna	--	--
130.0	130.0	1	Unknown	4' Yagi Antenna	--	--
25.0	25.0	1	Unknown	4' Yagi Antenna	--	--

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Feasibility Structural Analysis Report	B+T Group (Project No: 135097.003.01)	05/22/2019	CTI Towers
Tower Inspection Form	ETS, PLLC (Job No: 20077661)	08/05/2020	CTI Towers

3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

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

This analysis may be affected if any assumptions are not valid or have been made in error. Engineered Tower Solutions.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	300 - 280	Leg	2	3	-2.64	89.23	3.0	Pass
T2	280 - 260	Leg	2	51	-15.29	89.23	17.1	Pass
T3	260 - 240	Leg	2	99	-18.88	89.23	21.2	Pass
T4	240 - 220	Leg	2	147	-19.05	89.23	21.3	Pass
T5	220 - 200	Leg	2 1/4	195	-40.09	124.38	32.2	Pass
T6	200 - 180	Leg	2 1/4	241	-71.41	124.38	57.4	Pass
T7	180 - 160	Leg	2 1/4	289	-70.86	124.38	57.0	Pass
T8	160 - 140	Leg	2 1/4	337	-43.91	124.38	35.3	Pass
T9	140 - 120	Leg	2	386	-39.35	89.23	44.1	Pass
T10	120 - 100	Leg	2	435	-41.94	89.23	47.0	Pass
T11	100 - 80	Leg	2	483	-42.12	89.23	47.2	Pass
T12	80 - 60	Leg	2	530	-45.26	89.23	50.7	Pass
T13	60 - 40	Leg	2	577	-48.94	89.23	54.8	Pass
T14	40 - 20	Leg	2	625	-50.36	89.23	56.4	Pass
T15	20 - 6.6667	Leg	2	673	-50.25	89.57	56.1	Pass
T16	6.6667 - 0	Leg	2	708	-52.40	84.81	61.8	Pass
T1	300 - 280	Diagonal	1	12	-0.67	7.48	9.0	Pass
T2	280 - 260	Diagonal	1	94	-1.84	7.48	24.6	Pass
T3	260 - 240	Diagonal	1	142	-1.37	7.48	18.3	Pass
T4	240 - 220	Diagonal	1	154	-1.03	7.48	13.7	Pass
T5	220 - 200	Diagonal	1 1/8	203	-5.61	12.13	46.3	Pass
T6	200 - 180	Diagonal	1 1/8	286	-5.52	12.13	45.5	Pass
T7	180 - 160	Diagonal	1 1/8	300	-6.22	12.13	51.3	Pass
T8	160 - 140	Diagonal	1 1/8	348	-7.66	12.13	63.2	Pass
T9	140 - 120	Diagonal	1	422	-2.51	7.48	33.6	Pass
T10	120 - 100	Diagonal	1	478	-1.35	7.48	18.1	Pass
T11	100 - 80	Diagonal	1	492	-2.17	7.48	29.0	Pass
T12	80 - 60	Diagonal	1	561	-2.85	7.48	38.2	Pass
T13	60 - 40	Diagonal	1	621	-2.19	7.48	29.4	Pass
T14	40 - 20	Diagonal	1	669	-1.22	7.48	16.4	Pass
T15	20 - 6.6667	Diagonal	1	683	-1.91	7.51	25.4	Pass
T16	6.6667 - 0	Diagonal	1	716	-1.36	10.17	13.3	Pass
T1	300 - 280	Horizontal	7/8	14	-0.07	8.22	0.9	Pass
T2	280 - 260	Horizontal	7/8	77	-0.33	8.22	4.0	Pass
T3	260 - 240	Horizontal	7/8	111	-0.40	8.22	4.8	Pass
T4	240 - 220	Horizontal	7/8	159	-0.40	8.22	4.9	Pass
T5	220 - 200	Horizontal	7/8	220	5.40	19.48	27.7	Pass
T6	200 - 180	Horizontal	7/8	263	-1.38	8.31	16.6	Pass
T7	180 - 160	Horizontal	7/8	311	-1.37	8.31	16.5	Pass
T8	160 - 140	Horizontal	7/8	352	-0.89	8.31	10.7	Pass
T9	140 - 120	Horizontal	7/8	399	-0.84	8.22	10.2	Pass
T10	120 - 100	Horizontal	7/8	448	-0.89	8.22	10.8	Pass
T11	100 - 80	Horizontal	7/8	495	-0.89	8.22	10.8	Pass
T12	80 - 60	Horizontal	7/8	556	4.41	19.48	22.6	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T13	60 - 40	Horizontal	7/8	592	-1.04	8.22	12.6	Pass
T14	40 - 20	Horizontal	7/8	640	-1.06	8.22	12.9	Pass
T15	20 - 6.6667	Horizontal	7/8	695	-1.06	8.22	12.9	Pass
T16	6.6667 - 0	Horizontal	1 1/4	713	-1.16	32.73	3.5	Pass
T1	300 - 280	Secondary Horizontal	3/4	27	-0.00	9.76	0.1	Pass
T2	280 - 260	Secondary Horizontal	3/4	61	-0.00	9.76	0.1	Pass
T3	260 - 240	Secondary Horizontal	3/4	109	-0.00	9.76	0.1	Pass
T4	240 - 220	Secondary Horizontal	3/4	157	-0.00	9.76	0.1	Pass
T5	220 - 200	Secondary Horizontal	3/4	205	-0.00	9.76	0.1	Pass
T6	200 - 180	Secondary Horizontal	3/4	253	0.00	14.31	0.1	Pass
T7	180 - 160	Secondary Horizontal	3/4	301	-0.00	9.76	0.1	Pass
T8	160 - 140	Secondary Horizontal	3/4	363	-0.00	9.76	0.1	Pass
T9	140 - 120	Secondary Horizontal	3/4	425	-0.00	9.76	0.1	Pass
T10	120 - 100	Secondary Horizontal	3/4	445	-0.00	9.76	0.1	Pass
T11	100 - 80	Secondary Horizontal	3/4	493	-0.00	9.76	0.1	Pass
T12	80 - 60	Secondary Horizontal	3/4	541	-0.00	9.76	0.1	Pass
T13	60 - 40	Secondary Horizontal	3/4	589	-0.00	9.76	0.1	Pass
T14	40 - 20	Secondary Horizontal	3/4	637	-0.00	9.76	0.1	Pass
T15	20 - 6.6667	Secondary Horizontal	3/4	699	-0.00	9.76	0.1	Pass
T1	300 - 280	Top Girt	7/8	6	-0.04	8.22	0.5	Pass
T2	280 - 260	Top Girt	7/8	53	2.57	19.48	13.2	Pass
T3	260 - 240	Top Girt	7/8	101	-0.40	8.22	4.8	Pass
T4	240 - 220	Top Girt	7/8	149	-0.40	8.22	4.9	Pass
T5	220 - 200	Top Girt	7/8	198	-0.83	8.31	9.9	Pass
T6	200 - 180	Top Girt	7/8	246	-1.38	8.31	16.6	Pass
T7	180 - 160	Top Girt	7/8	294	-1.37	8.31	16.5	Pass
T8	160 - 140	Top Girt	7/8	342	-0.89	8.31	10.7	Pass
T9	140 - 120	Top Girt	7/8	389	4.92	19.48	25.2	Pass
T10	120 - 100	Top Girt	7/8	438	-0.89	8.22	10.8	Pass
T11	100 - 80	Top Girt	7/8	485	-0.89	8.22	10.8	Pass
T12	80 - 60	Top Girt	7/8	532	-0.96	8.22	11.6	Pass
T13	60 - 40	Top Girt	7/8	582	-1.04	8.22	12.6	Pass
T14	40 - 20	Top Girt	7/8	630	-1.06	8.22	12.9	Pass
T15	20 - 6.6667	Top Girt	7/8	678	-1.06	8.22	12.9	Pass
T16	6.6667 - 0	Top Girt	7/8	711	4.47	19.48	23.0	Pass
T1	300 - 280	Bottom Girt	7/8	8	1.31	19.48	6.7	Pass
T2	280 - 260	Bottom Girt	7/8	56	-0.33	8.22	4.0	Pass
T3	260 - 240	Bottom Girt	7/8	104	-0.40	8.22	4.8	Pass
T4	240 - 220	Bottom Girt	7/8	152	-0.40	8.22	4.9	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T5	220 - 200	Bottom Girt	7/8	201	-0.83	8.31	9.9	Pass
T6	200 - 180	Bottom Girt	7/8	249	-1.38	8.31	16.6	Pass
T7	180 - 160	Bottom Girt	7/8	297	-1.37	8.31	16.5	Pass
T8	160 - 140	Bottom Girt	7/8	345	3.20	19.48	16.4	Pass
T9	140 - 120	Bottom Girt	7/8	392	-0.84	8.22	10.2	Pass
T10	120 - 100	Bottom Girt	7/8	441	-0.89	8.22	10.8	Pass
T11	100 - 80	Bottom Girt	7/8	488	-0.89	8.22	10.8	Pass
T12	80 - 60	Bottom Girt	7/8	535	-0.96	8.22	11.6	Pass
T13	60 - 40	Bottom Girt	7/8	585	-1.04	8.22	12.6	Pass
T14	40 - 20	Bottom Girt	7/8	633	-1.06	8.22	12.9	Pass
T15	20 - 6.6667	Bottom Girt	7/8	680	4.45	19.48	22.9	Pass
T2	280 - 260	Guy A@279.917	3/4 (24000)	730	12.13	34.98	34.7	Pass
T5	220 - 200	Guy A@210	5/8 (23000)	727	13.41	25.44	52.7	Pass
T9	140 - 120	Guy A@139.917	5/8 (23000)	724	15.76	25.44	62.0	Pass
T12	80 - 60	Guy A@70	1/2 (23000)	721	7.52	16.14	46.6	Pass
T2	280 - 260	Guy B@279.917	3/4 (24000)	729	12.14	34.98	34.7	Pass
T5	220 - 200	Guy B@210	5/8 (23000)	726	13.29	25.44	52.2	Pass
T9	140 - 120	Guy B@139.917	5/8 (23000)	723	15.49	25.44	60.9	Pass
T12	80 - 60	Guy B@70	1/2 (23000)	720	7.40	16.14	45.8	Pass
T2	280 - 260	Guy C@279.917	3/4 (24000)	728	12.19	34.98	34.8	Pass
T5	220 - 200	Guy C@210	5/8 (23000)	725	13.92	25.44	54.7	Pass
T9	140 - 120	Guy C@139.917	5/8 (23000)	722	16.31	25.44	64.1	Pass
T12	80 - 60	Guy C@70	1/2 (23000)	719	7.78	16.14	48.2	Pass
							Summary	
						Leg (T16)	61.8	Pass
						Diagonal (T8)	63.2	Pass
						Horizontal (T5)	27.7	Pass
						Secondary Horizontal (T1)	0.1	Pass
						Top Girt (T9)	25.2	Pass
						Bottom Girt (T15)	22.9	Pass
						Guy A (T9)	62.0	Pass
						Guy B (T9)	60.9	Pass
						Guy C (T9)	64.1	Pass
						RATING =	**64.1**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Guy Anchor Block Foundation Structural	0	Not analyzed	Pass
1	Guy Anchor Block Foundation Soil Interaction	0	Not analyzed	Pass
1	Base Foundation Structural	0	Not analyzed	Pass
1	Base Foundation Soil Interaction	0	Not analyzed	Pass
Structure Rating (max from all components) =				**64.1%**

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

4.1) Recommendations

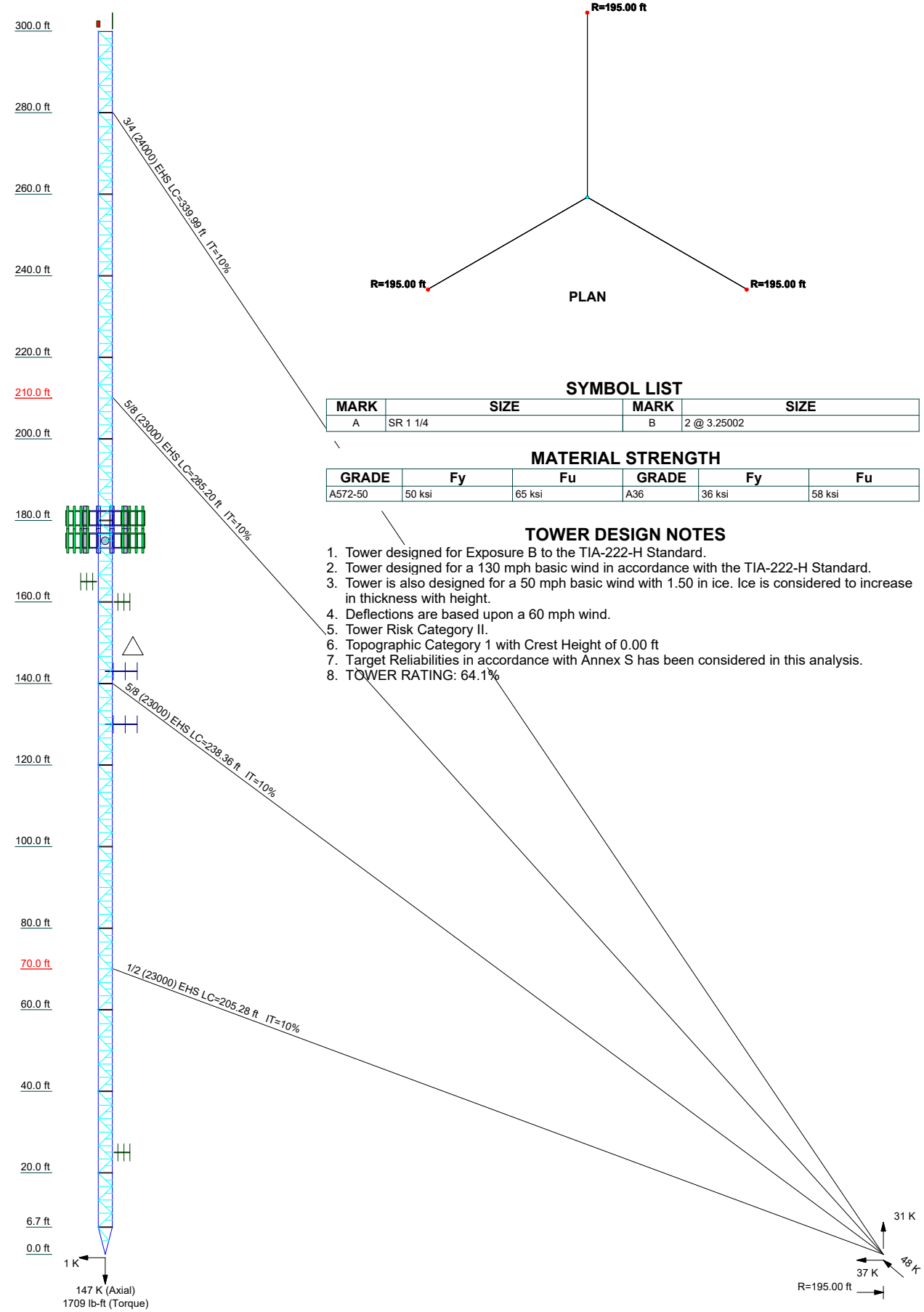
The tower feasibly has sufficient capacity to carry the proposed load configuration. However, the following conditions are required per TIA-222-H Section 15.6.3 prior to the implementation of a loading change:

1) Obtain original tower design drawings or a full tower mapping.
2) Obtain original foundation design drawings or a foundation mapping.
3) Obtain a geotechnical report.
4) Obtain a comprehensive (rigorous) structural analysis.

APPENDIX A

TNXTOWER OUTPUT

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16
Legs		SR 2				SR 2 1/4										
Leg Grade								A572-50								
Diagonals			SR 1				SR 1 1/8									
Diagonal Grade								A36								
Top Girts								SR 7/8								
Bottom Girts								SR 7/8								N.A.
Horizontals								SR 7/8								A
Sec. Horizontals								SR 3/4								N.A.
Face Width (ft)															3.5	
# Panels @ (ft)								84 @ 3.30556							B 4 @ 3.29166	
Weight (K)	1.1	1.1	1.1	1.1	1.3	1.3	1.3	1.3	1.1	1.1	1.1	1.1	1.1	1.1	0.7	0.3



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	SR 1 1/4	B	2 @ 3.25002

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 130 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. Target Reliabilities in accordance with Annex S has been considered in this analysis.
8. TOWER RATING: 64.1%

ALL REACTIONS ARE FACTORED

Engineered Tower Solutions
3227 Wellington Court
Raleigh, NC 27615
Phone: (919) 782-2710
FAX: (919) 435-0631

Job: ***East Haddam***			
Project: ***ETS Job No. 22108236.STR.8128***			
Client: CTI Towers	Drawn by: Amrita Chakraborty	App'd:	
Code: TIA-222-H	Date: 06/16/22	Scale: NTS	
Path:		Dwg No. E-1	

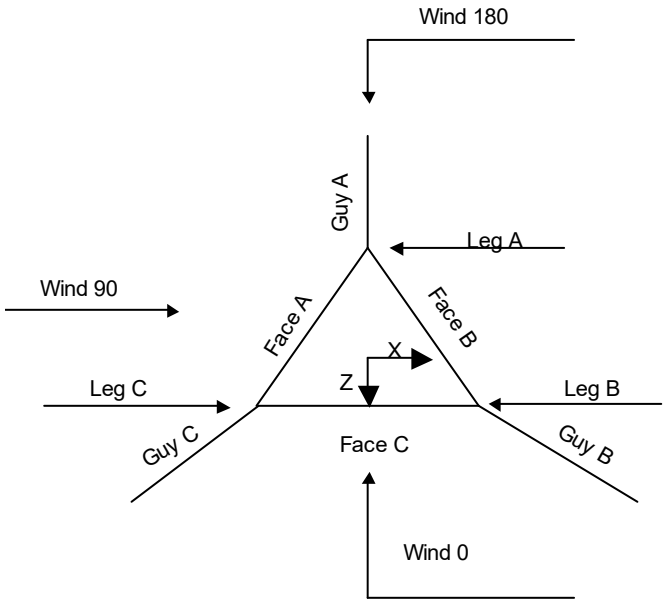
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 300.00 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 3.50 ft at the top and tapered at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower base elevation above sea level: 591.02 ft.
Basic wind speed of 130 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.5000 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 tower member design is 1.
Safety factor used in guy design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Maximum demand-capacity ratio is: 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Corner & Starmount Guyed Tower

Tower Section Geometry

Tower Section	*Tower Elevation*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
T1	300.00-280.00			3.50	1	20.00
T2	280.00-260.00			3.50	1	20.00
T3	260.00-240.00			3.50	1	20.00
T4	240.00-220.00			3.50	1	20.00
T5	220.00-200.00			3.50	1	20.00
T6	200.00-180.00			3.50	1	20.00
T7	180.00-160.00			3.50	1	20.00
T8	160.00-140.00			3.50	1	20.00
T9	140.00-120.00			3.50	1	20.00
T10	120.00-100.00			3.50	1	20.00
T11	100.00-80.00			3.50	1	20.00
T12	80.00-60.00			3.50	1	20.00
T13	60.00-40.00			3.50	1	20.00
T14	40.00-20.00			3.50	1	20.00
T15	20.00-6.67			3.50	1	13.33
T16	6.67-0.00			3.50	1	6.67

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	300.00-280.00	3.31	K Brace Left	No	Yes+Steps	1.0000	1.0000
T2	280.00-260.00	3.31	K Brace Left	No	Yes+Steps	1.0000	1.0000
T3	260.00-240.00	3.31	K Brace Left	No	Yes+Steps	1.0000	1.0000
T4	240.00-220.00	3.31	K Brace Left	No	Yes+Steps	1.0000	1.0000
T5	220.00-200.00	3.31	K Brace Left	No	Yes+Steps	1.0000	1.0000
T6	200.00-180.00	3.31	K Brace Left	No	Yes+Steps	1.0000	1.0000
T7	180.00-160.00	3.31	K Brace Left	No	Yes+Steps	1.0000	1.0000
T8	160.00-140.00	3.31	K Brace Left	No	Yes+Steps	1.0000	1.0000
T9	140.00-120.00	3.31	K Brace Left	No	Yes+Steps	1.0000	1.0000
T10	120.00-100.00	3.31	K Brace Left	No	Yes+Steps	1.0000	1.0000
T11	100.00-80.00	3.31	K Brace Left	No	Yes+Steps	1.0000	1.0000
T12	80.00-60.00	3.31	K Brace Left	No	Yes+Steps	1.0000	1.0000
T13	60.00-40.00	3.31	K Brace Left	No	Yes+Steps	1.0000	1.0000
T14	40.00-20.00	3.31	K Brace Left	No	Yes+Steps	1.0000	1.0000
T15	20.00-6.67	3.29	K Brace Left	No	Yes+Steps	1.0000	1.0000
T16	6.67-0.00	3.25	K Brace Left	No	Yes	1.0000	1.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 300.00-280.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T2 280.00-260.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T3 260.00-240.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T4 240.00-220.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T5 220.00-200.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T6 200.00-180.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T7 180.00-160.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T8 160.00-140.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T9 140.00-120.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T10 120.00-100.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T11 100.00-80.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T12 80.00-60.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T13 60.00-40.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T14 40.00-20.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T15 20.00-6.67	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T16 6.67-0.00	Solid Round	2	A572-50	Solid Round	1	A36

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
			(50 ksi)			(36 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 300.00-280.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T2 280.00-260.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T3 260.00-240.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T4 240.00-220.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T5 220.00-200.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T6 200.00-180.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T7 180.00-160.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T8 160.00-140.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T9 140.00-120.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T10 120.00-100.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T11 100.00-80.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T12 80.00-60.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T13 60.00-40.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T14 40.00-20.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T15 20.00-6.67	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T16 6.67-0.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	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
T1 300.00-280.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T2 280.00-260.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T3 260.00-240.00	None	Flat Bar		A36	Solid Round	7/8	A36

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T4 240.00-220.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Solid Round	7/8	(36 ksi) A36 (36 ksi)
T5 220.00-200.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Solid Round	7/8	(36 ksi) A36 (36 ksi)
T6 200.00-180.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Solid Round	7/8	(36 ksi) A36 (36 ksi)
T7 180.00-160.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Solid Round	7/8	(36 ksi) A36 (36 ksi)
T8 160.00-140.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Solid Round	7/8	(36 ksi) A36 (36 ksi)
T9 140.00-120.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Solid Round	7/8	(36 ksi) A36 (36 ksi)
T10 120.00-100.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Solid Round	7/8	(36 ksi) A36 (36 ksi)
T11 100.00-80.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Solid Round	7/8	(36 ksi) A36 (36 ksi)
T12 80.00-60.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Solid Round	7/8	(36 ksi) A36 (36 ksi)
T13 60.00-40.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Solid Round	7/8	(36 ksi) A36 (36 ksi)
T14 40.00-20.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Solid Round	7/8	(36 ksi) A36 (36 ksi)
T15 20.00-6.67	None	Flat Bar		(36 ksi) A36 (36 ksi)	Solid Round	7/8	(36 ksi) A36 (36 ksi)
T16 6.67-0.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Solid Round	1 1/4	(36 ksi) A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 300.00-280.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T2 280.00-260.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T3 260.00-240.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T4 240.00-220.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T5 220.00-200.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T6 200.00-180.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T7 180.00-160.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T8 160.00-140.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T9 140.00-120.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T10 120.00-100.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T11 100.00-80.00	Solid Round	3/4	A36	Solid Round		A572-50

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
			(36 ksi)			(50 ksi)
T12 80.00-60.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T13 60.00-40.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T14 40.00-20.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T15 20.00-6.67	Solid Round	3/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T16 6.67-0.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A572-50 (50 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 300.00-280.00	0.00	0.6250	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T2 280.00-260.00	0.00	0.6250	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T3 260.00-240.00	0.00	0.6250	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T4 240.00-220.00	0.00	0.6250	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T5 220.00-200.00	0.00	0.6250	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T6 200.00-180.00	0.00	0.6250	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T7 180.00-160.00	0.00	0.6250	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T8 160.00-140.00	0.00	0.6250	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T9 140.00-120.00	0.00	0.6250	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T10 120.00-100.00	0.00	0.6250	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T11 100.00-80.00	0.00	0.6250	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T12 80.00-60.00	0.00	0.6250	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T13 60.00-40.00	0.00	0.6250	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T14 40.00-20.00	0.00	0.6250	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T15 20.00-6.67	0.00	0.6250	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T16 6.67-0.00	0.00	0.6250	A36 (36 ksi)	1	1	1.03	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	No	Yes	1	1	1	1	1	1	1	1
300.00-280.00				1	1	1	1	1	1	1
T2	No	Yes	1	1	1	1	1	1	1	1
280.00-260.00				1	1	1	1	1	1	1
T3	No	Yes	1	1	1	1	1	1	1	1
260.00-240.00				1	1	1	1	1	1	1
T4	No	Yes	1	1	1	1	1	1	1	1
240.00-220.00				1	1	1	1	1	1	1
T5	No	Yes	1	1	1	1	1	1	1	1
220.00-200.00				1	1	1	1	1	1	1
T6	No	Yes	1	1	1	1	1	1	1	1
200.00-180.00				1	1	1	1	1	1	1
T7	No	Yes	1	1	1	1	1	1	1	1
180.00-160.00				1	1	1	1	1	1	1
T8	No	Yes	1	1	1	1	1	1	1	1
160.00-140.00				1	1	1	1	1	1	1
T9	No	Yes	1	1	1	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1
T10	No	Yes	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T11	No	Yes	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T12	No	Yes	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T13	No	Yes	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T14	No	Yes	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T15	No	Yes	1	1	1	1	1	1	1	1
20.00-6.67				1	1	1	1	1	1	1
T16 6.67-0.00	No	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		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
T1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
300.00-280.00														
T2	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
280.00-260.00														
T3	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
260.00-240.00														

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
T4 240.00-220.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T5 220.00-200.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T6 200.00-180.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T7 180.00-160.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T8 160.00-140.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T9 140.00-120.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T10 120.00-100.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T11 100.00-80.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T12 80.00-60.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T13 60.00-40.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T14 40.00-20.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T15 20.00-6.67	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T16 6.67-0.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	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
T1 300.00-280.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 280.00-260.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 260.00-240.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 240.00-220.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 220.00-200.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 200.00-180.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 180.00-160.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 160.00-140.00	0.0000	0.75	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 140.00-120.00	0.0000	0.75	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 120.00-100.00	0.0000	0.75	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 100.00-80.00	0.0000	0.75	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 Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	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
T12 80.00-60.00	0.0000	0.75	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 60.00-40.00	0.0000	0.75	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 40.00-20.00	0.0000	0.75	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 20.00-6.67	0.0000	0.75	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 6.67-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Guy Data

Guy Elevation ft	Guy Grade	Guy Size	Initial Tension K	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
70	EHS	A 1/2 (23000)	2.69	10%	23000	0.517	205.13	195.00	0.0000	0.00	100%
		B 1/2 (23000)	2.69	10%	23000	0.517	205.13	195.00	0.0000	0.00	100%
		C 1/2 (23000)	2.69	10%	23000	0.517	205.13	195.00	0.0000	0.00	100%
139.917	EHS	A 5/8 (23000)	4.24	10%	23000	0.813	238.19	195.00	0.0000	0.00	100%
		B 5/8 (23000)	4.24	10%	23000	0.813	238.19	195.00	0.0000	0.00	100%
		C 5/8 (23000)	4.24	10%	23000	0.813	238.19	195.00	0.0000	0.00	100%
210	EHS	A 5/8 (23000)	4.24	10%	23000	0.813	284.99	195.00	0.0000	0.00	100%
		B 5/8 (23000)	4.24	10%	23000	0.813	284.99	195.00	0.0000	0.00	100%
		C 5/8 (23000)	4.24	10%	23000	0.813	284.99	195.00	0.0000	0.00	100%
279.917	EHS	A 3/4 (24000)	5.83	10%	24000	1.155	339.76	195.00	0.0000	0.00	100%
		B 3/4 (24000)	5.83	10%	24000	1.155	339.76	195.00	0.0000	0.00	100%
		C 3/4 (24000)	5.83	10%	24000	1.155	339.76	195.00	0.0000	0.00	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
70	Corner						
139.917	Corner						
210	Corner						
279.917	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
70.00	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	
139.92	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	
210.00	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	
279.92	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	

Guy Data *(cont'd)*

Guy Elevation ft	Cable Weight A K	Cable Weight B K	Cable Weight C K	Cable Weight D K	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
70	0.11	0.11	0.11		4.02 3.5 sec/pulse	4.02 3.5 sec/pulse	4.02 3.5 sec/pulse	
139.917	0.19	0.19	0.19		5.37 4.0 sec/pulse	5.37 4.0 sec/pulse	5.37 4.0 sec/pulse	
210	0.23	0.23	0.23		7.64 4.8 sec/pulse	7.64 4.8 sec/pulse	7.64 4.8 sec/pulse	
279.917	0.39	0.39	0.39		11.14 5.8 sec/pulse	11.14 5.8 sec/pulse	11.14 5.8 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
70	No	Yes			0.7	0.7	1	1
139.917	No	No			0.7	0.7	1	1
210	No	No			0.7	0.7	1	1
279.917	No	No			0.7	0.7	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
70	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75
139.917	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75
210	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75
279.917	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	1	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
70	A	35.00	25	4	1.2825
	B	35.00	25	4	1.2825
	C	35.00	25	4	1.2825
139.917	A	69.96	31	5	1.3745
	B	69.96	31	5	1.3745
	C	69.96	31	5	1.3745
210	A	105.00	34	5	1.4315
	B	105.00	34	5	1.4315
	C	105.00	34	5	1.4315
279.917	A	139.96	37	6	1.4732
	B	139.96	37	6	1.4732
	C	139.96	37	6	1.4732

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
***													
Safety Line 3/8	A	No	No	Ar (CaAa)	300.00 - 0.00	3.0000	-0.2	1	1	0.3750	0.3750		0.22
***													
Wavequide Brackets	B	No	No	Af (CaAa)	185.00 - 0.00	0.0000	0	1	1	1.7500	1.7500		8.40
LDF7-50A(1-5/8)	B	No	No	Ar (CaAa)	185.00 - 0.00	0.0000	0	12	6	0.8750 0.7500	1.9800		0.82
3" Rigid Conduit	B	No	No	Ar (CaAa)	185.00 - 0.00	0.0000	-0.3	1	1	3.0000	3.0000		2.80
LDF4P-50A(1/2")	B	No	No	Ar (CaAa)	185.00 - 0.00	0.0000	-0.3	1	1	0.5000 0.6300	0.6300		0.15
***													
3/4" Fiber	B	No	No	Ar (CaAa)	185.00 - 0.00	0.0000	0.3	2	2	0.5000	0.7500		0.08
LDF4P-50A(1/2")	B	No	No	Af (CaAa)	185.00 - 0.00	0.0000	0.3	1	1	0.5000	0.6300		0.15
3/4" Fiber	B	No	No	Ar (CaAa)	185.00 - 0.00	0.0000	0.35	2	2	0.5000	0.7500		0.08
LDF4P-50A(1/2")	C	No	No	Af (CaAa)	300.00 - 0.00	0.0000	0	1	1	0.5000	0.6300		0.15
***													
4 AWG	C	No	No	Ar (CaAa)	175.00 - 5.00	0.0000	0	4	4	0.5000	0.2043		2.40
1/2" Coax	C	No	No	Ar (CaAa)	175.00 - 5.00	0.0000	0	1	1	0.5000	0.5100		0.16
***													

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight plf
***								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	300.00-280.00	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.100	0.000	0.00
T2	280.00-260.00	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.100	0.000	0.00
T3	260.00-240.00	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.100	0.000	0.00
T4	240.00-220.00	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.100	0.000	0.00
T5	220.00-200.00	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.100	0.000	0.00
T6	200.00-180.00	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	17.178	0.000	0.11
		C	0.000	0.000	2.100	0.000	0.00
T7	180.00-160.00	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	68.713	0.000	0.43
		C	0.000	0.000	4.091	0.000	0.15
T8	160.00-140.00	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	68.713	0.000	0.43
		C	0.000	0.000	4.754	0.000	0.20
T9	140.00-120.00	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	68.713	0.000	0.43
		C	0.000	0.000	4.754	0.000	0.20
T10	120.00-100.00	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	68.713	0.000	0.43
		C	0.000	0.000	4.754	0.000	0.20
T11	100.00-80.00	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	68.713	0.000	0.43
		C	0.000	0.000	4.754	0.000	0.20
T12	80.00-60.00	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	68.713	0.000	0.43
		C	0.000	0.000	4.754	0.000	0.20
T13	60.00-40.00	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	68.713	0.000	0.43
		C	0.000	0.000	4.754	0.000	0.20
T14	40.00-20.00	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	68.713	0.000	0.43
		C	0.000	0.000	4.754	0.000	0.20
T15	20.00-6.67	A	0.000	0.000	0.500	0.000	0.00
		B	0.000	0.000	45.809	0.000	0.29

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	3.170	0.000	0.13
T16	6.67-0.00	A	0.000	0.000	0.250	0.000	0.00
		B	0.000	0.000	22.905	0.000	0.14
		C	0.000	0.000	0.921	0.000	0.02

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	300.00-280.00	A	1.585	0.000	0.000	7.088	0.000	0.08
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	8.438	0.000	0.10
T2	280.00-260.00	A	1.573	0.000	0.000	7.043	0.000	0.08
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	8.393	0.000	0.10
T3	260.00-240.00	A	1.561	0.000	0.000	6.995	0.000	0.08
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	8.345	0.000	0.10
T4	240.00-220.00	A	1.548	0.000	0.000	6.943	0.000	0.08
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	8.293	0.000	0.10
T5	220.00-200.00	A	1.534	0.000	0.000	6.887	0.000	0.08
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	8.237	0.000	0.10
T6	200.00-180.00	A	1.519	0.000	0.000	6.826	0.000	0.07
		B		0.000	0.000	30.747	0.000	0.49
		C		0.000	0.000	8.176	0.000	0.09
T7	180.00-160.00	A	1.502	0.000	0.000	6.758	0.000	0.07
		B		0.000	0.000	122.374	0.000	1.94
		C		0.000	0.000	25.031	0.000	0.38
T8	160.00-140.00	A	1.483	0.000	0.000	6.684	0.000	0.07
		B		0.000	0.000	121.692	0.000	1.92
		C		0.000	0.000	30.394	0.000	0.47
T9	140.00-120.00	A	1.462	0.000	0.000	6.599	0.000	0.07
		B		0.000	0.000	120.923	0.000	1.90
		C		0.000	0.000	30.081	0.000	0.46
T10	120.00-100.00	A	1.438	0.000	0.000	6.503	0.000	0.07
		B		0.000	0.000	120.039	0.000	1.87
		C		0.000	0.000	29.721	0.000	0.46
T11	100.00-80.00	A	1.410	0.000	0.000	6.388	0.000	0.07
		B		0.000	0.000	118.996	0.000	1.84
		C		0.000	0.000	29.297	0.000	0.45
T12	80.00-60.00	A	1.375	0.000	0.000	6.248	0.000	0.06
		B		0.000	0.000	117.721	0.000	1.80
		C		0.000	0.000	28.778	0.000	0.44
T13	60.00-40.00	A	1.329	0.000	0.000	6.066	0.000	0.06
		B		0.000	0.000	116.063	0.000	1.76
		C		0.000	0.000	28.103	0.000	0.43
T14	40.00-20.00	A	1.263	0.000	0.000	5.802	0.000	0.05
		B		0.000	0.000	113.651	0.000	1.69
		C		0.000	0.000	27.122	0.000	0.41
T15	20.00-6.67	A	1.165	0.000	0.000	3.605	0.000	0.03
		B		0.000	0.000	73.379	0.000	1.07
		C		0.000	0.000	17.111	0.000	0.26
T16	6.67-0.00	A	1.014	0.000	0.000	1.602	0.000	0.01
		B		0.000	0.000	34.863	0.000	0.49
		C		0.000	0.000	3.492	0.000	0.04

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	300.00-280.00	-0.4121	0.3464	-1.1939	0.9755
T2	280.00-260.00	-0.4121	0.3464	-1.1960	0.9782
T3	260.00-240.00	-0.4121	0.3464	-1.1982	0.9812
T4	240.00-220.00	-0.4121	0.3464	-1.2006	0.9843
T5	220.00-200.00	-0.3837	0.3221	-1.1575	0.9503
T6	200.00-180.00	2.2754	-1.7174	1.1711	-0.2855
T7	180.00-160.00	5.8650	-3.8474	4.6094	-1.3906
T8	160.00-140.00	5.8132	-3.7777	4.5139	-1.1707
T9	140.00-120.00	6.0004	-3.8802	4.6183	-1.2077
T10	120.00-100.00	6.0004	-3.8802	4.6406	-1.2267
T11	100.00-80.00	6.0004	-3.8802	4.6669	-1.2495
T12	80.00-60.00	6.0004	-3.8802	4.6990	-1.2780
T13	60.00-40.00	6.0004	-3.8802	4.7281	-1.3130
T14	40.00-20.00	6.0004	-3.8802	4.7530	-1.3612
T15	20.00-6.67	5.9798	-3.8689	4.7681	-1.4339
T16	6.67-0.00	6.4955	-4.2845	5.1486	-2.6910

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	2	Safety Line 3/8	280.00 - 300.00	0.6000	0.5592
T1	15	LDF4P-50A(1/2")	280.00 - 300.00	0.6000	0.5592
T2	2	Safety Line 3/8	260.00 - 280.00	0.6000	0.5612
T2	15	LDF4P-50A(1/2")	260.00 - 280.00	0.6000	0.5612
T3	2	Safety Line 3/8	240.00 - 260.00	0.6000	0.5633
T3	15	LDF4P-50A(1/2")	240.00 - 260.00	0.6000	0.5633
T4	2	Safety Line 3/8	220.00 - 240.00	0.6000	0.5656
T4	15	LDF4P-50A(1/2")	220.00 - 240.00	0.6000	0.5656
T5	2	Safety Line 3/8	200.00 - 220.00	0.6000	0.5575
T5	15	LDF4P-50A(1/2")	200.00 - 220.00	0.6000	0.5575
T6	2	Safety Line 3/8	180.00 - 200.00	0.6000	0.5601
T6	4	Wavequide Brackets	180.00 - 185.00	0.6000	0.5601
T6	6	LDF7-50A(1-5/8)	180.00 - 185.00	0.6000	0.5601
T6	7	3" Rigid Conduit	180.00 -	0.6000	0.5601

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	10	LDF4P-50A(1/2")	180.00 - 185.00	0.6000	0.5601
T6	12	3/4" Fiber	180.00 - 185.00	0.6000	0.5601
T6	13	LDF4P-50A(1/2")	180.00 - 185.00	0.6000	0.5601
T6	14	3/4" Fiber	180.00 - 185.00	0.6000	0.5601
T6	15	LDF4P-50A(1/2")	180.00 - 200.00	0.6000	0.5601
T7	2	Safety Line 3/8	160.00 - 180.00	0.6000	0.5630
T7	4	Wavequide Brackets	160.00 - 180.00	0.6000	0.5630
T7	6	LDF7-50A(1-5/8)	160.00 - 180.00	0.6000	0.5630
T7	7	3" Rigid Conduit	160.00 - 180.00	0.6000	0.5630
T7	10	LDF4P-50A(1/2")	160.00 - 180.00	0.6000	0.5630
T7	12	3/4" Fiber	160.00 - 180.00	0.6000	0.5630
T7	13	LDF4P-50A(1/2")	160.00 - 180.00	0.6000	0.5630
T7	14	3/4" Fiber	160.00 - 180.00	0.6000	0.5630
T7	15	LDF4P-50A(1/2")	160.00 - 180.00	0.6000	0.5630
T7	18	4 AWG	160.00 - 175.00	0.6000	0.5630
T7	19	1/2" Coax	160.00 - 175.00	0.6000	0.5630
T8	2	Safety Line 3/8	140.00 - 160.00	0.6000	0.5662
T8	4	Wavequide Brackets	140.00 - 160.00	0.6000	0.5662
T8	6	LDF7-50A(1-5/8)	140.00 - 160.00	0.6000	0.5662
T8	7	3" Rigid Conduit	140.00 - 160.00	0.6000	0.5662
T8	10	LDF4P-50A(1/2")	140.00 - 160.00	0.6000	0.5662
T8	12	3/4" Fiber	140.00 - 160.00	0.6000	0.5662
T8	13	LDF4P-50A(1/2")	140.00 - 160.00	0.6000	0.5662
T8	14	3/4" Fiber	140.00 - 160.00	0.6000	0.5662
T8	15	LDF4P-50A(1/2")	140.00 - 160.00	0.6000	0.5662
T8	18	4 AWG	140.00 - 160.00	0.6000	0.5662
T8	19	1/2" Coax	140.00 - 160.00	0.6000	0.5662
T9	2	Safety Line 3/8	120.00 - 140.00	0.6000	0.5806
T9	4	Wavequide Brackets	120.00 - 140.00	0.6000	0.5806
T9	6	LDF7-50A(1-5/8)	120.00 - 140.00	0.6000	0.5806
T9	7	3" Rigid Conduit	120.00 -	0.6000	0.5806

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	10	LDF4P-50A(1/2")	120.00 - 140.00	0.6000	0.5806
T9	12	3/4" Fiber	120.00 - 140.00	0.6000	0.5806
T9	13	LDF4P-50A(1/2")	120.00 - 140.00	0.6000	0.5806
T9	14	3/4" Fiber	120.00 - 140.00	0.6000	0.5806
T9	15	LDF4P-50A(1/2")	120.00 - 140.00	0.6000	0.5806
T9	18	4 AWG	120.00 - 140.00	0.6000	0.5806
T9	19	1/2" Coax	120.00 - 140.00	0.6000	0.5806
T10	2	Safety Line 3/8	100.00 - 120.00	0.6000	0.5848
T10	4	Wavequide Brackets	100.00 - 120.00	0.6000	0.5848
T10	6	LDF7-50A(1-5/8)	100.00 - 120.00	0.6000	0.5848
T10	7	3" Rigid Conduit	100.00 - 120.00	0.6000	0.5848
T10	10	LDF4P-50A(1/2")	100.00 - 120.00	0.6000	0.5848
T10	12	3/4" Fiber	100.00 - 120.00	0.6000	0.5848
T10	13	LDF4P-50A(1/2")	100.00 - 120.00	0.6000	0.5848
T10	14	3/4" Fiber	100.00 - 120.00	0.6000	0.5848
T10	15	LDF4P-50A(1/2")	100.00 - 120.00	0.6000	0.5848
T10	18	4 AWG	100.00 - 120.00	0.6000	0.5848
T10	19	1/2" Coax	100.00 - 120.00	0.6000	0.5848
T11	2	Safety Line 3/8	80.00 - 100.00	0.6000	0.5899
T11	4	Wavequide Brackets	80.00 - 100.00	0.6000	0.5899
T11	6	LDF7-50A(1-5/8)	80.00 - 100.00	0.6000	0.5899
T11	7	3" Rigid Conduit	80.00 - 100.00	0.6000	0.5899
T11	10	LDF4P-50A(1/2")	80.00 - 100.00	0.6000	0.5899
T11	12	3/4" Fiber	80.00 - 100.00	0.6000	0.5899
T11	13	LDF4P-50A(1/2")	80.00 - 100.00	0.6000	0.5899
T11	14	3/4" Fiber	80.00 - 100.00	0.6000	0.5899
T11	15	LDF4P-50A(1/2")	80.00 - 100.00	0.6000	0.5899
T11	18	4 AWG	80.00 - 100.00	0.6000	0.5899
T11	19	1/2" Coax	80.00 - 100.00	0.6000	0.5899
T12	2	Safety Line 3/8	60.00 - 80.00	0.6000	0.5961
T12	4	Wavequide Brackets	60.00 - 80.00	0.6000	0.5961
T12	6	LDF7-50A(1-5/8)	60.00 - 80.00	0.6000	0.5961
T12	7	3" Rigid Conduit	60.00 - 80.00	0.6000	0.5961
T12	10	LDF4P-50A(1/2")	60.00 - 80.00	0.6000	0.5961
T12	12	3/4" Fiber	60.00 - 80.00	0.6000	0.5961
T12	13	LDF4P-50A(1/2")	60.00 - 80.00	0.6000	0.5961
T12	14	3/4" Fiber	60.00 - 80.00	0.6000	0.5961
T12	15	LDF4P-50A(1/2")	60.00 - 80.00	0.6000	0.5961
T12	18	4 AWG	60.00 - 80.00	0.6000	0.5961
T12	19	1/2" Coax	60.00 - 80.00	0.6000	0.5961
T13	2	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T13	4	Wavequide Brackets	40.00 - 60.00	0.6000	0.6000
T13	6	LDF7-50A(1-5/8)	40.00 - 60.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T13	7	3" Rigid Conduit	40.00 - 60.00	0.6000	0.6000
T13	10	LDF4P-50A(1/2")	40.00 - 60.00	0.6000	0.6000
T13	12	3/4" Fiber	40.00 - 60.00	0.6000	0.6000
T13	13	LDF4P-50A(1/2")	40.00 - 60.00	0.6000	0.6000
T13	14	3/4" Fiber	40.00 - 60.00	0.6000	0.6000
T13	15	LDF4P-50A(1/2")	40.00 - 60.00	0.6000	0.6000
T13	18	4 AWG	40.00 - 60.00	0.6000	0.6000
T13	19	1/2" Coax	40.00 - 60.00	0.6000	0.6000
T14	2	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T14	4	Wavequide Brackets	20.00 - 40.00	0.6000	0.6000
T14	6	LDF7-50A(1-5/8)	20.00 - 40.00	0.6000	0.6000
T14	7	3" Rigid Conduit	20.00 - 40.00	0.6000	0.6000
T14	10	LDF4P-50A(1/2")	20.00 - 40.00	0.6000	0.6000
T14	12	3/4" Fiber	20.00 - 40.00	0.6000	0.6000
T14	13	LDF4P-50A(1/2")	20.00 - 40.00	0.6000	0.6000
T14	14	3/4" Fiber	20.00 - 40.00	0.6000	0.6000
T14	15	LDF4P-50A(1/2")	20.00 - 40.00	0.6000	0.6000
T14	18	4 AWG	20.00 - 40.00	0.6000	0.6000
T14	19	1/2" Coax	20.00 - 40.00	0.6000	0.6000
T15	2	Safety Line 3/8	6.67 - 20.00	0.6000	0.6000
T15	4	Wavequide Brackets	6.67 - 20.00	0.6000	0.6000
T15	6	LDF7-50A(1-5/8)	6.67 - 20.00	0.6000	0.6000
T15	7	3" Rigid Conduit	6.67 - 20.00	0.6000	0.6000
T15	10	LDF4P-50A(1/2")	6.67 - 20.00	0.6000	0.6000
T15	12	3/4" Fiber	6.67 - 20.00	0.6000	0.6000
T15	13	LDF4P-50A(1/2")	6.67 - 20.00	0.6000	0.6000
T15	14	3/4" Fiber	6.67 - 20.00	0.6000	0.6000
T15	15	LDF4P-50A(1/2")	6.67 - 20.00	0.6000	0.6000
T15	18	4 AWG	6.67 - 20.00	0.6000	0.6000
T15	19	1/2" Coax	6.67 - 20.00	0.6000	0.6000
T16	2	Safety Line 3/8	0.00 - 6.67	0.6000	0.5068
T16	4	Wavequide Brackets	0.00 - 6.67	0.6000	0.5068
T16	6	LDF7-50A(1-5/8)	0.00 - 6.67	0.6000	0.5068
T16	7	3" Rigid Conduit	0.00 - 6.67	0.6000	0.5068
T16	10	LDF4P-50A(1/2")	0.00 - 6.67	0.6000	0.5068
T16	12	3/4" Fiber	0.00 - 6.67	0.6000	0.5068
T16	13	LDF4P-50A(1/2")	0.00 - 6.67	0.6000	0.5068
T16	14	3/4" Fiber	0.00 - 6.67	0.6000	0.5068
T16	15	LDF4P-50A(1/2")	0.00 - 6.67	0.6000	0.5068
T16	18	4 AWG	5.00 - 6.67	0.6000	0.5068
T16	19	1/2" Coax	5.00 - 6.67	0.6000	0.5068

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
***									
Beacon	C	From Leg	0.00 0.00 1.00	0.0000	300.00	No Ice 1/2" Ice 1" Ice	0.75 1.20 1.36	0.75 1.20 1.36	0.02 0.04 0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	1.71	1.71	0.10
1/2-in x 5-ft Lightning Rod	B	From Leg	0.00 0.00 2.50	0.0000	300.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.25 0.76 1.29 1.92	0.25 0.76 1.29 1.92	0.00 0.01 0.01 0.04
***									
Pipe Mount [PM 601-1]	A	From Leg	0.50 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.32 1.58 1.84 2.40	1.32 1.58 1.84 2.40	0.07 0.08 0.09 0.13
***									
Pirod 4' Side Mount Standoff	A	From Face	2.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.72 4.90 7.10 11.50	2.72 4.90 7.10 11.50	0.15 0.22 0.31 0.55
3" dia x 6-ft Omni Antenna	A	From Face	4.00 0.00 3.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.77 2.13 2.49 3.21	1.77 2.13 2.49 3.21	0.03 0.05 0.08 0.16
***									
7770.00 w/ Mount Pipe	A	From Face	4.00 0.00 4.50	0.0000	180.50	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
7770.00 w/ Mount Pipe	B	From Face	4.00 0.00 4.50	0.0000	180.50	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
7770.00 w/ Mount Pipe	C	From Face	4.00 0.00 4.50	0.0000	180.50	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
(2) LGP 21401	A	From Face	4.00 0.00 4.50	0.0000	180.50	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.35 0.44 0.54 0.77	0.01 0.02 0.03 0.05
(2) LGP 21401	B	From Face	4.00 0.00 4.50	0.0000	180.50	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.35 0.44 0.54 0.77	0.01 0.02 0.03 0.05
(2) LGP 21401	C	From Face	4.00 0.00 4.50	0.0000	180.50	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.35 0.44 0.54 0.77	0.01 0.02 0.03 0.05
DC6-48-60-18-8F	A	From Face	4.00 0.00 4.50	0.0000	180.50	No Ice 1/2" Ice 1" Ice 2" Ice	1.21 1.89 2.11 2.57	1.21 1.89 2.11 2.57	0.03 0.05 0.08 0.14
OPA65R-BU6A_TIA w/ Mount Pipe	A	From Face	4.00 0.00 4.50	0.0000	180.50	No Ice 1/2" Ice 1" Ice 2" Ice	8.09 8.64 9.16 10.22	7.65 8.83 9.71 11.51	0.10 0.17 0.24 0.43
OPA65R-BU6A_TIA w/ Mount Pipe	B	From Face	4.00 0.00 4.50	0.0000	180.50	No Ice 1/2" Ice 1" Ice 2" Ice	8.09 8.64 9.16 10.22	7.65 8.83 9.71 11.51	0.10 0.17 0.24 0.43
OPA65R-BU6A_TIA w/	C	From Face	4.00	0.0000	180.50	No Ice	8.09	7.65	0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			0.00			1/2" Ice	8.64	8.83	0.17
			4.50			1" Ice	9.16	9.71	0.24
						2" Ice	10.22	11.51	0.43
80010965_TIA w/ Mount Pipe	A	From Face	4.00	0.0000	180.50	No Ice	14.05	7.63	0.14
			0.00			1/2" Ice	14.69	8.90	0.23
			4.50			1" Ice	15.30	9.96	0.34
						2" Ice	16.53	11.92	0.58
80010965_TIA w/ Mount Pipe	B	From Face	4.00	0.0000	180.50	No Ice	14.05	7.63	0.14
			0.00			1/2" Ice	14.69	8.90	0.23
			4.50			1" Ice	15.30	9.96	0.34
						2" Ice	16.53	11.92	0.58
80010965_TIA w/ Mount Pipe	C	From Face	4.00	0.0000	180.50	No Ice	14.05	7.63	0.14
			0.00			1/2" Ice	14.69	8.90	0.23
			4.50			1" Ice	15.30	9.96	0.34
						2" Ice	16.53	11.92	0.58
DBCT108F1V92-1	A	From Face	4.00	0.0000	180.50	No Ice	0.61	0.61	0.01
			0.00			1/2" Ice	0.71	0.71	0.02
			4.50			1" Ice	0.81	0.81	0.02
						2" Ice	1.01	1.01	0.03
DBCT108F1V92-1	B	From Face	4.00	0.0000	180.50	No Ice	0.61	0.61	0.01
			0.00			1/2" Ice	0.71	0.71	0.02
			4.50			1" Ice	0.81	0.81	0.02
						2" Ice	1.01	1.01	0.03
DBCT108F1V92-1	C	From Face	4.00	0.0000	180.50	No Ice	0.61	0.61	0.01
			0.00			1/2" Ice	0.71	0.71	0.02
			4.50			1" Ice	0.81	0.81	0.02
						2" Ice	1.01	1.01	0.03
DC6-48-60-0-8C	B	From Face	4.00	0.0000	180.50	No Ice	1.14	1.14	0.03
			0.00			1/2" Ice	1.79	1.79	0.05
			4.50			1" Ice	2.00	2.00	0.07
						2" Ice	2.45	2.45	0.13
RRUS 4449 B5/B12	A	From Face	4.00	0.0000	180.50	No Ice	1.97	1.41	0.07
			0.00			1/2" Ice	2.14	1.56	0.09
			4.50			1" Ice	2.33	1.73	0.11
						2" Ice	2.72	2.07	0.16
RRUS 4449 B5/B12	B	From Face	4.00	0.0000	180.50	No Ice	1.97	1.41	0.07
			0.00			1/2" Ice	2.14	1.56	0.09
			4.50			1" Ice	2.33	1.73	0.11
						2" Ice	2.72	2.07	0.16
RRUS 4449 B5/B12	C	From Face	4.00	0.0000	180.50	No Ice	1.97	1.41	0.07
			0.00			1/2" Ice	2.14	1.56	0.09
			4.50			1" Ice	2.33	1.73	0.11
						2" Ice	2.72	2.07	0.16
RRUS 8843 B2/B66A	A	From Face	4.00	0.0000	180.50	No Ice	1.64	1.35	0.07
			0.00			1/2" Ice	1.80	1.50	0.09
			4.50			1" Ice	1.97	1.65	0.11
						2" Ice	2.32	1.99	0.16
RRUS 8843 B2/B66A	B	From Face	4.00	0.0000	180.50	No Ice	1.64	1.35	0.07
			0.00			1/2" Ice	1.80	1.50	0.09
			4.50			1" Ice	1.97	1.65	0.11
						2" Ice	2.32	1.99	0.16
RRUS 8843 B2/B66A	C	From Face	4.00	0.0000	180.50	No Ice	1.64	1.35	0.07
			0.00			1/2" Ice	1.80	1.50	0.09
			4.50			1" Ice	1.97	1.65	0.11
						2" Ice	2.32	1.99	0.16
2" x 8' Pipe mounts	A	From Face	4.00	0.0000	180.50	No Ice	1.90	1.90	0.03
			0.00			1/2" Ice	2.73	2.73	0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert (ft ft ft)	Azimuth Adjustment (°)	Placement (ft)		C_AA_A Front (ft^2)	C_AA_A Side (ft^2)	Weight (K)
			2.00			1" Ice	3.56	3.56	0.06
						2" Ice	5.21	5.21	0.09
2" x 8' Pipe mounts	B	From Face	4.00	0.0000	180.50	No Ice	1.90	1.90	0.03
			0.00			1/2" Ice	2.73	2.73	0.04
			2.00			1" Ice	3.56	3.56	0.06
						2" Ice	5.21	5.21	0.09
2" x 8' Pipe mounts	C	From Face	4.00	0.0000	180.50	No Ice	1.90	1.90	0.03
			0.00			1/2" Ice	2.73	2.73	0.04
			2.00			1" Ice	3.56	3.56	0.06
						2" Ice	5.21	5.21	0.09
(2) 5' x 2" Pipe Mount	A	From Face	4.00	0.0000	180.50	No Ice	1.19	1.19	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			2.00			1" Ice	1.81	1.81	0.04
						2" Ice	2.46	2.46	0.08
(2) 5' x 2" Pipe Mount	B	From Face	4.00	0.0000	180.50	No Ice	1.19	1.19	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			2.00			1" Ice	1.81	1.81	0.04
						2" Ice	2.46	2.46	0.08
(2) 5' x 2" Pipe Mount	C	From Face	4.00	0.0000	180.50	No Ice	1.19	1.19	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			2.00			1" Ice	1.81	1.81	0.04
						2" Ice	2.46	2.46	0.08
(4) L2.5x2.5x3/16x6'Angle	A	From Face	2.00	0.0000	180.50	No Ice	1.50	1.50	0.06
			0.00			1/2" Ice	1.99	1.40	0.07
			2.00			1" Ice	2.22	1.63	0.09
						2" Ice	2.70	2.12	0.13
(4) L2.5x2.5x3/16x6'Angle	B	From Face	2.00	0.0000	180.50	No Ice	1.50	1.50	0.06
			0.00			1/2" Ice	1.99	1.40	0.07
			2.00			1" Ice	2.22	1.63	0.09
						2" Ice	2.70	2.12	0.13
(4) L2.5x2.5x3/16x6'Angle	C	From Face	2.00	0.0000	180.50	No Ice	1.50	1.50	0.06
			0.00			1/2" Ice	1.99	1.40	0.07
			2.00			1" Ice	2.22	1.63	0.09
						2" Ice	2.70	2.12	0.13
5' x 2" x 2" Tube Mount	A	From Face	0.50	0.0000	180.50	No Ice	1.67	1.18	0.06
			0.00			1/2" Ice	2.16	1.40	0.07
			2.00			1" Ice	2.22	1.63	0.09
						2" Ice	2.70	2.12	0.13
5' x 2" x 2" Tube Mount	B	From Face	0.50	0.0000	180.50	No Ice	1.67	1.18	0.06
			0.00			1/2" Ice	2.16	1.40	0.07
			2.00			1" Ice	2.22	1.63	0.09
						2" Ice	2.70	2.12	0.13
5' x 2" x 2" Tube Mount	C	From Face	0.50	0.0000	180.50	No Ice	1.67	1.18	0.06
			0.00			1/2" Ice	2.16	1.40	0.07
			2.00			1" Ice	2.22	1.63	0.09
						2" Ice	2.70	2.12	0.13
5' x 2" x 2" Tube Mount	C	From Face	0.50	0.0000	180.50	No Ice	1.67	1.18	0.06
			0.00			1/2" Ice	2.16	1.40	0.07
			-2.00			1" Ice	2.22	1.63	0.09
						2" Ice	2.70	2.12	0.13
5' x 2" x 2" Tube Mount	C	From Face	0.50	0.0000	180.50	No Ice	1.67	1.18	0.06
			0.00			1/2" Ice	2.16	1.40	0.07
			-2.00			1" Ice	2.22	1.63	0.09
						2" Ice	2.70	2.12	0.13
5' x 2" x 2" Tube Mount	C	From Face	0.50	0.0000	180.50	No Ice	1.67	1.18	0.06
			0.00			1/2" Ice	2.16	1.40	0.07
			-2.00			1" Ice	2.22	1.63	0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	2.70	2.12	0.13
Sector Mount [SM 402-1]	A	From Face	2.00 0.00 0.00	0.0000	180.50	No Ice 1/2" Ice 1" Ice 2" Ice	9.72 13.66 17.55 25.28	7.05 9.87 12.66 18.13	0.28 0.40 0.57 1.01
Sector Mount [SM 402-1]	B	From Face	2.00 0.00 0.00	0.0000	180.50	No Ice 1/2" Ice 1" Ice 2" Ice	9.72 13.66 17.55 25.28	7.05 9.87 12.66 18.13	0.28 0.40 0.57 1.01
Sector Mount [SM 402-1]	C	From Face	2.00 0.00 0.00	0.0000	180.50	No Ice 1/2" Ice 1" Ice 2" Ice	9.72 13.66 17.55 25.28	7.05 9.87 12.66 18.13	0.28 0.40 0.57 1.01
V									
4-ft Yagi Antennas	C	From Leg	0.50 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.50 1.00 1.50 2.50	0.25 0.50 0.75 1.25	0.00 0.01 0.03 0.05
4-ft Yagi Antennas	B	From Leg	0.50 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.50 1.00 1.50 2.50	0.25 0.50 0.75 1.25	0.00 0.01 0.03 0.05
4-ft Yagi Antennas	A	From Leg	0.50 0.00 0.00	0.0000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.50 1.00 1.50 2.50	0.25 0.50 0.75 1.25	0.00 0.01 0.03 0.05
4-ft Yagi Antennas	A	From Leg	0.50 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.50 1.00 1.50 2.50	0.25 0.50 0.75 1.25	0.00 0.01 0.03 0.05
4-ft Yagi Antennas	B	From Leg	0.50 0.00 0.00	0.0000	25.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.50 1.00 1.50 2.50	0.25 0.50 0.75 1.25	0.00 0.01 0.03 0.05
***									
*** T-Mobile Proposed***									
VV-65A-R_TIA w/ Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.14 8.69 9.21 10.26	5.39 6.52 7.38 9.14	0.07 0.13 0.20 0.36
VV-65A-R_TIA w/ Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.14 8.69 9.21 10.26	5.39 6.52 7.38 9.14	0.07 0.13 0.20 0.36
VV-65A-R_TIA w/ Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.14 8.69 9.21 10.26	5.39 6.52 7.38 9.14	0.07 0.13 0.20 0.36
APXVAALL24_43-U-A20	A	From Leg	3.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	20.24 20.89 21.54 22.87	10.40 11.72 12.76 14.87	0.15 0.28 0.42 0.73
APXVAALL24_43-U-A20	B	From Leg	3.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	20.24 20.89 21.54 22.87	10.40 11.72 12.76 14.87	0.15 0.28 0.42 0.73
APXVAALL24_43-U-A20	C	From Leg	3.00	0.0000	175.00	No Ice	20.24	10.40	0.15

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 K
			0.00				1/2" Ice	20.89	11.72	0.28
			0.00				1" Ice	21.54	12.76	0.42
							2" Ice	22.87	14.87	0.73
AIR 6419 B41	A	From Leg	3.00		0.0000	175.00	No Ice	6.17	3.40	0.08
			0.00				1/2" Ice	6.52	3.87	0.13
			0.00				1" Ice	6.87	4.34	0.18
							2" Ice	7.61	5.35	0.32
AIR 6419 B41	B	From Leg	3.00		0.0000	175.00	No Ice	6.17	3.40	0.08
			0.00				1/2" Ice	6.52	3.87	0.13
			0.00				1" Ice	6.87	4.34	0.18
							2" Ice	7.61	5.35	0.32
AIR 6419 B41	C	From Leg	3.00		0.0000	175.00	No Ice	6.17	3.40	0.08
			0.00				1/2" Ice	6.52	3.87	0.13
			0.00				1" Ice	6.87	4.34	0.18
							2" Ice	7.61	5.35	0.32
RADIO 4480 B71+B85_TMO	A	From Leg	3.00		0.0000	175.00	No Ice	2.85	1.38	0.09
			0.00				1/2" Ice	3.06	1.54	0.11
			0.00				1" Ice	3.28	1.71	0.14
							2" Ice	3.74	2.07	0.20
RADIO 4480 B71+B85_TMO	B	From Leg	3.00		0.0000	175.00	No Ice	2.85	1.38	0.09
			0.00				1/2" Ice	3.06	1.54	0.11
			0.00				1" Ice	3.28	1.71	0.14
							2" Ice	3.74	2.07	0.20
RADIO 4480 B71+B85_TMO	C	From Leg	3.00		0.0000	175.00	No Ice	2.85	1.38	0.09
			0.00				1/2" Ice	3.06	1.54	0.11
			0.00				1" Ice	3.28	1.71	0.14
							2" Ice	3.74	2.07	0.20
RADIO 4460 B2/B25 B66_TMO	A	From Leg	3.00		0.0000	175.00	No Ice	2.14	1.69	0.11
			0.00				1/2" Ice	2.32	1.85	0.13
			0.00				1" Ice	2.51	2.02	0.16
							2" Ice	2.91	2.39	0.22
RADIO 4460 B2/B25 B66_TMO	B	From Leg	3.00		0.0000	175.00	No Ice	2.14	1.69	0.11
			0.00				1/2" Ice	2.32	1.85	0.13
			0.00				1" Ice	2.51	2.02	0.16
							2" Ice	2.91	2.39	0.22
RADIO 4460 B2/B25 B66_TMO	C	From Leg	3.00		0.0000	175.00	No Ice	2.14	1.69	0.11
			0.00				1/2" Ice	2.32	1.85	0.13
			0.00				1" Ice	2.51	2.02	0.16
							2" Ice	2.91	2.39	0.22
Sector Mount [SM 602-3]	C	None			0.0000	175.00	No Ice	32.10	32.10	1.54
							1/2" Ice	39.56	39.56	2.12
							1" Ice	47.21	47.21	2.84
							2" Ice	63.52	63.52	4.69

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft^2	Weight K

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 ft²	Weight K
***											
***											
SC2-W100AB	A	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		175.00	2.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.07 7.47 7.86 8.66	0.04 0.08 0.12 0.19

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.0 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.0 Wind 60 deg - No Ice+1.0 Guy
5	1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy
6	1.2 Dead+1.0 Wind 120 deg - No Ice+1.0 Guy
7	1.2 Dead+1.0 Wind 150 deg - No Ice+1.0 Guy
8	1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy
9	1.2 Dead+1.0 Wind 210 deg - No Ice+1.0 Guy
10	1.2 Dead+1.0 Wind 240 deg - No Ice+1.0 Guy
11	1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy
12	1.2 Dead+1.0 Wind 300 deg - No Ice+1.0 Guy
13	1.2 Dead+1.0 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 K	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T1	300 - 280	Leg	Max Tension	4	2.18	117.03	-71.97
			Max. Compression	2	-3.08	13.91	18.11
			Max. Mx	25	0.19	-129.23	-61.59
			Max. My	21	0.28	7.08	144.23
			Max. Vy	4	1.73	-27.11	17.47
			Max. Vx	8	2.10	-6.67	-32.88
		Diagonal	Max Tension	5	0.68	0.00	0.00
			Max. Compression	3	-0.67	0.00	0.00
			Max. Mx	16	-0.29	17.55	0.00
			Max. My	6	0.03	0.00	0.19
			Max. Vy	16	-0.01	0.00	0.00
			Max. Vx	6	-0.00	0.00	0.00
		Horizontal	Max Tension	4	0.05	0.00	0.00
			Max. Compression	5	-0.07	0.00	0.00
			Max. Mx	23	-0.03	11.16	0.00
			Max. My	5	-0.07	0.00	0.00
			Max. Vy	23	0.01	0.00	0.00
			Max. Vx	5	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	10	0.00	-0.77	-0.00
			Max. Compression	18	-0.00	-2.45	-0.00
			Max. Mx	21	-0.00	-2.51	0.00
			Max. My	2	-0.00	-1.08	0.00
			Max. Vy	21	0.01	-2.51	0.00
			Max. Vx	2	-0.00	-1.08	0.00
		Top Girt	Max Tension	8	0.04	0.00	0.00
			Max. Compression	2	-0.04	0.00	0.00
			Max. Mx	23	0.01	11.16	0.00
			Max. My	5	0.04	0.00	0.00
			Max. Vy	23	0.01	0.00	0.00
			Max. Vx	5	-0.00	0.00	0.00
		Bottom Girt	Max Tension	8	1.31	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	23	1.16	11.16	0.00
			Max. My	5	0.47	0.00	0.00
			Max. Vy	23	0.01	0.00	0.00
			Max. Vx	5	-0.00	0.00	0.00
T2	280 - 260	Leg	Max Tension	2	3.76	9.60	32.06
			Max. Compression	8	-15.54	48.95	1.64
			Max. Mx	4	2.18	-171.26	106.94
			Max. My	8	2.15	-10.66	-207.59
			Max. Vy	4	1.73	-171.26	106.94
			Max. Vx	8	2.10	-10.66	-207.59
		Diagonal	Max Tension	13	1.80	0.00	0.00
			Max. Compression	7	-1.84	0.00	0.00
			Max. Mx	16	0.39	17.43	0.00
			Max. My	6	0.38	0.00	0.19
			Max. Vy	16	-0.01	0.00	0.00
			Max. Vx	6	-0.00	0.00	0.00
		Horizontal	Max Tension	13	0.10	0.00	0.00
			Max. Compression	2	-0.02	0.00	0.00
			Max. Mx	14	0.06	11.08	0.00
			Max. My	5	0.07	0.00	0.00
			Max. Vy	14	0.01	0.00	0.00
			Max. Vx	5	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	23	0.00	-2.45	-0.00
			Max. Compression	18	-0.00	-2.43	-0.00
			Max. Mx	22	0.00	-2.50	0.00
			Max. My	2	-0.00	-1.09	0.00
			Max. Vy	22	0.01	-2.50	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	2	-0.00	-1.09	0.00
		Top Girt	Max Tension	8	2.57	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	23	2.49	11.08	0.00
			Max. My	5	1.43	0.00	0.00
			Max. Vy	23	0.01	0.00	0.00
			Max. Vx	5	-0.00	0.00	0.00
		Bottom Girt	Max Tension	12	0.18	0.00	0.00
			Max. Compression	6	-0.17	0.00	0.00
			Max. Mx	23	0.05	11.08	0.00
			Max. My	5	0.06	0.00	0.00
			Max. Vy	23	0.01	0.00	0.00
			Max. Vx	5	-0.00	0.00	0.00
		Guy A	Bottom Tension	21	11.55		
			Top Tension	8	12.13		
			Top Cable Vert	21	10.37		
			Top Cable Norm	21	6.29		
			Top Cable Tan	21	0.00		
			Bot Cable Vert	8	-9.28		
			Bot Cable Norm	8	6.88		
			Bot Cable Tan	8	0.00		
		Guy B	Bottom Tension	25	11.52		
			Top Tension	12	12.14		
			Top Cable Vert	25	10.38		
			Top Cable Norm	25	6.30		
			Top Cable Tan	25	0.00		
			Bot Cable Vert	12	-9.25		
			Bot Cable Norm	12	6.86		
			Bot Cable Tan	12	0.00		
		Guy C	Bottom Tension	17	11.52		
			Top Tension	4	12.19		
			Top Cable Vert	17	10.42		
			Top Cable Norm	17	6.33		
			Top Cable Tan	17	0.00		
			Bot Cable Vert	4	-9.25		
			Bot Cable Norm	4	6.86		
			Bot Cable Tan	4	0.00		
T3	260 - 240	Leg	Max Tension	2	8.99	-18.08	-9.44
			Max. Compression	8	-18.88	43.69	14.50
			Max. Mx	6	-12.53	67.23	-20.37
			Max. My	7	2.45	23.63	83.85
			Max. Vy	10	0.56	-14.56	-17.28
			Max. Vx	2	0.72	-32.13	28.38
		Diagonal	Max Tension	2	1.24	0.00	0.00
			Max. Compression	6	-1.37	0.00	0.00
			Max. Mx	18	0.13	17.29	0.00
			Max. My	6	0.36	0.00	0.19
			Max. Vy	18	-0.01	0.00	0.00
			Max. Vx	6	-0.00	0.00	0.00
		Horizontal	Max Tension	8	0.12	0.00	0.00
			Max. Compression	2	-0.04	0.00	0.00
			Max. Mx	14	0.06	10.99	0.00
			Max. My	5	-0.01	0.00	0.00
			Max. Vy	14	0.01	0.00	0.00
			Max. Vx	5	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	10	0.00	-0.77	-0.00
			Max. Compression	18	-0.00	-2.40	-0.00
			Max. Mx	22	0.00	-2.47	0.00
			Max. My	2	-0.00	-1.06	0.00
			Max. Vy	22	0.01	-2.47	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	2	-0.00	-1.06	0.00
		Top Girt	Max Tension	6	0.16	0.00	0.00
			Max. Compression	12	-0.10	0.00	0.00
			Max. Mx	23	0.02	10.99	0.00
			Max. My	5	0.01	0.00	0.00
			Max. Vy	23	0.01	0.00	0.00
			Max. Vx	5	-0.00	0.00	0.00
		Bottom Girt	Max Tension	2	0.12	0.00	0.00
			Max. Compression	6	-0.10	0.00	0.00
			Max. Mx	14	0.03	10.99	0.00
			Max. My	5	-0.00	0.00	0.00
			Max. Vy	14	0.01	0.00	0.00
			Max. Vx	5	-0.00	0.00	0.00
T4	240 - 220	Leg	Max Tension	2	10.05	-17.82	-8.77
			Max. Compression	8	-19.05	59.95	3.08
			Max. Mx	7	-18.27	74.88	-21.52
			Max. My	10	-16.54	-19.25	63.54
			Max. Vy	12	-0.59	-19.23	-27.69
			Max. Vx	8	0.45	64.28	-3.59
		Diagonal	Max Tension	8	0.79	0.00	0.00
			Max. Compression	12	-1.03	0.00	0.00
			Max. Mx	18	-0.19	17.15	0.00
			Max. My	6	0.35	0.00	0.18
			Max. Vy	18	0.01	0.00	0.00
			Max. Vx	6	-0.00	0.00	0.00
		Horizontal	Max Tension	13	0.12	0.00	0.00
			Max. Compression	2	-0.02	0.00	0.00
			Max. Mx	14	0.07	10.89	0.00
			Max. My	11	0.07	0.00	0.00
			Max. Vy	14	0.01	0.00	0.00
			Max. Vx	11	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	10	0.00	-0.76	-0.00
			Max. Compression	18	-0.00	-2.38	-0.00
			Max. Mx	22	0.00	-2.44	0.00
			Max. My	2	-0.00	-1.00	0.00
			Max. Vy	22	0.01	-2.44	0.00
			Max. Vx	2	-0.00	-1.00	0.00
		Top Girt	Max Tension	6	0.10	0.00	0.00
			Max. Compression	11	-0.06	0.00	0.00
			Max. Mx	14	0.03	10.89	0.00
			Max. My	5	0.07	0.00	0.00
			Max. Vy	14	0.01	0.00	0.00
			Max. Vx	5	-0.00	0.00	0.00
		Bottom Girt	Max Tension	12	0.10	0.00	0.00
			Max. Compression	8	-0.05	0.00	0.00
			Max. Mx	14	0.03	10.89	0.00
			Max. My	5	-0.05	0.00	0.00
			Max. Vy	14	0.01	0.00	0.00
			Max. Vx	5	-0.00	0.00	0.00
T5	220 - 200	Leg	Max Tension	10	25.01	192.31	-10.53
			Max. Compression	4	-42.73	-38.41	-132.63
			Max. Mx	4	-39.65	-271.96	-120.15
			Max. My	12	-38.52	54.58	326.10
			Max. Vy	5	-2.87	-234.52	-126.79
			Max. Vx	7	-3.06	-112.99	-189.99
		Diagonal	Max Tension	7	5.49	0.00	0.00
			Max. Compression	13	-5.61	0.00	0.00
			Max. Mx	23	-0.36	19.34	0.00
			Max. My	6	0.93	0.00	0.23
			Max. Vy	23	-0.02	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	6	-0.00	0.00	0.00
		Horizontal	Max Tension	3	5.40	0.00	0.00
			Max. Compression	6	-0.06	0.00	0.00
			Max. Mx	14	0.11	10.79	0.00
			Max. My	11	0.05	0.00	0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	11	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	23	0.00	-2.38	-0.00
			Max. Compression	19	-0.00	-2.37	-0.00
			Max. Mx	22	0.00	-2.40	0.00
			Max. My	2	-0.00	-0.93	0.00
			Max. Vy	22	0.01	-2.40	0.00
			Max. Vx	2	-0.00	-0.93	0.00
		Top Girt	Max Tension	8	0.15	0.00	0.00
			Max. Compression	12	-0.07	0.00	0.00
			Max. Mx	14	0.04	10.79	0.00
			Max. My	5	0.13	0.00	0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	5	-0.00	0.00	0.00
		Bottom Girt	Max Tension	12	0.52	0.00	0.00
			Max. Compression	6	-0.39	0.00	0.00
			Max. Mx	14	0.07	10.79	0.00
			Max. My	5	0.28	0.00	0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	5	-0.00	0.00	0.00
		Guy A	Bottom Tension	8	13.24		
			Top Tension	8	13.41		
			Top Cable Vert	8	10.00		
			Top Cable Norm	8	8.93		
			Top Cable Tan	8	0.00		
			Bot Cable Vert	8	-9.58		
			Bot Cable Norm	8	9.14		
			Bot Cable Tan	8	0.00		
		Guy B	Bottom Tension	12	13.12		
			Top Tension	12	13.29		
			Top Cable Vert	12	9.91		
			Top Cable Norm	12	8.85		
			Top Cable Tan	12	0.00		
			Bot Cable Vert	12	-9.49		
			Bot Cable Norm	12	9.06		
			Bot Cable Tan	12	0.00		
		Guy C	Bottom Tension	4	13.75		
			Top Tension	4	13.92		
			Top Cable Vert	4	10.37		
			Top Cable Norm	4	9.27		
			Top Cable Tan	4	0.00		
			Bot Cable Vert	4	-9.95		
			Bot Cable Norm	4	9.48		
			Bot Cable Tan	4	0.00		
T6	200 - 180	Leg	Max Tension	10	53.49	23.74	-47.55
			Max. Compression	4	-71.41	52.66	211.07
			Max. Mx	5	-20.87	548.06	82.69
			Max. My	2	-49.41	162.10	-591.23
			Max. Vy	5	-2.87	4.73	-127.17
			Max. Vx	7	-3.06	24.12	64.89
		Diagonal	Max Tension	13	5.26	0.00	0.00
			Max. Compression	7	-5.52	0.00	0.00
			Max. Mx	23	0.92	19.17	0.00
			Max. My	11	3.14	0.00	-0.22
			Max. Vy	23	-0.02	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	11	0.00	0.00	0.00
		Horizontal	Max Tension	13	0.48	0.00	0.00
			Max. Compression	6	-0.26	0.00	0.00
			Max. Mx	14	0.15	10.68	0.00
			Max. My	11	0.21	0.00	0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	11	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	23	0.00	-2.35	-0.00
			Max. Compression	19	-0.00	-2.34	-0.00
			Max. Mx	22	0.00	-2.37	0.00
			Max. My	2	-0.00	-0.87	0.00
			Max. Vy	22	0.01	-2.37	0.00
			Max. Vx	2	-0.00	-0.87	0.00
		Top Girt	Max Tension	6	0.41	0.00	0.00
			Max. Compression	12	-0.37	0.00	0.00
			Max. Mx	14	0.07	10.68	0.00
			Max. My	5	-0.19	0.00	0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	5	-0.00	0.00	0.00
		Bottom Girt	Max Tension	3	0.91	0.00	0.00
			Max. Compression	6	-0.91	0.00	0.00
			Max. Mx	25	0.28	10.68	0.00
			Max. My	12	0.87	0.00	0.00
			Max. Vy	25	-0.01	0.00	0.00
			Max. Vx	12	-0.00	0.00	0.00
T7	180 - 160	Leg	Max Tension	10	49.92	0.93	-14.86
			Max. Compression	4	-70.94	-109.25	-124.91
			Max. Mx	11	-64.13	-916.88	-160.43
			Max. My	2	-46.78	-152.31	-917.35
			Max. Vy	5	3.70	-10.87	-144.89
			Max. Vx	9	3.44	131.72	62.91
		Diagonal	Max Tension	9	5.95	0.00	0.00
			Max. Compression	3	-6.22	0.00	0.00
			Max. Mx	17	0.85	18.98	0.00
			Max. My	12	0.49	0.00	-0.25
			Max. Vy	17	-0.02	0.00	0.00
			Max. Vx	12	0.00	0.00	0.00
		Horizontal	Max Tension	11	1.12	0.00	0.00
			Max. Compression	6	-0.96	0.00	0.00
			Max. Mx	14	0.19	10.55	0.00
			Max. My	12	-0.03	0.00	0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	12	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	5	0.00	-0.74	-0.00
			Max. Compression	12	-0.00	-0.63	-0.00
			Max. Mx	18	0.00	-2.31	-0.00
			Max. My	8	0.00	-0.44	0.00
			Max. Vy	18	0.01	-2.31	-0.00
			Max. Vx	8	-0.00	-0.44	0.00
		Top Girt	Max Tension	8	0.76	0.00	0.00
			Max. Compression	2	-0.66	0.00	0.00
			Max. Mx	25	0.22	10.55	0.00
			Max. My	12	0.64	0.00	0.00
			Max. Vy	25	-0.01	0.00	0.00
			Max. Vx	12	-0.00	0.00	0.00
		Bottom Girt	Max Tension	2	0.44	0.00	0.00
			Max. Compression	8	-0.34	0.00	0.00
			Max. Mx	23	0.05	10.55	0.00
			Max. My	12	-0.23	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vy	23	-0.01	0.00	0.00
			Max. Vx	12	-0.00	0.00	0.00
T8	160 - 140	Leg	Max Tension	10	22.12	-56.34	-19.13
			Max. Compression	4	-46.13	-312.79	-134.47
			Max. Mx	5	-6.44	481.66	-253.17
			Max. My	9	-6.53	-38.68	566.21
			Max. Vy	5	5.92	-11.27	-60.86
			Max. Vx	9	6.50	55.41	24.54
		Diagonal	Max Tension	9	7.40	0.00	0.00
			Max. Compression	3	-7.66	0.00	0.00
			Max. Mx	17	1.43	18.79	0.00
			Max. My	12	0.14	0.00	-0.26
			Max. Vy	17	0.02	0.00	0.00
			Max. Vx	12	0.00	0.00	0.00
		Horizontal	Max Tension	3	0.30	0.00	0.00
			Max. Compression	9	-0.18	0.00	0.00
			Max. Mx	14	0.14	10.42	0.00
			Max. My	5	0.20	0.00	-0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	5	0.00	-0.72	-0.00
			Max. Compression	11	-0.00	-0.72	-0.00
			Max. Mx	18	0.00	-2.28	-0.00
			Max. My	2	0.00	-0.49	0.00
			Max. Vy	18	0.01	-2.28	-0.00
			Max. Vx	2	-0.00	0.00	0.00
		Top Girt	Max Tension	8	0.55	0.00	0.00
			Max. Compression	2	-0.42	0.00	0.00
			Max. Mx	23	0.17	10.42	0.00
			Max. My	12	0.49	0.00	0.00
			Max. Vy	23	-0.01	0.00	0.00
			Max. Vx	12	-0.00	0.00	0.00
		Bottom Girt	Max Tension	4	3.20	0.00	0.00
			Max. Compression	9	-0.54	0.00	0.00
			Max. Mx	14	1.24	10.42	0.00
			Max. My	5	-0.47	0.00	-0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
T9	140 - 120	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	23	-39.72	189.23	5.17
			Max. Mx	5	-6.44	-504.04	131.19
			Max. My	9	-6.54	149.60	-516.94
			Max. Vy	5	5.91	-504.04	131.19
			Max. Vx	9	6.50	149.60	-516.94
		Diagonal	Max Tension	8	2.20	0.00	0.00
			Max. Compression	4	-2.51	0.00	0.00
			Max. Mx	18	-0.76	16.24	0.00
			Max. My	12	0.28	0.00	-0.20
			Max. Vy	18	-0.01	0.00	0.00
			Max. Vx	12	0.00	0.00	0.00
		Horizontal	Max Tension	3	0.25	0.00	0.00
			Max. Compression	10	-0.03	0.00	0.00
			Max. Mx	17	0.19	10.27	0.00
			Max. My	6	0.16	0.00	-0.00
			Max. Vy	17	-0.01	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	5	0.00	-0.69	-0.00
			Max. Compression	11	-0.00	-0.76	-0.00
			Max. Mx	18	0.00	-2.25	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	2	0.00	-0.50	0.00
			Max. Vy	18	0.01	-2.25	-0.00
			Max. Vx	2	-0.00	0.00	0.00
		Top Girt	Max Tension	9	4.92	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	2.39	10.27	0.00
			Max. My	5	1.09	0.00	-0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Bottom Girt	Max Tension	3	0.28	0.00	0.00
			Max. Compression	9	-0.11	0.00	0.00
			Max. Mx	17	0.06	10.27	0.00
			Max. My	6	0.06	0.00	-0.00
			Max. Vy	17	-0.01	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Guy A	Bottom Tension	9	15.65		
			Top Tension	9	15.76		
			Top Cable Vert	9	9.35		
			Top Cable Norm	9	12.69		
			Top Cable Tan	9	0.04		
			Bot Cable Vert	9	-9.04		
			Bot Cable Norm	9	12.77		
			Bot Cable Tan	9	0.10		
		Guy B	Bottom Tension	11	15.38		
			Top Tension	11	15.49		
			Top Cable Vert	11	9.19		
			Top Cable Norm	11	12.47		
			Top Cable Tan	11	0.04		
			Bot Cable Vert	11	-8.89		
			Bot Cable Norm	11	12.55		
			Bot Cable Tan	11	0.10		
		Guy C	Bottom Tension	4	16.20		
			Top Tension	4	16.31		
			Top Cable Vert	4	9.67		
			Top Cable Norm	4	13.14		
			Top Cable Tan	4	0.00		
			Bot Cable Vert	4	-9.37		
			Bot Cable Norm	4	13.22		
			Bot Cable Tan	4	0.00		
T10	120 - 100	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	17	-42.11	-99.81	-175.08
			Max. Mx	23	-40.60	-214.27	-3.33
			Max. My	23	-41.00	-102.20	186.96
			Max. Vy	4	-0.78	-62.87	-103.74
			Max. Vx	8	-0.70	-63.05	89.65
		Diagonal	Max Tension	4	0.98	0.00	0.00
			Max. Compression	8	-1.35	0.00	0.00
			Max. Mx	18	-0.24	16.01	0.00
			Max. My	12	-0.13	0.00	-0.20
			Max. Vy	18	-0.01	0.00	0.00
			Max. Vx	12	0.00	0.00	0.00
		Horizontal	Max Tension	9	0.28	0.00	0.00
			Max. Compression	10	-0.01	0.00	0.00
			Max. Mx	17	0.16	10.10	0.00
			Max. My	5	0.21	0.00	-0.00
			Max. Vy	17	0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	5	0.00	-0.67	-0.00
			Max. Compression	10	-0.00	-0.68	-0.00
			Max. Mx	18	0.00	-2.21	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	2	0.00	-0.48	0.00
			Max. Vy	18	0.01	-2.21	-0.00
			Max. Vx	2	-0.00	0.00	0.00
		Top Girt	Max Tension	9	0.17	0.00	0.00
			Max. Compression	4	-0.03	0.00	0.00
			Max. Mx	17	0.10	10.10	0.00
			Max. My	6	0.09	0.00	-0.00
			Max. Vy	17	0.01	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Bottom Girt	Max Tension	2	0.14	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	17	0.09	10.10	0.00
			Max. My	5	0.07	0.00	-0.00
			Max. Vy	17	0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
T11	100 - 80	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	22	-42.12	215.40	3.50
			Max. Mx	23	-41.55	-221.30	-2.40
			Max. My	19	-39.49	-87.00	200.23
			Max. Vy	10	-1.29	-63.33	-117.23
			Max. Vx	3	-1.18	133.97	7.53
		Diagonal	Max Tension	10	2.02	0.00	0.00
			Max. Compression	3	-2.17	0.00	0.00
			Max. Mx	18	0.25	15.73	0.00
			Max. My	12	-0.21	0.00	-0.20
			Max. Vy	18	-0.01	0.00	0.00
			Max. Vx	12	0.00	0.00	0.00
		Horizontal	Max Tension	4	0.28	0.00	0.00
			Max. Compression	10	-0.02	0.00	0.00
			Max. Mx	17	0.18	9.90	0.00
			Max. My	5	0.21	0.00	-0.00
			Max. Vy	17	0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	5	0.00	-0.66	-0.00
			Max. Compression	10	-0.00	-0.68	-0.00
			Max. Mx	18	0.00	-2.16	-0.00
			Max. My	2	0.00	-0.47	0.00
			Max. Vy	18	0.01	-2.16	-0.00
			Max. Vx	2	-0.00	0.00	0.00
		Top Girt	Max Tension	11	0.18	0.00	0.00
			Max. Compression	5	-0.08	0.00	0.00
			Max. Mx	17	0.08	9.90	0.00
			Max. My	5	0.13	0.00	-0.00
			Max. Vy	17	0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Bottom Girt	Max Tension	5	0.28	0.00	0.00
			Max. Compression	11	-0.11	0.00	0.00
			Max. Mx	17	0.11	9.90	0.00
			Max. My	5	-0.02	0.00	-0.00
			Max. Vy	17	0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
T12	80 - 60	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	23	-45.52	-113.04	195.66
			Max. Mx	23	-45.40	235.95	-14.86
			Max. My	26	-44.23	-100.75	218.82
			Max. Vy	5	-1.31	-181.95	-120.15
			Max. Vx	3	-1.18	84.52	105.64
		Diagonal	Max Tension	10	2.33	0.00	0.00
			Max. Compression	10	-2.85	0.00	0.00
			Max. Mx	18	0.38	15.39	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	6	0.16	0.00	0.20
			Max. Vy	18	-0.01	0.00	0.00
			Max. Vx	6	-0.00	0.00	0.00
		Horizontal	Max Tension	3	4.41	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	3.11	9.66	0.00
			Max. My	5	0.11	0.00	-0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	5	0.00	-0.66	-0.00
			Max. Compression	10	-0.00	-0.68	-0.00
			Max. Mx	18	0.00	-2.10	-0.00
			Max. My	2	0.00	-0.48	0.00
			Max. Vy	18	0.01	-2.10	-0.00
			Max. Vx	2	-0.00	0.00	0.00
		Top Girt	Max Tension	11	0.33	0.00	0.00
			Max. Compression	5	-0.22	0.00	0.00
			Max. Mx	17	0.06	9.66	0.00
			Max. My	5	0.22	0.00	-0.00
			Max. Vy	17	-0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Bottom Girt	Max Tension	4	0.33	0.00	0.00
			Max. Compression	10	-0.18	0.00	0.00
			Max. Mx	14	0.10	9.66	0.00
			Max. My	5	0.29	0.00	-0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Guy A	Bottom Tension	9	7.48		
			Top Tension	9	7.52		
			Top Cable Vert	9	2.62		
			Top Cable Norm	9	7.04		
			Top Cable Tan	9	0.02		
			Bot Cable Vert	9	-2.48		
			Bot Cable Norm	9	7.06		
			Bot Cable Tan	9	0.04		
		Guy B	Bottom Tension	11	7.36		
			Top Tension	11	7.40		
			Top Cable Vert	11	2.58		
			Top Cable Norm	11	6.93		
			Top Cable Tan	11	0.02		
			Bot Cable Vert	11	-2.44		
			Bot Cable Norm	11	6.95		
			Bot Cable Tan	11	0.04		
		Guy C	Bottom Tension	4	7.74		
			Top Tension	4	7.78		
			Top Cable Vert	4	2.71		
			Top Cable Norm	4	7.29		
			Top Cable Tan	4	0.00		
			Bot Cable Vert	4	-2.58		
			Bot Cable Norm	4	7.30		
			Bot Cable Tan	4	0.00		
T13	60 - 40	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	17	-49.36	-127.93	-204.98
			Max. Mx	22	-48.46	-252.33	0.36
			Max. My	20	-44.24	-97.25	218.75
			Max. Vy	5	-1.31	-72.81	-115.79
			Max. Vx	3	1.10	145.86	5.55
		Diagonal	Max Tension	5	1.85	0.00	0.00
			Max. Compression	11	-2.19	0.00	0.00
			Max. Mx	18	-0.60	14.95	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	6	-0.12	0.00	0.19
			Max. Vy	18	-0.01	0.00	0.00
			Max. Vx	6	-0.00	0.00	0.00
		Horizontal	Max Tension	4	0.27	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	0.21	9.35	0.00
			Max. My	5	0.21	0.00	-0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	18	0.00	-2.03	-0.00
			Max. Compression	10	-0.00	-0.68	-0.00
			Max. Mx	17	0.00	-2.03	-0.00
			Max. My	2	0.00	-0.52	0.00
			Max. Vy	17	0.01	-2.03	-0.00
			Max. Vx	2	-0.00	0.00	0.00
		Top Girt	Max Tension	10	0.23	0.00	0.00
			Max. Compression	4	-0.10	0.00	0.00
			Max. Mx	14	0.10	9.35	0.00
			Max. My	5	-0.09	0.00	-0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Bottom Girt	Max Tension	5	0.22	0.00	0.00
			Max. Compression	11	-0.07	0.00	0.00
			Max. Mx	14	0.10	9.35	0.00
			Max. My	5	0.22	0.00	-0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
T14	40 - 20	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	17	-50.51	-111.00	-211.60
			Max. Mx	22	-49.65	-260.74	-0.75
			Max. My	23	-49.07	-125.50	226.38
			Max. Vy	5	-0.66	-68.49	-131.90
			Max. Vx	3	0.51	142.14	-7.37
		Diagonal	Max Tension	5	0.85	0.00	0.00
			Max. Compression	11	-1.22	0.00	0.00
			Max. Mx	18	-0.22	14.35	0.00
			Max. My	6	0.13	0.00	0.19
			Max. Vy	18	-0.01	0.00	0.00
			Max. Vx	6	-0.00	0.00	0.00
		Horizontal	Max Tension	21	0.26	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	0.22	8.92	0.00
			Max. My	5	0.21	0.00	-0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	18	0.00	-1.92	-0.00
			Max. Compression	10	-0.00	-0.68	-0.00
			Max. Mx	17	0.00	-1.93	-0.00
			Max. My	5	0.00	-0.67	-0.00
			Max. Vy	17	0.01	-1.93	-0.00
			Max. Vx	5	0.00	0.00	0.00
		Top Girt	Max Tension	11	0.16	0.00	0.00
			Max. Compression	5	-0.01	0.00	0.00
			Max. Mx	14	0.11	8.92	0.00
			Max. My	5	-0.01	0.00	-0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Bottom Girt	Max Tension	6	0.16	0.00	0.00
			Max. Compression	12	-0.01	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Mx	25	0.09	8.92	0.00
			Max. My	5	0.15	0.00	-0.00
			Max. Vy	25	-0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
T15	20 - 6.6667	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	17	-50.51	-121.18	-211.56
			Max. Mx	19	-49.14	-679.24	105.07
			Max. My	22	-49.57	293.73	-639.62
			Max. Vy	16	6.63	-587.13	284.69
			Max. Vx	23	7.55	209.34	-634.30
		Diagonal	Max Tension	12	1.72	0.00	0.00
			Max. Compression	8	-1.91	0.00	0.00
			Max. Mx	18	-0.02	13.45	0.00
			Max. My	6	0.35	0.00	0.19
			Max. Vy	18	-0.01	0.00	0.00
			Max. Vx	6	-0.00	0.00	0.00
		Horizontal	Max Tension	8	0.44	0.00	0.00
			Max. Compression	12	-0.17	0.00	0.00
			Max. Mx	19	0.23	8.32	0.00
			Max. My	5	0.25	0.00	-0.00
			Max. Vy	19	-0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	18	0.00	-1.78	-0.00
			Max. Compression	10	-0.00	-0.67	-0.00
			Max. Mx	17	0.00	-1.78	-0.00
			Max. My	5	0.00	-0.69	-0.00
			Max. Vy	17	0.01	-1.78	-0.00
			Max. Vx	5	0.00	0.00	0.00
		Top Girt	Max Tension	11	0.23	0.00	0.00
			Max. Compression	5	-0.07	0.00	0.00
			Max. Mx	25	0.11	8.32	0.00
			Max. My	5	0.06	0.00	-0.00
			Max. Vy	25	-0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Bottom Girt	Max Tension	22	4.45	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	4.20	8.32	0.00
			Max. My	5	2.66	0.00	-0.00
			Max. Vy	25	-0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
T16	6.6667 - 0	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	24	-52.40	-25.53	394.76
			Max. Mx	17	-49.78	651.76	127.27
			Max. My	12	-28.77	17.71	1612.95
			Max. Vy	23	7.21	10.69	192.33
			Max. Vx	12	-0.59	17.71	1612.95
		Diagonal	Max Tension	6	0.84	0.00	0.00
			Max. Compression	12	-1.36	0.00	0.00
			Max. Mx	23	-0.20	8.08	0.00
			Max. My	12	-1.31	0.00	-0.14
			Max. Vy	23	0.01	0.00	0.00
			Max. Vx	12	0.00	0.00	0.00
		Horizontal	Max Tension	12	0.58	0.00	0.00
			Max. Compression	6	-0.35	0.00	0.00
			Max. Mx	14	0.18	3.05	0.00
			Max. My	11	0.54	0.00	-0.00
			Max. Vy	14	0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Top Girt	Max Tension	23	4.47	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Mx	14	4.34	7.27	0.00
			Max. My	5	2.56	0.00	-0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Mast	Max. Vert	23	146.96	0.33	-0.16
	Max. H_x	11	90.23	0.87	0.15
	Max. H_z	3	90.90	-0.55	0.67
	Max. M_x	1	0.00	0.02	-0.00
	Max. M_z	1	0.00	0.02	-0.00
	Max. Torsion	6	1574.29	-0.42	-0.25
	Min. Vert	1	65.77	0.02	-0.00
	Min. H_x	4	87.69	-1.00	0.58
	Min. H_z	9	90.59	0.31	-0.83
	Min. M_x	1	0.00	0.02	-0.00
	Min. M_z	1	0.00	0.02	-0.00
	Min. Torsion	12	-1709.35	0.69	0.37
Guy C @ 195 ft Elev 0 ft Azimuth 240 deg	Max. Vert	10	-3.64	-2.27	1.31
	Max. H_x	10	-3.64	-2.27	1.31
	Max. H_z	4	-31.15	-31.92	18.43
	Min. Vert	4	-31.15	-31.92	18.43
	Min. H_x	4	-31.15	-31.92	18.43
	Min. H_z	10	-3.64	-2.27	1.31
Guy B @ 195 ft Elev 0 ft Azimuth 120 deg	Max. Vert	6	-3.71	2.39	1.38
	Max. H_x	11	-29.34	30.38	17.03
	Max. H_z	11	-29.34	30.38	17.03
	Min. Vert	11	-29.34	30.38	17.03
	Min. H_x	6	-3.71	2.39	1.38
	Min. H_z	6	-3.71	2.39	1.38
Guy A @ 195 ft Elev 0 ft Azimuth 0 deg	Max. Vert	2	-3.58	0.00	-2.65
	Max. H_x	11	-17.29	1.03	-19.60
	Max. H_z	2	-3.58	0.00	-2.65
	Min. Vert	9	-29.67	0.45	-35.27
	Min. H_x	5	-17.42	-1.03	-19.77
	Min. H_z	9	-29.67	0.45	-35.27

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	65.77	-0.02	0.00	0.00	0.00	10.56

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	lb-ft	lb-ft	lb-ft
1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy	90.20	-0.03	-0.51	0.00	0.00	1481.34
1.2 Dead+1.0 Wind 30 deg - No Ice+1.0 Guy	90.90	0.55	-0.67	0.00	0.00	1352.16
1.2 Dead+1.0 Wind 60 deg - No Ice+1.0 Guy	87.69	1.00	-0.58	0.00	0.00	-40.46
1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy	90.60	0.83	-0.16	0.00	0.00	-1474.77
1.2 Dead+1.0 Wind 120 deg - No Ice+1.0 Guy	89.63	0.42	0.25	0.00	0.00	-1574.29
1.2 Dead+1.0 Wind 150 deg - No Ice+1.0 Guy	87.79	0.05	0.45	0.00	0.00	-1225.28
1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy	86.54	-0.02	0.76	0.00	0.00	-1549.42
1.2 Dead+1.0 Wind 210 deg - No Ice+1.0 Guy	90.59	-0.31	0.83	0.00	0.00	-1312.47
1.2 Dead+1.0 Wind 240 deg - No Ice+1.0 Guy	93.01	-0.81	0.46	0.00	0.00	73.80
1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy	90.23	-0.87	-0.15	0.00	0.00	1517.61
1.2 Dead+1.0 Wind 300 deg - No Ice+1.0 Guy	86.41	-0.69	-0.37	0.00	0.00	1709.35
1.2 Dead+1.0 Wind 330 deg - No Ice+1.0 Guy	87.73	-0.38	-0.28	0.00	0.00	1257.28
1.2 Dead+1.0 Ice+1.0 Temp+Guy	144.88	-0.09	0.03	0.00	0.00	31.20
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	146.92	-0.10	-0.19	0.00	0.00	404.51
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	146.60	0.04	-0.20	0.00	0.00	465.28
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	146.28	0.15	-0.11	0.00	0.00	162.86
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	146.59	0.16	0.02	0.00	0.00	-193.70
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	146.89	0.09	0.13	0.00	0.00	-241.79
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	146.47	0.01	0.20	0.00	0.00	-199.93
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	146.17	-0.10	0.25	0.00	0.00	-342.94
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	146.54	-0.23	0.25	0.00	0.00	-401.05
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	146.96	-0.33	0.16	0.00	0.00	-97.10
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	146.52	-0.35	0.03	0.00	0.00	257.82
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy	146.15	-0.28	-0.08	0.00	0.00	306.49
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy	146.46	-0.19	-0.15	0.00	0.00	263.14
Dead+Wind 0 deg - Service+Guy	66.42	-0.02	-0.21	0.00	0.00	433.31
Dead+Wind 30 deg - Service+Guy	66.37	0.12	-0.24	0.00	0.00	395.94
Dead+Wind 60 deg - Service+Guy	66.32	0.25	-0.15	0.00	0.00	-10.85
Dead+Wind 90 deg - Service+Guy	66.38	0.25	0.00	0.00	0.00	-429.40
Dead+Wind 120 deg - Service+Guy	66.43	0.16	0.11	0.00	0.00	-450.65
Dead+Wind 150 deg -	66.33	0.06	0.15	0.00	0.00	-332.23

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Service+Guy						
Dead+Wind 180 deg - Service+Guy	66.29	-0.02	0.21	0.00	0.00	-410.00
Dead+Wind 210 deg - Service+Guy	66.37	-0.16	0.24	0.00	0.00	-370.39
Dead+Wind 240 deg - Service+Guy	66.47	-0.29	0.16	0.00	0.00	36.96
Dead+Wind 270 deg - Service+Guy	66.37	-0.29	0.00	0.00	0.00	452.94
Dead+Wind 300 deg - Service+Guy	66.29	-0.20	-0.10	0.00	0.00	472.86
Dead+Wind 330 deg - Service+Guy	66.33	-0.11	-0.14	0.00	0.00	354.54

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-32.49	0.00	0.00	32.49	-0.00	0.002%
2	-0.00	-38.63	-27.38	0.00	38.63	27.38	0.006%
3	14.79	-38.43	-25.67	-14.79	38.43	25.67	0.006%
4	26.49	-38.23	-15.31	-26.49	38.23	15.30	0.005%
5	29.26	-38.43	0.03	-29.25	38.43	-0.03	0.006%
6	23.21	-38.63	13.45	-23.20	38.63	-13.45	0.006%
7	12.79	-38.43	22.21	-12.79	38.43	-22.20	0.005%
8	0.00	-38.23	27.05	0.00	38.23	-27.05	0.005%
9	-14.64	-38.43	25.41	14.64	38.43	-25.41	0.005%
10	-26.21	-38.63	15.18	26.20	38.63	-15.18	0.005%
11	-28.89	-38.43	0.03	28.89	38.43	-0.03	0.004%
12	-23.17	-38.23	-13.39	23.17	38.23	13.39	0.004%
13	-12.76	-38.43	-22.15	12.76	38.43	22.15	0.004%
14	0.00	-94.19	0.00	0.00	94.19	-0.00	0.002%
15	-0.00	-94.35	-10.90	0.00	94.35	10.90	0.002%
16	5.62	-94.19	-9.74	-5.62	94.19	9.74	0.002%
17	9.85	-94.02	-5.69	-9.85	94.02	5.69	0.001%
18	11.15	-94.19	0.01	-11.15	94.19	-0.01	0.002%
19	9.14	-94.35	5.29	-9.14	94.35	-5.29	0.001%
20	5.21	-94.19	9.03	-5.21	94.19	-9.03	0.002%
21	0.00	-94.02	10.65	0.00	94.02	-10.65	0.001%
22	-5.49	-94.19	9.53	5.49	94.19	-9.53	0.001%
23	-9.63	-94.35	5.57	9.63	94.35	-5.57	0.002%
24	-10.89	-94.19	0.00	10.89	94.19	-0.00	0.001%
25	-9.13	-94.02	-5.28	9.13	94.02	5.28	0.001%
26	-5.20	-94.19	-9.02	5.20	94.19	9.02	0.001%
27	-0.00	-32.53	-6.14	-0.00	32.53	6.14	0.004%
28	3.32	-32.49	-5.76	-3.32	32.49	5.76	0.003%
29	5.94	-32.44	-3.43	-5.94	32.44	3.43	0.003%
30	6.56	-32.49	0.01	-6.56	32.49	-0.01	0.005%
31	5.21	-32.53	3.02	-5.20	32.53	-3.02	0.005%
32	2.87	-32.49	4.98	-2.87	32.49	-4.98	0.003%
33	0.00	-32.44	6.07	0.00	32.44	-6.07	0.004%
34	-3.28	-32.49	5.70	3.28	32.49	-5.70	0.004%
35	-5.88	-32.53	3.41	5.88	32.53	-3.40	0.002%
36	-6.48	-32.49	0.01	6.48	32.49	-0.01	0.002%
37	-5.20	-32.44	-3.00	5.20	32.44	3.01	0.005%
38	-2.86	-32.49	-4.97	2.86	32.49	4.97	0.003%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	10	0.00000001	0.00001808
2	Yes	21	0.00008434	0.00006077
3	Yes	21	0.00007896	0.00005542
4	Yes	14	0.00009259	0.00004270
5	Yes	21	0.00008716	0.00007291
6	Yes	21	0.00009419	0.00008149
7	Yes	21	0.00007827	0.00005671
8	Yes	18	0.00009682	0.00005993
9	Yes	21	0.00007681	0.00005778
10	Yes	22	0.00005909	0.00004370
11	Yes	22	0.00006998	0.00004440
12	Yes	20	0.00007946	0.00004092
13	Yes	21	0.00006405	0.00003777
14	Yes	11	0.00010000	0.00002495
15	Yes	16	0.00000001	0.00002637
16	Yes	15	0.00000001	0.00003523
17	Yes	15	0.00000001	0.00002447
18	Yes	16	0.00000001	0.00003461
19	Yes	17	0.00000001	0.00002041
20	Yes	16	0.00000001	0.00002831
21	Yes	15	0.00000001	0.00002281
22	Yes	15	0.00000001	0.00003271
23	Yes	16	0.00000001	0.00003498
24	Yes	17	0.00000001	0.00001612
25	Yes	16	0.00000001	0.00001753
26	Yes	16	0.00000001	0.00001952
27	Yes	15	0.00000001	0.00003672
28	Yes	15	0.00000001	0.00003136
29	Yes	13	0.00000001	0.00002778
30	Yes	15	0.00000001	0.00006100
31	Yes	15	0.00000001	0.00006208
32	Yes	15	0.00000001	0.00003958
33	Yes	15	0.00000001	0.00005201
34	Yes	15	0.00000001	0.00004505
35	Yes	14	0.00000001	0.00002171
36	Yes	16	0.00000001	0.00002263
37	Yes	15	0.00000001	0.00005069
38	Yes	15	0.00000001	0.00003099

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	300 - 280	0.184	33	0.0927	0.5417
T2	280 - 260	0.521	29	0.0940	0.5388
T3	260 - 240	0.886	29	0.0889	0.5561
T4	240 - 220	1.211	29	0.0783	0.5663
T5	220 - 200	1.482	29	0.0683	0.5767
T6	200 - 180	1.725	29	0.0566	0.5936

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T7	180 - 160	1.852	29	0.0098	0.6104
T8	160 - 140	1.727	29	0.0526	0.6208
T9	140 - 120	1.472	29	0.0576	0.6196
T10	120 - 100	1.295	35	0.0479	0.6347
T11	100 - 80	1.107	35	0.0503	0.6350
T12	80 - 60	0.885	35	0.0521	0.6286
T13	60 - 40	0.685	35	0.0436	0.6219
T14	40 - 20	0.502	35	0.0487	0.6117
T15	20 - 6.6667	0.274	35	0.0601	0.5962
T16	6.6667 - 0	0.094	35	0.0656	0.5686

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
300.00	Beacon	33	0.184	0.0927	0.5417	51813
279.92	Guy	29	0.522	0.0940	0.5388	14393
210.00	Guy	29	1.609	0.0671	0.5848	90961
195.00	Pirod 4' Side Mount Standoff	29	1.774	0.0441	0.5981	32258
180.50	7770.00 w/ Mount Pipe	29	1.852	0.0101	0.6101	15867
175.00	SC2-W100AB	29	1.844	0.0144	0.6142	17299
165.00	4-ft Yagi Antennas	29	1.779	0.0404	0.6197	24594
160.00	4-ft Yagi Antennas	29	1.727	0.0526	0.6208	32142
143.00	4-ft Yagi Antennas	29	1.508	0.0593	0.6189	48990
139.92	Guy	29	1.471	0.0575	0.6197	38828
130.00	4-ft Yagi Antennas	35	1.375	0.0518	0.6268	81198
70.00	Guy	35	0.780	0.0477	0.6217	110759
25.00	4-ft Yagi Antennas	35	0.336	0.0572	0.5509	88828

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	300 - 280	3.281	8	0.6784	1.7621
T2	280 - 260	4.712	4	0.6841	1.7702
T3	260 - 240	6.682	3	0.6470	1.8097
T4	240 - 220	9.016	10	0.5625	1.8611
T5	220 - 200	11.159	10	0.4589	1.9141
T6	200 - 180	12.929	10	0.3457	1.9687
T7	180 - 160	13.931	10	0.0838	2.0454
T8	160 - 140	13.534	10	0.3016	2.0914
T9	140 - 120	12.283	10	0.3528	2.1123
T10	120 - 100	11.003	10	0.3572	2.1467
T11	100 - 80	9.428	10	0.4119	2.1605
T12	80 - 60	7.569	10	0.4459	2.1440
T13	60 - 40	5.773	10	0.4100	2.1158
T14	40 - 20	4.055	10	0.4330	2.0829
T15	20 - 6.6667	2.134	10	0.4855	2.0265
T16	6.6667 - 0	0.726	10	0.5107	1.9742

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
300.00	Beacon	8	3.281	0.6784	1.7621	8945
279.92	Guy	4	4.719	0.6840	1.7703	2453
210.00	Guy	10	12.102	0.4244	1.9391	10021
195.00	Pirod 4' Side Mount Standoff	10	13.282	0.2717	1.9872	5221
180.50	7770.00 w/ Mount Pipe	10	13.922	0.0813	2.0437	2968
175.00	SC2-W100AB	10	13.961	0.1239	2.0609	3185
165.00	4-ft Yagi Antennas	10	13.751	0.2428	2.0837	4266
160.00	4-ft Yagi Antennas	10	13.534	0.3016	2.0914	5248
143.00	4-ft Yagi Antennas	10	12.481	0.3559	2.1085	11338
139.92	Guy	10	12.277	0.3527	2.1124	8901
130.00	4-ft Yagi Antennas	10	11.651	0.3487	2.1294	17559
70.00	Guy	10	6.652	0.4253	2.1169	16196
25.00	4-ft Yagi Antennas	10	2.638	0.4307	1.8617	19383

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_n K	Required S.F.	Actual S.F.
T2	279.92 (A) (730)	3/4 (24000) EHS	5.83	58.30	12.13	34.98	1.000	2.883
	279.92 (B) (729)	3/4 (24000) EHS	5.83	58.30	12.14	34.98	1.000	2.881
	279.92 (C) (728)	3/4 (24000) EHS	5.83	58.30	12.19	34.98	1.000	2.870
T5	210.00 (A) (727)	5/8 (23000) EHS	4.24	42.40	13.41	25.44	1.000	1.898
	210.00 (B) (726)	5/8 (23000) EHS	4.24	42.40	13.29	25.44	1.000	1.914
	210.00 (C) (725)	5/8 (23000) EHS	4.24	42.40	13.92	25.44	1.000	1.828
T9	139.92 (A) (724)	5/8 (23000) EHS	4.24	42.40	15.76	25.44	1.000	1.614
	139.92 (B) (723)	5/8 (23000) EHS	4.24	42.40	15.49	25.44	1.000	1.642
	139.92 (C) (722)	5/8 (23000) EHS	4.24	42.40	16.31	25.44	1.000	1.559
T12	70.00 (A) (721)	1/2 (23000) EHS	2.69	26.90	7.52	16.14	1.000	2.147
	70.00 (B) (720)	1/2 (23000) EHS	2.69	26.90	7.40	16.14	1.000	2.181
	70.00 (C) (719)	1/2 (23000) EHS	2.69	26.90	7.78	16.14	1.000	2.075

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	2	20.00	3.31	79.3 K=1.00	3.1416	-2.64	89.23	0.030 [1]
T2	280 - 260	2	20.00	3.31	79.3 K=1.00	3.1416	-15.29	89.23	0.171 [1]
T3	260 - 240	2	20.00	3.31	79.3 K=1.00	3.1416	-18.88	89.23	0.212 [1]
T4	240 - 220	2	20.00	3.31	79.3 K=1.00	3.1416	-19.05	89.23	0.213 [1]
T5	220 - 200	2 1/4	20.00	3.31	70.5 K=1.00	3.9761	-40.09	124.38	0.322 [1]
T6	200 - 180	2 1/4	20.00	3.31	70.5 K=1.00	3.9761	-71.41	124.38	0.574 [1]
T7	180 - 160	2 1/4	20.00	3.31	70.5 K=1.00	3.9761	-70.86	124.38	0.570 [1]
T8	160 - 140	2 1/4	20.00	3.31	70.5 K=1.00	3.9761	-43.91	124.38	0.353 [1]
T9	140 - 120	2	20.00	3.31	79.3 K=1.00	3.1416	-39.35	89.23	0.441 [1]
T10	120 - 100	2	20.00	3.31	79.3 K=1.00	3.1416	-41.94	89.23	0.470 [1]
T11	100 - 80	2	20.00	3.31	79.3 K=1.00	3.1416	-42.12	89.23	0.472 [1]
T12	80 - 60	2	20.00	3.31	79.3 K=1.00	3.1416	-45.26	89.23	0.507 [1]
T13	60 - 40	2	20.00	3.31	79.3 K=1.00	3.1416	-48.94	89.23	0.548 [1]
T14	40 - 20	2	20.00	3.31	79.3 K=1.00	3.1416	-50.36	89.23	0.564 [1]
T15	20 - 6.6667	2	13.33	3.29	79.0 K=1.00	3.1416	-50.25	89.57	0.561 [1]
T16	6.6667 - 0	2	6.97	3.48	83.6 K=1.00	3.1416	-52.40	84.81	0.618 [1]

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	1	4.81	4.58	154.1 K=0.70	0.7854	-0.67	7.48	0.090 [1]
T2	280 - 260	1	4.81	4.58	154.1 K=0.70	0.7854	-1.84	7.48	0.246 [1]
T3	260 - 240	1	4.81	4.58	154.1 K=0.70	0.7854	-1.37	7.48	0.183 [1]
T4	240 - 220	1	4.81	4.58	154.1 K=0.70	0.7854	-1.03	7.48	0.137 [1]
T5	220 - 200	1 1/8	4.81	4.56	136.1 K=0.70	0.9940	-5.61	12.13	0.463 [1]
T6	200 - 180	1 1/8	4.81	4.56	136.1 K=0.70	0.9940	-5.52	12.13	0.455 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T7	180 - 160	1 1/8	4.81	4.56	136.1 K=0.70	0.9940	-6.22	12.13	0.513 [1]
T8	160 - 140	1 1/8	4.81	4.56	136.1 K=0.70	0.9940	-7.66	12.13	0.632 [1]
T9	140 - 120	1	4.81	4.58	154.1 K=0.70	0.7854	-2.51	7.48	0.336 [1]
T10	120 - 100	1	4.81	4.58	154.1 K=0.70	0.7854	-1.35	7.48	0.181 [1]
T11	100 - 80	1	4.81	4.58	154.1 K=0.70	0.7854	-2.17	7.48	0.290 [1]
T12	80 - 60	1	4.81	4.58	154.1 K=0.70	0.7854	-2.85	7.48	0.382 [1]
T13	60 - 40	1	4.81	4.58	154.1 K=0.70	0.7854	-2.19	7.48	0.294 [1]
T14	40 - 20	1	4.81	4.58	154.1 K=0.70	0.7854	-1.22	7.48	0.164 [1]
T15	20 - 6.6667	1	4.80	4.58	153.8 K=0.70	0.7854	-1.91	7.51	0.254 [1]
T16	6.6667 - 0	1	4.19	3.93	132.0 K=0.70	0.7854	-1.36	10.17	0.133 [1]

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	7/8	3.50	3.33	128.0 K=0.70	0.6013	-0.07	8.22	0.009 [1]
T2	280 - 260	7/8	3.50	3.33	128.0 K=0.70	0.6013	-0.33	8.22	0.040 [1]
T3	260 - 240	7/8	3.50	3.33	128.0 K=0.70	0.6013	-0.40	8.22	0.048 [1]
T4	240 - 220	7/8	3.50	3.33	128.0 K=0.70	0.6013	-0.40	8.22	0.049 [1]
T5	220 - 200	7/8	3.50	3.31	127.2 K=0.70	0.6013	-0.83	8.31	0.099 [1]
T6	200 - 180	7/8	3.50	3.31	127.2 K=0.70	0.6013	-1.38	8.31	0.166 [1]
T7	180 - 160	7/8	3.50	3.31	127.2 K=0.70	0.6013	-1.37	8.31	0.165 [1]
T8	160 - 140	7/8	3.50	3.31	127.2 K=0.70	0.6013	-0.89	8.31	0.107 [1]
T9	140 - 120	7/8	3.50	3.33	128.0 K=0.70	0.6013	-0.84	8.22	0.102 [1]
T10	120 - 100	7/8	3.50	3.33	128.0 K=0.70	0.6013	-0.89	8.22	0.108 [1]
T11	100 - 80	7/8	3.50	3.33	128.0 K=0.70	0.6013	-0.89	8.22	0.108 [1]
T12	80 - 60	7/8	3.50	3.33	128.0 K=0.70	0.6013	-0.96	8.22	0.116 [1]
T13	60 - 40	7/8	3.50	3.33	128.0 K=0.70	0.6013	-1.04	8.22	0.126 [1]
T14	40 - 20	7/8	3.50	3.33	128.0 K=0.70	0.6013	-1.06	8.22	0.129 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T15	20 - 6.6667	7/8	3.50	3.33	128.0 K=0.70	0.6013	-1.06	8.22	0.129 [1]
T16	6.6667 - 0	1 1/4	1.75	1.58	60.8 K=1.00	1.2272	-1.16	32.73	0.035 [1]

[1] $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	3/4	1.75	1.67	85.3 K=0.80	0.4418	-0.00	9.76	0.000 [1]
T2	280 - 260	3/4	1.75	1.67	85.3 K=0.80	0.4418	-0.00	9.76	0.000 [1]
T3	260 - 240	3/4	1.75	1.67	85.3 K=0.80	0.4418	-0.00	9.76	0.000 [1]
T4	240 - 220	3/4	1.75	1.67	85.3 K=0.80	0.4418	-0.00	9.76	0.000 [1]
T5	220 - 200	3/4	1.75	1.66	85.3 K=0.80	0.4418	-0.00	9.76	0.000 [1]
T6	200 - 180	3/4	1.75	1.66	85.3 K=0.80	0.4418	-0.00	9.76	0.000 [1]
T7	180 - 160	3/4	1.75	1.66	85.3 K=0.80	0.4418	-0.00	9.76	0.000 [1]
T8	160 - 140	3/4	1.75	1.66	85.3 K=0.80	0.4418	-0.00	9.76	0.000 [1]
T9	140 - 120	3/4	1.75	1.67	85.3 K=0.80	0.4418	-0.00	9.76	0.000 [1]
T10	120 - 100	3/4	1.75	1.67	85.3 K=0.80	0.4418	-0.00	9.76	0.000 [1]
T11	100 - 80	3/4	1.75	1.67	85.3 K=0.80	0.4418	-0.00	9.76	0.000 [1]
T12	80 - 60	3/4	1.75	1.67	85.3 K=0.80	0.4418	-0.00	9.76	0.000 [1]
T13	60 - 40	3/4	1.75	1.67	85.3 K=0.80	0.4418	-0.00	9.76	0.000 [1]
T14	40 - 20	3/4	1.75	1.67	85.3 K=0.80	0.4418	-0.00	9.76	0.000 [1]
T15	20 - 6.6667	3/4	1.75	1.67	85.3 K=0.80	0.4418	-0.00	9.76	0.000 [1]

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	7/8	3.50	3.33	128.0	0.6013	-0.04	8.22	0.005 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	280 - 260	7/8	3.50	3.33	128.0 K=0.70	0.6013	-0.33	8.22	0.040 [1]
T3	260 - 240	7/8	3.50	3.33	128.0 K=0.70	0.6013	-0.40	8.22	0.048 [1]
T4	240 - 220	7/8	3.50	3.33	128.0 K=0.70	0.6013	-0.40	8.22	0.049 [1]
T5	220 - 200	7/8	3.50	3.31	127.2 K=0.70	0.6013	-0.83	8.31	0.099 [1]
T6	200 - 180	7/8	3.50	3.31	127.2 K=0.70	0.6013	-1.38	8.31	0.166 [1]
T7	180 - 160	7/8	3.50	3.31	127.2 K=0.70	0.6013	-1.37	8.31	0.165 [1]
T8	160 - 140	7/8	3.50	3.31	127.2 K=0.70	0.6013	-0.89	8.31	0.107 [1]
T9	140 - 120	7/8	3.50	3.33	128.0 K=0.70	0.6013	-0.84	8.22	0.102 [1]
T10	120 - 100	7/8	3.50	3.33	128.0 K=0.70	0.6013	-0.89	8.22	0.108 [1]
T11	100 - 80	7/8	3.50	3.33	128.0 K=0.70	0.6013	-0.89	8.22	0.108 [1]
T12	80 - 60	7/8	3.50	3.33	128.0 K=0.70	0.6013	-0.96	8.22	0.116 [1]
T13	60 - 40	7/8	3.50	3.33	128.0 K=0.70	0.6013	-1.04	8.22	0.126 [1]
T14	40 - 20	7/8	3.50	3.33	128.0 K=0.70	0.6013	-1.06	8.22	0.129 [1]
T15	20 - 6.6667	7/8	3.50	3.33	128.0 K=0.70	0.6013	-1.06	8.22	0.129 [1]
T16	6.6667 - 0	7/8	3.46	3.29	126.3 K=0.70	0.6013	-1.16	8.41	0.138 [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 K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	7/8	3.50	3.33	128.0 K=0.70	0.6013	-0.06	8.22	0.008 [1]
T2	280 - 260	7/8	3.50	3.33	128.0 K=0.70	0.6013	-0.33	8.22	0.040 [1]
T3	260 - 240	7/8	3.50	3.33	128.0 K=0.70	0.6013	-0.40	8.22	0.048 [1]
T4	240 - 220	7/8	3.50	3.33	128.0 K=0.70	0.6013	-0.40	8.22	0.049 [1]
T5	220 - 200	7/8	3.50	3.31	127.2 K=0.70	0.6013	-0.83	8.31	0.099 [1]
T6	200 - 180	7/8	3.50	3.31	127.2 K=0.70	0.6013	-1.38	8.31	0.166 [1]
T7	180 - 160	7/8	3.50	3.31	127.2 K=0.70	0.6013	-1.37	8.31	0.165 [1]
T8	160 - 140	7/8	3.50	3.31	127.2 K=0.70	0.6013	-0.89	8.31	0.107 [1]
T9	140 - 120	7/8	3.50	3.33	128.0	0.6013	-0.84	8.22	0.102 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T10	120 - 100	7/8	3.50	3.33	K=0.70 128.0	0.6013	-0.89	8.22	0.108 [1]
T11	100 - 80	7/8	3.50	3.33	K=0.70 128.0	0.6013	-0.89	8.22	0.108 [1]
T12	80 - 60	7/8	3.50	3.33	K=0.70 128.0	0.6013	-0.96	8.22	0.116 [1]
T13	60 - 40	7/8	3.50	3.33	K=0.70 128.0	0.6013	-1.04	8.22	0.126 [1]
T14	40 - 20	7/8	3.50	3.33	K=0.70 128.0	0.6013	-1.06	8.22	0.129 [1]
T15	20 - 6.6667	7/8	3.50	3.33	K=0.70 128.0	0.6013	-1.06	8.22	0.129 [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 K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	2	20.00	0.08	2.0	3.1416	2.18	141.37	0.015 [1]
T2	280 - 260	2	20.00	0.08	2.0	3.1416	3.76	141.37	0.027 [1]
T3	260 - 240	2	20.00	3.31	79.3	3.1416	8.99	141.37	0.064 [1]
T4	240 - 220	2	20.00	3.31	79.3	3.1416	10.05	141.37	0.071 [1]
T5	220 - 200	2 1/4	20.00	0.08	1.8	3.9761	25.01	178.92	0.140 [1]
T6	200 - 180	2 1/4	20.00	3.31	70.5	3.9761	53.49	178.92	0.299 [1]
T7	180 - 160	2 1/4	20.00	3.31	70.5	3.9761	49.92	178.92	0.279 [1]
T8	160 - 140	2 1/4	20.00	0.08	1.8	3.9761	22.12	178.92	0.124 [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 K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	1	4.81	4.58	220.1	0.7854	0.68	25.45	0.027 [1]
T2	280 - 260	1	4.81	4.58	220.1	0.7854	1.80	25.45	0.071 [1]
T3	260 - 240	1	4.81	4.58	220.1	0.7854	1.24	25.45	0.049 [1]
T4	240 - 220	1	4.81	4.58	220.1	0.7854	0.79	25.45	0.031 [1]
T5	220 - 200	1 1/8	4.81	4.56	194.4	0.9940	5.49	32.21	0.170 [1]
T6	200 - 180	1 1/8	4.81	4.56	194.4	0.9940	5.26	32.21	0.163 [1]
T7	180 - 160	1 1/8	4.81	4.56	194.4	0.9940	5.95	32.21	0.185 [1]
T8	160 - 140	1 1/8	4.81	4.56	194.4	0.9940	7.40	32.21	0.230 [1]
T9	140 - 120	1	4.81	4.58	220.1	0.7854	2.20	25.45	0.086 [1]
T10	120 - 100	1	4.81	4.58	220.1	0.7854	0.98	25.45	0.038 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	100 - 80	1	4.81	4.58	220.1	0.7854	2.02	25.45	0.079 [1]
T12	80 - 60	1	4.81	4.58	220.1	0.7854	2.33	25.45	0.092 [1]
T13	60 - 40	1	4.81	4.58	220.1	0.7854	1.85	25.45	0.073 [1]
T14	40 - 20	1	4.81	4.58	220.1	0.7854	0.85	25.45	0.033 [1]
T15	20 - 6.6667	1	4.80	4.58	219.6	0.7854	1.72	25.45	0.068 [1]
T16	6.6667 - 0	1	4.19	3.93	188.6	0.7854	0.84	25.45	0.033 [1]

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	7/8	3.50	3.33	182.9	0.6013	0.06	19.48	0.003 [1]
T2	280 - 260	7/8	3.50	3.33	182.9	0.6013	0.33	19.48	0.017 [1]
T3	260 - 240	7/8	3.50	3.33	182.9	0.6013	0.40	19.48	0.020 [1]
T4	240 - 220	7/8	3.50	3.33	182.9	0.6013	0.40	19.48	0.021 [1]
T5	220 - 200	7/8	3.50	3.31	181.7	0.6013	5.40	19.48	0.277 [1]
T6	200 - 180	7/8	3.50	3.31	181.7	0.6013	1.38	19.48	0.071 [1]
T7	180 - 160	7/8	3.50	3.31	181.7	0.6013	1.37	19.48	0.070 [1]
T8	160 - 140	7/8	3.50	3.31	181.7	0.6013	0.89	19.48	0.046 [1]
T9	140 - 120	7/8	3.50	3.33	182.9	0.6013	0.84	19.48	0.043 [1]
T10	120 - 100	7/8	3.50	3.33	182.9	0.6013	0.89	19.48	0.045 [1]
T11	100 - 80	7/8	3.50	3.33	182.9	0.6013	0.89	19.48	0.045 [1]
T12	80 - 60	7/8	3.50	3.33	182.9	0.6013	4.41	19.48	0.226 [1]
T13	60 - 40	7/8	3.50	3.33	182.9	0.6013	1.04	19.48	0.053 [1]
T14	40 - 20	7/8	3.50	3.33	182.9	0.6013	1.06	19.48	0.055 [1]
T15	20 - 6.6667	7/8	3.50	3.33	182.9	0.6013	1.06	19.48	0.054 [1]
T16	6.6667 - 0	1 1/4	1.75	1.58	60.8	1.2272	1.16	39.76	0.029 [1]

[1] $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	3/4	1.75	1.67	106.7	0.4418	0.00	14.31	0.000 [1]
T2	280 - 260	3/4	1.75	1.67	106.7	0.4418	0.00	14.31	0.000 [1]
T3	260 - 240	3/4	1.75	1.67	106.7	0.4418	0.00	14.31	0.000 [1]
T4	240 - 220	3/4	1.75	1.67	106.7	0.4418	0.00	14.31	0.000 [1]
T5	220 - 200	3/4	1.75	1.66	106.0	0.4418	0.00	14.31	0.000 [1]
T6	200 - 180	3/4	1.75	1.66	106.0	0.4418	0.00	14.31	0.000 [1]
T7	180 - 160	3/4	1.75	1.66	106.0	0.4418	0.00	14.31	0.000 [1]
T8	160 - 140	3/4	1.75	1.66	106.0	0.4418	0.00	14.31	0.000 [1]
T9	140 - 120	3/4	1.75	1.67	106.7	0.4418	0.00	14.31	0.000 [1]
T10	120 - 100	3/4	1.75	1.67	106.7	0.4418	0.00	14.31	0.000 [1]
T11	100 - 80	3/4	1.75	1.67	106.7	0.4418	0.00	14.31	0.000 [1]
T12	80 - 60	3/4	1.75	1.67	106.7	0.4418	0.00	14.31	0.000 [1]
T13	60 - 40	3/4	1.75	1.67	106.7	0.4418	0.00	14.31	0.000 [1]

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T14	40 - 20	3/4	1.75	1.67	106.7	0.4418	0.00	14.31	0.000 [1]
T15	20 - 6.6667	3/4	1.75	1.67	106.7	0.4418	0.00	14.31	0.000 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	300 - 280	7/8	3.50	3.33	182.9	0.6013	0.04	19.48	0.002 [1]
T2	280 - 260	7/8	3.50	3.33	182.9	0.6013	2.57	19.48	0.132 [1]
T3	260 - 240	7/8	3.50	3.33	182.9	0.6013	0.40	19.48	0.020 [1]
T4	240 - 220	7/8	3.50	3.33	182.9	0.6013	0.40	19.48	0.021 [1]
T5	220 - 200	7/8	3.50	3.31	181.7	0.6013	0.83	19.48	0.042 [1]
T6	200 - 180	7/8	3.50	3.31	181.7	0.6013	1.38	19.48	0.071 [1]
T7	180 - 160	7/8	3.50	3.31	181.7	0.6013	1.37	19.48	0.070 [1]
T8	160 - 140	7/8	3.50	3.31	181.7	0.6013	0.89	19.48	0.046 [1]
T9	140 - 120	7/8	3.50	3.33	182.9	0.6013	4.92	19.48	0.252 [1]
T10	120 - 100	7/8	3.50	3.33	182.9	0.6013	0.89	19.48	0.045 [1]
T11	100 - 80	7/8	3.50	3.33	182.9	0.6013	0.89	19.48	0.045 [1]
T12	80 - 60	7/8	3.50	3.33	182.9	0.6013	0.96	19.48	0.049 [1]
T13	60 - 40	7/8	3.50	3.33	182.9	0.6013	1.04	19.48	0.053 [1]
T14	40 - 20	7/8	3.50	3.33	182.9	0.6013	1.06	19.48	0.055 [1]
T15	20 - 6.6667	7/8	3.50	3.33	182.9	0.6013	1.06	19.48	0.054 [1]
T16	6.6667 - 0	7/8	3.46	3.29	180.5	0.6013	4.47	19.48	0.230 [1]

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	300 - 280	7/8	3.50	3.33	182.9	0.6013	1.31	19.48	0.067 [1]
T2	280 - 260	7/8	3.50	3.33	182.9	0.6013	0.33	19.48	0.017 [1]
T3	260 - 240	7/8	3.50	3.33	182.9	0.6013	0.40	19.48	0.020 [1]
T4	240 - 220	7/8	3.50	3.33	182.9	0.6013	0.40	19.48	0.021 [1]
T5	220 - 200	7/8	3.50	3.31	181.7	0.6013	0.83	19.48	0.042 [1]
T6	200 - 180	7/8	3.50	3.31	181.7	0.6013	1.38	19.48	0.071 [1]
T7	180 - 160	7/8	3.50	3.31	181.7	0.6013	1.37	19.48	0.070 [1]
T8	160 - 140	7/8	3.50	3.31	181.7	0.6013	3.20	19.48	0.164 [1]
T9	140 - 120	7/8	3.50	3.33	182.9	0.6013	0.84	19.48	0.043 [1]
T10	120 - 100	7/8	3.50	3.33	182.9	0.6013	0.89	19.48	0.045 [1]
T11	100 - 80	7/8	3.50	3.33	182.9	0.6013	0.89	19.48	0.045 [1]
T12	80 - 60	7/8	3.50	3.33	182.9	0.6013	0.96	19.48	0.049 [1]
T13	60 - 40	7/8	3.50	3.33	182.9	0.6013	1.04	19.48	0.053 [1]
T14	40 - 20	7/8	3.50	3.33	182.9	0.6013	1.06	19.48	0.055 [1]
T15	20 - 6.6667	7/8	3.50	3.33	182.9	0.6013	4.45	19.48	0.229 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	300 - 280	Leg	2	3	-2.64	89.23	3.0	Pass
T2	280 - 260	Leg	2	51	-15.29	89.23	17.1	Pass
T3	260 - 240	Leg	2	99	-18.88	89.23	21.2	Pass
T4	240 - 220	Leg	2	147	-19.05	89.23	21.3	Pass
T5	220 - 200	Leg	2 1/4	195	-40.09	124.38	32.2	Pass
T6	200 - 180	Leg	2 1/4	241	-71.41	124.38	57.4	Pass
T7	180 - 160	Leg	2 1/4	289	-70.86	124.38	57.0	Pass
T8	160 - 140	Leg	2 1/4	337	-43.91	124.38	35.3	Pass
T9	140 - 120	Leg	2	386	-39.35	89.23	44.1	Pass
T10	120 - 100	Leg	2	435	-41.94	89.23	47.0	Pass
T11	100 - 80	Leg	2	483	-42.12	89.23	47.2	Pass
T12	80 - 60	Leg	2	530	-45.26	89.23	50.7	Pass
T13	60 - 40	Leg	2	577	-48.94	89.23	54.8	Pass
T14	40 - 20	Leg	2	625	-50.36	89.23	56.4	Pass
T15	20 - 6.6667	Leg	2	673	-50.25	89.57	56.1	Pass
T16	6.6667 - 0	Leg	2	708	-52.40	84.81	61.8	Pass
T1	300 - 280	Diagonal	1	12	-0.67	7.48	9.0	Pass
T2	280 - 260	Diagonal	1	94	-1.84	7.48	24.6	Pass
T3	260 - 240	Diagonal	1	142	-1.37	7.48	18.3	Pass
T4	240 - 220	Diagonal	1	154	-1.03	7.48	13.7	Pass
T5	220 - 200	Diagonal	1 1/8	203	-5.61	12.13	46.3	Pass
T6	200 - 180	Diagonal	1 1/8	286	-5.52	12.13	45.5	Pass
T7	180 - 160	Diagonal	1 1/8	300	-6.22	12.13	51.3	Pass
T8	160 - 140	Diagonal	1 1/8	348	-7.66	12.13	63.2	Pass
T9	140 - 120	Diagonal	1	422	-2.51	7.48	33.6	Pass
T10	120 - 100	Diagonal	1	478	-1.35	7.48	18.1	Pass
T11	100 - 80	Diagonal	1	492	-2.17	7.48	29.0	Pass
T12	80 - 60	Diagonal	1	561	-2.85	7.48	38.2	Pass
T13	60 - 40	Diagonal	1	621	-2.19	7.48	29.4	Pass
T14	40 - 20	Diagonal	1	669	-1.22	7.48	16.4	Pass
T15	20 - 6.6667	Diagonal	1	683	-1.91	7.51	25.4	Pass
T16	6.6667 - 0	Diagonal	1	716	-1.36	10.17	13.3	Pass
T1	300 - 280	Horizontal	7/8	14	-0.07	8.22	0.9	Pass
T2	280 - 260	Horizontal	7/8	77	-0.33	8.22	4.0	Pass
T3	260 - 240	Horizontal	7/8	111	-0.40	8.22	4.8	Pass
T4	240 - 220	Horizontal	7/8	159	-0.40	8.22	4.9	Pass
T5	220 - 200	Horizontal	7/8	220	5.40	19.48	27.7	Pass
T6	200 - 180	Horizontal	7/8	263	-1.38	8.31	16.6	Pass
T7	180 - 160	Horizontal	7/8	311	-1.37	8.31	16.5	Pass
T8	160 - 140	Horizontal	7/8	352	-0.89	8.31	10.7	Pass
T9	140 - 120	Horizontal	7/8	399	-0.84	8.22	10.2	Pass
T10	120 - 100	Horizontal	7/8	448	-0.89	8.22	10.8	Pass
T11	100 - 80	Horizontal	7/8	495	-0.89	8.22	10.8	Pass
T12	80 - 60	Horizontal	7/8	556	4.41	19.48	22.6	Pass
T13	60 - 40	Horizontal	7/8	592	-1.04	8.22	12.6	Pass
T14	40 - 20	Horizontal	7/8	640	-1.06	8.22	12.9	Pass
T15	20 - 6.6667	Horizontal	7/8	695	-1.06	8.22	12.9	Pass
T16	6.6667 - 0	Horizontal	1 1/4	713	-1.16	32.73	3.5	Pass
T1	300 - 280	Secondary Horizontal	3/4	27	-0.00	9.76	0.1	Pass
T2	280 - 260	Secondary Horizontal	3/4	61	-0.00	9.76	0.1	Pass
T3	260 - 240	Secondary Horizontal	3/4	109	-0.00	9.76	0.1	Pass
T4	240 - 220	Secondary Horizontal	3/4	157	-0.00	9.76	0.1	Pass
T5	220 - 200	Secondary Horizontal	3/4	205	-0.00	9.76	0.1	Pass
T6	200 - 180	Secondary Horizontal	3/4	253	0.00	14.31	0.1	Pass
T7	180 - 160	Secondary Horizontal	3/4	301	-0.00	9.76	0.1	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T8	160 - 140	Secondary Horizontal	3/4	363	-0.00	9.76	0.1	Pass
T9	140 - 120	Secondary Horizontal	3/4	425	-0.00	9.76	0.1	Pass
T10	120 - 100	Secondary Horizontal	3/4	445	-0.00	9.76	0.1	Pass
T11	100 - 80	Secondary Horizontal	3/4	493	-0.00	9.76	0.1	Pass
T12	80 - 60	Secondary Horizontal	3/4	541	-0.00	9.76	0.1	Pass
T13	60 - 40	Secondary Horizontal	3/4	589	-0.00	9.76	0.1	Pass
T14	40 - 20	Secondary Horizontal	3/4	637	-0.00	9.76	0.1	Pass
T15	20 - 6.6667	Secondary Horizontal	3/4	699	-0.00	9.76	0.1	Pass
T1	300 - 280	Top Girt	7/8	6	-0.04	8.22	0.5	Pass
T2	280 - 260	Top Girt	7/8	53	2.57	19.48	13.2	Pass
T3	260 - 240	Top Girt	7/8	101	-0.40	8.22	4.8	Pass
T4	240 - 220	Top Girt	7/8	149	-0.40	8.22	4.9	Pass
T5	220 - 200	Top Girt	7/8	198	-0.83	8.31	9.9	Pass
T6	200 - 180	Top Girt	7/8	246	-1.38	8.31	16.6	Pass
T7	180 - 160	Top Girt	7/8	294	-1.37	8.31	16.5	Pass
T8	160 - 140	Top Girt	7/8	342	-0.89	8.31	10.7	Pass
T9	140 - 120	Top Girt	7/8	389	4.92	19.48	25.2	Pass
T10	120 - 100	Top Girt	7/8	438	-0.89	8.22	10.8	Pass
T11	100 - 80	Top Girt	7/8	485	-0.89	8.22	10.8	Pass
T12	80 - 60	Top Girt	7/8	532	-0.96	8.22	11.6	Pass
T13	60 - 40	Top Girt	7/8	582	-1.04	8.22	12.6	Pass
T14	40 - 20	Top Girt	7/8	630	-1.06	8.22	12.9	Pass
T15	20 - 6.6667	Top Girt	7/8	678	-1.06	8.22	12.9	Pass
T16	6.6667 - 0	Top Girt	7/8	711	4.47	19.48	23.0	Pass
T1	300 - 280	Bottom Girt	7/8	8	1.31	19.48	6.7	Pass
T2	280 - 260	Bottom Girt	7/8	56	-0.33	8.22	4.0	Pass
T3	260 - 240	Bottom Girt	7/8	104	-0.40	8.22	4.8	Pass
T4	240 - 220	Bottom Girt	7/8	152	-0.40	8.22	4.9	Pass
T5	220 - 200	Bottom Girt	7/8	201	-0.83	8.31	9.9	Pass
T6	200 - 180	Bottom Girt	7/8	249	-1.38	8.31	16.6	Pass
T7	180 - 160	Bottom Girt	7/8	297	-1.37	8.31	16.5	Pass
T8	160 - 140	Bottom Girt	7/8	345	3.20	19.48	16.4	Pass
T9	140 - 120	Bottom Girt	7/8	392	-0.84	8.22	10.2	Pass
T10	120 - 100	Bottom Girt	7/8	441	-0.89	8.22	10.8	Pass
T11	100 - 80	Bottom Girt	7/8	488	-0.89	8.22	10.8	Pass
T12	80 - 60	Bottom Girt	7/8	535	-0.96	8.22	11.6	Pass
T13	60 - 40	Bottom Girt	7/8	585	-1.04	8.22	12.6	Pass
T14	40 - 20	Bottom Girt	7/8	633	-1.06	8.22	12.9	Pass
T15	20 - 6.6667	Bottom Girt	7/8	680	4.45	19.48	22.9	Pass
T2	280 - 260	Guy A@279.917	3/4 (24000)	730	12.13	34.98	34.7	Pass
T5	220 - 200	Guy A@210	5/8 (23000)	727	13.41	25.44	52.7	Pass
T9	140 - 120	Guy A@139.917	5/8 (23000)	724	15.76	25.44	62.0	Pass
T12	80 - 60	Guy A@70	1/2 (23000)	721	7.52	16.14	46.6	Pass
T2	280 - 260	Guy B@279.917	3/4 (24000)	729	12.14	34.98	34.7	Pass
T5	220 - 200	Guy B@210	5/8 (23000)	726	13.29	25.44	52.2	Pass
T9	140 - 120	Guy B@139.917	5/8 (23000)	723	15.49	25.44	60.9	Pass
T12	80 - 60	Guy B@70	1/2 (23000)	720	7.40	16.14	45.8	Pass
T2	280 - 260	Guy C@279.917	3/4 (24000)	728	12.19	34.98	34.8	Pass
T5	220 - 200	Guy C@210	5/8 (23000)	725	13.92	25.44	54.7	Pass
T9	140 - 120	Guy C@139.917	5/8 (23000)	722	16.31	25.44	64.1	Pass
T12	80 - 60	Guy C@70	1/2 (23000)	719	7.78	16.14	48.2	Pass
							Summary	
						Leg (T16)	61.8	Pass
						Diagonal (T8)	63.2	Pass
						Horizontal (T5)	27.7	Pass
						Secondary Horizontal (T1)	0.1	Pass
						Top Girt	25.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
						(T9) Bottom Girt (T15)	22.9	Pass
						Guy A (T9)	62.0	Pass
						Guy B (T9)	60.9	Pass
						Guy C (T9)	64.1	Pass
						RATING =	**64.1**	**Pass**

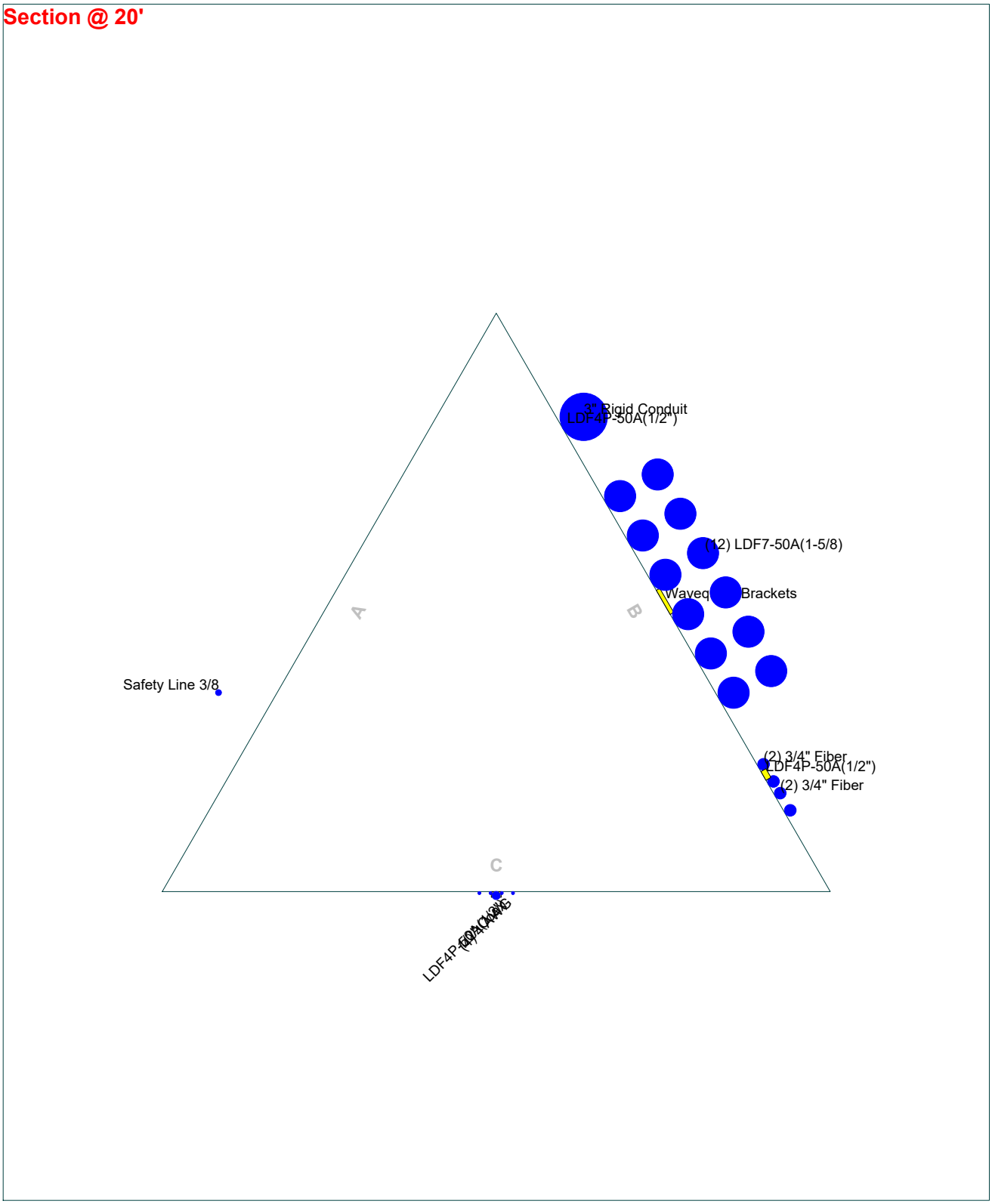
APPENDIX B

BASE LEVEL DRAWING

Feed Line Plan
20'

Round Flat App In Face App Out Face

Section @ 20'



Engineered Tower Solutions
3227 Wellington Court
Raleigh, NC 27615
Phone: (919) 782-2710
FAX: (919) 435-0631

Job: ***East Haddam***			
Project: ***ETS Job No. 22108236.STR.8128***			
Client: CTI Towers	Drawn by: Amrita Chakraborty	App'd:	
Code: TIA-222-H	Date: 06/16/22	Scale: NTS	
Path:		Dwg No. E-7	

APPENDIX C

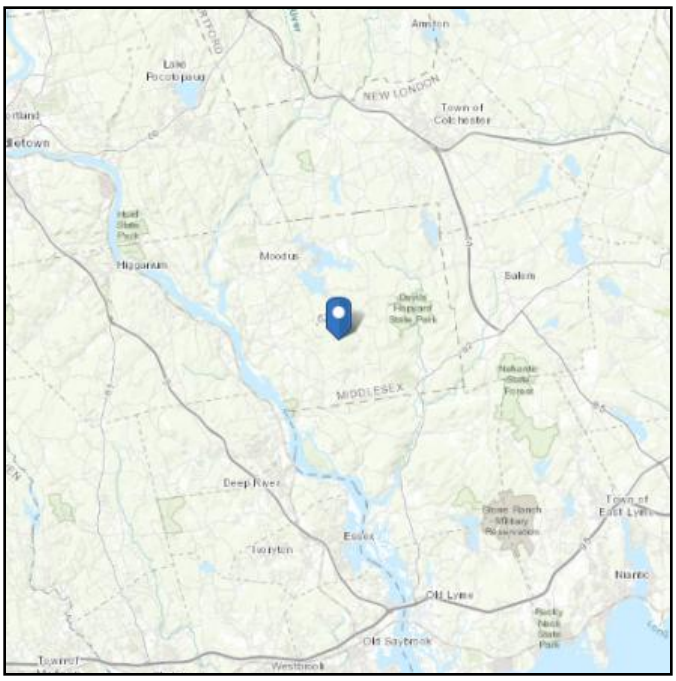
ADDITIONAL CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 591.02 ft (NAVD 88)
Latitude: 41.460883
Longitude: -72.395217



Wind

Results:

Wind Speed	130 Vmph
10-year MRI	78 Vmph
25-year MRI	88 Vmph
50-year MRI	96 Vmph
100-year MRI	105 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

Date Accessed: Wed Jun 15 2022

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

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

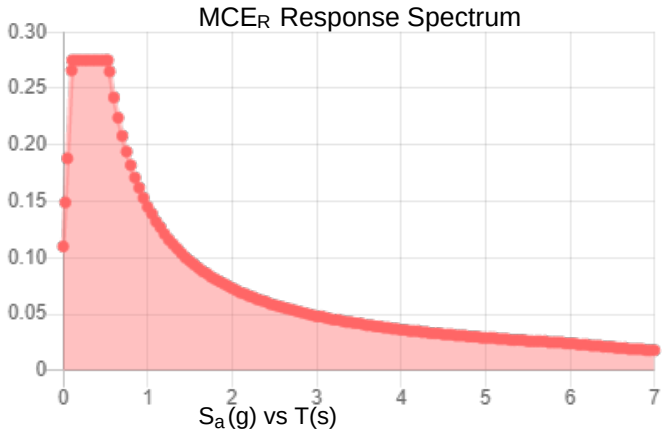
Seismic

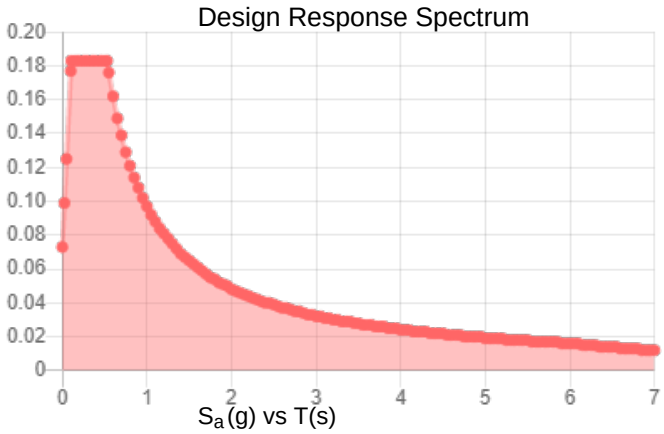
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.172	S_{DS} :	0.183
S_1 :	0.061	S_{D1} :	0.097
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.087
S_{MS} :	0.275	PGA_M :	0.139
S_{M1} :	0.145	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: **Wed Jun 15 2022**

Date Source:

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

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Wed Jun 15 2022

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

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

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

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

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

Exhibit E

Mount Analysis Report

Trylon Project # 211904

July 22, 2022

Project Information	
Client	Northeast Site Solutions
Carrier Name	T-Mobile
Carrier Site ID	CTHA346A
Carrier Site Name	CTI Parker Road East Haddam
Site Address	126 Parker Road, East Haddam, Middlesex County, CT 06423
Site Coordinates	41.46091000, -72.39522000
Structure Type	Guyed Tower
Structure Height	300.0 ft
Mount Type	Sector Frames
Mount Elevation	175.0 ft

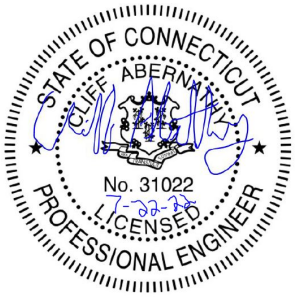
STRUCTURE RATING =	**77.6%**	**PASS**

Analysis Performed by:

James Geis, E.I.

Reviewed and Approved by:

Cliff Abernathy, P.E.



Mount Analysis Report

Subject: Analysis of the Proposed Sector Frames at 175.0 ft Elevation

Dear Northeast Site Solutions,

We have been provided with RF information, photos and sketches of the structure for the above referenced sites. T-Mobile is proposing to change the equipment configuration on the Proposed mounting hardware.

A revised antenna, coax and miscellaneous equipment schematic have been provided to us. We have been asked to evaluate this information to determine whether the mounting apparatus is adequate to safely support the proposed loading change.

RISA 3D (Version 17), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

1. Source Data

Document Type	Source	Reference	Date
RFDS	T-Mobile	Site ID: CTHA346A	February 28, 2022
Construction Drawings	Trylon	Site ID: CTHA346A	July 13, 2022
Mount Manufacturer Drawings	Site Pro 1	Part No: VFA12-HD	June 22, 2015

2. Analysis Criteria

Adopted Codes and Site Parameters	
Building Code / Local Code	2015 IBC
Code Standard	TIA-222-G
Design Wind Speed (mph)	130 (V_{ult}) / 101 (V_{nom})
Design Wind Speed with Ice (mph)	50
Design Ice Thickness (in)	0.75
Risk Category/Structure Class	II
Exposure Category	C
Topographic Factor, K_{zt}	1.00
Seismic Response Acceleration, S_s (g)	0.172
Seismic Response Acceleration, S_1 (g)	0.061

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Irving, Texas 75038

3. Final Loading Configuration

Mount CL (ft)	Equipment CL (ft)	Qty.	Manufacturer	Model	Carrier
175.0	175.0	1	RFS/CELWAVE	SC2-W100BD	T-Mobile
		3	ERICSSON	AIR 6419 B41	
		3	RFS/CELWAVE	APXVAA24_43-U-A20	
		3	COMMSCOPE	VV-65A-R1	
		3	ERICSSON	RADIO 4480 B71+B85	
		3	ERICSSON	RADIO 4460 B25+B66	

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Irving, Texas 75038

4. Standard Conditions for Providing Structural Consulting Services on Existing Structures

1) Mounting hardware is analyzed to the best of our ability using all information that is provided or can be obtained during fieldwork (if authorized by client). If the existing conditions are not as we have represented in this analysis, we should be contacted to evaluate the significance of the deviation and revise the assessment accordingly.
2) The structural analysis has been performed assuming that hardware is in "like new" condition. No allowance was made for excessive corrosion, damaged or missing structural members, loose bolts, misaligned parts, or any reduction in strength due to the age or fatigue of the product.
3) The structural analysis provided is an assessment of the primary load carrying capacity of the hardware. We provide a limited scope of service. In some cases, we cannot verify the capacity of every weld, plate, connection detail, etc. In some cases, structural fabrication details are unknown at the time of our analysis, and the detailed field measurement of some of the required details may not be possible. In instances where we cannot perform connection capacity calculations, it is assumed that the existing manufactured connections develop the full capacity of the primary members being connected.
4) We cannot be held responsible for mounting hardware that is installed improperly or hardware that is loose or has a tendency of working loose over the lifetime of the mounting hardware. Our analysis has been performed assuming fully tightened connections, and proper installation and symmetry of the mounting hardware per manufacturer's instructions.
5) The structural analysis has been performed using information currently provided by the client and potentially field verified. We have been provided with a mounting arrangement for all telecommunications equipment, including antennas RRH's, TMA's, RRU's, diplexers, surge protection devices, etc. Our analysis has been based upon a particular mounting arrangement. We are not responsible for deviations in the mounting arrangement that may occur over time. If deviations in equipment type or mounting arrangements are proposed, then we should be contacted to revise the recommendations of this structural report.
6) We cannot be held responsible for temporary and unbalanced loads on mounting hardware. Our analysis is based on a particular mounting arrangement or as-built field condition. We are not responsible for the methods and means of how the mounting arrangement is accomplished by the contractor. These methods and means may include rigging of equipment or hardware to lift and locate, temporary hanging of equipment in locations other than the final arrangement, movement and tie off of tower riggers, personnel, and their equipment, etc.
7) Steel grade and strength is unknown and cannot be field tested. We cannot be held responsible for equipment manufactured from inferior steel or bolts. Our analysis assumes that standard structural grade steel has been used by the equipment manufacturer for all assembled parts of the mounting apparatus. Acceptable steels and connection components are specified by the American Institute of Steel Construction. It is assumed all welded connections are performed in the shop under the latest American Welding Society Code. No field welds are permitted or assumed for the existing premanufactured equipment.
8) Steel grades have been assumed as follows, unless noted otherwise:

Assumed Steel Grades	
Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM 500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325
U-Bolts, Threaded Rods	SAE J429 Gr. 2

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5. Analysis Results

Mount CL (ft.)	Component	% Capacity	Pass/Fail	Notes
175.0	Horizontal Pipe(s)	36.5	Pass	1
	Standoff Pipe(s)	16.9	Pass	
	Vertical Bracing(s)	64.9	Pass	
	Mount Pipe(s)	77.6	Pass	
	Standoff Plate(s)	66.1	Pass	
	Tieback(s)	14.9	Pass	
	Diagonal Bracing(s)	18.5	Pass	
	Connection(s)	12.5	Pass	

Structure Rating (max from all components) =	77.6%

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

6. Conclusions and Recommendations

Based on the information provided, our calculations conclude that the Proposed T-Mobile Sector Frames installed at 175.0 ft. elevation has sufficient capacity to carry the final loading configuration.

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Irving, Texas 75038

APPENDIX

ADDITIONAL CALCULATIONS

1825 W. Walnut Hill Lane, Suite 120
Irving, Texas 75038

Trylon
1825 W. Walnut Hill Lane Suite 120
Irving, TX 75038

TIA LOAD CALCULATOR 2.2

PROJECT DATA	
Job Code:	211904
Carrier Site ID:	CTHA346A
Carrier Site Name:	TI Parker Road East Hadda

CODES AND STANDARDS	
Building Code:	2015 IBC
Local Building Code:	--
Design Standard:	TIA-222-G

STRUCTURE DETAILS		
Mount Type:	ector Frame (Multipl	--
Mount Elevation:	175.0	ft.
Number of Sectors:	3	--
Structure Type:	Guyed Tower	--
Structure Height:	300.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	C	--
Site Class:	D - Default	--

TOPOGRAPHIC DATA		
Topographic Category:	1	--
Topographic Feature:	N/A	--
Crest Point Elevation:	0.00	ft.
Base Point Elevation:	0.00	ft.
Crest to Mid-Height (L/2):	0.00	ft.
Distance from Crest (x):	0.00	ft.
Base Topo Factor (K_{zt}):	1.00	--
Mount Topo Factor (K_{zt}):	1.00	--

WIND PARAMETERS		
Design Wind Speed:	101	mph
Importance Factor (I_w):	1.00	--
Velocity Coefficient (K_z):	1.42	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	1.00	--
Velocity Pressure (q_z):	35.32	psf

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	0.75	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	7.18	psf
Mount Ice Thickness (t_{iz}):	1.77	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	70.65	psf
Round Member Pressure:	42.39	psf
Ice Wind Pressure:	8.62	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1	--
Short Period Accel .(S_s):	0.172	g
1 Second Accel (S_1):	0.061	g
Short Period Des. (S_{DS}):	0.18	g
1 Second Des. (S_{D1}):	0.10	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (Cs):	0.07	--
Amplification Factor (A_S):	1.20	--

LOAD COMBINATIONS [LRFD]

#	Description
1	1.4DL
2	1.2DL + 1.6WL 0 AZI
3	1.2DL + 1.6WL 30 AZI
4	1.2DL + 1.6WL 45 AZI
5	1.2DL + 1.6WL 60 AZI
6	1.2DL + 1.6WL 90 AZI
7	1.2DL + 1.6WL 120 AZI
8	1.2DL + 1.6WL 135 AZI
9	1.2DL + 1.6WL 150 AZI
10	1.2DL + 1.6WL 180 AZI
11	1.2DL + 1.6WL 210 AZI
12	1.2DL + 1.6WL 225 AZI
13	1.2DL + 1.6WL 240 AZI
14	1.2DL + 1.6WL 270 AZI
15	1.2DL + 1.6WL 300 AZI
16	1.2DL + 1.6WL 315 AZI
17	1.2DL + 1.6WL 330 AZI
18	0.9DL + 1.6WL 0 AZI
19	0.9DL + 1.6WL 30 AZI
20	0.9DL + 1.6WL 45 AZI
21	0.9DL + 1.6WL 60 AZI
22	0.9DL + 1.6WL 90 AZI
23	0.9DL + 1.6WL 120 AZI
24	0.9DL + 1.6WL 135 AZI
25	0.9DL + 1.6WL 150 AZI
26	0.9DL + 1.6WL 180 AZI
27	0.9DL + 1.6WL 210 AZI
28	0.9DL + 1.6WL 225 AZI
29	0.9DL + 1.6WL 240 AZI
30	0.9DL + 1.6WL 270 AZI
31	0.9DL + 1.6WL 300 AZI
32	0.9DL + 1.6WL 315 AZI
33	0.9DL + 1.6WL 330 AZI
34	1.2DL + 1DLi + 1WLi 0 AZI
35	1.2DL + 1DLi + 1WLi 30 AZI
36	1.2DL + 1DLi + 1WLi 45 AZI
37	1.2DL + 1DLi + 1WLi 60 AZI
38	1.2DL + 1DLi + 1WLi 90 AZI
39	1.2DL + 1DLi + 1WLi 120 AZI
40	1.2DL + 1DLi + 1WLi 135 AZI
41	1.2DL + 1DLi + 1WLi 150 AZI

#	Description
42	1.2DL + 1DLi + 1WLi 180 AZI
43	1.2DL + 1DLi + 1WLi 210 AZI
44	1.2DL + 1DLi + 1WLi 225 AZI
45	1.2DL + 1DLi + 1WLi 240 AZI
46	1.2DL + 1DLi + 1WLi 270 AZI
47	1.2DL + 1DLi + 1WLi 300 AZI
48	1.2DL + 1DLi + 1WLi 315 AZI
49	1.2DL + 1DLi + 1WLi 330 AZI
50	(1.2+0.2Sds) + 1.0E 0 AZI
51	(1.2+0.2Sds) + 1.0E 30 AZI
52	(1.2+0.2Sds) + 1.0E 45 AZI
53	(1.2+0.2Sds) + 1.0E 60 AZI
54	(1.2+0.2Sds) + 1.0E 90 AZI
55	(1.2+0.2Sds) + 1.0E 120 AZI
56	(1.2+0.2Sds) + 1.0E 135 AZI
57	(1.2+0.2Sds) + 1.0E 150 AZI
58	(1.2+0.2Sds) + 1.0E 180 AZI
59	(1.2+0.2Sds) + 1.0E 210 AZI
60	(1.2+0.2Sds) + 1.0E 225 AZI
61	(1.2+0.2Sds) + 1.0E 240 AZI
62	(1.2+0.2Sds) + 1.0E 270 AZI
63	(1.2+0.2Sds) + 1.0E 300 AZI
64	(1.2+0.2Sds) + 1.0E 315 AZI
65	(1.2+0.2Sds) + 1.0E 330 AZI
66	(0.9-0.2Sds) + 1.0E 0 AZI
67	(0.9-0.2Sds) + 1.0E 30 AZI
68	(0.9-0.2Sds) + 1.0E 45 AZI
69	(0.9-0.2Sds) + 1.0E 60 AZI
70	(0.9-0.2Sds) + 1.0E 90 AZI
71	(0.9-0.2Sds) + 1.0E 120 AZI
72	(0.9-0.2Sds) + 1.0E 135 AZI
73	(0.9-0.2Sds) + 1.0E 150 AZI
74	(0.9-0.2Sds) + 1.0E 180 AZI
75	(0.9-0.2Sds) + 1.0E 210 AZI
76	(0.9-0.2Sds) + 1.0E 225 AZI
77	(0.9-0.2Sds) + 1.0E 240 AZI
78	(0.9-0.2Sds) + 1.0E 270 AZI
79	(0.9-0.2Sds) + 1.0E 300 AZI
80	(0.9-0.2Sds) + 1.0E 315 AZI
81	(0.9-0.2Sds) + 1.0E 330 AZI

EQUIPMENT LOADING

Appurtenance Name	Qty.	Elevation [ft]	--	EPA $_N$ (ft2)	EPA $_T$ (ft2)	Weight (lbs)
SC2-W100BD	1	175	No Ice	5.808	2.574	20
--	--	--	w/ Ice	6.52	3.11	178.7325797
AIR 6419 B41	3	175	No Ice	6.32	2.88	96.5
--	--	--	w/ Ice	7.10	3.52	174.6897069
APXVAA24_43-U-A20	3	175	No Ice	20.24	8.73	124.3
--	--	--	w/ Ice	21.88	10.26	435.1903718
VV-65A-R1	3	175	No Ice	5.89	2.73	33.3
--	--	--	w/ Ice	6.82	3.61	141.1235781
RADIO 4480 B71+B85	3	175	No Ice	2.43	1.20	92.5
--	--	--	w/ Ice	2.92	1.59	81.66614345
RADIO 4460 B25+B66	3	175	No Ice	2.56	1.98	109
--	--	--	w/ Ice	3.06	2.43	105.1583135
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT LOADING [CONT.]

Appurtenance Name	Qty.	Elevation [ft]	--	EPA $_N$ (ft2)	EPA $_T$ (ft2)	Weight (lbs)
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT WIND CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	K_{zt}	K_z	K_d	t_d	q_z [psf]	q_{zi} [psf]
SC2-W100BD	1	175	1	1.423865	0.95	1.772326	35.32443	8.657099
AIR 6419 B41	3	175	1	1.423865	0.95	1.772326	35.32443	8.657099
APXVAA24_43-U-A20	3	175	1	1.423865	0.95	1.772326	35.32443	8.657099
VV-65A-R1	3	175	1	1.423865	0.95	1.772326	35.32443	8.657099
RADIO 4480 B71+B85	3	175	1	1.423865	0.95	1.772326	35.32443	8.657099
RADIO 4460 B25+B66	3	175	1	1.423865	0.95	1.772326	35.32443	8.657099

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
SC2-W100BD	1	No Ice	169.4207	105.2988	148.0467	83.92481	148.0467	105.2988
--	--	w/ Ice	56.48407	34.32334	49.09716	26.93644	49.09716	34.32334
AIR 6419 B41	3	No Ice	223.1289	132.0319	192.7633	101.6662	192.7633	132.0319
--	--	w/ Ice	61.43119	38.20973	53.69071	30.46924	53.69071	38.20973
APXVAA24_43-U-A20	3	No Ice	715.0581	410.1338	613.4166	308.4923	613.4166	410.1338
--	--	w/ Ice	189.3786	113.9545	164.2372	88.81308	164.2372	113.9545
VV-65A-R1	3	No Ice	207.955	124.3473	180.0858	96.47812	180.0858	124.3473
--	--	w/ Ice	59.02477	38.16923	52.07292	31.21739	52.07292	38.16923
RADIO 4480 B71+B85	3	No Ice	85.90901	53.33988	75.05263	42.48351	75.05263	53.33988
--	--	w/ Ice	25.24553	16.65822	22.38309	13.79578	22.38309	16.65822
RADIO 4460 B25+B66	3	No Ice	90.5836	75.00553	85.39091	69.81284	85.39091	75.00553
--	--	w/ Ice	26.48986	22.38625	25.12199	21.01839	25.12199	22.38625
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

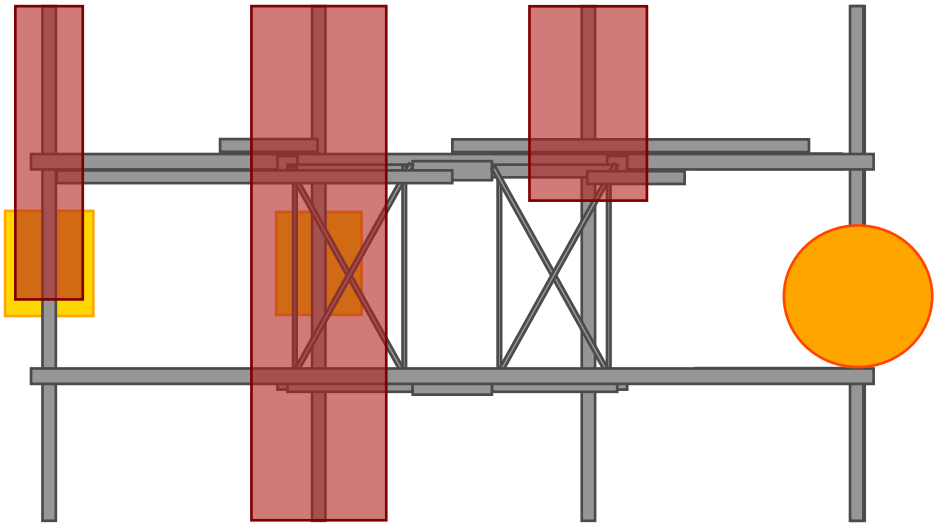
EQUIPMENT LATERAL WIND FORCE CALCULATIONS [CONT.]

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

EQUIPMENT SEISMIC FORCE CALCULATIONS

Appurtenance Name	*Qty.*	*Elevation [ft]*	*Weight [lbs]*	F_p [lbs]
SC2-W100BD	1	175	20	1.76128
AIR 6419 B41	3	175	96.5	8.498176
APXVAA24_43-U-A20	3	175	124.3	10.9463552
VV-65A-R1	3	175	33.3	2.9325312
RADIO 4480 B71+B85	3	175	92.5	8.14592
RADIO 4460 B25+B66	3	175	109	9.598976

ELEVATION VIEW

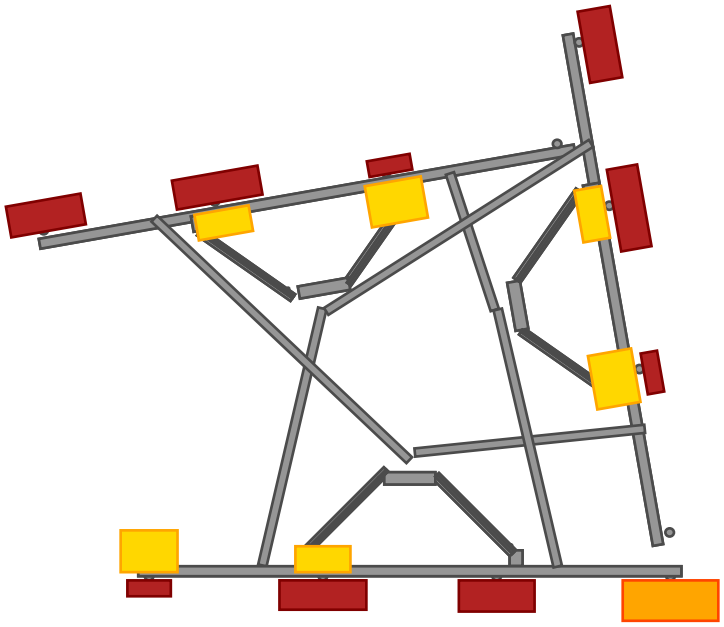


MP4 MP3 MP2 **MP1**

*these drawings are intended to show approximate locations of equipment on the mount and should not be used to determine exact placement of equipment or additional hardware

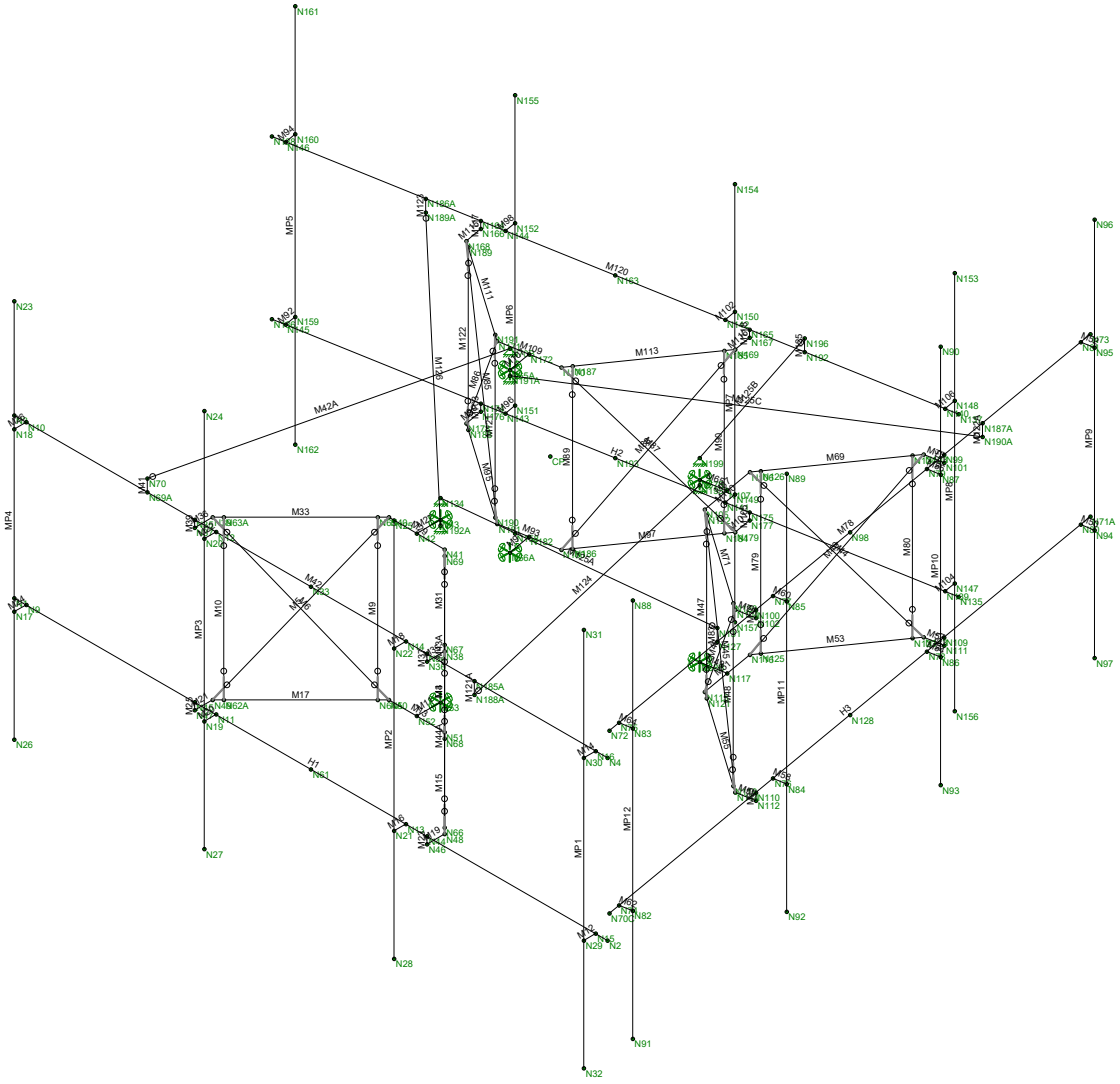
**Elevation View Shows Only One Sector

PLAN VIEW

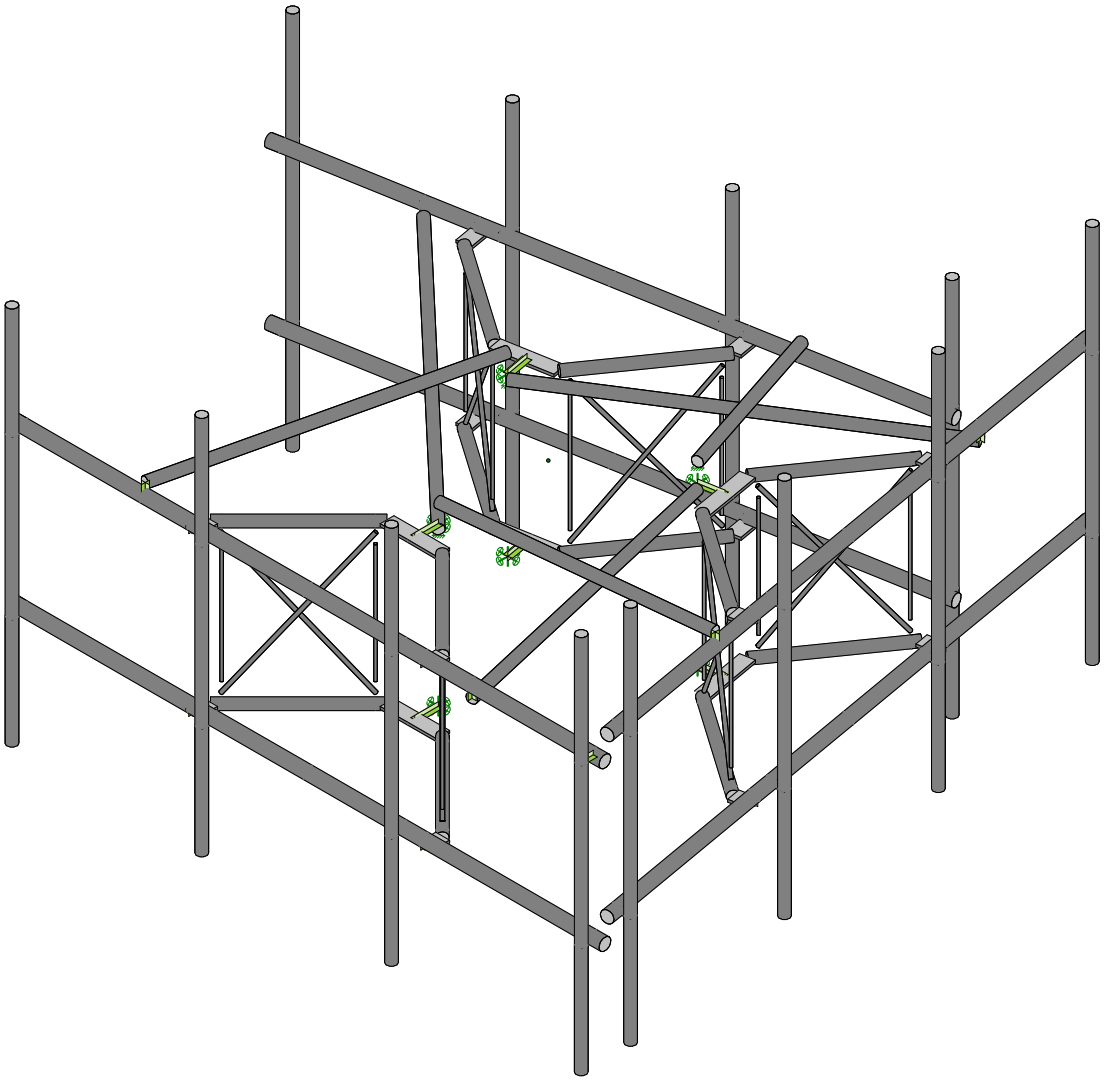


1825 W. Walnut Hill Lane, Suite 120
Irving, Texas 75038

Equipment Name	Total Quantity	Antenna Centerline	Mount Pipe Positions	Equipment Azimuths
SC2-W100BD	1	175	MP1	40
AIR 6419 B41	3	175	MP2/MP5/MP9	40/210/300
APXVAA24_43-U-A20	3	175	MP3/MP6/MP10	40/210/300
VV-65A-R1	3	175	MP4/MP7/MP11	40/210/300
RADIO 4480 B71+B85	3	175	MP3/MP6/MP10	40/210/300
RADIO 4460 B25+B66	3	175	MP4/MP7/MP11	40/210/300



Trylon	CTHA346A	Wireframe
James Geis, E.I.		July 22, 2022 at 2:06 PM
211904		CTHA346A_loaded.r3d



Trylon	CTHA346A	Render
James Geis, E.I.		July 22, 2022 at 2:06 PM
211904		CTHA346A_loaded.r3d

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): LRFD
Cold Formed Steel Code	None
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building
Stainless Steel Code	None

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [psi]	G [psi]	Nu	Therm (/1...	Density[lb/ft^3]	Yield[psi]	Ry	Fu[psi]	Rt
1	A992	2.9e+7	1.115e+7	.3	.65	490	50000	1.1	65000	1.1
2	A36 Gr.36	2.9e+7	1.115e+7	.3	.65	490	36000	1.5	58000	1.2
3	A572 Gr.50	2.9e+7	1.115e+7	.3	.65	490	50000	1.1	65000	1.1
4	A500 Gr.B RND	2.9e+7	1.115e+7	.3	.65	527	42000	1.4	58000	1.3
5	A500 Gr.B Rect	2.9e+7	1.115e+7	.3	.65	527	46000	1.4	58000	1.3
6	A53 Gr.B	2.9e+7	1.115e+7	.3	.65	490	35000	1.6	60000	1.2
7	A1085	2.9e+7	1.115e+7	.3	.65	490	50000	1.4	65000	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Horizontal Pipe	PIPE_2.5	Beam	None	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
2	Standoff Pipe	PIPE_2.0	Beam	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
3	Vertical Bracing	0.625" S.R.	Beam	None	A36 Gr.36	Typical	.307	.007	.007	.015
4	Mount Pipe	PIPE_2.0	Beam	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
5	Connection Plate	PL0.625x3.5	Beam	None	A36 Gr.36	Typical	2.188	.071	2.233	.253
6	Standoff Plate	PL3 1/2x5/8	Beam	None	A36 Gr.36	Typical	2.188	.071	2.233	.253
7	Tieback	PIPE_2.0	Beam	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
8	Diagonal Bracing	SR 3/4	Beam	None	A36 Gr.36	Typical	.442	.016	.016	.031

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N43	Reaction	Reaction	Reaction	Reaction		Reaction
2	N53	Reaction	Reaction	Reaction	Reaction		Reaction
3	N65A	Reaction	Reaction	Reaction	Reaction		Reaction
4	N66A	Reaction	Reaction	Reaction	Reaction		Reaction
5	N67B	Reaction	Reaction	Reaction	Reaction		Reaction
6	N68B	Reaction	Reaction	Reaction	Reaction		Reaction

Joint Boundary Conditions (Continued)

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
7	N70B	Reaction	Reaction	Reaction			
8	N134	Reaction	Reaction	Reaction			
9	N199	Reaction	Reaction	Reaction			
10	N191A	Reaction	Reaction	Reaction			
11	N192A	Reaction	Reaction	Reaction			
12	N193A	Reaction	Reaction	Reaction			

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Self Weight	DL		-1			25			
2	Structure Wind Z	WLZ						126		
3	Structure Wind X	WLX						126		
4	Wind Load 0 AZI	WLZ					50			
5	Wind Load 30 AZI	None					50			
6	Wind Load 45 AZI	None					50			
7	Wind Load 60 AZI	None					50			
8	Wind Load 90 AZI	WLX					50			
9	Wind Load 120 AZI	None					50			
10	Wind Load 135 AZI	None					50			
11	Wind Load 150 AZI	None					50			
12	Ice Weight	OL1					25	126		
13	Ice Structure Wind Z	OL2						126		
14	Ice Structure Wind X	OL3						126		
15	Ice Wind Load 0 AZI	OL2					50			
16	Ice Wind Load 30 AZI	None					50			
17	Ice Wind Load 45 AZI	None					50			
18	Ice Wind Load 60 AZI	None					50			
19	Ice Wind Load 90 AZI	OL3					50			
20	Ice Wind Load 120 AZI	None					50			
21	Ice Wind Load 135 AZI	None					50			
22	Ice Wind Load 150 AZI	None					50			
23	Seismic Load Z	ELZ			-.088		25			
24	Seismic Load X	ELX	-.088				25			
25	Live Load 1 (Lv)	None					1			
26	Live Load 2 (Lv)	None					1			
27	Live Load 3 (Lv)	None					1			
28	Live Load 4 (Lv)	None					1			
29	Live Load 5 (Lv)	None					1			
30	Live Load 6 (Lv)	None					1			
31	Live Load 7 (Lv)	None					1			
32	Live Load 8 (Lv)	None					1			
33	Live Load 9 (Lv)	None					1			
34	Maintenance Load 1 (Lm)	None					1			
35	Maintenance Load 2 (Lm)	None					1			
36	Maintenance Load 3 (Lm)	None					1			
37	Maintenance Load 4 (Lm)	None					1			
38	Maintenance Load 5 (Lm)	None					1			
39	Maintenance Load 6 (Lm)	None					1			
40	Maintenance Load 7 (Lm)	None					1			
41	Maintenance Load 8 (Lm)	None					1			
42	Maintenance Load 9 (Lm)	None					1			
43	Maintenance Load 10 (Lm)	None					1			
44	Maintenance Load 11 (Lm)	None					1			
45	Maintenance Load 12 (Lm)	None					1			

Load Combinations

	Description	So...	P...	S...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
1	1.4DL	Yes	Y		DL	1.4																		
2	1.2DL + 1.6WL 0 AZI	Yes	Y		DL	1.2	2	1.6	3		4	1.6												
3	1.2DL + 1.6WL 30 AZI	Yes	Y		DL	1.2	2	1.3...	3	.8	5	1.6												
4	1.2DL + 1.6WL 45 AZI	Yes	Y		DL	1.2	2	1.1...	3	1.1...	6	1.6												
5	1.2DL + 1.6WL 60 AZI	Yes	Y		DL	1.2	2	.8	3	1.3...	7	1.6												
6	1.2DL + 1.6WL 90 AZI	Yes	Y		DL	1.2	2		3	1.6	8	1.6												
7	1.2DL + 1.6WL 120 AZI	Yes	Y		DL	1.2	2	-.8	3	1.3...	9	1.6												
8	1.2DL + 1.6WL 135 AZI	Yes	Y		DL	1.2	2	-1....	3	1.1...	10	1.6												
9	1.2DL + 1.6WL 150 AZI	Yes	Y		DL	1.2	2	-1....	3	.8	11	1.6												
10	1.2DL + 1.6WL 180 AZI	Yes	Y		DL	1.2	2	-1.6	3		4	-1.6												
11	1.2DL + 1.6WL 210 AZI	Yes	Y		DL	1.2	2	-1....	3	-.8	5	-1.6												
12	1.2DL + 1.6WL 225 AZI	Yes	Y		DL	1.2	2	-1....	3	-1....	6	-1.6												
13	1.2DL + 1.6WL 240 AZI	Yes	Y		DL	1.2	2	-.8	3	-1....	7	-1.6												
14	1.2DL + 1.6WL 270 AZI	Yes	Y		DL	1.2	2		3	-1.6	8	-1.6												
15	1.2DL + 1.6WL 300 AZI	Yes	Y		DL	1.2	2	.8	3	-1....	9	-1.6												
16	1.2DL + 1.6WL 315 AZI	Yes	Y		DL	1.2	2	1.1...	3	-1....	10	-1.6												
17	1.2DL + 1.6WL 330 AZI	Yes	Y		DL	1.2	2	1.3...	3	-.8	11	-1.6												
18	0.9DL + 1.6WL 0 AZI	Yes	Y		DL	.9	2	1.6	3		4	1.6												
19	0.9DL + 1.6WL 30 AZI	Yes	Y		DL	.9	2	1.3...	3	.8	5	1.6												
20	0.9DL + 1.6WL 45 AZI	Yes	Y		DL	.9	2	1.1...	3	1.1...	6	1.6												
21	0.9DL + 1.6WL 60 AZI	Yes	Y		DL	.9	2	.8	3	1.3...	7	1.6												
22	0.9DL + 1.6WL 90 AZI	Yes	Y		DL	.9	2		3	1.6	8	1.6												
23	0.9DL + 1.6WL 120 AZI	Yes	Y		DL	.9	2	-.8	3	1.3...	9	1.6												
24	0.9DL + 1.6WL 135 AZI	Yes	Y		DL	.9	2	-1....	3	1.1...	10	1.6												
25	0.9DL + 1.6WL 150 AZI	Yes	Y		DL	.9	2	-1....	3	.8	11	1.6												
26	0.9DL + 1.6WL 180 AZI	Yes	Y		DL	.9	2	-1.6	3		4	-1.6												
27	0.9DL + 1.6WL 210 AZI	Yes	Y		DL	.9	2	-1....	3	-.8	5	-1.6												
28	0.9DL + 1.6WL 225 AZI	Yes	Y		DL	.9	2	-1....	3	-1....	6	-1.6												
29	0.9DL + 1.6WL 240 AZI	Yes	Y		DL	.9	2	-.8	3	-1....	7	-1.6												
30	0.9DL + 1.6WL 270 AZI	Yes	Y		DL	.9	2		3	-1.6	8	-1.6												
31	0.9DL + 1.6WL 300 AZI	Yes	Y		DL	.9	2	.8	3	-1....	9	-1.6												
32	0.9DL + 1.6WL 315 AZI	Yes	Y		DL	.9	2	1.1...	3	-1....	10	-1.6												
33	0.9DL + 1.6WL 330 AZI	Yes	Y		DL	.9	2	1.3...	3	-.8	11	-1.6												
34	1.2DL + 1DLi + 1WLi 0 AZI	Yes	Y		DL	1.2	OL1	1	13	1	14		15	1										
35	1.2DL + 1DLi + 1WLi 30 ...	Yes	Y		DL	1.2	OL1	1	13	.866	14	.5	16	1										
36	1.2DL + 1DLi + 1WLi 45 ...	Yes	Y		DL	1.2	OL1	1	13	.707	14	.707	17	1										
37	1.2DL + 1DLi + 1WLi 60 ...	Yes	Y		DL	1.2	OL1	1	13	.5	14	.866	18	1										
38	1.2DL + 1DLi + 1WLi 90 ...	Yes	Y		DL	1.2	OL1	1	13		14	1	19	1										
39	1.2DL + 1DLi + 1WLi 120...	Yes	Y		DL	1.2	OL1	1	13	-.5	14	.866	20	1										
40	1.2DL + 1DLi + 1WLi 135...	Yes	Y		DL	1.2	OL1	1	13	-.707	14	.707	21	1										
41	1.2DL + 1DLi + 1WLi 150...	Yes	Y		DL	1.2	OL1	1	13	-.866	14	.5	22	1										
42	1.2DL + 1DLi + 1WLi 180...	Yes	Y		DL	1.2	OL1	1	13	-1	14		15	-1										
43	1.2DL + 1DLi + 1WLi 210...	Yes	Y		DL	1.2	OL1	1	13	-.866	14	-.5	16	-1										
44	1.2DL + 1DLi + 1WLi 225...	Yes	Y		DL	1.2	OL1	1	13	-.707	14	-.707	17	-1										
45	1.2DL + 1DLi + 1WLi 240...	Yes	Y		DL	1.2	OL1	1	13	-.5	14	-.866	18	-1										
46	1.2DL + 1DLi + 1WLi 270...	Yes	Y		DL	1.2	OL1	1	13		14	-1	19	-1										
47	1.2DL + 1DLi + 1WLi 300...	Yes	Y		DL	1.2	OL1	1	13	.5	14	-.866	20	-1										
48	1.2DL + 1DLi + 1WLi 315...	Yes	Y		DL	1.2	OL1	1	13	.707	14	-.707	21	-1										
49	1.2DL + 1DLi + 1WLi 330...	Yes	Y		DL	1.2	OL1	1	13	.866	14	-.5	22	-1										
50	(1.2+0.2Sds)DL + 1E 0 A...	Yes	Y		DL	1.2...	23	1	24															
51	(1.2+0.2Sds)DL + 1E 30 ...	Yes	Y		DL	1.2...	23	.866	24	.5														
52	(1.2+0.2Sds)DL + 1E 45 ...	Yes	Y		DL	1.2...	23	.707	24	.707														
53	(1.2+0.2Sds)DL + 1E 60 ...	Yes	Y		DL	1.2...	23	.5	24	.866														
54	(1.2+0.2Sds)DL + 1E 90 ...	Yes	Y		DL	1.2...	23		24	1														
55	(1.2+0.2Sds)DL + 1E 120...	Yes	Y		DL	1.2...	23	-.5	24	.866														
56	(1.2+0.2Sds)DL + 1E 135...	Yes	Y		DL	1.2...	23	-.707	24	.707														

Load Combinations (Continued)

	Description	So...	P...	S...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
57	(1.2+0.2Sds)DL + 1E 150...	Yes	Y		DL	1.2...	23	-.866	24	.5														
58	(1.2+0.2Sds)DL + 1E 180...	Yes	Y		DL	1.2...	23	-1	24															
59	(1.2+0.2Sds)DL + 1E 210...	Yes	Y		DL	1.2...	23	-.866	24	-.5														
60	(1.2+0.2Sds)DL + 1E 225...	Yes	Y		DL	1.2...	23	-.707	24	-.707														
61	(1.2+0.2Sds)DL + 1E 240...	Yes	Y		DL	1.2...	23	-.5	24	-.866														
62	(1.2+0.2Sds)DL + 1E 270...	Yes	Y		DL	1.2...	23		24	-1														
63	(1.2+0.2Sds)DL + 1E 300...	Yes	Y		DL	1.2...	23	.5	24	-.866														
64	(1.2+0.2Sds)DL + 1E 315...	Yes	Y		DL	1.2...	23	.707	24	-.707														
65	(1.2+0.2Sds)DL + 1E 330...	Yes	Y		DL	1.2...	23	.866	24	-.5														
66	(0.9-0.2Sds)DL + 1E 0 AZI	Yes	Y		DL	.863	23	1	24															
67	(0.9-0.2Sds)DL + 1E 30 ...	Yes	Y		DL	.863	23	.866	24	.5														
68	(0.9-0.2Sds)DL + 1E 45 ...	Yes	Y		DL	.863	23	.707	24	.707														
69	(0.9-0.2Sds)DL + 1E 60 ...	Yes	Y		DL	.863	23	.5	24	.866														
70	(0.9-0.2Sds)DL + 1E 90 ...	Yes	Y		DL	.863	23		24	1														
71	(0.9-0.2Sds)DL + 1E 120...	Yes	Y		DL	.863	23	-.5	24	.866														
72	(0.9-0.2Sds)DL + 1E 135...	Yes	Y		DL	.863	23	-.707	24	.707														
73	(0.9-0.2Sds)DL + 1E 150...	Yes	Y		DL	.863	23	-.866	24	.5														
74	(0.9-0.2Sds)DL + 1E 180...	Yes	Y		DL	.863	23	-1	24															
75	(0.9-0.2Sds)DL + 1E 210...	Yes	Y		DL	.863	23	-.866	24	-.5														
76	(0.9-0.2Sds)DL + 1E 225...	Yes	Y		DL	.863	23	-.707	24	-.707														
77	(0.9-0.2Sds)DL + 1E 240...	Yes	Y		DL	.863	23	-.5	24	-.866														
78	(0.9-0.2Sds)DL + 1E 270...	Yes	Y		DL	.863	23		24	-1														
79	(0.9-0.2Sds)DL + 1E 300...	Yes	Y		DL	.863	23	.5	24	-.866														
80	(0.9-0.2Sds)DL + 1E 315...	Yes	Y		DL	.863	23	.707	24	-.707														
81	(0.9-0.2Sds)DL + 1E 330...	Yes	Y		DL	.863	23	.866	24	-.5														
82	1.2DL + 1Lv1	Yes	Y		DL	1.2	25	1.5																
83	1.2DL + 1Lv2	Yes	Y		DL	1.2	26	1.5																
84	1.2DL + 1Lv3	Yes	Y		DL	1.2	27	1.5																
85	1.2DL + 1Lv4	Yes	Y		DL	1.2	28	1.5																
86	1.2DL + 1Lv5	Yes	Y		DL	1.2	29	1.5																
87	1.2DL + 1Lv6	Yes	Y		DL	1.2	30	1.5																
88	1.2DL + 1Lv7	Yes	Y		DL	1.2	31	1.5																
89	1.2DL + 1Lv8	Yes	Y		DL	1.2	32	1.5																
90	1.2DL + 1Lv9	Yes	Y		DL	1.2	33	1.5																
91	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	34	1.5	2	.085	3		4	.085										
92	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	34	1.5	2	.074	3	.043	5	.085										
93	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	34	1.5	2	.06	3	.06	6	.085										
94	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	34	1.5	2	.043	3	.074	7	.085										
95	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	34	1.5	2		3	.085	8	.085										
96	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	34	1.5	2	-.043	3	.074	9	.085										
97	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	34	1.5	2	-.06	3	.06	10	.085										
98	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	34	1.5	2	-.074	3	.043	11	.085										
99	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	34	1.5	2	-.085	3		4	-.085										
100	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	34	1.5	2	-.074	3	-.043	5	-.085										
101	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	34	1.5	2	-.06	3	-.06	6	-.085										
102	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	34	1.5	2	-.043	3	-.074	7	-.085										
103	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	34	1.5	2		3	-.085	8	-.085										
104	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	34	1.5	2	.043	3	-.074	9	-.085										
105	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	34	1.5	2	.06	3	-.06	10	-.085										
106	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	34	1.5	2	.074	3	-.043	11	-.085										
107	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	35	1.5	2	.085	3		4	.085										
108	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	35	1.5	2	.074	3	.043	5	.085										
109	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	35	1.5	2	.06	3	.06	6	.085										
110	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	35	1.5	2	.043	3	.074	7	.085										
111	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	35	1.5	2		3	.085	8	.085										
112	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	35	1.5	2	-.043	3	.074	9	.085										
113	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	35	1.5	2	-.06	3	.06	10	.085										

Load Combinations (Continued)

	Description	So...	P...	S...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
114	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	35	1.5	2	-.074	3	.043	11	.085										
115	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	35	1.5	2	-.085	3		4	-.085										
116	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	35	1.5	2	-.074	3	-.043	5	-.085										
117	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	35	1.5	2	-.06	3	-.06	6	-.085										
118	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	35	1.5	2	-.043	3	-.074	7	-.085										
119	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	35	1.5	2		3	-.085	8	-.085										
120	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	35	1.5	2	.043	3	-.074	9	-.085										
121	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	35	1.5	2	.06	3	-.06	10	-.085										
122	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	35	1.5	2	.074	3	-.043	11	-.085										
123	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	36	1.5	2	.085	3		4	.085										
124	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	36	1.5	2	.074	3	.043	5	.085										
125	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	36	1.5	2	.06	3	.06	6	.085										
126	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	36	1.5	2	.043	3	.074	7	.085										
127	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	36	1.5	2		3	.085	8	.085										
128	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	36	1.5	2	-.043	3	.074	9	.085										
129	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	36	1.5	2	-.06	3	.06	10	.085										
130	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	36	1.5	2	-.074	3	.043	11	.085										
131	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	36	1.5	2	-.085	3		4	-.085										
132	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	36	1.5	2	-.074	3	-.043	5	-.085										
133	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	36	1.5	2	-.06	3	-.06	6	-.085										
134	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	36	1.5	2	-.043	3	-.074	7	-.085										
135	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	36	1.5	2		3	-.085	8	-.085										
136	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	36	1.5	2	.043	3	-.074	9	-.085										
137	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	36	1.5	2	.06	3	-.06	10	-.085										
138	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	36	1.5	2	.074	3	-.043	11	-.085										
139	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	37	1.5	2	.085	3		4	.085										
140	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	37	1.5	2	.074	3	.043	5	.085										
141	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	37	1.5	2	.06	3	.06	6	.085										
142	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	37	1.5	2	.043	3	.074	7	.085										
143	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	37	1.5	2		3	.085	8	.085										
144	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.043	3	.074	9	.085										
145	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.06	3	.06	10	.085										
146	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.074	3	.043	11	.085										
147	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.085	3		4	-.085										
148	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.074	3	-.043	5	-.085										
149	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.06	3	-.06	6	-.085										
150	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.043	3	-.074	7	-.085										
151	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	37	1.5	2		3	-.085	8	-.085										
152	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	37	1.5	2	.043	3	-.074	9	-.085										
153	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	37	1.5	2	.06	3	-.06	10	-.085										
154	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	37	1.5	2	.074	3	-.043	11	-.085										
155	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	38	1.5	2	.085	3		4	.085										
156	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	38	1.5	2	.074	3	.043	5	.085										
157	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	38	1.5	2	.06	3	.06	6	.085										
158	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	38	1.5	2	.043	3	.074	7	.085										
159	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	38	1.5	2		3	.085	8	.085										
160	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.043	3	.074	9	.085										
161	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.06	3	.06	10	.085										
162	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.074	3	.043	11	.085										
163	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.085	3		4	-.085										
164	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.074	3	-.043	5	-.085										
165	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.06	3	-.06	6	-.085										
166	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.043	3	-.074	7	-.085										
167	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	38	1.5	2		3	-.085	8	-.085										
168	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	38	1.5	2	.043	3	-.074	9	-.085										
169	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	38	1.5	2	.06	3	-.06	10	-.085										
170	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	38	1.5	2	.074	3	-.043	11	-.085										

Load Combinations (Continued)

	Description	So...	P...	S...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
171	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	39	1.5	2	.085	3		4	.085										
172	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	39	1.5	2	.074	3	.043	5	.085										
173	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	39	1.5	2	.06	3	.06	6	.085										
174	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	39	1.5	2	.043	3	.074	7	.085										
175	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	39	1.5	2		3	.085	8	.085										
176	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.043	3	.074	9	.085										
177	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.06	3	.06	10	.085										
178	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.074	3	.043	11	.085										
179	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.085	3		4	-.085										
180	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.074	3	-.043	5	-.085										
181	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.06	3	-.06	6	-.085										
182	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.043	3	-.074	7	-.085										
183	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	39	1.5	2		3	-.085	8	-.085										
184	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	39	1.5	2	.043	3	-.074	9	-.085										
185	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	39	1.5	2	.06	3	-.06	10	-.085										
186	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	39	1.5	2	.074	3	-.043	11	-.085										
187	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	40	1.5	2	.085	3		4	.085										
188	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	40	1.5	2	.074	3	.043	5	.085										
189	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	40	1.5	2	.06	3	.06	6	.085										
190	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	40	1.5	2	.043	3	.074	7	.085										
191	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	40	1.5	2		3	.085	8	.085										
192	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.043	3	.074	9	.085										
193	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.06	3	.06	10	.085										
194	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.074	3	.043	11	.085										
195	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.085	3		4	-.085										
196	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.074	3	-.043	5	-.085										
197	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.06	3	-.06	6	-.085										
198	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.043	3	-.074	7	-.085										
199	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	40	1.5	2		3	-.085	8	-.085										
200	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	40	1.5	2	.043	3	-.074	9	-.085										
201	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	40	1.5	2	.06	3	-.06	10	-.085										
202	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	40	1.5	2	.074	3	-.043	11	-.085										
203	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	41	1.5	2	.085	3		4	.085										
204	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	41	1.5	2	.074	3	.043	5	.085										
205	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	41	1.5	2	.06	3	.06	6	.085										
206	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	41	1.5	2	.043	3	.074	7	.085										
207	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	41	1.5	2		3	.085	8	.085										
208	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.043	3	.074	9	.085										
209	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.06	3	.06	10	.085										
210	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.074	3	.043	11	.085										
211	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.085	3		4	-.085										
212	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.074	3	-.043	5	-.085										
213	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.06	3	-.06	6	-.085										
214	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.043	3	-.074	7	-.085										
215	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	41	1.5	2		3	-.085	8	-.085										
216	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	41	1.5	2	.043	3	-.074	9	-.085										
217	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	41	1.5	2	.06	3	-.06	10	-.085										
218	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	41	1.5	2	.074	3	-.043	11	-.085										
219	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	42	1.5	2	.085	3		4	.085										
220	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	42	1.5	2	.074	3	.043	5	.085										
221	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	42	1.5	2	.06	3	.06	6	.085										
222	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	42	1.5	2	.043	3	.074	7	.085										
223	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	42	1.5	2		3	.085	8	.085										
224	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.043	3	.074	9	.085										
225	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.06	3	.06	10	.085										
226	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.074	3	.043	11	.085										
227	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.085	3		4	-.085										

Load Combinations (Continued)

	Description	So...	P...	S...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
228	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.074	3	-.043	5	-.085										
229	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.06	3	-.06	6	-.085										
230	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.043	3	-.074	7	-.085										
231	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	42	1.5	2		3	-.085	8	-.085										
232	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	42	1.5	2	.043	3	-.074	9	-.085										
233	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	42	1.5	2	.06	3	-.06	10	-.085										
234	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	42	1.5	2	.074	3	-.043	11	-.085										
235	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	43	1.5	2	.085	3		4	.085										
236	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	43	1.5	2	.074	3	.043	5	.085										
237	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	43	1.5	2	.06	3	.06	6	.085										
238	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	43	1.5	2	.043	3	.074	7	.085										
239	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	43	1.5	2		3	.085	8	.085										
240	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.043	3	.074	9	.085										
241	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.06	3	.06	10	.085										
242	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.074	3	.043	11	.085										
243	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.085	3		4	-.085										
244	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.074	3	-.043	5	-.085										
245	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.06	3	-.06	6	-.085										
246	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.043	3	-.074	7	-.085										
247	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	43	1.5	2		3	-.085	8	-.085										
248	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	43	1.5	2	.043	3	-.074	9	-.085										
249	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	43	1.5	2	.06	3	-.06	10	-.085										
250	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	43	1.5	2	.074	3	-.043	11	-.085										
251	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	44	1.5	2	.085	3		4	.085										
252	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	44	1.5	2	.074	3	.043	5	.085										
253	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	44	1.5	2	.06	3	.06	6	.085										
254	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	44	1.5	2	.043	3	.074	7	.085										
255	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	44	1.5	2		3	.085	8	.085										
256	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.043	3	.074	9	.085										
257	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.06	3	.06	10	.085										
258	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.074	3	.043	11	.085										
259	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.085	3		4	-.085										
260	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.074	3	-.043	5	-.085										
261	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.06	3	-.06	6	-.085										
262	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.043	3	-.074	7	-.085										
263	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	44	1.5	2		3	-.085	8	-.085										
264	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	44	1.5	2	.043	3	-.074	9	-.085										
265	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	44	1.5	2	.06	3	-.06	10	-.085										
266	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	44	1.5	2	.074	3	-.043	11	-.085										
267	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	45	1.5	2	.085	3		4	.085										
268	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	45	1.5	2	.074	3	.043	5	.085										
269	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	45	1.5	2	.06	3	.06	6	.085										
270	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	45	1.5	2	.043	3	.074	7	.085										
271	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	45	1.5	2		3	.085	8	.085										
272	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.043	3	.074	9	.085										
273	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.06	3	.06	10	.085										
274	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.074	3	.043	11	.085										
275	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.085	3		4	-.085										
276	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.074	3	-.043	5	-.085										
277	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.06	3	-.06	6	-.085										
278	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.043	3	-.074	7	-.085										
279	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	45	1.5	2		3	-.085	8	-.085										
280	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	45	1.5	2	.043	3	-.074	9	-.085										
281	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	45	1.5	2	.06	3	-.06	10	-.085										
282	1.2DL + 1.5Lm + 1.6Wm ...	Yes	Y		DL	1.2	45	1.5	2	.074	3	-.043	11	-.085										

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N43	max	2160.475	5	1710.047	34	123.989	24	-106.642	26	0	282	199.379	140
2		min	-1626.616	29	326.025	26	-1682.056	49	-745.835	34	0	1	-408.268	100
3	N53	max	919.311	144	1325.635	42	2347.695	34	-106.81	18	0	282	200.124	140
4		min	-1515.099	104	328.472	18	-795.04	26	-635.494	42	0	1	-296.727	100
5	N65A	max	2232.039	9	1599.567	42	2047.591	2	663.871	42	0	282	150.274	162
6		min	-1696.805	33	309.362	18	-1053.945	26	78.445	18	0	1	-451.735	216
7	N66A	max	746.135	158	1234.708	34	390.496	18	580.926	34	0	282	152.501	162
8		min	-1654.963	214	311.14	26	-1964.309	42	82.067	26	0	1	-331.623	218
9	N67B	max	288.198	22	1599.367	38	2254.5	4	448.314	275	0	282	662.523	38
10		min	-1567.175	46	310.059	30	-1718.244	28	-152.901	222	0	1	85.546	30
11	N68B	max	1959.142	38	1238.31	46	748.637	234	327.926	278	0	282	580.494	47
12		min	-421.67	30	312.057	22	-1651.603	274	-154.95	222	0	1	86.424	22
13	N70B	max	445.332	11	42.751	43	1850.982	19	0	282	0	282	0	282
14		min	-409.893	19	9.179	19	-2008.436	11	0	1	0	1	0	1
15	N134	max	820.709	25	35.12	49	127.856	2	0	282	0	282	0	282
16		min	-902.664	17	7.968	74	-118.545	26	0	1	0	1	0	1
17	N199	max	386.433	8	22.978	39	1125.936	9	0	282	0	282	0	282
18		min	-374.593	32	5.008	33	-1096.925	33	0	1	0	1	0	1
19	N191A	max	1767.427	21	48.197	45	1163.846	14	0	282	0	282	0	282
20		min	-1876.857	13	10.812	68	-1098.658	22	0	1	0	1	0	1
21	N192A	max	1641.923	2	53.764	34	1596.813	2	0	282	0	282	0	282
22		min	-1573.044	26	12.106	73	-1527.216	26	0	1	0	1	0	1
23	N193A	max	304.61	32	42.214	40	1436.108	32	0	282	0	282	0	282
24		min	-339.346	8	9.537	78	-1591.078	8	0	1	0	1	0	1
25	Totals:	max	6799.439	6	8820.751	40	8519.899	18						
26		min	-6799.437	30	2203.996	78	-8519.901	10						

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shea...	Loc...	...	L...	phi*Pn...	phi*Pn...	phi*Mn...	phi*Mn...	...	Eqn
1	MP3	PIPE_2.0	.776	68	26	.121	28		11	14916...	32130	1871.6...	1871.6...	3...	H1-1b
2	MP10	PIPE_2.0	.773	68	30	.099	28		13	14916...	32130	1871.6...	1871.6...	1...	H1-1b
3	MP6	PIPE_2.0	.771	68	18	.097	28		17	14916...	32130	1871.6...	1871.6...	2...	H1-1b
4	M73	PL3 1/2x5/8	.661	4.5	6	.119	0	y	16	68591...	70875	922.852	5167.97	1...	H1-1b
5	M122	0.625" S.R.	.649	15.313	26	.017	0		16	1757.0...	9946.8	96.768	96.768	1	H1-1a
6	M115	PL3 1/2x5/8	.639	4.5	10	.115	0	y	3	68591...	70875	922.852	5167.97	1...	H1-1b
7	M80	0.625" S.R.	.627	30	22	.017	0		12	1757.0...	9946.8	96.768	96.768	1	H1-1a
8	M10	0.625" S.R.	.616	16.563	34	.022	0		11	1757.0...	9946.8	96.768	96.768	1	H1-1a
9	M99	PL3 1/2x5/8	.578	4.5	2	.200	0	y	2...	68591...	70875	922.852	5167.97	2...	H1-1b
10	M57	PL3 1/2x5/8	.569	4.5	14	.199	0	y	2...	68591...	70875	922.852	5167.97	1...	H1-1b
11	M21	PL3 1/2x5/8	.521	4.5	10	.209	0	y	1...	68591...	70875	922.852	5167.97	1...	H1-1b
12	M9	0.625" S.R.	.511	16.563	42	.022	0		3	1757.0...	9946.8	96.768	96.768	1	H1-1a
13	M121	0.625" S.R.	.505	16.563	34	.018	0		9	1757.0...	9946.8	96.768	96.768	1	H1-1a
14	M79	0.625" S.R.	.488	18.125	45	.018	0		5	1757.0...	9946.8	96.768	96.768	1	H1-1a
15	MP4	PIPE_2.0	.445	68	92	.056	68		1...	14916...	32130	1871.6...	1871.6...	4...	H1-1b
16	M36	PL3 1/2x5/8	.434	4.5	2	.118	0	y	5	68591...	70875	922.852	5167.97	1...	H1-1b
17	MP5	PIPE_2.0	.425	68	205	.114	28		2	14916...	32130	1871.6...	1871.6...	4...	H1-1b
18	MP9	PIPE_2.0	.424	68	282	.114	28		14	14916...	32130	1871.6...	1871.6...	3...	H1-1b
19	M116	PL3 1/2x5/8	.424	4.5	9	.130	0	y	1...	68591...	70875	922.852	5167.97	1...	H1-1b
20	MP1	PIPE_2.0	.376	68	146	.046	28		1...	14916...	32130	1871.6...	1871.6...	4...	H1-1b
21	M120	PIPE_2.5	.365	115.625	2	.192	115...		10	14558...	50715	3596.25	3596.25	2...	H1-1b
22	MP8	PIPE_2.0	.363	68	170	.043	68		1...	14916...	32130	1871.6...	1871.6...	4...	H1-1b
23	MP12	PIPE_2.0	.361	68	230	.045	68		2...	14916...	32130	1871.6...	1871.6...	4...	H1-1b
24	MP7	PIPE_2.0	.357	28	17	.085	28		17	14916...	32130	1871.6...	1871.6...	3...	H1-1b
25	M78	PIPE_2.5	.348	115.625	14	.215	115...		14	14558...	50715	3596.25	3596.25	2...	H1-1b

Envelope AISC 14th(360-10): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[in]	LC	Shea...	Loc.....		L...	phi*Pn...	phi*Pn...	phi*Mn...	phi*Mn.....		Eqn
26	MP2	PIPE_2.0	.330	28	11	.079	28		12	14916...	32130	1871.6...	1871.6...	3...	H1-1b
27	M42	PIPE_2.5	.328	32.813	10	.336	46....		2	14558...	50715	3596.25	3596.25	3...	H1-1b
28	M74	PL3 1/2x5/8	.319	4.5	5	.121	0	y	2...	68591...	70875	922.852	5167.97	1...	H1-1b
29	H1	PIPE_2.5	.312	45.313	93	.265	46....		10	14558...	50715	3596.25	3596.25	2...	H1-1b
30	MP11	PIPE_2.0	.306	28	13	.072	28		13	14916...	32130	1871.6...	1871.6...	2...	H1-1b
31	H2	PIPE_2.5	.302	104.688	204	.317	103...		2	14558...	50715	3596.25	3596.25	2...	H1-1b
32	H3	PIPE_2.5	.301	104.688	280	.314	103...		14	14558...	50715	3596.25	3596.25	2...	H1-1b
33	M35	PL3 1/2x5/8	.252	4.5	17	.123	0	y	1...	68591...	70875	922.852	5167.97	1...	H1-1b
34	M5	SR 3/4	.185	0	43	.021	44....		11	1737.6...	14313...	178.929	178.929	1...	H1-1b*
35	M19	PL3 1/2x5/8	.178	0	141	.122	0	y	1...	68591...	70875	922.852	5167.97	1...	H1-1b
36	M86	SR 3/4	.178	0	49	.020	44....		17	1737.6...	14313...	178.929	178.929	1...	H1-1b*
37	M101	PL3 1/2x5/8	.178	0	155	.118	4.5	y	1...	68591...	70875	922.852	5167.97	1...	H1-1b
38	M59	PL3 1/2x5/8	.178	0	231	.117	4.5	y	2...	68591...	70875	922.852	5167.97	1...	H1-1b
39	M44	SR 3/4	.177	0	45	.019	0		14	1737.6...	14313...	178.929	178.929	1...	H1-1b*
40	M44A	0.625" S.R.	.171	30	33	.016	0		12	1757.0...	9946.8	96.768	96.768	1	H1-1b*
41	M17	PIPE_2.0	.169	31.537	105	.177	31....		34	29576...	32130	1871.6...	1871.6...	2...	H1-1b
42	M53	PIPE_2.0	.168	29.566	14	.173	31....		38	29576...	32130	1871.6...	1871.6...	2...	H1-1b
43	M95	PIPE_2.0	.167	29.566	2	.175	31....		42	29576...	32130	1871.6...	1871.6...	2...	H1-1b
44	M90	0.625" S.R.	.162	30	10	.017	0		17	1757.0...	9946.8	96.768	96.768	1	H1-1b*
45	M126	PIPE_2.0	.149	96.986	26	.006	0		48	14681...	32130	1871.6...	1871.6...	1...	H1-1b*
46	M69	PIPE_2.0	.140	29.566	5	.161	29....		38	29576...	32130	1871.6...	1871.6...	2...	H1-1b
47	M48	0.625" S.R.	.139	30	6	.014	0		12	1757.0...	9946.8	96.768	96.768	1	H1-1b*
48	M33	PIPE_2.0	.138	0	45	.163	1.971		46	29576...	32130	1871.6...	1871.6...	2...	H1-1b
49	M89	0.625" S.R.	.135	30	18	.022	0		17	1757.0...	9946.8	96.768	96.768	1	H1-1b*
50	M111	PIPE_2.0	.132	29.566	211	.161	29....		42	29576...	32130	1871.6...	1871.6...	2...	H1-1b
51	M15	PIPE_2.0	.129	31.537	3	.056	31....		49	29576...	32130	1871.6...	1871.6...	1...	H1-1b
52	M125C	PIPE_2.0	.121	86.61	21	.005	0		43	17205...	32130	1871.6...	1871.6...	1...	H1-1b*
53	M31	PIPE_2.0	.114	31.537	8	.059	31....		41	29576...	32130	1871.6...	1871.6...	1...	H1-1b
54	M113	PIPE_2.0	.106	31.537	170	.054	31....		34	29576...	32130	1871.6...	1871.6...	2...	H1-1b
55	M47	0.625" S.R.	.105	30	30	.020	0		13	1757.0...	9946.8	96.768	96.768	1	H1-1b*
56	M55	PIPE_2.0	.105	0	222	.053	31....		39	29576...	32130	1871.6...	1871.6...	2...	H1-1b
57	M97	PIPE_2.0	.103	31.537	155	.053	31....		42	29576...	32130	1871.6...	1871.6...	2...	H1-1b
58	M71	PIPE_2.0	.101	31.537	230	.053	31....		2...	29576...	32130	1871.6...	1871.6...	2...	H1-1b
59	M42A	PIPE_2.0	.096	76.366	19	.005	76....		46	19771...	32130	1871.6...	1871.6...	1...	H1-1b*
60	M43A	0.625" S.R.	.093	30	26	.024	0		11	1757.0...	9946.8	96.768	96.768	1	H1-1b*
61	M124	PIPE_2.0	.074	0	32	.005	76....		46	19771...	32130	1871.6...	1871.6...	1...	H1-1b*
62	M87	SR 3/4	.073	0	155	.009	0		1...	1737.6...	14313...	178.929	178.929	1...	H1-1b*
63	M45	SR 3/4	.072	0	231	.009	44....		2...	1737.6...	14313...	178.929	178.929	1...	H1-1b*
64	M4	SR 3/4	.070	0	144	.008	44....		1...	1737.6...	14313...	178.929	178.929	1...	H1-1b*
65	M125A	PIPE_2.0	.044	31.909	10	.004	63....		10	22889...	32130	1871.6...	1871.6...	1...	H1-1b
66	M125B	PIPE_2.0	.042	0	33	.002	41....		46	27826...	32130	1871.6...	1871.6...	1...	H1-1b*
67	M88	SR 3/4	.016	44.937	33	.017	0		9	1737.6...	14313...	178.929	178.929	1...	H1-1b*
68	M3	SR 3/4	.011	44.937	27	.018	0		3	1737.6...	14313...	178.929	178.929	1...	H1-1b*
69	M46	SR 3/4	.011	44.937	29	.014	44....		4	1737.6...	14313...	178.929	178.929	1...	H1-1b*
70	M43	SR 3/4	.009	44.937	30	.013	0		10	1737.6...	14313...	178.929	178.929	1...	H1-1b*
71	M85	SR 3/4	.007	44.937	18	.013	44....		13	1737.6...	14313...	178.929	178.929	1...	H1-1b*
72	M6	SR 3/4	.000	0	282	.015	44....		12	1737.6...	14313...	178.929	178.929	1...	H1-1a

Trylon

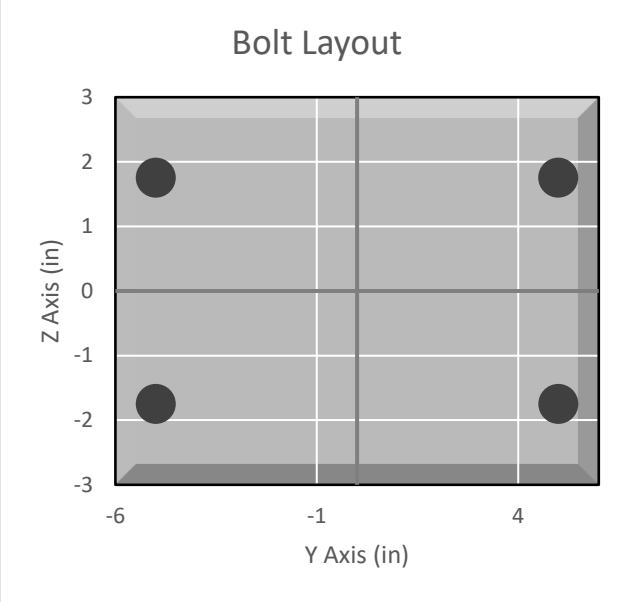
Analysis date: 7/22/2022

BOLT TOOL 1.5.2

Project Data	
Job Code:	211904
Carrier Site ID:	CTHA346A
Carrier Site Name:	TI Parker Road East Hadda

Code	
Design Standard:	TIA-222-G
Slip Check:	Yes
Pretension Standard:	TIA

Bolt Properties		
Connection Type:	Threaded Rod	
Diameter:	0.625	in
Grade:	A325	--
Yield Strength (Fy):	92	ksi
Ultimate Strength (Fu):	120	ksi
Number of Bolts:	4	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	10	in



Connection Description
Standoff to Collar

Bolt Check		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	12425.2	lbs
Tension Force (T_u):	1695.0	lbs
Shear Force (V_u):	540.1	lbs
Tension Usage:	8.3%	--
Shear Usage:	4.3%	--
Interaction:	8.3%	Pass
Controlling Member:	M27	--
Controlling LC:	49	--

Slip Check		
Sliding Capacity (ϕR_{ns}):	13717.0	lbs
Torsion Capacity (ϕR_{nr}):	5715.4	lb-ft
Sliding Force (V_{us}):	1709.3	lbs
Torsional Force (T_{ur}):	0.0	lb-ft
Sliding Usage:	12.5%	--
Torsion Usage:	0.0%	--
Interaction:	12.5%	Pass
Controlling Member:	M27	--
Controlling LC:	49	--

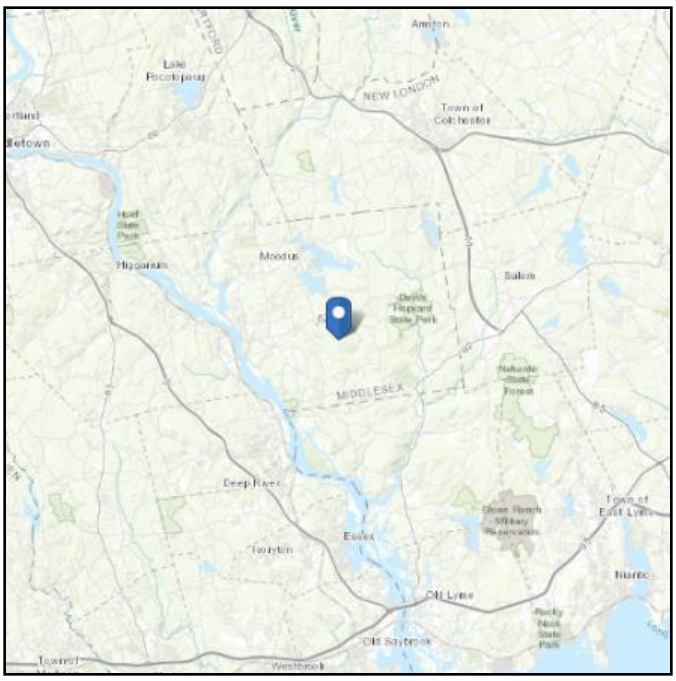
1825 W. Walnut Hill Lane, Suite 120
Irving, Texas 75038

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 591.02 ft (NAVD 88)
Latitude: 41.46091
Longitude: -72.39522



Wind

Results:

Wind Speed	130 Vmph
10-year MRI	78 Vmph
25-year MRI	88 Vmph
50-year MRI	96 Vmph
100-year MRI	105 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

Date Accessed: Tue Jul 19 2022

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

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

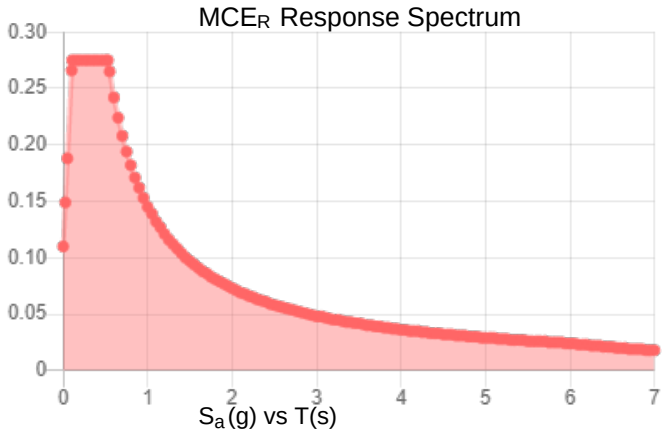
Seismic

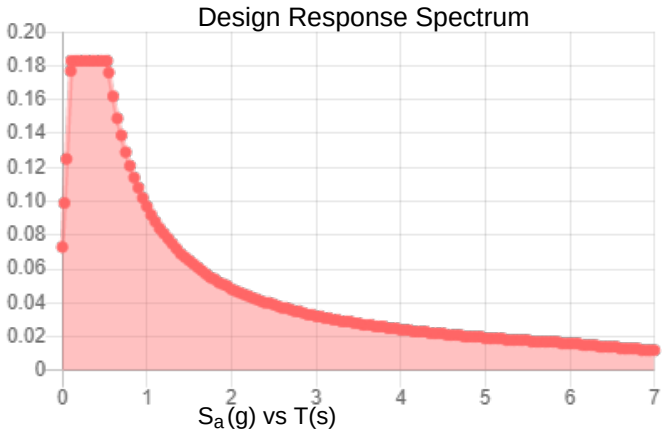
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.172	S_{DS} :	0.183
S_1 :	0.061	S_{D1} :	0.097
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.087
S_{MS} :	0.275	PGA_M :	0.139
S_{M1} :	0.145	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: **Tue Jul 19 2022**

Date Source:

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

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Tue Jul 19 2022

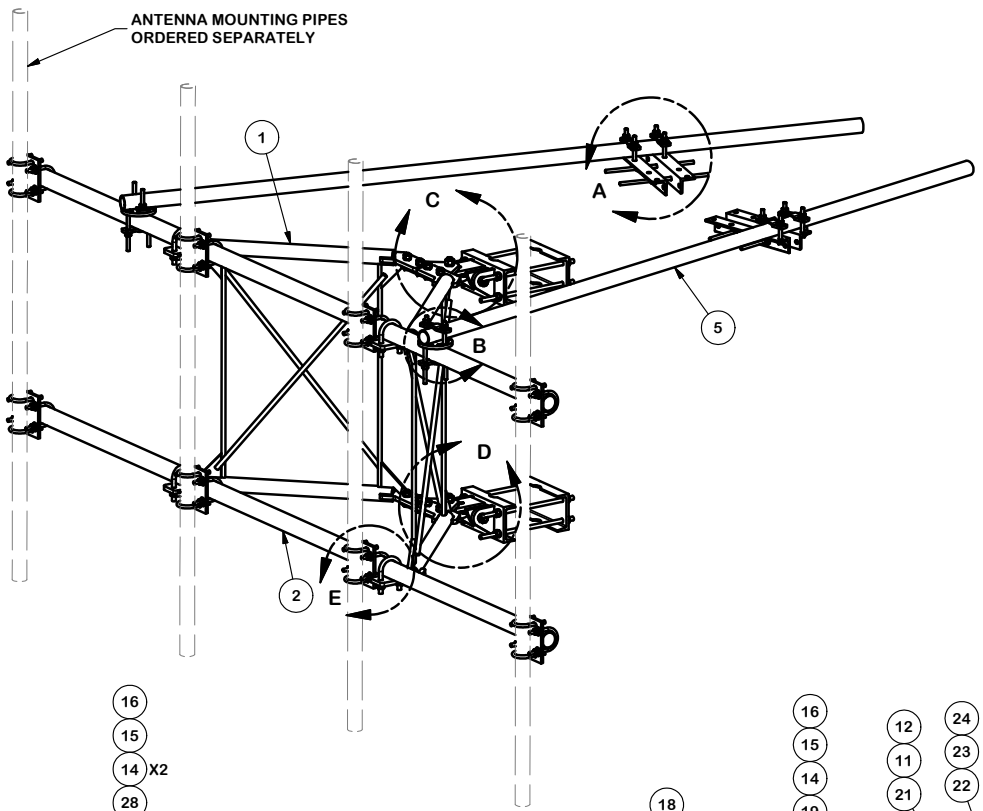
Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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

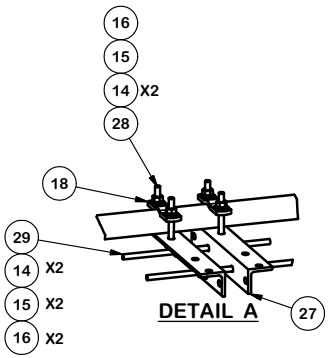
The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated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

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

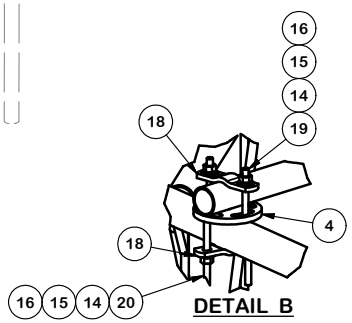
In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from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



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	2	X-VFAW	SUPPORT ARM		66.80	133.59
2	2	P30150	2-7/8" O.D. X 150" SCH. 40 PIPE	150 in	76.94	153.87
3	8	SCX2	CROSSOVER PLATE	7 in	4.80	38.37
4	2	X-127594	FLAT DISK CLAMP PLATE 4" CENTERS (GALV.)		2.48	4.97
5	2	P2126	2-3/8" OD X 126" SCH 40 GALVANIZED PIPE	126 in	40.75	81.50
6	4	X-UB5300	5/8" X 3" X 5-1/4" X 2-1/2" U-BOLT (HDG.)		1.15	4.60
7	2	X-VFAPL3	VFA-HD PIVOT PLATE	24 in	9.69	19.38
8	1	X-LPB	LOWER PIVOT BRACKET		8.84	8.84
9	1	X-UPB	UPPER PIVOT BRACKET		8.84	8.84
10	2	X-HDPMW	HEAVY DUTY PIPE MOUNT WELDMENT		18.52	37.04
11	32	G58LW	5/8" HDG LOCKWASHER		0.03	0.83
12	32	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	4.16
13	32	X-UB1300	1/2" X 3" X 5" X 2" GALV U-BOLT		0.74	23.64
14	96	G12FW	1/2" HDG USS FLATWASHER		0.03	3.27
15	88	G12LW	1/2" HDG LOCKWASHER		0.01	1.22
16	88	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	6.30
17	16	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.26	4.11
18	8	X-100064	CLAMP (S) (4" V-CLAMP) GALVANIZED		0.91	7.30
19	4	G1204	1/2" x 4" HDG HEX BOLT GR5 FULL THREAD	4 in	0.27	1.08
20	4	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	6 1/2 in	0.41	1.64
21	8	A582114	5/8" x 2-1/4" HDG A325 HEX BOLT	2 1/4 in	0.31	2.50
22	6	A34212	3/4" x 2-1/2" UNC HEX BOLT (A325)	2 1/2 in	0.48	2.87
23	6	G34LW	3/4" HDG LOCKWASHER		0.04	0.26
24	6	G34NUT	3/4" HDG HEAVY 2H HEX NUT		0.21	1.28
25	2	X-HDPMBP	HEAVY DUTY PIPE MOUNT BACKING PLATE	12 in	13.44	26.89
26	8	G58R-18	5/8" x 18" THREADED ROD (HDG.)		0.40	3.19
27	4	X-LLTB	ANGLE BRACKET FOR LLTB	16 1/2 in	7.06	28.25
28	8	G12045	1/2" x 4.5" HDG HEX BOLT GR5 FULL THREAD	4 1/2 in	0.30	2.38
29	4	G12R-15	1/2" x 15" THREADED ROD (HDG.)		0.40	1.60
					TOTAL WT. #	630.79



DETAIL A



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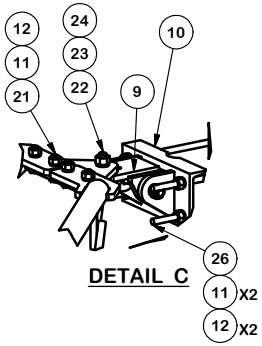
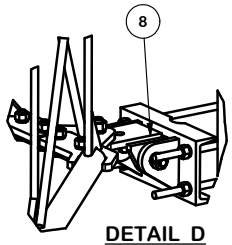
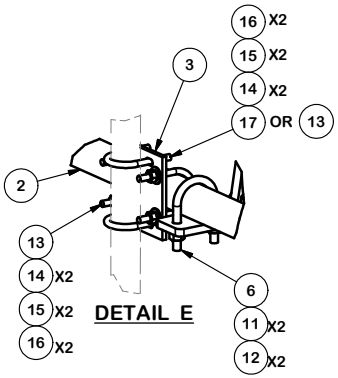


DETAIL C



DETAIL D



DETAIL E

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

PROPRIETARY NOTE:
THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

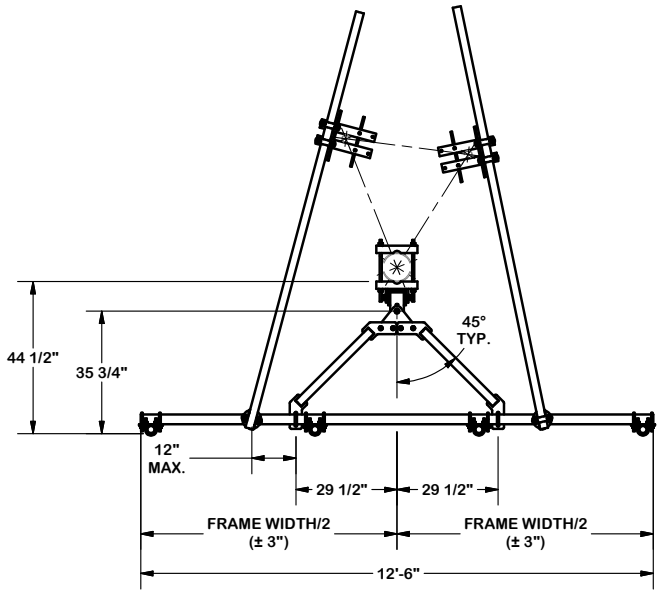
DESCRIPTION
12'-6" HEAVY DUTY
V-FRAME ASSEMBLY
WITH TWO STIFF ARMS

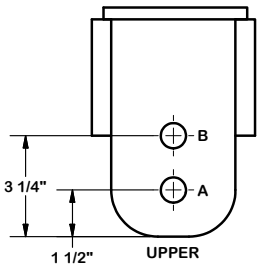
SITE PRO 1
A valmont COMPANY

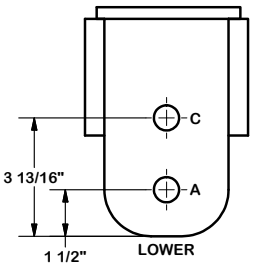
Engineering Support Team:
1-888-753-7446

Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	
	CEK 6/2/2015		VFA12-HD	PAGE 1 OF 2
CLASS / SUB	DRAWING USAGE	CHECKED BY	DWG. NO.	
81 / 02	CUSTOMER	BMC 6/22/2015	VFA12-HD	

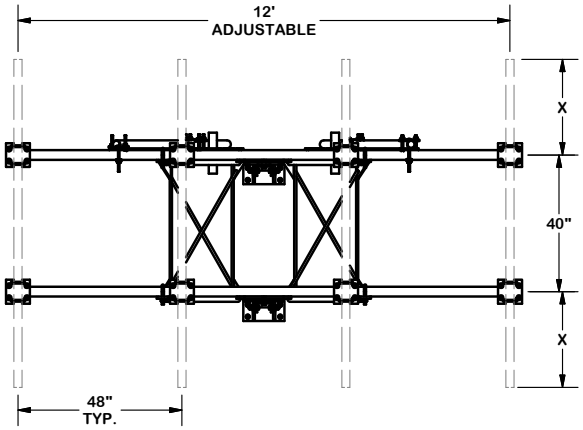




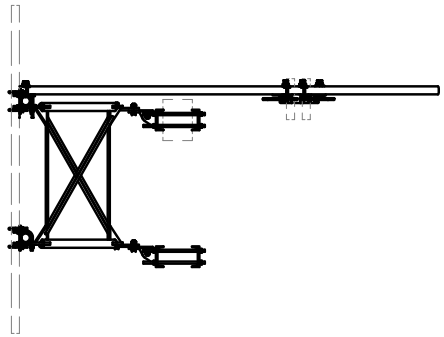


NOTES:

1. USE HOLE "A' IN UPPER AND LOWER BRACKETS FOR STRAIGHT LEGS.
2. USE HOLE "A" IN UPPER BRACKET AND HOLE "C" IN LOWER BRACKET FOR 2" IN 20' TAPER LEGS (3.309°)
3. USE HOLE "B" IN UPPER BRACKET AND HOLE "C" IN LOWER BRACKET FOR 6" IN 20' TAPER LEGS. (0.827°)



CENTER ANTENNA PIPE VERTICALLY ON V-FRAME FACE.



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LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

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DESCRIPTION: 12'-6" HEAVY DUTY V-FRAME ASSEMBLY WITH TWO STIFF ARMS

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CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CEK 6/2/2015		VFA12-HD

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 6/22/2015	VFA12-HD

Exhibit F

Fox Hill Telecom

Radio Frequency Emissions Analysis Report

T-Mobile

Site ID: CTHA346A

Parker Road East Haddam CTI
126 Parker Road
East Haddam, CT 06423

August 8, 2022

Fox Hill Telecom Project Number: 221405

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**7.35 %**

Fox Hill Telecom

August 8, 2022

T-MOBILE
Attn: RF Manager
35 Griffin Road South
Bloomfield, CT 06009

Emissions Analysis for Site: **CTHA346A – Parker Road East Haddam CTI**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **126 Parker Road, East Haddam, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

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

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

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

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz & 700 MHz bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS), 2500 MHz (BRS) and 11 GHz microwave bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **126 Parker Road, East Haddam, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-MOBILE is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused on the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20
LTE	1900 MHz (PCS)	4	40
LTE	2100 MHz (AWS)	4	40
LTE / 5G NR	2500 MHz (BRS)	8	20
Microwave (Sector A)	11 GHz	1	1

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 700 MHz, 1900 MHz (PCS), 2100 MHz (AWS), 2500 MHz (BRS) and 11 GHz microwave frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	RFS APXVAALL24_43-U-NA20	175
A	2	Commscope VV-65A-R1	175
A	3	Ericsson AIR6419 B41	175
A	4	RFS SC2-W100BD	175
B	1	RFS APXVAALL24_43-U-NA20	175
B	2	Commscope VV-65A-R1	175
B	3	Ericsson AIR6419 B41	175
C	1	RFS APXVAALL24_43-U-NA20	175
C	2	Commscope VV-65A-R1	175
C	3	Ericsson AIR6419 B41	175

Table 2: Antenna Data

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

RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	0.84
Antenna A2	Commscope VV-65A-R1	1900 MHz (PCS) / 2100 MHz (AWS)	15.55 / 16.05	8	320	12,186.22	1.53
Antenna A3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	2.84
Antenna A4	RFS SC2-W100BD	11 GHz	32.35 / 0 / 0 / 0 / 0 / 0	1	1	1,717.91	0.02
						Sector A Composite MPE%	**5.23**
Antenna B1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	0.84
Antenna B2	Commscope VV-65A-R1	1900 MHz (PCS) / 2100 MHz (AWS)	15.55 / 16.05	8	320	12,186.22	1.53
Antenna B3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	2.84
						Sector B Composite MPE%	**5.21**
Antenna C1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	0.84
Antenna C2	Commscope VV-65A-R1	1900 MHz (PCS) / 2100 MHz (AWS)	15.55 / 16.05	8	320	12,186.22	1.53
Antenna C3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	2.84
						Sector C Composite MPE%	**5.21**

Table 3: T-MOBILE Emissions Levels

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

Site Composite MPE%	
Carrier	**MPE%**
T-MOBILE – Max Value at Sector A	**5.23 %**
AT&T	2.12 %
Century Cable Mngmt	0.00 %
Site Total MPE %:	**7.35 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	5.23 %
T-MOBILE Sector B Total:	5.21 %
T-MOBILE Sector C Total:	5.21 %
Site Total:	7.35 %

Table 5: Site MPE Summary

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

T-MOBILE _ Frequency Band / Technology Max Power Values (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 600 MHz LTE / 5G NR	2	926.96	175	2.33	600 MHz	400	0.58%
T-Mobile 700 MHz LTE	2	485.32	175	1.22	700 MHz	467	0.26%
T-Mobile 1900 MHz (PCS) LTE	4	1,435.69	175	7.23	1900 MHz (PCS)	1000	0.72%
T-Mobile 2100 MHz (AWS) LTE	4	1,610.87	175	8.11	2100 MHz (AWS)	1000	0.81%
T-Mobile 2500 MHz (BRS) LTE / 5G NR	8	2,825.08	175	28.45	2500 MHz (BRS)	1000	2.84%
T-Mobile 11 GHz Microwave	1	1,717.91	175	0.22	11 GHz	1000	0.02%
						Total:	**5.23%**

Table 6: T-MOBILE Maximum Sector MPE Power Values

Summary

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

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

T-MOBILE Sector	Power Density Value (%)
Sector A:	5.23 %
Sector B:	5.21 %
Sector C:	5.21 %
T-MOBILE Maximum Total (per sector):	5.23 %
Site Total:	7.35 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **7.35 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
Principal RF Engineer
Fox Hill Telecom, Inc
Holden, MA 01520
(978)660-3998

Exhibit G

Letter of Authorization

August 4, 2022

T-Mobile Site ID: CTHA346A

Site Address: 126 Parker Road, East Haddam, CT 06423

RE: Application for Antenna Install

This letter authorizes T-Mobile, LLC and its authorized agents from Northeast Site Solutions, LLC to file all necessary administrative approvals, zoning approvals and building permits for the purposes of upgrading and maintaining telecommunications equipment located at 126 Parker Road, East Haddam, CT.

By:

Scott Crisler

Name:

Scott Crisler

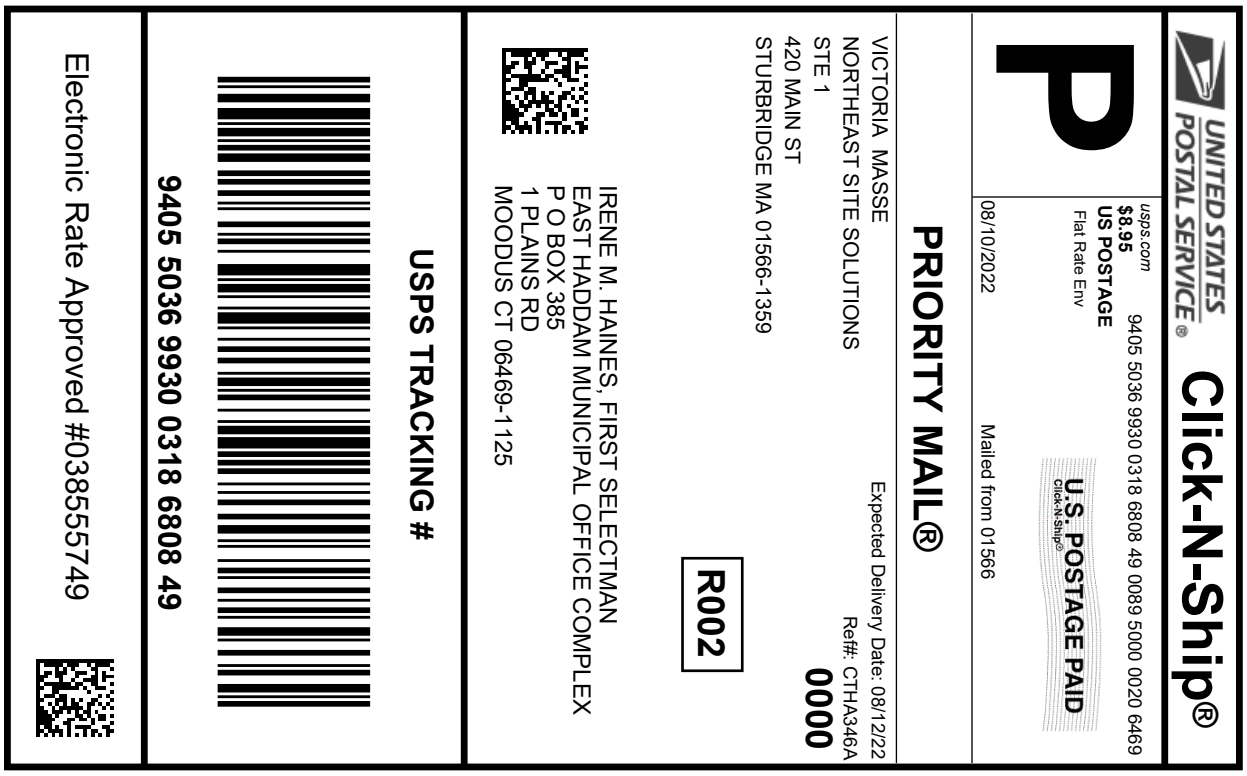
Title:

COO

Date:

8.8.2022

Exhibit H



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STURBRIDGE MA 01566-1359
Ref#: CTHA346A

To: IRENE M. HAINES, FIRST SELECTMAN
EAST HADDAM MUNICIPAL OFFICE COMPLEX
P O BOX 385
1 PLAINS RD
MOODUS CT 06469-1125

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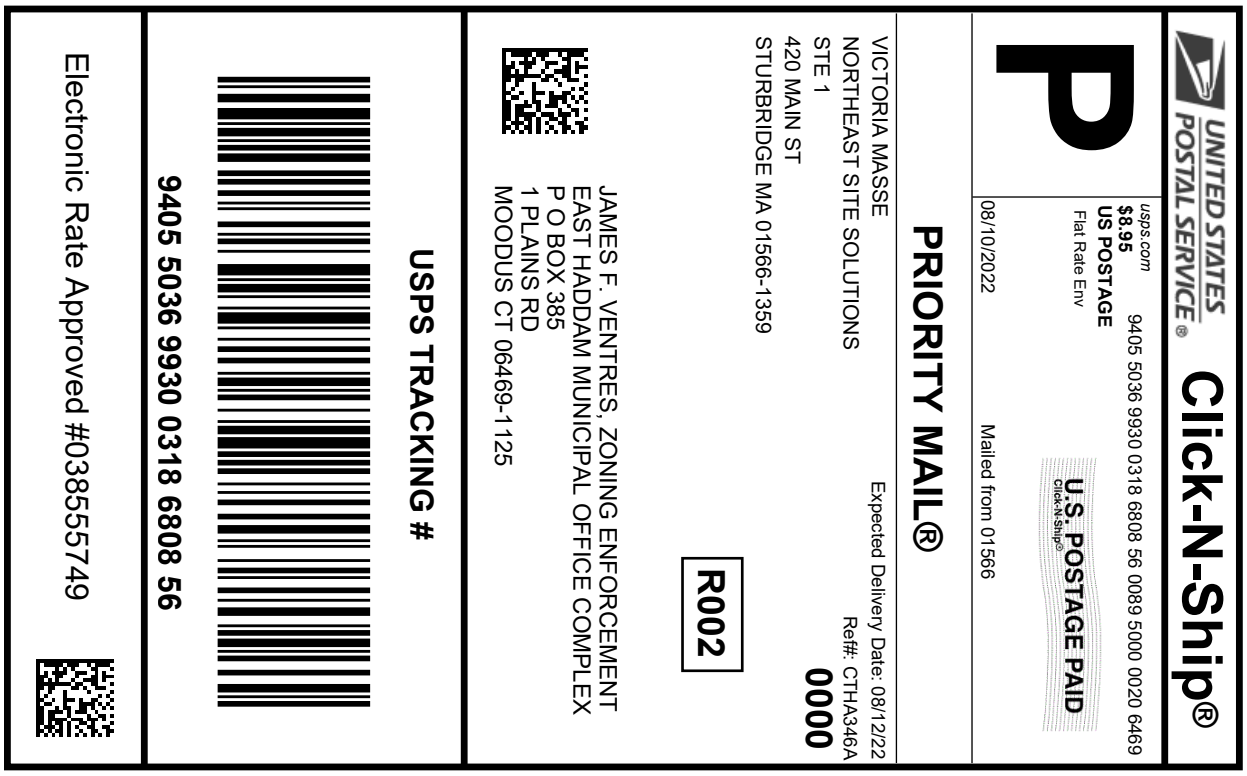

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From: VICTORIA MASSE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359
Ref#: CTHA346A

To: JAMES F. VENTRES, ZONING ENFORCEMENT OFFICER
EAST HADDAM MUNICIPAL OFFICE COMPLEX
P O BOX 385
1 PLAINS RD
MOODUS CT 06469-1125

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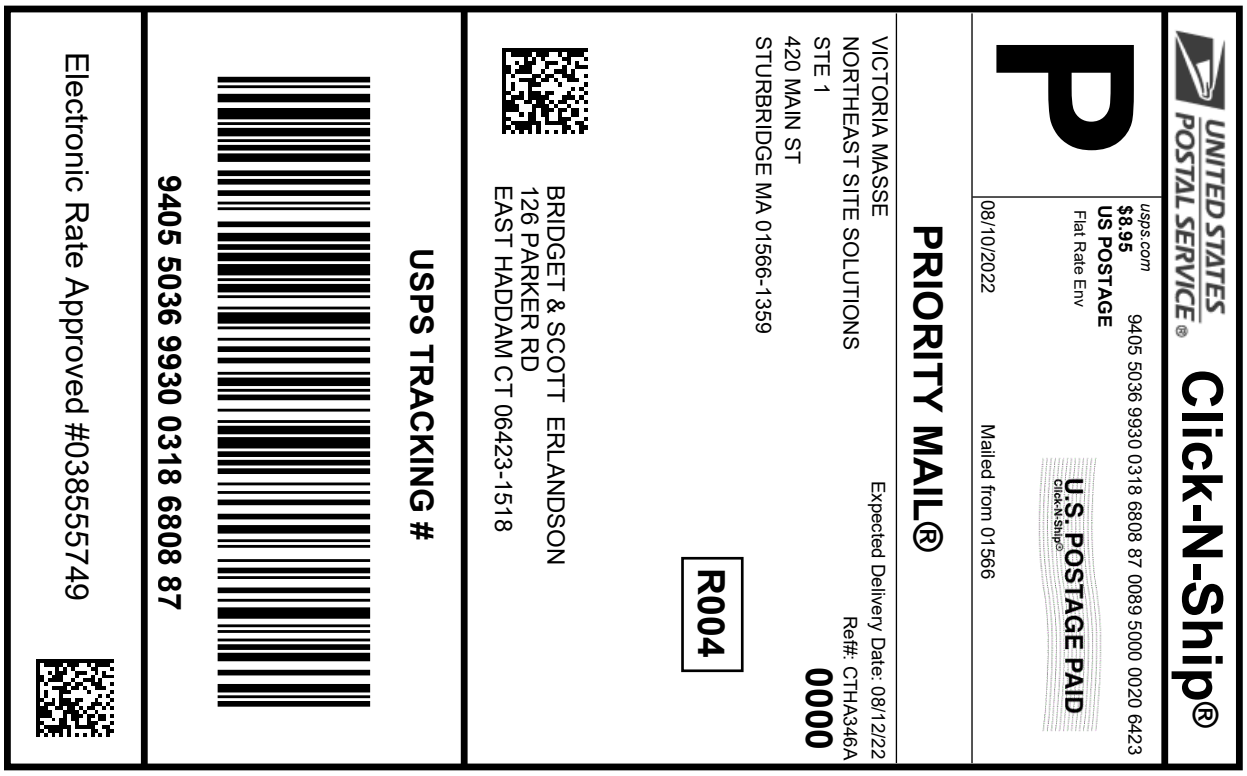

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Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

From: VICTORIA MASSE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359

Ref#: CTHA346A

To: BRIDGET & SCOTT ERLANDSON
126 PARKER RD
EAST HADDAM CT 06423-1518

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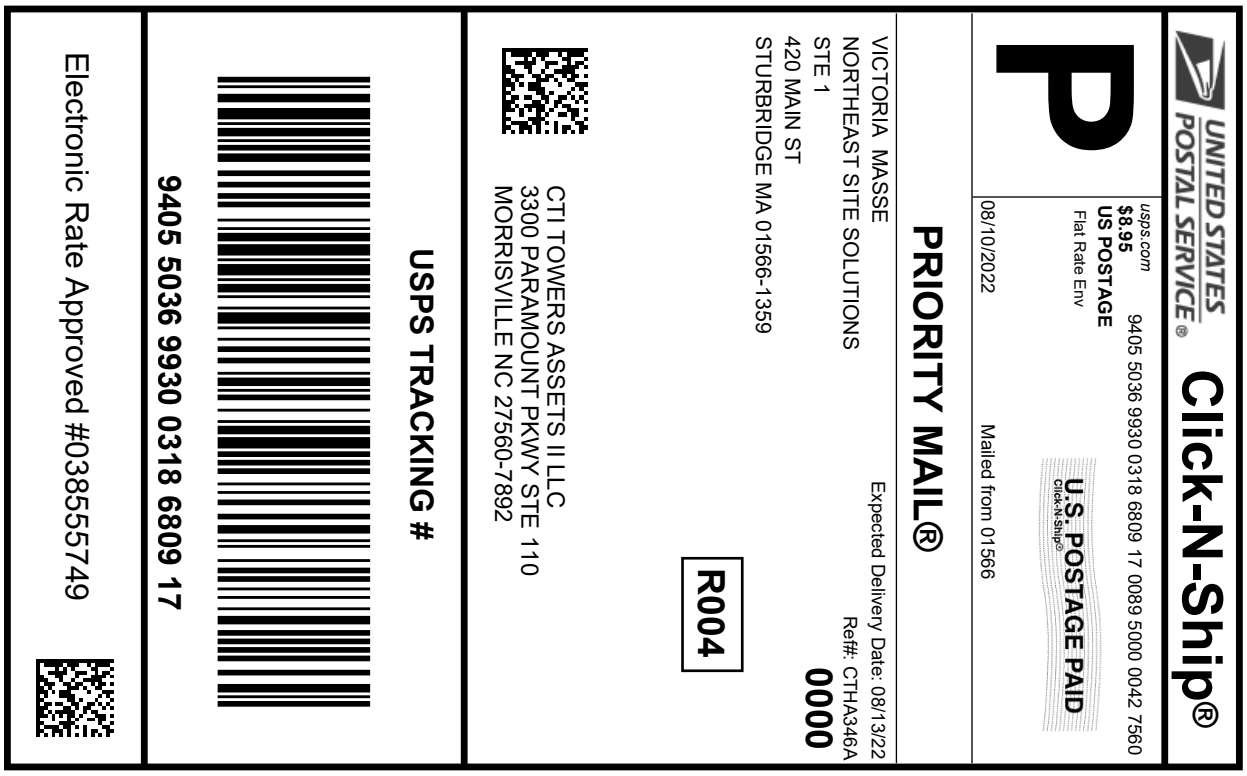

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Total:	**$8.95**

From: VICTORIA MASSE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359

Ref#: CTHA346A

To: CTI TOWERS ASSETS II LLC
3300 PARAMOUNT PKWY STE 110
MORRISVILLE NC 27560-7892

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