



Northeast Site Solutions
Victoria Masse
420 Main Street #2, Sturbridge, MA 01566
860-306-2326
victoria@northeastsitesolutions.com

November 9, 2021

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

RE: Notice of Exempt Modification
482 Pigeon Hill Road, Windsor CT 06095
Latitude: 41.86663000
Longitude: -72.67481200
T-Mobile Site#: CT11227D_L700 4x2

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 146-foot level of the existing 160-foot lattice tower located at 482 Pigeon Hill Road, Windsor. The lattice tower and property is owned by Cellco Partnership C/O Verizon Wireless. T-Mobile now intends to replace (3) existing antenna with three (3) new 600/700MHz antenna. The new antennas would be installed at the 146-foot level of the tower. T-Mobile also intends to make the following modifications.

T-Mobile Planned Modifications:

Remove:
(6) Coax

Remove and Replace:

(3) Andrew LNX-6515DS-A1M Antenna (Remove) - (3) RFS APXVAALL24 600/700MHz Antenna (Replace)

Install New:

(3) Radio 4449 B71 + B85

Existing to Remain:

(3) RFS APX16DWV-16DWVS 1900/2100 MHz Antenna
(6) TMA's
(12) Coax



This facility was approved by the CT Siting Council. Docket No. 58– Dated July 11, 1986. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter The Honorable Donald S. Trinks, Town Mayor, Mr. Peter P. Souza, Town Manager, and Eric Barz, Windsor Town Planner as well as the property owner and the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

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



NSS **NORTHEAST**
SITE SOLUTIONS
Turnkey Wireless Development

Attachments cc:

The Honorable Donald S. Trinks, Mayor - property owner
275 Broad Street
Windsor, CT 06095

Eric Barz- Planning and Zoning
275 Broad Street
Windsor, CT 06095

Mr. Peter P. Souza, Town Manager
275 Broad Street
Windsor, CT 06095

Cellco Partnership – as property and tower owner
C/O Verizon Wireless
PO BOX 2549
Addison TX 75001

Exhibit A

Original Facility Approval

DOCKET NO. 58

AN APPLICATION OF HARTFORD CELLULAR
COPANY FOR A CERTIFICATE OF
ENVIRONMENTAL COMPATIBILITY AND PUBLIC
NEED FOR THE CONSTRUCTION, MAINTENANCE,
AND OPERATION OF FACILITIES TO PROVIDE
CELLULAR SERVICE IN HARTFORD, TOLLAND AND
MIDDLESEX COUNTIES.

CONNECTICUT SITING
COUNCIL

July 11, 1986.

D E C I S I O N A N D O R D E R

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 the Hartford Cellular Company for the construction, maintenance, and operation of cellular mobile phone telecommunication towers and associated equipment in the towns of Glastonbury, Haddam, Hartford, Portland, Rocky Hill, Somers, Vernon, Windsor, and Willington subject to the conditions below.

- 1) The proposed Bloomfield and Middlefield sites are rejected without prejudice.
- 2) The antennas on the Glastonbury tower shall be mounted no higher than the 180' level of this existing tower.
- 3) The Portland and Rocky Hill towers shall be monopoles.
- 4) The towers shall be no taller than necessary to provide the proposed service, and in no event shall exceed total heights, including antennas, of
 - a) 193' at the Haddam site;
 - b) 173' at the Portland site;

- c) 153' at the Rocky Hill site;
- d) 173' at the Somers site;
- e) 173' at the Vernon site;
- f) 153' at the Willington site;
- g) 173' at the Windsor site.

5) The Hartford site receive antennas shall be mounted below the top of the high point of the building to preclude visibility.

6) Any future actions requiring the removal of the existing Glastonbury tower to be shared by the certificate holder shall also apply to the equipment mounted on that tower by the certificate holder, regardless of that equipment's status under Chapter 277a of the CGS.

7) The certificate holder shall submit a development and management (D&M) plan for the Haddam, Portland, Rocky Hill, Somers, Vernon and Windsor sites pursuant to Sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies (RSA), except that irrelevant items in Section 16-50j-76 need only be identified as such. In addition to the requirements of Section 16-50j-76, the D&M plan shall provide plans for evergreen screening around the fenced perimeter at the Haddam, Somers, Vernon, and Windsor sites. The D&M plan shall include a proposal for painting the approved monopole structures to blend with the sky. The D&M plan must be approved prior to facility construction. Any changes to specifications in the D&M plan must be approved by the Council prior to facility operation.

8) All certified facilities shall be constructed, operated, and maintained as specified in the Council's record and in the

site plan required by order number 7.

9) The certificate holder shall comply with any future radiofrequency (RF) standards promulgated by state or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facilities granted in this decision shall continue to be in compliance with such standards.

10) The certificate holder shall permit public or private entities to share space on the towers approved herein, for due consideration received, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing. In addition to complying with Section 16-50j-73 of the RSA, the certificate holder shall notify the Council of the addition of any equipment to any approved tower.

11) A fence not lower than 8' shall surround each tower and associated equipment.

12) Unless necessary to comply with order 13, no lights shall be installed on any of these towers.

13) The facilities' construction and any future tower sharing shall be in accordance with all applicable federal, state, and municipal laws and regulations. Shared uses by entities not subject to jurisdiction pursuant to Section 16-50k of the CGS shall be subject to all applicable federal, state, and municipal laws and regulations.

14) Construction activities shall take place during daylight working hours.

15) This decision and order shall be void and the towers and associate equipment shall be dismantled and removed, or reapplication for any new use shall be made to the Council before any such new use is made, if the towers do not provide or permanently cease to provide cellular service following completion of construction.

16) This decision and order shall be void if all construction authorized herein is not completed within three years of the issuance of this decision, or within three years of the completion of any appeal if appeal of this decision is taken, unless otherwise approved by the Council.

Pursuant to CGS Section 16-50p, we hereby direct that a copy of the decision and order shall be served on each person listed below. A notice of the issuance shall be published in the Hartford Courant, Middletown Press, Manchester Journal Inquirer, and the Willimantic Chronicle.

The parties to the proceeding are:

Metro Mobile (applicant)
5 Eversley Avenue
Norwalk, Connecticut 06855
ATTN: Armand Mascioli
General Manager

Howard L. Slater, Esq. (its attorneys)
Scott A. Gursky, Esq.
Byrne, Slater, Sandler,
Shulman & Rouse, P.C.
111 Pearl Street
Hartford, Connecticut 06103

Richard Rubin, Esq.
Fleischman and Walsh, P.C.
1725 N Street, N.W.
Washington, D. C. 20036

Mr. William Wamester
1225 Randolph Road
Middletown, Connecticut 06457

The Southern New England Telephone Company
227 Church Street
New Haven, Connecticut 06506
ATTN: Peter J. Tyrrell, Esq.

Mr. James W. Tilney

represented by:
Patricia A. Ayars
Samuel Baily, Jr.
Robinson & Cole
One Commercial Plaza
Hartford, CT. 06103-3597

Mr. Samuel DuBosar, Chairman
Bessie Bennett, Esq.
Town Plan & Zoning Commission
P.O. Box 337
Bloomfield, Connecticut 06002

Town of Somers

represented by:

Mr. Robert F. Peters
Town Counsel
Tatoian, Devline, Peters
& Davis
11 South Road
P.O. Box 415
Somers, CT. 06071

Town of Haddam
represented by:

Lucy R. Petrella
Chairperson
Town Office Building
Route 9A
P.O. Box 87
Haddam, CT. 06438

Midstate Regional Planning Agency

represented by:

Thomas M. Gilligan
Regional Planner
P.O. Box 139
Middletown, CT. 06457

Dr. Donald P. LaSalle
Director
Talcott Mountain Science Center
Montevideo Road
Avon, Connecticut 06001

Barnard Tilson (service waived)
Secretary
Avon Planning and Zoning
60 West Main Street
Avon, Connecticut 06001

Alden Giddings
33 Privelege Road
Bloomfield, Connecticut 06002

Town of Bloomfield

represented by:

Joseph M. Suggs, Jr.
Deputy Mayor
Town Hall
880 Bloomfield Avenue
P.O. Box 337
Bloomfield, CT. 06002
(service waived)

Town of Middlefield

represented by:

David Silverstone, Esq.
Silverstone & Koontz
37 Lewis Street
Hartford, CT. 06103

with a copy to:

Geoffrey Colegrove
Midstate Regional Planning Agency
100 DeKoven Drive
Middletown, CT. 06457

Zoning Commission
Town of Somers

represented by:

Joseph A. Paradis
Chairman
Town Hall
600 Main Street
P.O. Box 803
Somers, CT. 06071

Barbara Sirwilo, Secretary (service waived)
Planning & Zoning Commission
Town of Rocky Hill
600 Old Main Street
P.O. Box 657
Rocky Hill, Connecticut 06067

H. Robert Goodrich (service waived)
Goodrich Lane
Portland, Connecticut 06480

The Honorable Richard P. Antonetti
State Representative (service waived)
5 Sachem Circle
Meriden, Connecticut 06450

John Hevrin
R.D. #1 - Plains Road
Haddam, Connecticut 06438

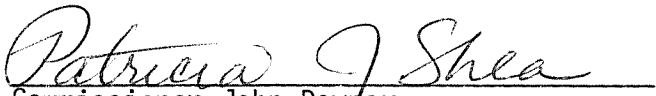



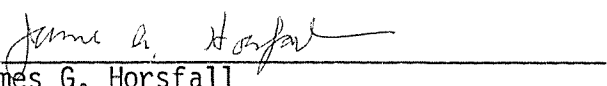
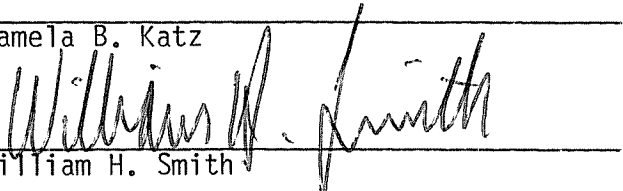
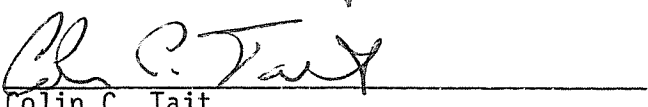
Norman and Darlene Manning (represented by)

Elizabeth Allen, Esq.
P.O. Box 467
Higganum, CT. 06441
(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, this 11th day of July, 1986.

<u>Council Members</u>	<u>Vote Cast</u>
_____) Gloria Dibble Pond Chairperson	Absent
 _____) Commissioner John Downey Designee: Patricia Shea	Yes
 _____) Commissioner Stanley Pac Designee: Christopher Cooper	Yes
 _____) Owen L. Clark	Yes
 _____) Mortimer A. Gelston	Yes
 _____) James G. Horsfall	Yes
_____) Pamela B. Katz	Absent
 _____) William H. Smith	Yes
 _____) Colin C. Tait	Yes


STATE OF CONNECTICUT
COUNTY OF HARTFORD

)
:
)

ss. New Britain, July 11, 1986

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:



Christopher S. Wood, Executive Director
Connecticut Siting Council

Exhibit B

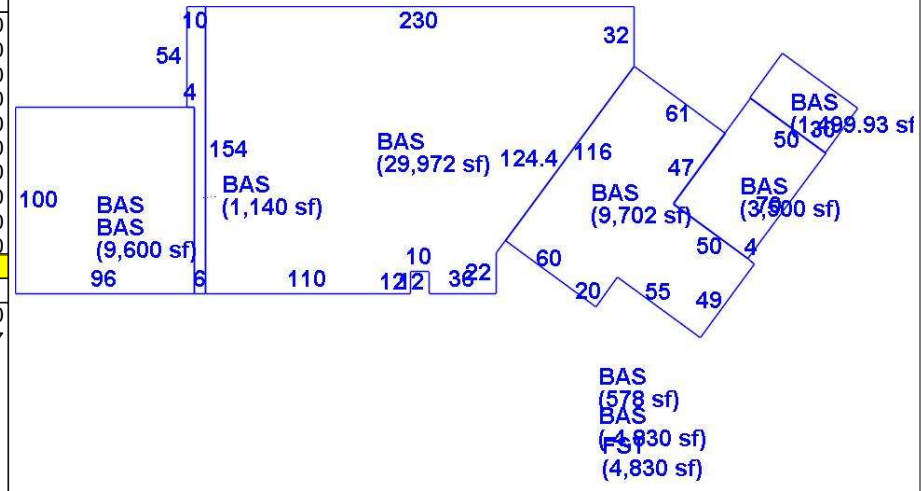
Property Card

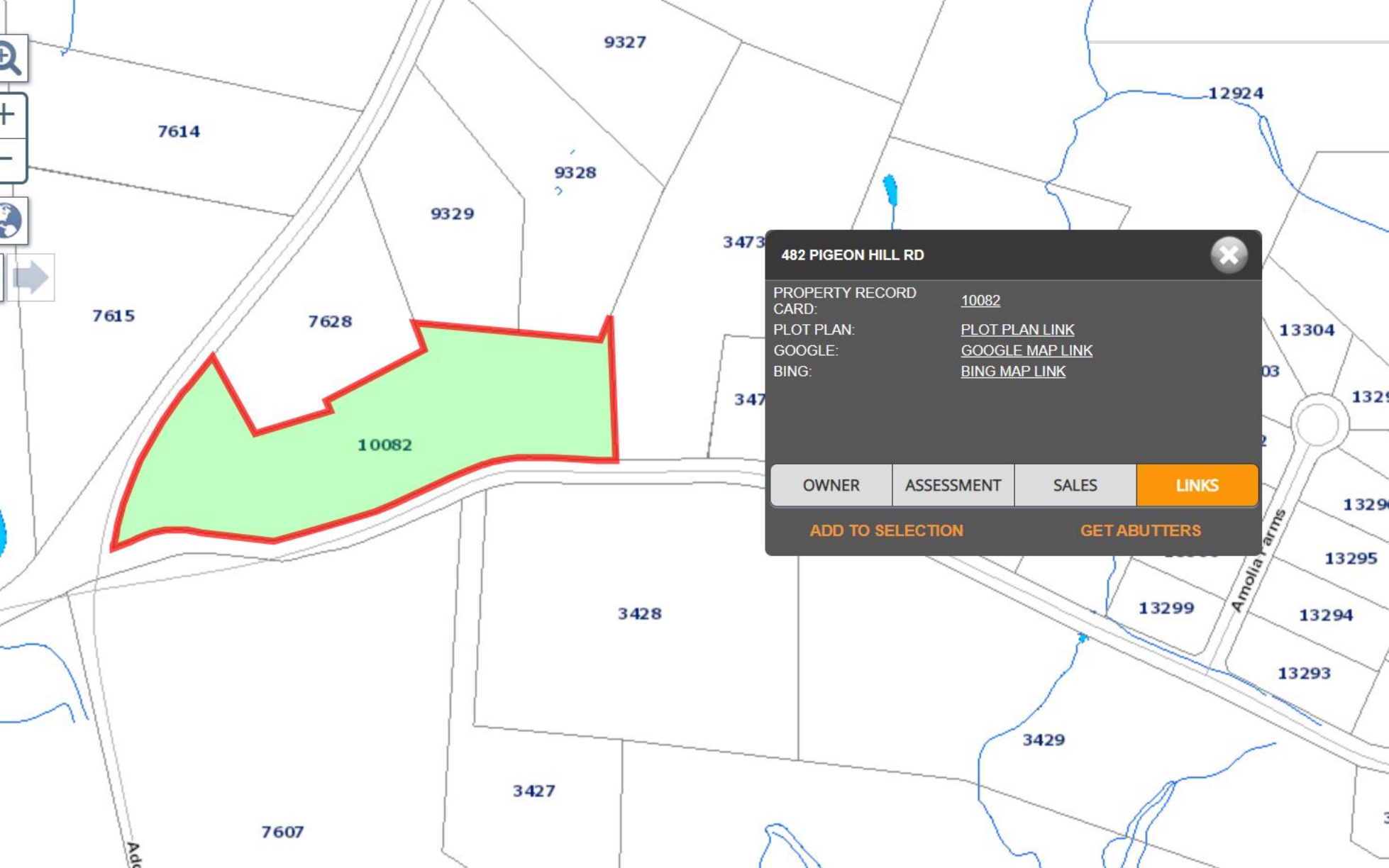
CONSTRUCTION DETAIL			CONSTRUCTION DETAIL (CONTINUED)		
Element	Cd	Description	Element	Cd	Description
Style:	79	Telephone Bldg			
Model	96	Ind/Comm			
Grade	15				
Stories:	1				
Occupancy					
Exterior Wall 1	19	Brick Veneer			
Exterior Wall 2	15	Concrete/Block			
Roof Structure	01	Flat			
Roof Cover	04	T&G/Rubber			
Interior Wall 1	05	Drywall			
Interior Wall 2					
Interior Floor 1	14	Carpet	RCN		18,035,446
Interior Floor 2	05	Vinyl			
Heating Fuel	04	Electric			
Heating Type	04	Forced Air	Year Built		1987
AC Type	03	Central	Effective Year Built		
Bldg Use	4300	Tel X Station	Depreciation Code		G
Total Rooms			Remodel Rating		
Total Bedrms	00		Year Remodeled		
Total Baths	2		Depreciation %		6
Heat/AC	02	Heat/AC Split	Functional Obsol		
Frame Type	05	Steel	External Obsol		
Baths/Plumbing	02	Average	Trend Factor		1
Ceiling/Wall	05	Sus-Ceil & WI	Condition		UC
Rooms/Prtns	02	Average	Condition %		70
Wall Height	18.00		Percent Good		70
% Conn Wall	0.00		Cns Sect Rcndd		12,624,800
1st Floor Use:	4300		Dep % Ovr		
			Dep Ovr Comment		
			Misc Imp Ovr		
			Misc Imp Ovr Comment		
			Cost to Cure Ovr		
			Cost to Cure Ovr Comment		



OB - OUTBUILDING & YARD ITEMS(L) / XF - BUILDING EXTRA FEATURES(B)												
Code	Descripti	Sub	Sub Ty	L/B	Units	Unit Price	Yr Blt	Cond. Cd	% Gd	Grade	Grade Ad	Appr. V
PAV1	PAVING-			L	5,000	2.50	2003		99		0.00	12,400
SHP1	WORK			L	480	17.00	2003		100		0.00	8,200
SHP1	WORK			L	300	17.00	2003		100		0.00	5,100
MSC8	SPR1			B	1	8300.00	2001		70		0.00	5,800
MSC9	SPR4(2			B	1	69600.00	2001		70		0.00	48,700
MSC9	SPR1(2			B	1	32300.00	2001		70		0.00	22,600
MSC9	SPR4(2			B	1	96800.00	2001		70		0.00	67,800
PAV1	PAVING-			L	11,20	2.50	2005		100		0.00	28,000
MSC9	SPR4(2			B	1	65000.00	2001		70		0.00	45,500
ELVF	FREIGH			B	1	75000.00	2019	G	70	E	0.00	52,500

BUILDING SUB-AREA SUMMARY SECTION						
Code	Description	Living Area	Floor Area	Eff Area	Unit Cost	Undeprec Value
BAS	First Floor	60,762	60,762		287.67	17,479,660
FST	Utility, Storage	4,830	4,830		115.07	555,787
Ttl Gross Liv / Lease Area		65,592	65,592			18,035,447





482 PIGEON HILL RD

PROPERTY RECORD CARD: [10082](#)

PLOT PLAN: [PLOT PLAN LINK](#)

GOOGLE: [GOOGLE MAP LINK](#)

BING: [BING MAP LINK](#)

OWNER	ASSESSMENT	SALES	LINKS
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[ADD TO SELECTION](#) [GET ABUTTERS](#)

Exhibit C

Construction Drawings

MODIFICATION OF EXISTING WIRELESS FACILITY BY



T-MOBILE NORTHEAST LLC

PROJECT TITLE: L700 4X2

SITE NUMBER: CT11227D

SITE NAME: WINDSOR 191 / X38

SITE ADDRESS: 482 PIGEON HILL ROAD

WINDSOR, CT 06095

RF CONFIGURATION: 67D04B_1QP+1OP (DATED 7/20/21)

APPLICANT:

T-Mobile
T-MOBILE NORTHEAST LLC

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860-692-7100

PROJECT MANAGER

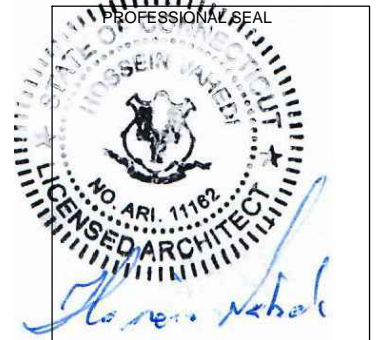


420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
203-275-6669

CONSULTANT:



462 WALNUT STREET, SUITE 1
NEWTON, MA 02460
617-212-3123



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REV	DESCRIPTION	DATE
A	PRELIMINARY	09/21/21

SITE NUMBER: CT11227D
SITE NAME: WINDSOR 191 / X38
SITE ADDRESS: 482 PIGEON HILL ROAD
WINDSOR, CT 06095

SHEET TITLE:
T-1: TITLE SHEET

PROJECT NOTES:

- THIS IS AN UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION:
HANDICAPPED ACCESS IS NOT REQUIRED.
POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED.
NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED.
- DEVELOPMENT AND USE OF THE SITE WILL CONFORM TO ALL APPLICABLE CODES, ORDINANCES AND SPECIFICATIONS.

CODE COMPLIANCE:

ALL WORK SHALL COMPLY WITH THE CURRENT NATIONAL AND CONNECTICUT STATE BUILDING AND LIFE SAFETY CODES, SUPPLEMENTS AND AMENDMENTS INCLUDING BUT NOT LIMITED TO THE LATEST EDITION OF:
CONNECTICUT STATE BUILDING CODE (CSBC).
ANSI/TIA-222-G STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.
NATIONAL ELECTRICAL CODE (NEC) FOR POWER AND GROUNDING REQUIREMENTS.
OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA).
NFPA - NATIONAL FIRE PROTECTION ASSOCIATION.



Connecticut - Call Before You Dig
811 or
1-800-922-4455

Advance Notice:
Minimum of 2 working days in advance, no more than 30 days in advance

CONTRACTOR'S NOTES:

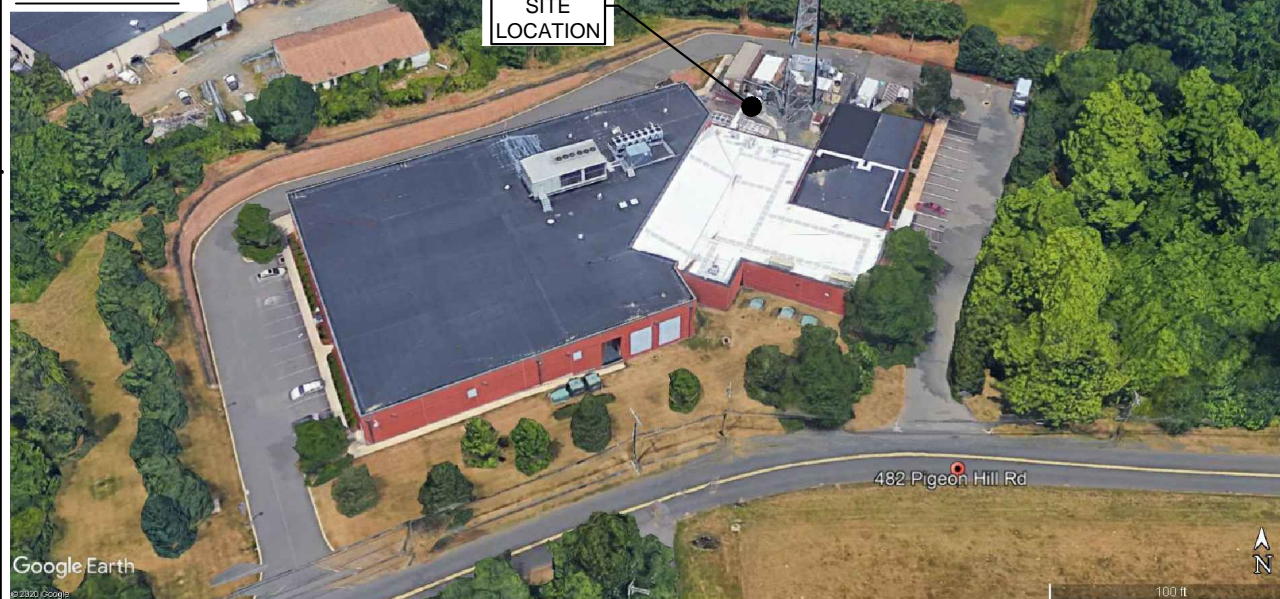
CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON THE JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACES THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.

REFER TO STRUCTURAL REPORT:
STRUCTURAL ANALYSIS REPORT PREPARED BY SEMAAN ENGINEERING SOLUTIONS - DATED 09/10/2021.
MOUNT STRUCTURAL ANALYSIS REPORT PREPARED BY EFI GLOBAL INC. - DATED 01/28/2021.

APPROVALS:

FSA CM	DATE
RF ENGINEER	DATE
FOPS	DATE
T-MOBILE ENGINEERING AND DEVELOPMENT	DATE
	DATE
	DATE

SITE IMAGE:



SITE VICINITY :



PROJECT SCOPE:

THE OUTLINE OF PROJECT SCOPE OF THIS L700 4X2 PROJECT WILL CONSIST OF:
INTERNAL UPGRADE OF THE EXISTING RBS 6102 CABINET.
REPLACEMENT OF (3) OF (6) EXISTING ANTENNAS AND THEIR COMPONENTS ON THE EXISTING TOWER.
REMOVAL OF (6) OF (18) EXISTING 1-5/8" COAXIAL CABLES FROM TOWER.

PROJECT INFORMATION:

ADDRESS: 482 PIGEON HILL ROAD
WINDSOR, CT 06095
PARCEL ID: 10082
ZONING DISTRICT: I
COORDINATES: 41° 51' 59.89" N, 72° 40' 29.19" W
GROUND ELEV: 167± (AMSL)

PROJECT TEAM:

APPLICANT: T-MOBILE NORTHEAST, LLC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860-692-7100
PROPERTY OWNER: CELCO PARTNERSHIP
C/O VERIZON WIRELESS
P.O. BOX 2549
ADDISON, TX 75001
PROJECT MANAGER: NORTHEAST SITE SOLUTIONS
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
SHELDON FREINCLE
SHELDON@NORTHEASTSITE SOLUTIONS.COM
201-776-8521
CONSULTANTS: FORESITE LLC
462 WALNUT ST
NEWTON, MA 02460
SAEED MOSSAVAT
SMOSSAVAT@FORESITELLC.COM
617-212-3123

SHEET INDEX:

T-1: TITLE SHEET
N-1: GENERAL NOTES
A-1: SITE PLAN
A-2: EQUIPMENT LAYOUT
A-3: ELEVATION AND ANTENNA PLAN
A-4: ANTENNA AND EQUIPMENT SPECIFICATIONS
E-1: GROUNDING DETAILS

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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 PROJEC
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 (LATEST 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.
 - B. 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.
 - C. 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.

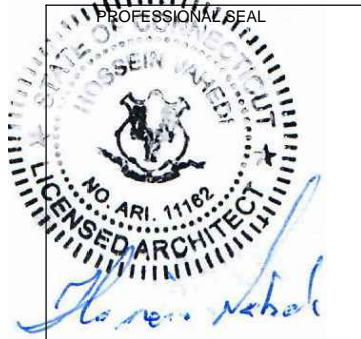
- C. INSTALL COAXIAL / FIBER CABLES AND TERMINATIONS BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTORS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS.
15. ANTENNA AND COAXIAL / FIBER CABLE GROUNDING:
 - A. ALL EXTERIOR #6 GREEN GROUND WIRE "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.
 - J. 2018 LIFE SAFETY CODE NFPA - 101.

APPLICANT:
T-Mobile
T-MOBILE NORTHEAST LLC
 35 GRIFFIN ROAD SOUTH
 BLOOMFIELD, CT 06002
 860-692-7100

PROJECT MANAGER

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

CONSULTANT:
FORESITE LLC
Architects . Engineers . Surveyors
 462 WALNUT STREET, SUITE 1
 NEWTON, MA 02460
 617-212-3123



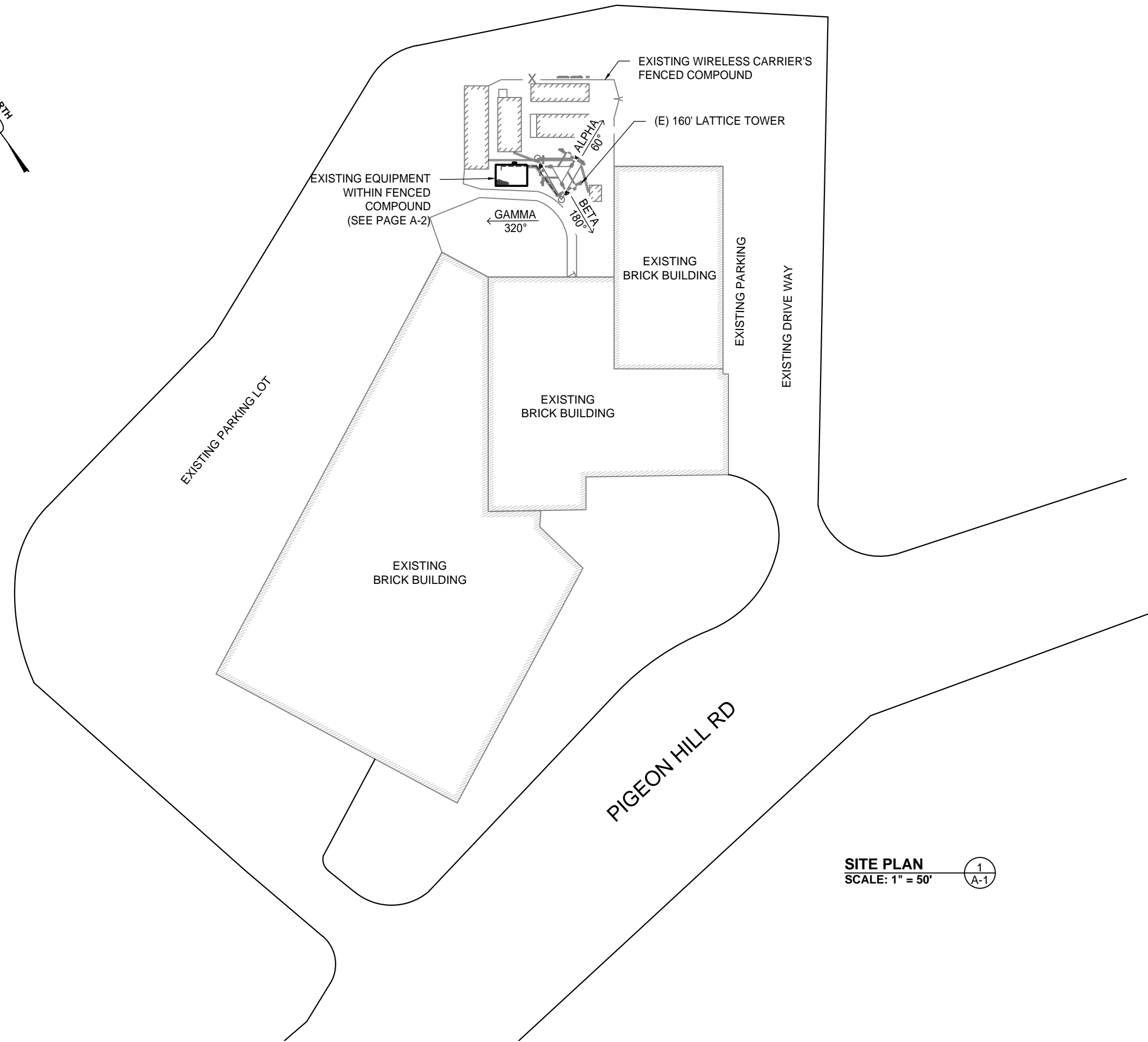
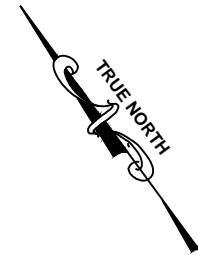
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 SITE ADDRESS: 482 PIGEON HILL ROAD
 WINDSOR, CT 06095

SHEET TITLE:
N-1: GENERAL NOTES

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SITE PLAN
SCALE: 1" = 50'

1
A-1

APPLICANT:
T-Mobile
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860-692-7100

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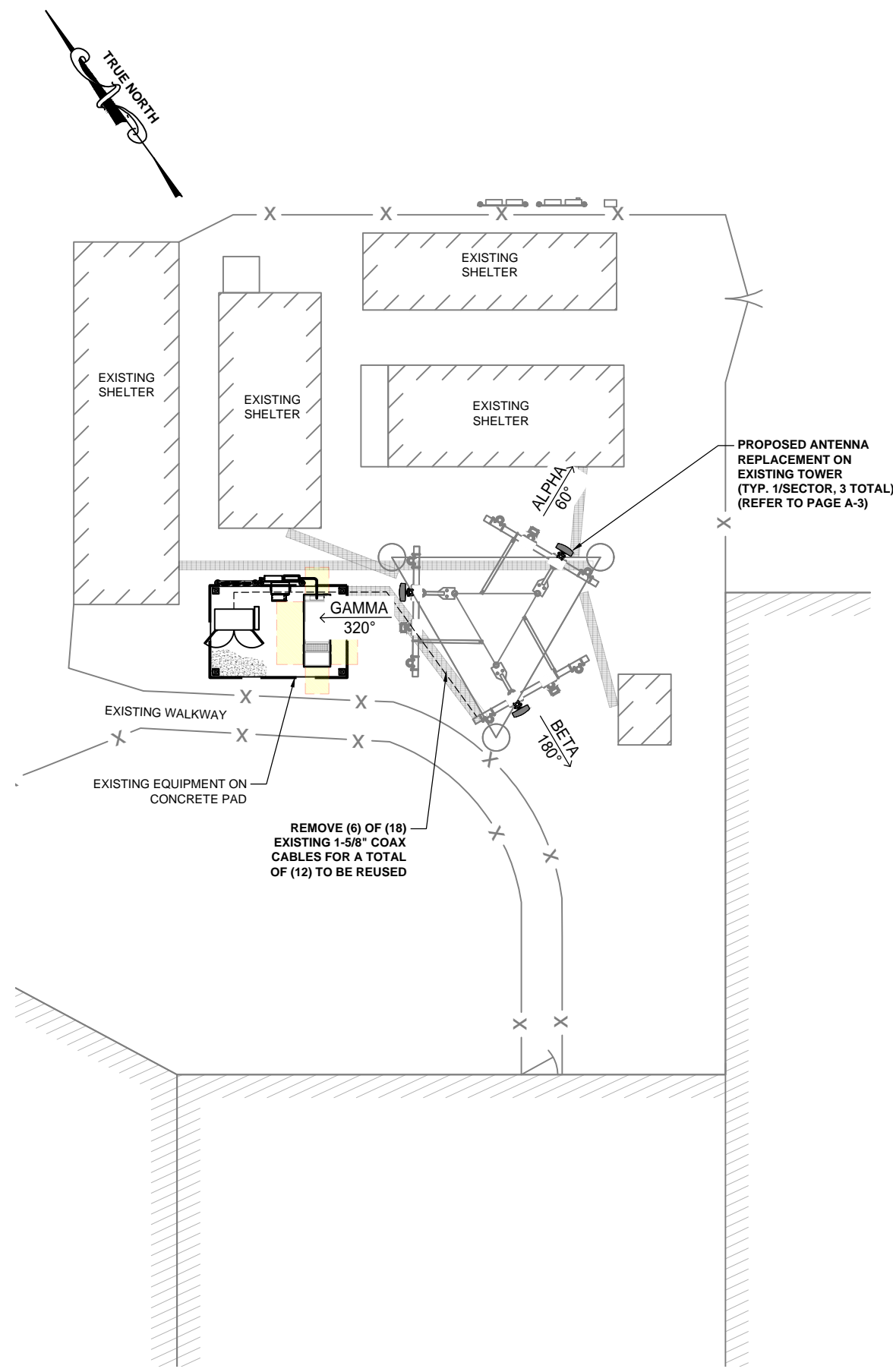
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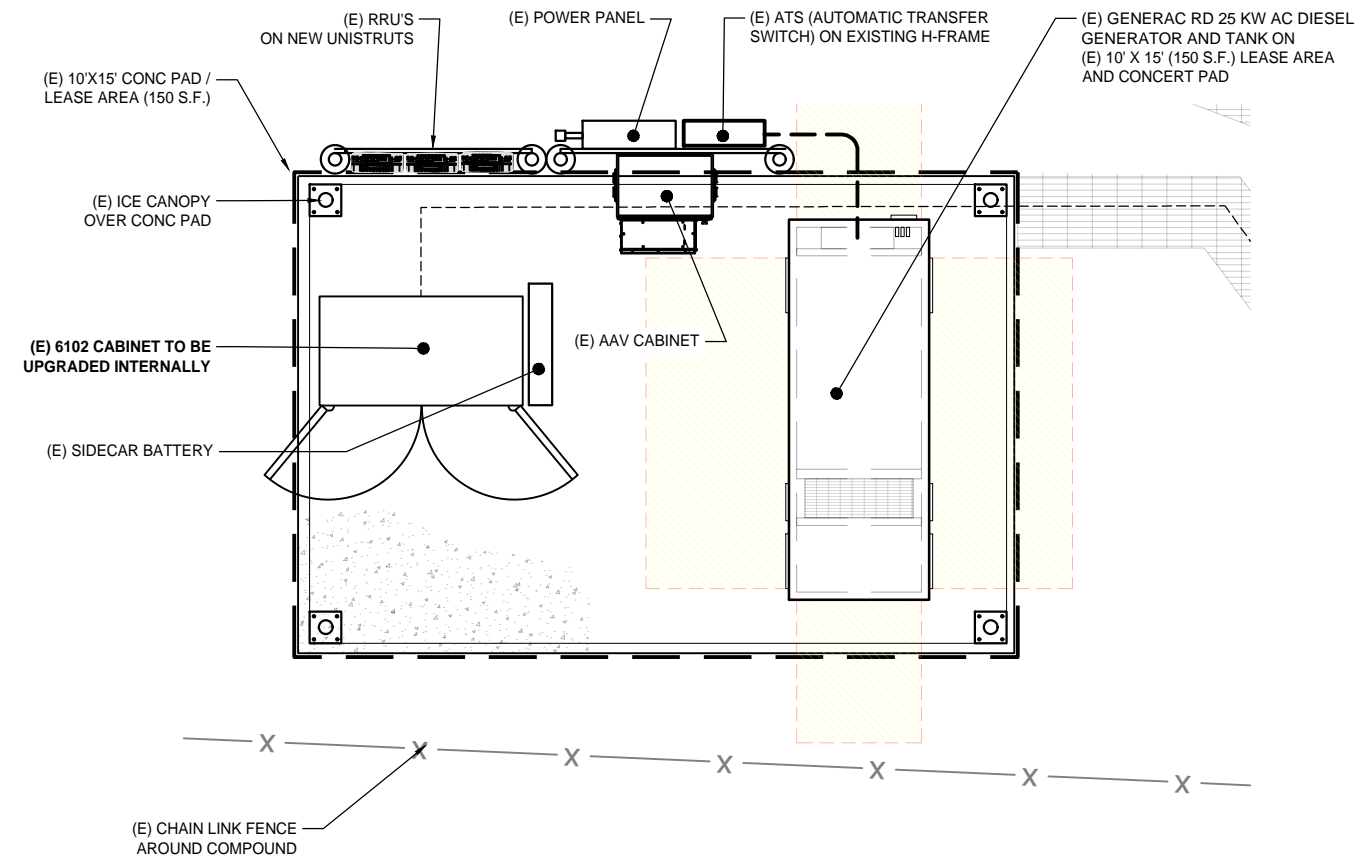
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SITE NAME: WINDSOR 191 / X38
SITE ADDRESS: 482 PIGEON HILL ROAD
WINDSOR, CT 06095

SHEET TITLE:
A-1: SITE PLAN

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SITE PLAN
SCALE: 1/16" = 1'-0"
1
A-2



PARTIAL SITE PLAN
SCALE: 1/4" = 1'-0"
2
A-2

APPLICANT:
T-Mobile
T-MOBILE NORTHEAST LLC
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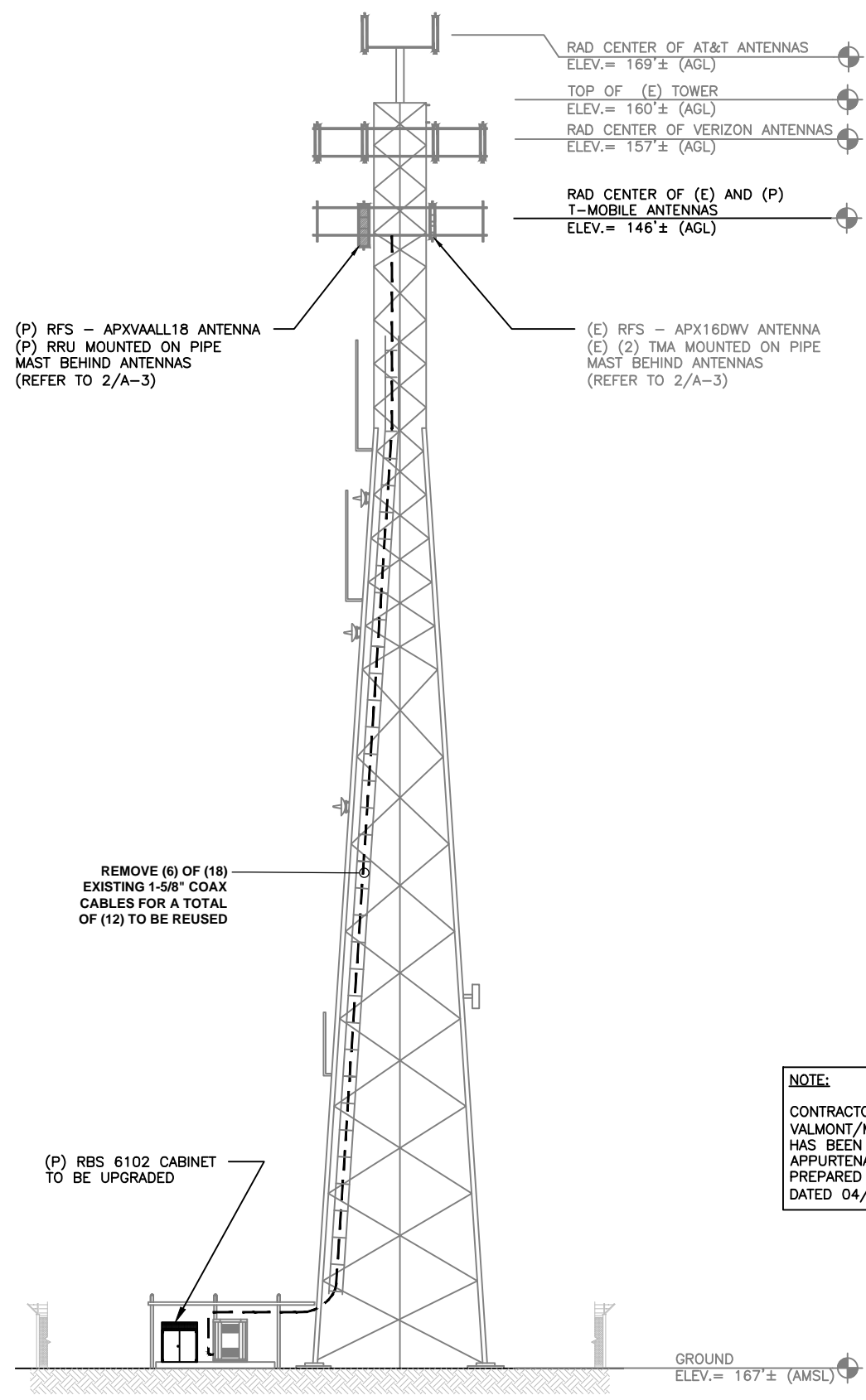
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SHEET TITLE:
A-2: EQUIPMENT LAYOUT PLAN

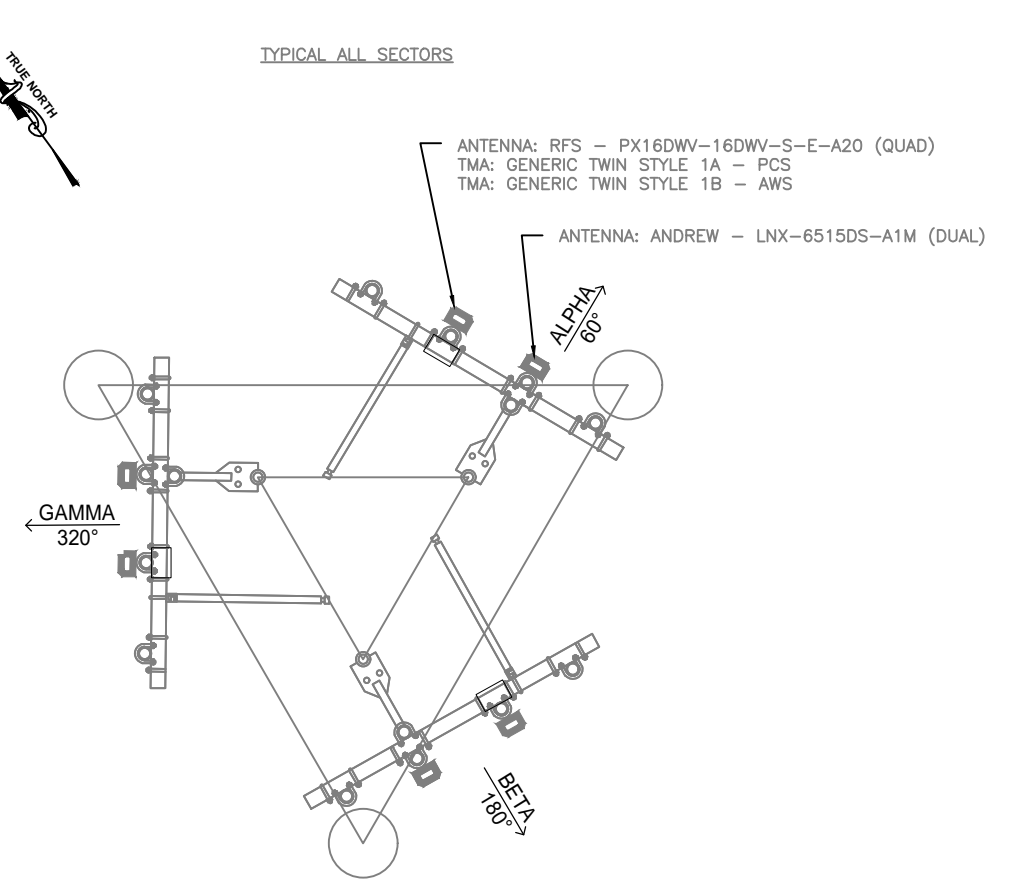
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ELEVATION
SCALE: 1"=20'

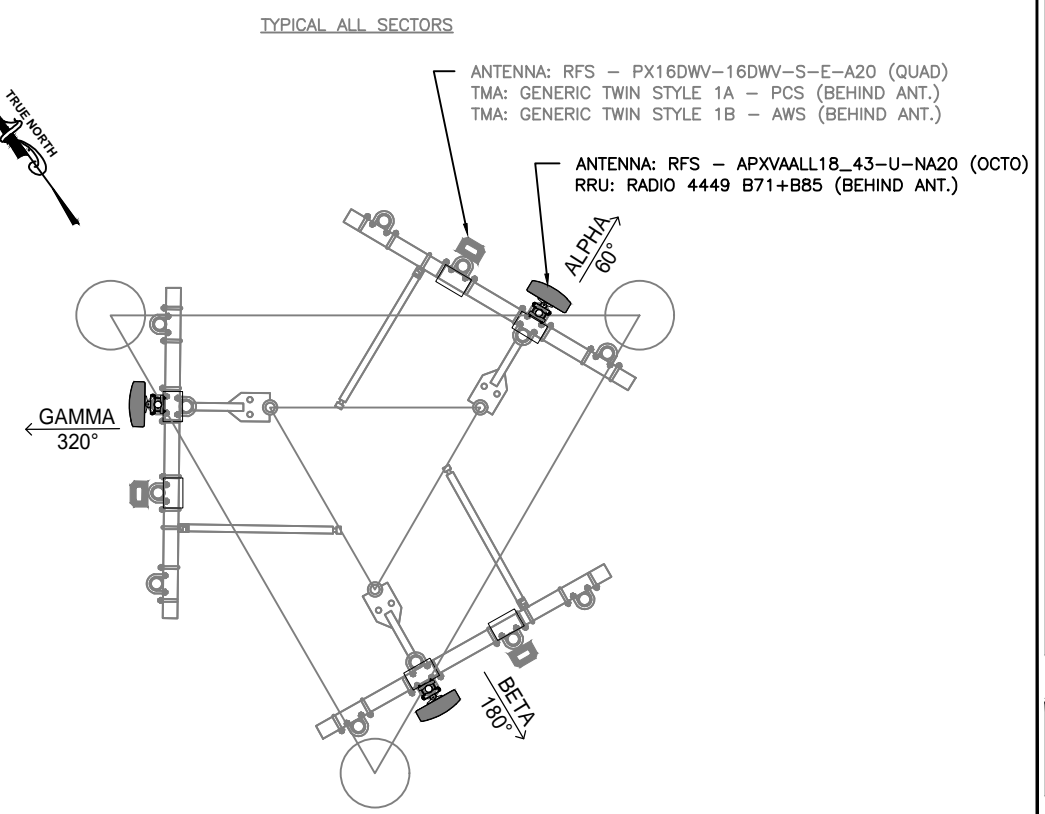
1
A-3

NOTE:
 CONTRACTOR TO FIELD VERIFY THAT VALMONT/MICROFLECT #99320 SECTOR FRAMES HAS BEEN INSTALLED AT EACH SECTOR PER APPURTENANCE MOUNT ANALYSIS REPORT PREPARED BY SEMAAN ENGINEERING SOLUTIONS, DATED 04/23/2019



EXISTING ANTENNA PLAN
N.T.S.

2
A-3



FINAL ANTENNA PLAN
N.T.S.

3
A-3

APPLICANT:
T-Mobile
T-MOBILE NORTHEAST LLC
 35 GRIFFIN ROAD SOUTH
 BLOOMFIELD, CT 06002
 860-692-7100

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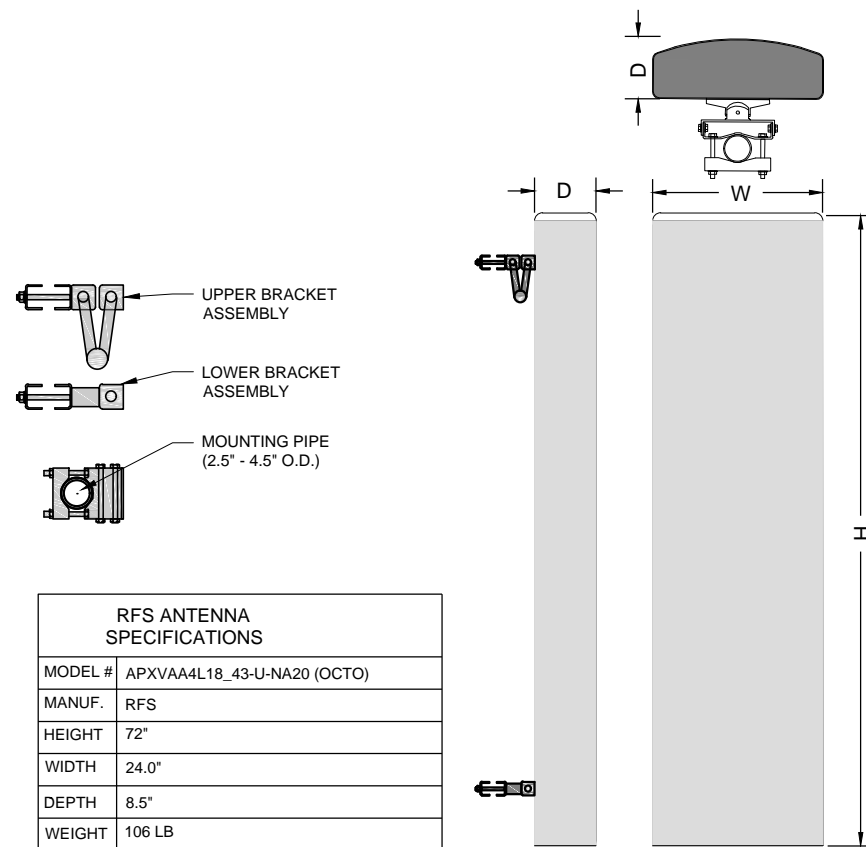
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SHEET TITLE:
 A-3: ELEVATION AND ANTENNA PLAN

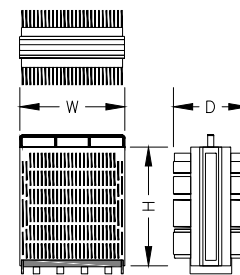
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RFS ANTENNA SPECIFICATIONS	
MODEL #	APXVAA4L18_43-U-NA20 (OCTO)
MANUF.	RFS
HEIGHT	72"
WIDTH	24.0"
DEPTH	8.5"
WEIGHT	106 LB

RFS ANTENNA
N.T.S

1
A-4



REMOTE RADIO UNIT SPECIFICATIONS	
MODEL #	RADIO 4449 B71+B85
MANUF.	ERICSSON
HEIGHT	14.9"
WIDTH	13.2"
DEPTH	10.4"
WEIGHT	74 LB

REMOTE RADIO UNIT
N.T.S

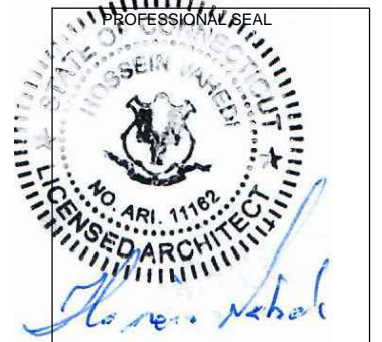
2
A-4

APPLICANT:
T-Mobile
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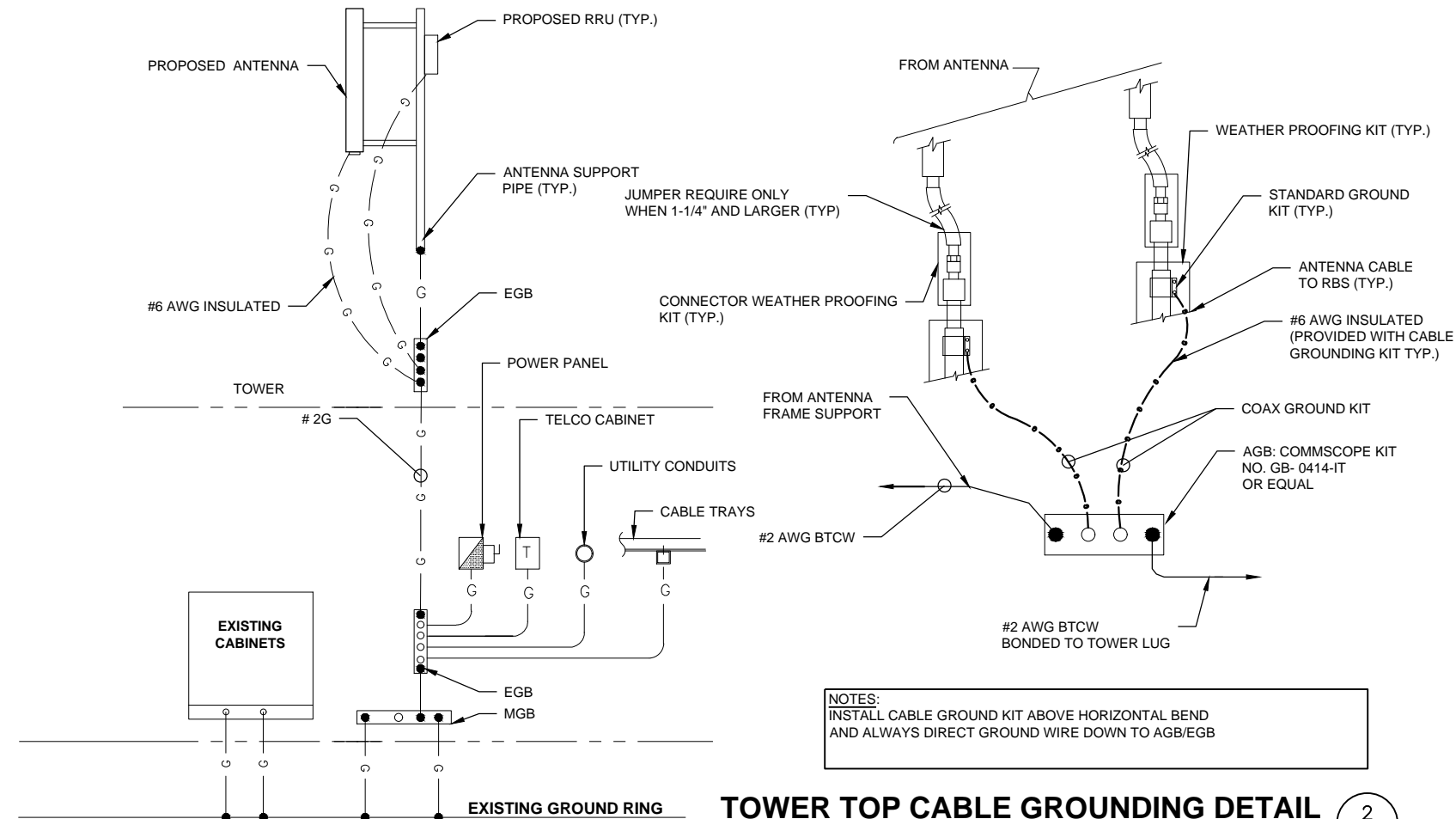
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SITE NAME: WINDSOR 191 / X38
SITE ADDRESS: 482 PIGEON HILL ROAD
WINDSOR, CT 06095

SHEET TITLE:
A-4: ANTENNA AND EQUIPMENT SPECS

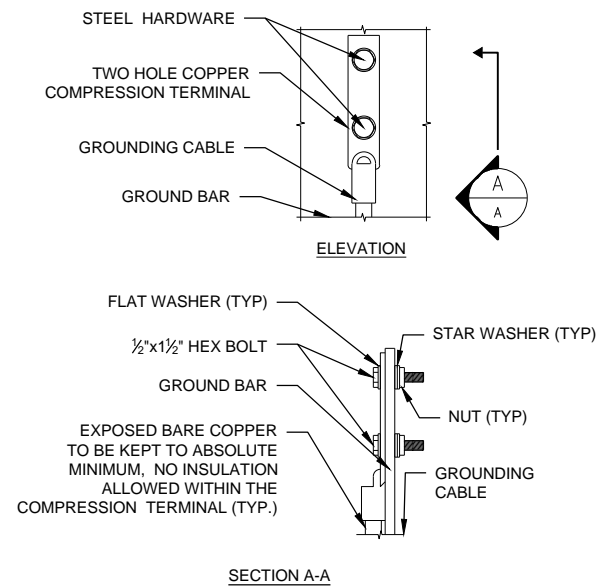
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ELECTRICAL & GROUNDING NOTES

1. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NAME 3R ENCLOSURE.
2. GROUNDING SHALL COMPLY WITH NEC ART. 250.
3. GROUNDING COAX CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURES COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
4. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSTALLATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE GROUND.
5. ALL GROUND CONNECTION TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
6. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AS RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY BOND ANY METER OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
7. CONNECTIONS TO MGB SHALL BE ARRANGED IN THREE MAIN GROUPS: SURGE PROCEDURES (COAXIAL CABLE GROUND KITS, TELCO AND POWER PANEL GROUND); (GROUNDING ELECTRODE RING OR BUILDING STEEL); NON-SURGING OBJECTS (EGB GROUND IN RBS UNIT).
8. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
9. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTION.
10. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
11. TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.
12. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.



GROUNDING RISER DIAGRAM
N.T.S.



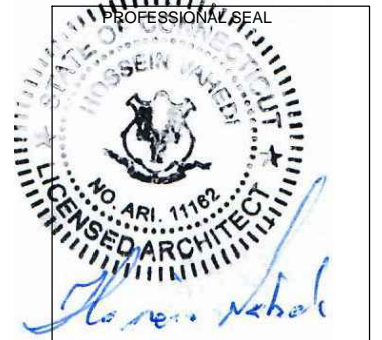
- NOTES:**
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
 2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

TYPICAL GROUND BAR CONNECTIONS DETAIL
N.T.S.

APPLICANT:
T-Mobile
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860-692-7100

PROJECT MANAGER
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Turning Wireless Development
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CONSULTANT:
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SITE NAME: WINDSOR 191 / X38
SITE ADDRESS: 482 PIGEON HILL ROAD
WINDSOR, CT 06095

SHEET TITLE:
E-1: GROUNDING DETAILS

Exhibit D

Structural Analysis Report



Structural Analysis Report

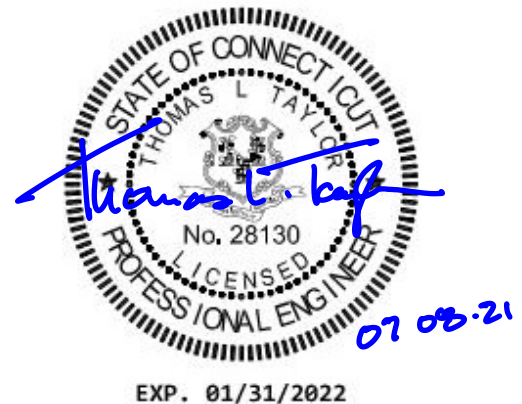
Prepared for:

KGI

805 Las Cimas Parkway, Building Three, Suite 370
Austin, TX 78746

ATTN: Ms. Shirley Rock

Structure : 160 ft Self Supported Tower
Site ID : 28229
Proposed Carrier : T-Mobile
Site Name : Windsor
Site Location : 482 Pigeon Hill Road
Windsor, CT
41.8666, -72.6748
County : Hartford
Date : June 23, 2021
Max Structure Usage : 101%
Max Foundation Usage : 29%
Result : Pass



Prepared By:
Nathan Wood, E.I.T
Structural Engineer

A handwritten signature in cursive script that reads "Nathan Wood".



Table of Contents

Introduction ----- 1

Supporting Documents ----- 1

Analysis ----- 1

Conclusion ----- 1

Existing and Reserved Equipment ----- 2

Equipment to be Removed ----- 2

Proposed Equipment ----- 2

Structure Usages ----- 3

Foundations ----- 3

Standard Conditions ----- 4

Calculations ----- Attached

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 160 ft Self Supported Tower to reflect the change in loading by T-Mobile.

Supporting Documents

Tower Drawing	Rohn Drawing #A870542-1, dated April 20, 1987 HighTower Solutions Mapping, dated February 20, 2019
Foundation Drawing	Rohn Drawing #A870543-1, dated April 20, 1987 FDH Foundation Mapping Project #08-04006E N1, dated April 18, 2008
Geotechnical Report	Geotechnical Engineering, dated September 20, 2010
Mount Analysis	EFI Global Project #049.01159 - 2075095, dated January 20, 2021
Tower Inventory	KGI Tower Loading Form Site #28229, dated June 21, 2021
Modifications	CENTEK Foundation Reinforcement Job #10001.000, dated November 9, 2010 Centek Modification Certification letter Project #10179.CO22, dated July 11, 2011

Analysis

The tower was analyzed using TNX tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed	116 mph (3-Second Gust) Vult
Basic Wind Speed w/Ice	50 mph (3-Second Gust) w/ 37257" radial ice concurrent
Code	ANSI/TIA-222-H / 2018 IBC / 2018 Connecticut State Building Code
Risk Category	II
Exposure Category	B
Topographic Category	1
Crest Height	0 ft
Spectral Response	$S_s = 0.179$, $S_1 = 0.055$
Site Class	D - Stiff Soil
Ground Elevation	169.4 ft

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact Semaan Engineering Solutions at 402-289-1888.

Existing and Reserved Equipment

This loading is included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	Equip.					
159.0	168.0	1	16 ft Whip	Pipe	(1) 7/8"	City of Windsor
169.0	169.0	3	QS66512-2	(3) T-Arms with Platform on (1) Modified 18 ft Pipe w/Face Frame	(2) 0.39" Fiber (4) 0.78" DC (6) 1 1/4"	ATT
		2	800-10965			
		1	800-10964			
		3	4449 B5/B12 RRU			
		3	8843 B2/B66A RRU			
		3	RRUS 32 B30			
		1	DC6-48-60-18-8C			
		1	DC6-48-60-18-8F			
157.0	157.0	12	BXA-70080/8CF	(1) Platform w/Rail	(12) 1 5/8" Stacked 6/6 (3) Hybrid Cable	Verizon
		12	RRUS A2 Module			
		6	RRH 3JR52709AA 2x60			
		3	RRH 4x30-4T4R B13			
		3	RRH 4x30-4T4R B25			
		12	10"x7"x2" TMA			
		3	OVP Junction Box			
146.0	147.0	3	APX16DWV-16DWVS-C-A20	(3) Sector Frame	(12) 1 5/8" Stacked 3/9	T-Mobile
		3	11"x6"x3.5" TMA			
		3	7"x6"x2.5" TMA			
132.0	-	-	-	Empty 14 ft Face Mount	-	-
126.5	126.5	1	16 ft Whip	(1) 6 ft Sidearm	(1) 7/8"	City of Windsor
107.0	107.0	1	16 ft Whip	(1) 6 ft Sidearm	(1) 7/8"	
47.5	52.0	1	10 ft Dipole	(1) 4 ft Sidearm	(1) 1/2"	Verizon
37.5	45.0	1	12 ft Whip	(1) 4 ft Sidearm	(1) 1/2"	City of Windsor

Equipment to be Removed

This loading is not included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	Equip.					
146.0	146.0	3	LNx-6515DS-A1M	-	(6) 1 5/8"	T-Mobile

Proposed Equipment

This loading is included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	Equip.					
146.0	147.0	3	APXVAALL24 43-U-NA20	-	(2) 1 1/4" Hybrid Cable	T-Mobile
		3	4449 B71/B85 RRU			

Install proposed coax anywhere on tower.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Legs	101%	Pass
Diagonals	89%	Pass
Horizontals	14%	Pass
Bolts	87%	Pass
Anchor Bolts	64%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Uplift (Kips)	197.3	25%
Axial (Kips)	234.4	29%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.



Standard Conditions

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

-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

-- Information from drawings in the possession of Semaan Engineering Solutions, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to Semaan Engineering Solutions Holdings and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and Semaan Engineering Solutions, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Semaan Engineering Solutions Holdings is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Feed Line (ATT)	163	DC6-48-60-18-8F (ATT)	157
Feed Line (ATT)	163	(4) BXA-70080/8CF w/8' Mount Pipe (Verizon)	157
16 ft Whip (City of Windsor)	159	Platform w/Rail (Verizon)	157
(4) BXA-70080/8CF w/8' Mount Pipe (Verizon)	157	Sector Frame (T-Mobile)	146
(4) BXA-70080/8CF w/8' Mount Pipe (Verizon)	157	APX16DWV-16DWVS-C-A20 w/6' Mount Pipe (T-Mobile)	146
(4) RRUS A2 Module (Verizon)	157	APX16DWV-16DWVS-C-A20 w/6' Mount Pipe (T-Mobile)	146
(4) RRUS A2 Module (Verizon)	157	APX16DWV-16DWVS-C-A20 w/6' Mount Pipe (T-Mobile)	146
(4) RRUS A2 Module (Verizon)	157	APX16DWV-16DWVS-C-A20 w/6' Mount Pipe (T-Mobile)	146
(2) RRH 3JR52709AA 2x60 (Verizon)	157	APXVAALL24_43-U-NA20 w/8' Mount Pipe (T-Mobile)	146
(2) RRH 3JR52709AA 2x60 (Verizon)	157	APXVAALL24_43-U-NA20 w/8' Mount Pipe (T-Mobile)	146
RRH 4x30-4T4R B13 (Verizon)	157	APXVAALL24_43-U-NA20 w/8' Mount Pipe (T-Mobile)	146
RRH 4x30-4T4R B13 (Verizon)	157	APXVAALL24_43-U-NA20 w/8' Mount Pipe (T-Mobile)	146
RRH 4x30-4T4R B13 (Verizon)	157	APXVAALL24_43-U-NA20 w/8' Mount Pipe (T-Mobile)	146
RRH 4x30-4T4R B25 (Verizon)	157	6'x2 1/2" Pipe Mount (T-Mobile)	146
RRH 4x30-4T4R B25 (Verizon)	157	6'x2 1/2" Pipe Mount (T-Mobile)	146
RRH 4x30-4T4R B25 (Verizon)	157	6'x2 1/2" Pipe Mount (T-Mobile)	146
(4) 10"x7"x2" TMA (Verizon)	157	4449 B71/B85 RRU (T-Mobile)	146
(4) 10"x7"x2" TMA (Verizon)	157	4449 B71/B85 RRU (T-Mobile)	146
(4) 10"x7"x2" TMA (Verizon)	157	4449 B71/B85 RRU (T-Mobile)	146
OVP Junction Box (Verizon)	157	11"x6"x3.5" TMA (T-Mobile)	146
OVP Junction Box (Verizon)	157	11"x6"x3.5" TMA (T-Mobile)	146
OVP Junction Box (Verizon)	157	11"x6"x3.5" TMA (T-Mobile)	146
Face Frame (ATT)	157	7"x6"x2.5" TMA (T-Mobile)	146
18 ft Pipe (ATT)	157	7"x6"x2.5" TMA (T-Mobile)	146
Modified Mount (ATT)	157	7"x6"x2.5" TMA (T-Mobile)	146
(3) T-Arms with Platform (ATT)	157	Sector Frame (T-Mobile)	146
800-10965 w/6' Mount Pipe (ATT)	157	Sector Frame (T-Mobile)	146
800-10965 w/6' Mount Pipe (ATT)	157	14 ft Face Mount	132
800-10964 w/6' Mount Pipe (ATT)	157	16 ft Whip (City of Windsor)	126.5
(3) QS66512-2 w/6' Mount Pipe (ATT)	157	6 ft Sidearm (City of Windsor)	126.5
6'x2 1/2" Pipe Mount (ATT)	157	6 ft Sidearm (City of Windsor)	107
6'x2 1/2" Pipe Mount (ATT)	157	16 ft Whip (City of Windsor)	107
6'x2 1/2" Pipe Mount (ATT)	157	4 ft Sidearm (Verizon)	47.5
(3) RRUS 32 B30 (ATT)	157	10 ft Dipole (Verizon)	47.5
(3) 4449 B5/B12 RRU (ATT)	157	4 ft Sidearm (City of Windsor)	37.5
(3) 8843 B2/B66A RRU (ATT)	157	12 ft Whip (City of Windsor)	37.5
DC6-48-60-18-8C (ATT)	157		

SYMBOL LIST

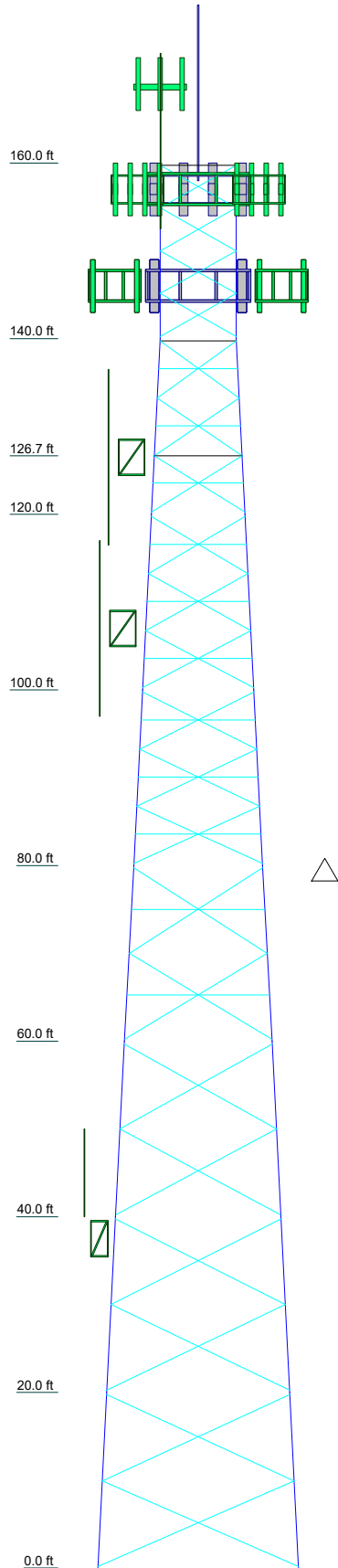
MARK	SIZE	MARK	SIZE
A	L3x3x3/16		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 116 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. CCISEismic Note: Seismic loads generated by CCISEismic 3.2.3
9. CCISEismic Note: Seismic calculations are in accordance with TIA-222-H



Section	T1	T2	T3	T4	T5	T6	T7	T8	T9
Legs	P2.5x.203<ERW>	P2.5x.276<ERW>	P2.5x.552<ERW>	P2.5x.552<ERW>	P3x.3<ERW>	P4x.337<ERW>	P5x.375<ERW>	ROHN 6 EHS<ERW>	
Diagonals	L1 3/4x1 3/4x3/16	L2x2x1/4	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x3/16	L3x3x3/16	L3x3x1/4	L3 1/2x3 1/2x1/4	L4x4x1/4	
Diagonal Grade									
Top Girts	L2x2x5/16	L2 1/2x2 1/2x3/16	L2x2x1/4	L2 1/2x2 1/2x3/16	L3x3x3/16	L3x3x1/4	L3 1/2x3 1/2x1/4	L4x4x1/4	
Sec. Horizontals	N.A.	L2x2x1/4	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x3/16	L3x3x3/16	L3x3x1/4	L3 1/2x3 1/2x1/4	L4x4x1/4	
Face Width (ft)	8.6458	9.9791	10.6458	12.6875	14.6979	16.7708	18.7708	20.8646	
# Panels @ (ft)	4 @ 4.875	2 @ 6.5415	1 @ 6.417	6 @ 6.5	2 @ 9.72917	2 @ 9.71875	2 @ 9.75	2 @ 9.80208	
Weight (K)	1.0	1.0	0.8	2.1	2.4	2.6	2.8	3.3	17.7

<p>Semaan Engineering Solutions 1047 N 205th Street Elkhorn, NE 68022 Phone: 402.289.1888 FAX:</p>	Job: 28229 Windsor		
	Project: REV06		
	Client: KGI	Drawn by: NathanW	App'd:
	Code: TIA-222-H	Date: 06/23/21	Scale: NTS
	Path: \\DMZ\SERVER011\Common\TNS files\28229\28229_REV06\28229_REV06.dwg		Dwg No. E-1

SYMBOL LIST

MARK	SIZE	MARK	SIZE
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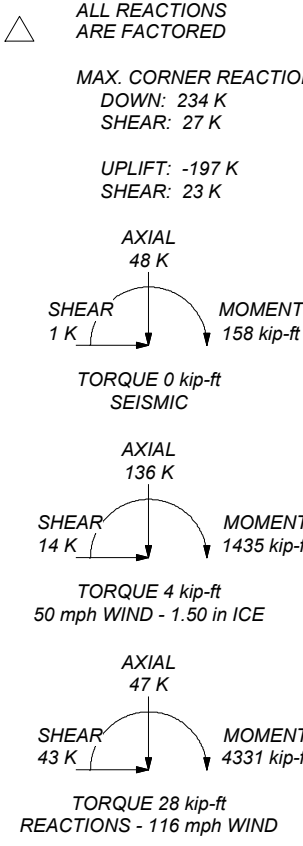
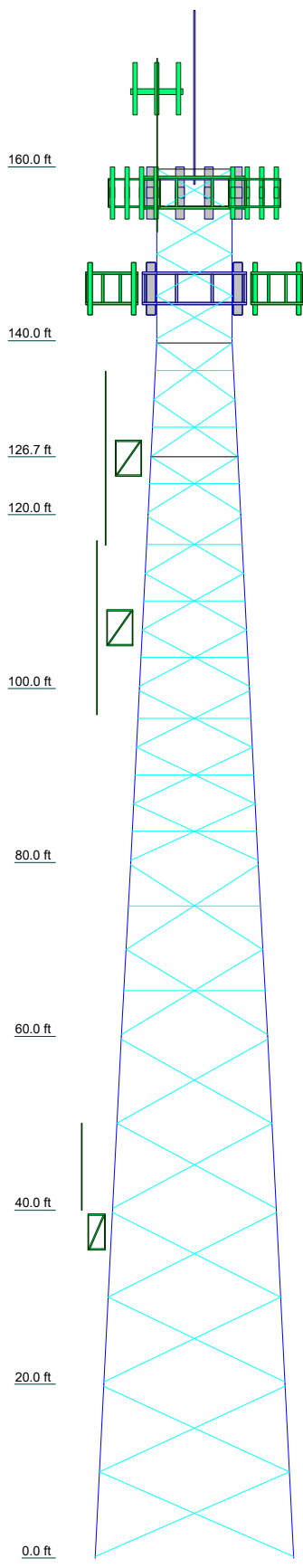
MATERIAL STRENGTH


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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
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4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. CCISeismic Note: Seismic loads generated by CCISeismic 3.2.3
9. CCISeismic Note: Seismic calculations are in accordance with TIA-222-H
10. TOWER RATING: 100.9%

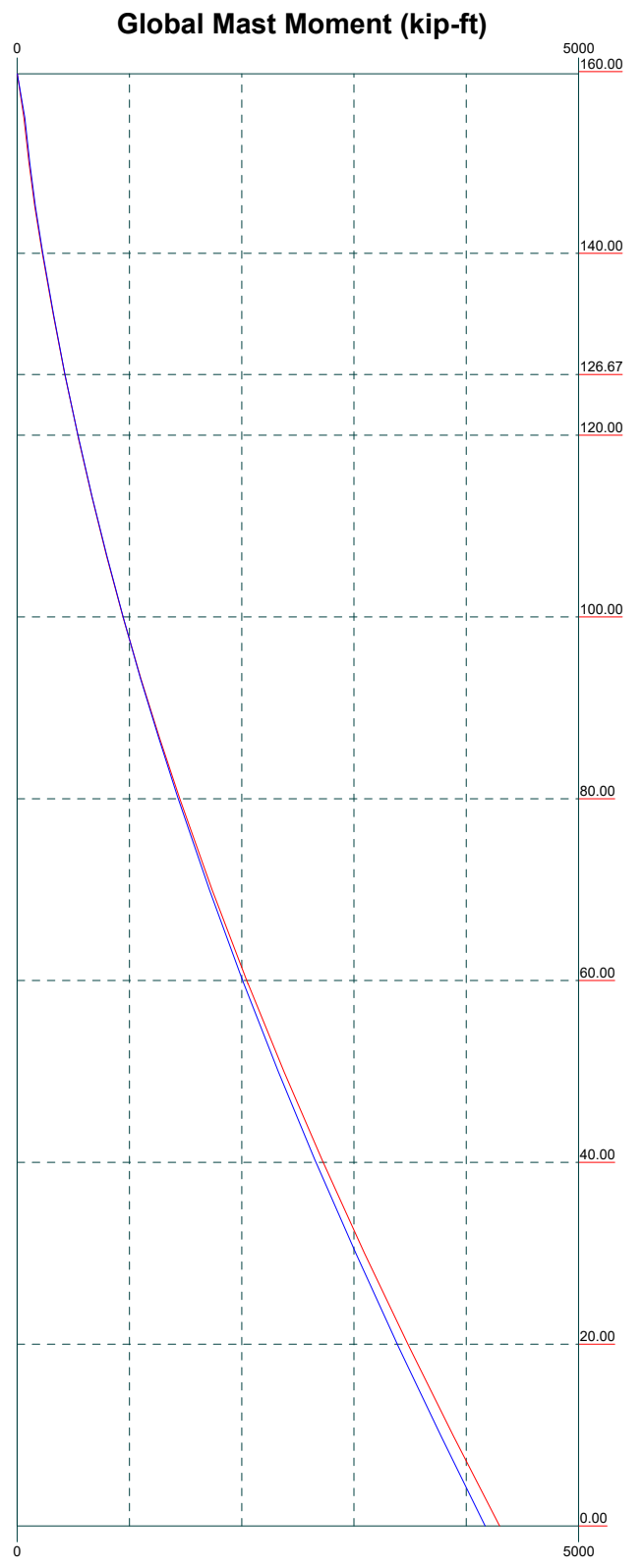
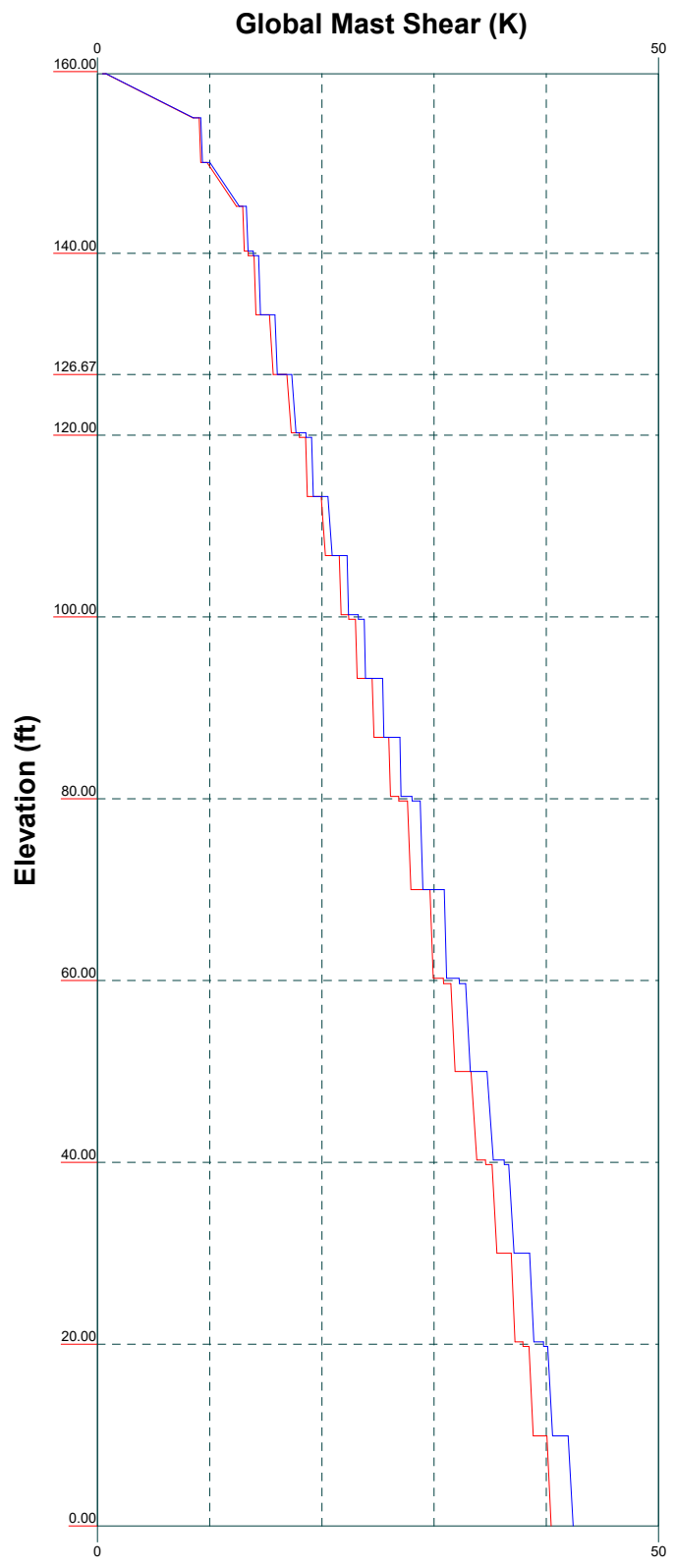
Section	T1	T2	T3	T4	T5	T6	T7	T8	T9
Legs	P2.5x.203<ERW>	P2.5x.276<ERW>	P2.5x.552<ERW>	P2.5x.3<ERW>	P4x.337<ERW>	P5x.375<ERW>	ROHN 6 EHS<ERW>		
Leg Grade	L1 3/4x1 3/4x3/16	L2x2x1/4	L2 1/2x2 1/2x3/16	L3x3x3/16	L3x3x1/4	L3 1/2x3 1/2x1/4	L4x4x1/4		
Diagonals									
Diagonal Grade									
Top Girts									
Sec. Horizontals	L2x2x5/16	L2x2x1/4	L2 1/2x2 1/2x3/16	L3x3x3/16	L3x3x1/4	L3 1/2x3 1/2x1/4	L4x4x1/4		
Face Width (ft)	N.A.	N.A.	10.6458	12.6875	14.6979	16.7708	18.7708	20.8646	
# Panels @ (ft)	4 @ 4.875	2 @ 6.5415	1 @ 6.417	6 @ 6.5	2 @ 9.72917	2 @ 9.71875	2 @ 9.75	2 @ 9.80208	
Weight (K)	1.0	1.0	0.8	2.1	2.4	2.6	2.8	3.3	17.7



 <p>Semaan Engineering Solutions 1047 N 205th Street Elkhorn, NE 68022 Phone: 402.289.1888 FAX:</p>	Job: 28229 Windsor		
	Project: REV06		
	Client: KGI	Drawn by: NathanW	App'd:
	Code: TIA-222-H	Date: 06/23/21	Scale: NTS
	Path: <small>\\DMZSESSERVER01\Common\THX_files\28229\28229_REV06\28229_REV06.dwg</small>		Dwg No. E-1

Vx Vz

Mx Mz

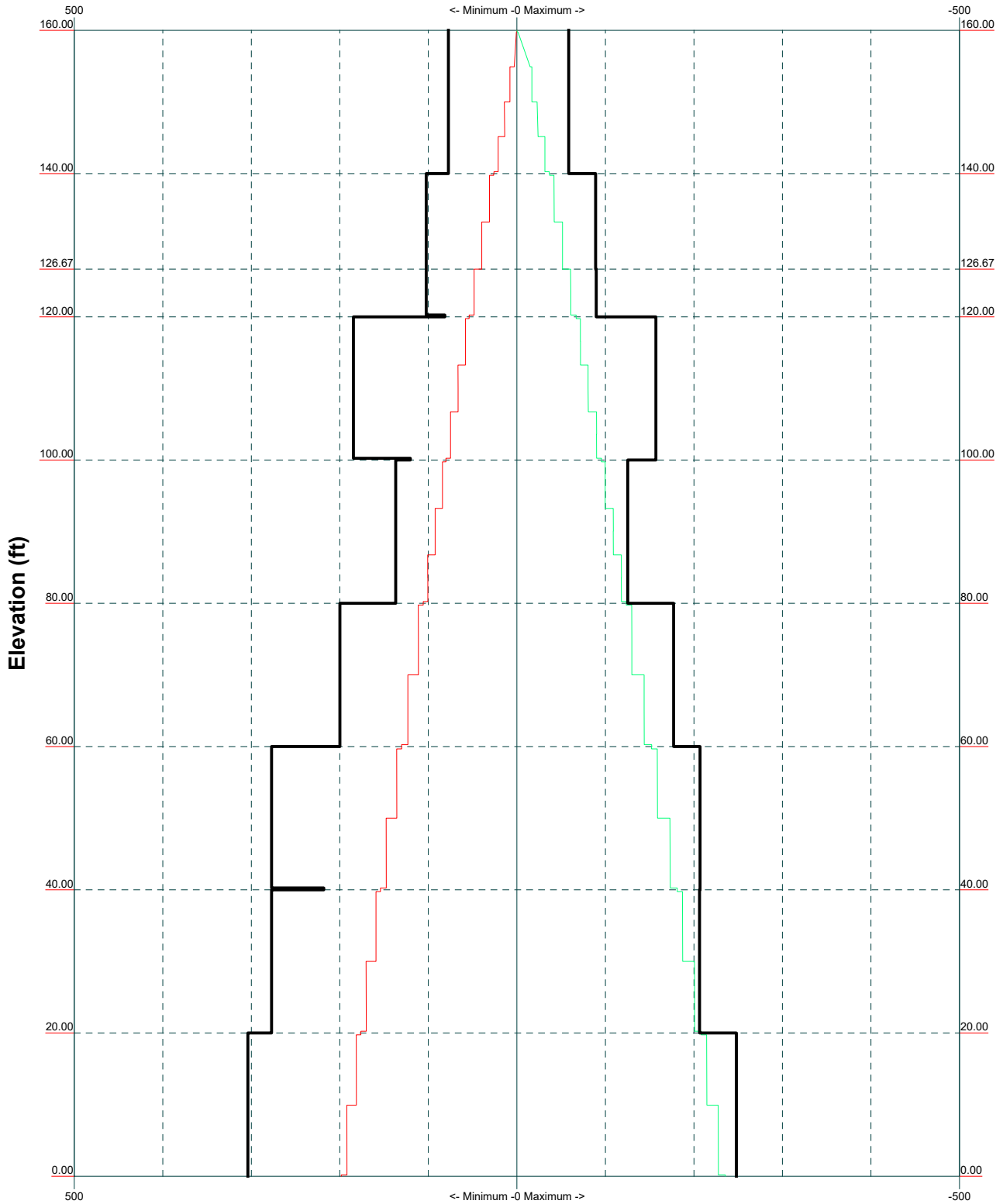



<p>Semaan Engineering Solutions 1047 N 205th Street Elkhorn, NE 68022 Phone: 402.289.1888 FAX:</p>	Job: 28229 Windsor		
	Project: REV06		
	Client: KGI	Drawn by: NathanW	App'd:
	Code: TIA-222-H	Date: 06/23/21	Scale: NTS
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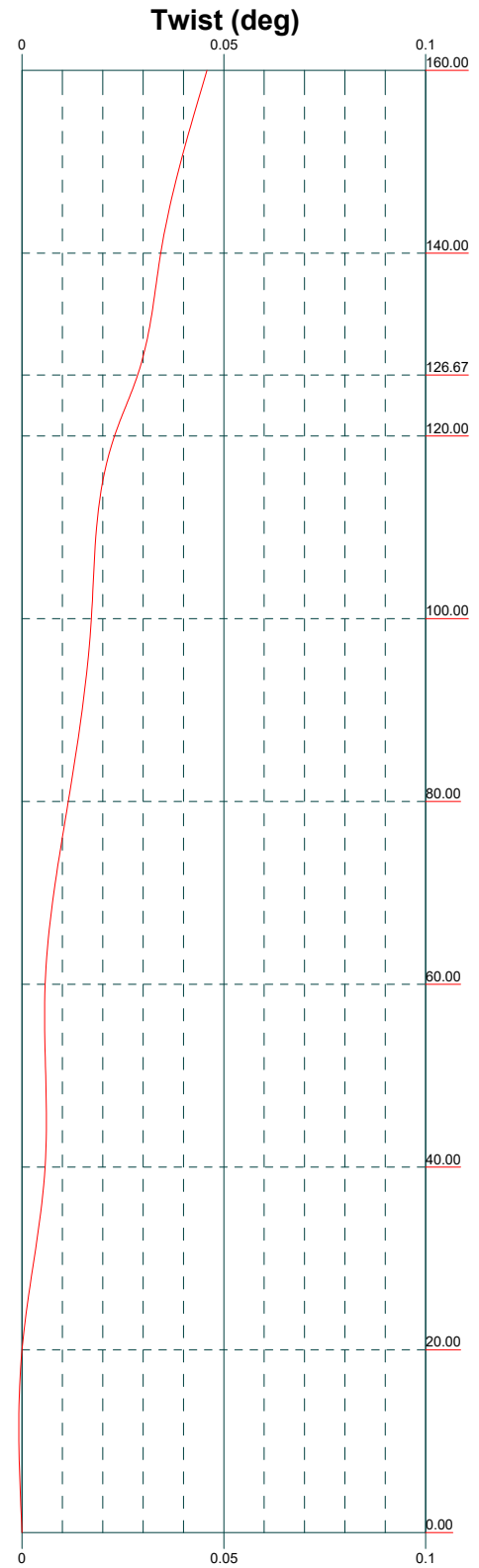
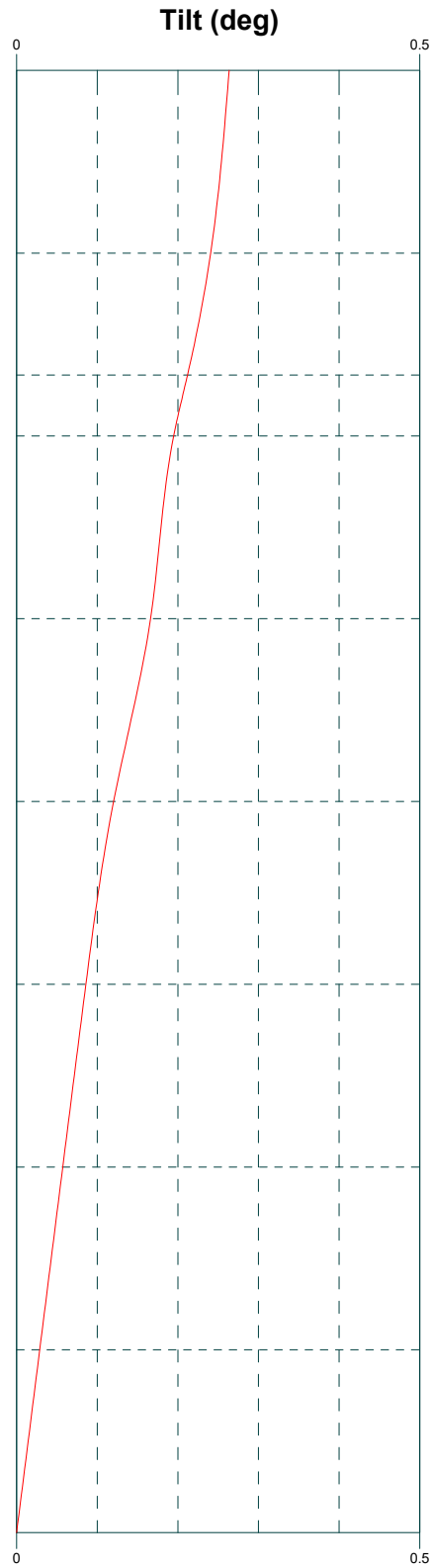
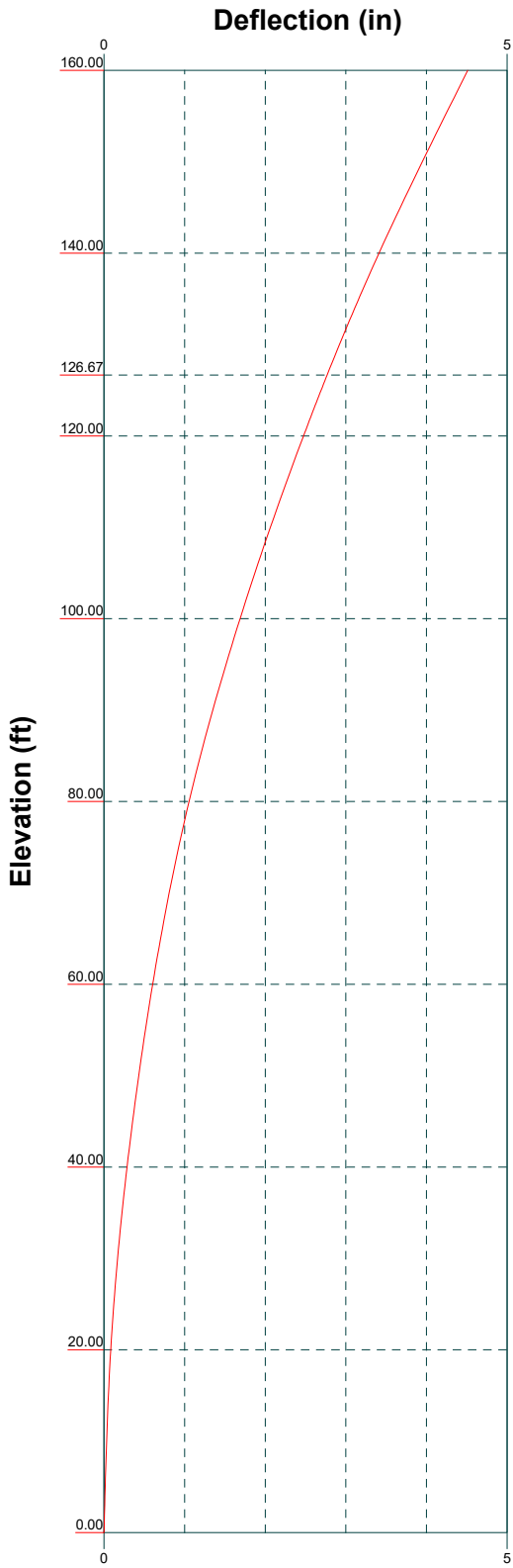
TIA-222-H - 116 mph/50 mph 1.50 in Ice Exposure B


Leg Capacity

Leg Compression (K)



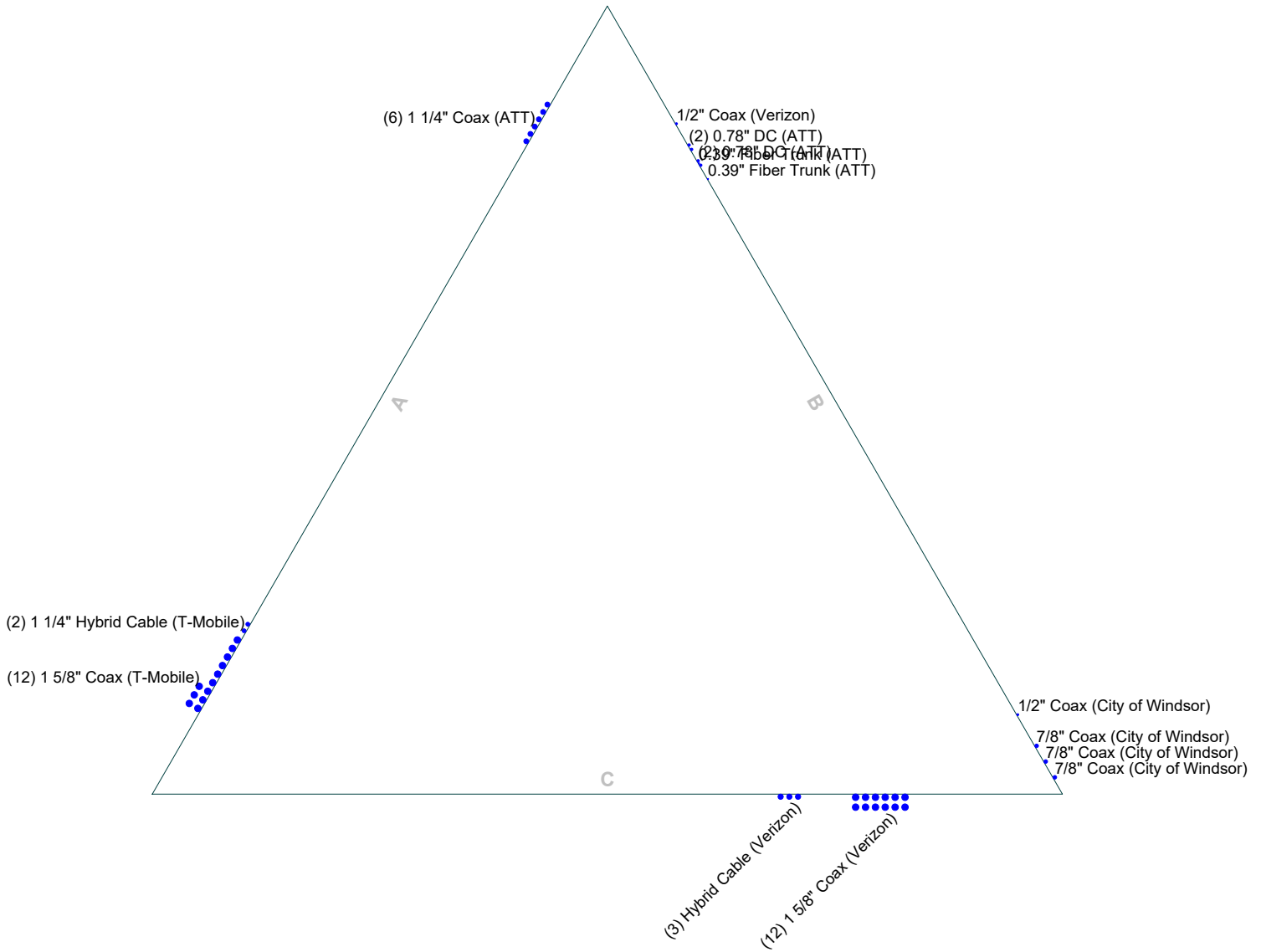
 <p>Semaan Engineering Solutions 1047 N 205th Street Elkhorn, NE 68022 Phone: 402.289.1888 FAX:</p>	Job: 28229_Windsor		
	Project: REV06		
	Client: KGI	Drawn by: NathanW	App'd:
	Code: TIA-222-H	Date: 06/23/21	Scale: NTS
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 <p>Semaan Engineering Solutions 1047 N 205th Street Elkhorn, NE 68022 Phone: 402.289.1888 FAX:</p>	Job: 28229_Windsor		
	Project: REV06		
	Client: KGI	Drawn by: NathanW	App'd:
	Code: TIA-222-H	Date: 06/23/21	Scale: NTS
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Feed Line Plan

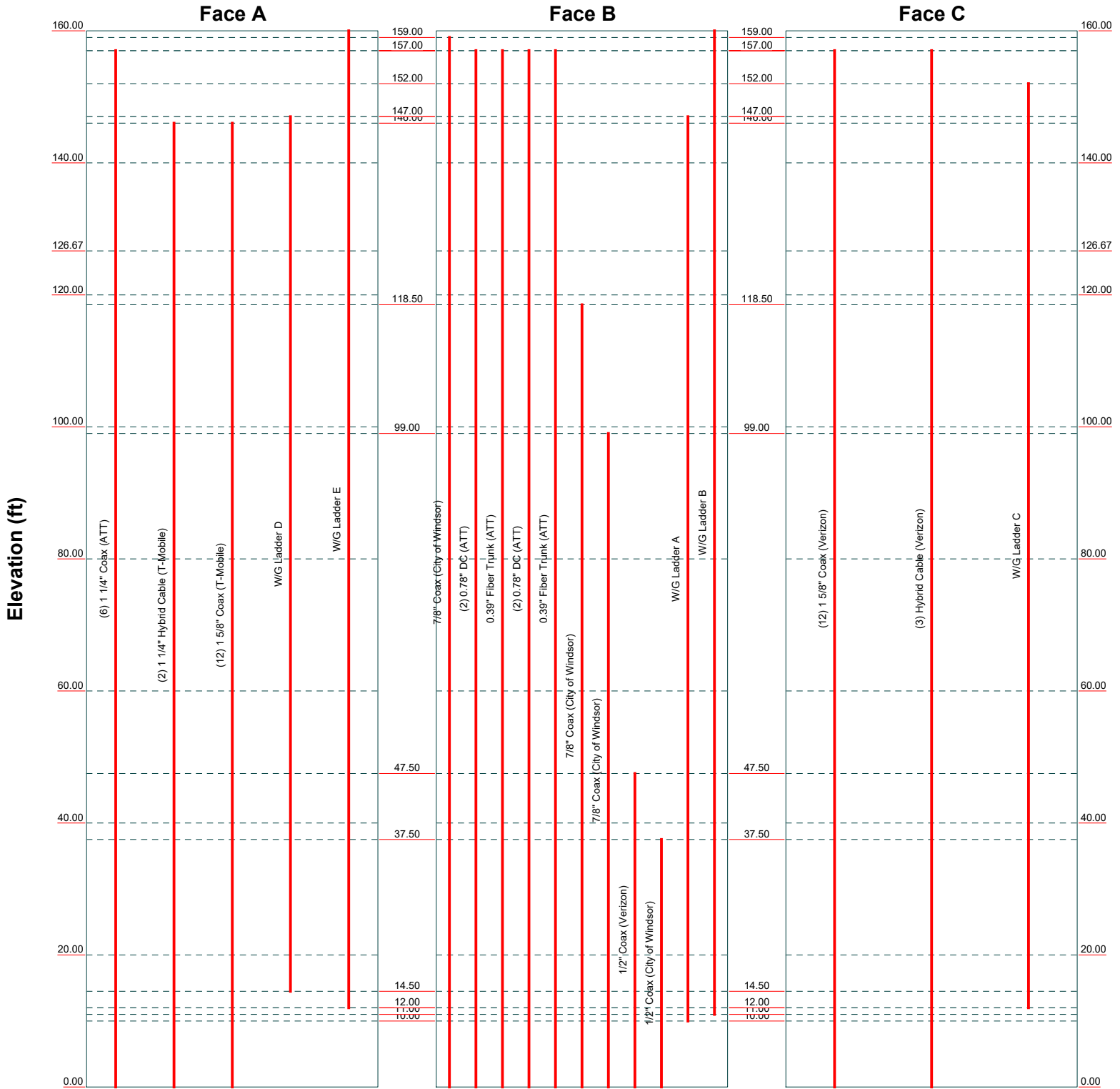
— Round
 — Flat
 — App In Face
 — App Out Face



	Semaan Engineering Solutions		Job: 28229_Windsor		
	1047 N 205th Street				
	Elkhorn, NE 68022				
	Phone: 402.289.1888				
	FAX:				
Project: REV06		Client: KGI		Drawn by: NathanW	App'd:
Code: TIA-222-H		Date: 06/23/21		Scale: NTS	
Path: \\DMZSESSERVER01\Common\TXN files\28229\28229_REV06\28229_REV06.dwg		Dwg No. E-7			

Feed Line Distribution Chart 0' - 160'

— Round
 — Flat
 — App In Face
 — App Out Face
 — Truss Leg



<p>Semaan Engineering Solutions 1047 N 205th Street Elkhorn, NE 68022 Phone: 402.289.1888 FAX:</p>	Job: 28229_Windsor		
	Project: REV06		
	Client: KGI	Drawn by: NathanW	App'd:
	Code: TIA-222-H	Date: 06/23/21	Scale: NTS
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tnxTower Semaan Engineering Solutions 1047 N 205th Street Elkhorn, NE 68022 Phone: 402.289.1888 FAX:	Job 28229_Windsor	Page 1 of 53
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	Client KGI	Designed by NathanW

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 160.00 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 8.65 ft at the top and 22.86 ft at the base.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

Tower is located in Hartford County, Connecticut.

Tower base elevation above sea level: 169.40 ft.

Basic wind speed of 116 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 1.50 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.

CCISEismic Note: Seismic loads generated by CCISEismic 3.2.3.

CCISEismic Note: Seismic calculations are in accordance with TIA-222-H.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

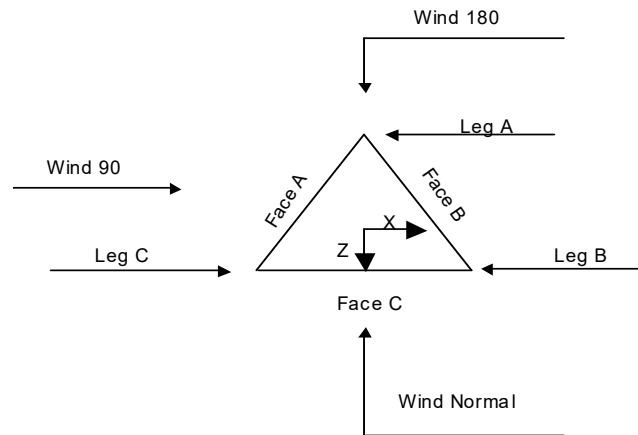
Stress ratio used in tower member design is 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

- | | | |
|--|---|---|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section √ Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area √ Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder √ Ignore KL/ry For 60 Deg. Angle Legs | <ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules √ Calculate Redundant Bracing Forces Ignore Redundant Members in FEA √ SR Leg Bolts Resist Compression √ All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque √ Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <li style="text-align: center;">Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known |
|--|---|---|

tnxTower Semaan Engineering Solutions 1047 N 205th Street Elkhorn, NE 68022 Phone: 402.289.1888 FAX:	Job 28229_Windsor	Page 2 of 53
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	Client KGI	Designed by NathanW



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	160.00-140.00			8.65	1	20.00
T2	140.00-126.67			8.65	1	13.33
T3	126.67-120.00			9.98	1	6.67
T4	120.00-100.00			10.65	1	20.00
T5	100.00-80.00			12.69	1	20.00
T6	80.00-60.00			14.70	1	20.00
T7	60.00-40.00			16.77	1	20.00
T8	40.00-20.00			18.77	1	20.00
T9	20.00-0.00			20.86	1	20.00

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T1	160.00-140.00	4.88	X Brace	No	No	3.00	3.00
T2	140.00-126.67	6.54	X Brace	No	Yes	3.00	0.00
T3	126.67-120.00	6.42	X Brace	No	Yes	0.00	3.00
T4	120.00-100.00	6.50	X Brace	No	Yes	3.00	3.00
T5	100.00-80.00	6.50	X Brace	No	Yes	3.00	3.00
T6	80.00-60.00	9.73	X Brace	No	Yes	3.25	3.25

tnxTower Semaan Engineering Solutions 1047 N 205th Street Elkhorn, NE 68022 Phone: 402.289.1888 FAX:	Job	28229_Windsor	Page	3 of 53
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	Client	KGI	Designed by	NathanW

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
T7	60.00-40.00	9.72	X Brace	No	No	3.75	3.00
T8	40.00-20.00	9.75	X Brace	No	No	3.00	3.00
T9	20.00-0.00	9.80	X Brace	No	No	3.00	1.75

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 160.00-140.00	Pipe	P2.5x.203<ERW>	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 140.00-126.67	Pipe	P2.5x.276<ERW>	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T3 126.67-120.00	Pipe	P2.5x.276<ERW>	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T4 120.00-100.00	Pipe	P2.5x.552<ERW>	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 100.00-80.00	Pipe	P3x.3<ERW>	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T6 80.00-60.00	Pipe	P4x.337<ERW>	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T7 60.00-40.00	Pipe	P5x.375<ERW>	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T8 40.00-20.00	Pipe	P5x.375<ERW>	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T9 20.00-0.00	Pipe	ROHN 6 EHS<ERW>	A572-50 (50 ksi)	Equal Angle	L4x4x1/4	A36 (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 160.00-140.00	Equal Angle	L2x2x5/16	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T2 140.00-126.67	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T3 126.67-120.00	Equal Angle	L3x3x3/16	A36 (36 ksi)	Flat Bar		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
T2 140.00-126.67	Equal Angle	L2x2x1/4	A36	Solid Round		A572-50

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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
T5 100.00-80.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T6 80.00-60.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T7 60.00-40.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T8 40.00-20.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T9 20.00-0.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 160.00-140.00	Flange	0.63	4	0.63	1	0.63	1	0.63	0	0.63	0	0.63	0	0.63	0
T2 140.00-126.67	Flange	0.63	0	0.63	1	0.63	1	0.63	0	0.63	0	0.63	0	0.63	2
T3 126.67-120.00	Flange	0.63	4	0.63	1	0.63	1	0.63	0	0.63	0	0.63	0	0.63	2
T4 120.00-100.00	Flange	0.75	4	0.63	1	0.63	0	0.63	0	0.63	0	0.63	0	0.75	2
T5 100.00-80.00	Flange	0.88	4	0.63	1	0.63	0	0.63	0	0.63	0	0.63	0	0.75	2
T6 80.00-60.00	Flange	1.00	4	0.63	1	0.63	0	0.63	0	0.63	0	0.63	0	0.75	2
T7 60.00-40.00	Flange	1.00	4	0.63	1	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0
T8 40.00-20.00	Flange	1.00	6	0.63	1	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0
T9 20.00-0.00	Flange	0.75	0	0.63	1	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0

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
7/8" Coax (City of Windsor)	B	No	No	Ar (CaAa)	159.00 - 0.00	0.00	0.44	1	1	1.00	1.11		0.520
1 1/4" Coax (ATT)	A	No	No	Ar (CaAa)	157.00 - 0.00	0.00	0.35	6	6	1.00	1.55		0.660
0.78" DC (ATT)	B	No	No	Ar (CaAa)	157.00 - 0.00	0.00	-0.3	2	2	0.75 1.00	0.78		0.590
0.39" Fiber Trunk	B	No	No	Ar (CaAa)	157.00 - 0.00	0.00	-0.3	1	1	1.00	0.39		0.060

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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
(ATT) 0.78" DC	B	No	No	Ar (CaAa)	157.00 - 0.00	0.00	-0.32	2	2	0.75	0.78		0.590
(ATT) 0.39" Fiber Trunk	B	No	No	Ar (CaAa)	157.00 - 0.00	0.00	-0.28	1	1	1.00	0.39		0.060
(ATT) 1 5/8" Coax (Verizon)	C	No	No	Ar (CaAa)	157.00 - 0.00	0.00	-0.3	12	6	1.00	1.98		1.040
Hybrid Cable (Verizon)	C	No	No	Ar (CaAa)	157.00 - 0.00	0.00	-0.2	3	3	1.00	1.63		1.780
1 1/4" Hybrid Cable (T-Mobile)	A	No	No	Ar (CaAa)	146.00 - 0.00	0.00	-0.29	2	2	1.00	1.25		0.950
1 5/8" Coax (T-Mobile)	A	No	No	Ar (CaAa)	146.00 - 0.00	0.00	-0.35	12	9	1.00	1.98		1.040
7/8" Coax (City of Windsor)	B	No	No	Ar (CaAa)	118.50 - 0.00	0.00	0.48	1	1	1.00	1.11		0.520
7/8" Coax (City of Windsor)	B	No	No	Ar (CaAa)	99.00 - 0.00	0.00	0.46	1	1	1.00	1.11		0.520
1/2" Coax (Verizon)	B	No	No	Ar (CaAa)	47.50 - 0.00	0.00	-0.35	1	1	1.00	0.65		0.160
1/2" Coax (City of Windsor)	B	No	No	Ar (CaAa)	37.50 - 0.00	0.00	0.4	1	1	1.00	0.65		0.160
W/G Ladder A	B	No	No	Af (CaAa)	147.00 - 10.00	0.00	-0.35	1	1	1.00	3.50		6.000
W/G Ladder B	B	No	No	Af (CaAa)	160.00 - 11.00	0.00	0.45	1	1	1.00	3.00		6.000
W/G Ladder C	C	No	No	Af (CaAa)	152.00 - 12.00	0.00	-0.45	1	1	1.00	3.00		6.000
W/G Ladder D	A	No	No	Af (CaAa)	147.00 - 14.50	0.00	-0.35	1	1	1.00	3.00		6.000
W/G Ladder E	A	No	No	Af (CaAa)	160.00 - 12.00	0.00	0.35	1	1	1.00	3.00		6.000

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
T1	160.00-140.00	A	0.000	0.000	45.066	0.000	0.32
		B	0.000	0.000	22.822	0.000	0.21
		C	0.000	0.000	54.679	0.000	0.37
T2	140.00-126.67	A	0.000	0.000	60.745	0.000	0.40
		B	0.000	0.000	21.124	0.000	0.20
		C	0.000	0.000	44.846	0.000	0.32
T3	126.67-120.00	A	0.000	0.000	30.375	0.000	0.20
		B	0.000	0.000	10.563	0.000	0.10
		C	0.000	0.000	22.424	0.000	0.16
T4	120.00-100.00	A	0.000	0.000	91.120	0.000	0.61
		B	0.000	0.000	33.740	0.000	0.31
		C	0.000	0.000	67.270	0.000	0.48
T5	100.00-80.00	A	0.000	0.000	91.120	0.000	0.61
		B	0.000	0.000	36.016	0.000	0.32

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Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
T6	80.00-60.00	C	0.000	0.000	67.270	0.000	0.48
		A	0.000	0.000	91.120	0.000	0.61
		B	0.000	0.000	36.127	0.000	0.32
T7	60.00-40.00	C	0.000	0.000	67.270	0.000	0.48
		A	0.000	0.000	91.120	0.000	0.61
		B	0.000	0.000	36.614	0.000	0.32
T8	40.00-20.00	C	0.000	0.000	67.270	0.000	0.48
		A	0.000	0.000	91.120	0.000	0.61
		B	0.000	0.000	38.564	0.000	0.33
T9	20.00-0.00	C	0.000	0.000	67.270	0.000	0.48
		A	0.000	0.000	77.870	0.000	0.45
		B	0.000	0.000	27.393	0.000	0.20
		C	0.000	0.000	61.270	0.000	0.40

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} In Face ft ²	C_{AA} Out Face ft ²	Weight K
T1	160.00-140.00	A	1.745	0.000	0.000	91.430	0.000	1.55
		B		0.000	0.000	76.054	0.000	1.09
		C		0.000	0.000	81.615	0.000	1.65
T2	140.00-126.67	A	1.725	0.000	0.000	118.001	0.000	2.01
		B		0.000	0.000	63.779	0.000	0.93
		C		0.000	0.000	67.105	0.000	1.36
T3	126.67-120.00	A	1.711	0.000	0.000	58.883	0.000	1.00
		B		0.000	0.000	31.740	0.000	0.46
		C		0.000	0.000	33.478	0.000	0.67
T4	120.00-100.00	A	1.692	0.000	0.000	176.110	0.000	2.97
		B		0.000	0.000	102.868	0.000	1.49
		C		0.000	0.000	100.095	0.000	2.01
T5	100.00-80.00	A	1.658	0.000	0.000	175.193	0.000	2.92
		B		0.000	0.000	110.676	0.000	1.58
		C		0.000	0.000	99.516	0.000	1.98
T6	80.00-60.00	A	1.617	0.000	0.000	174.071	0.000	2.86
		B		0.000	0.000	109.392	0.000	1.54
		C		0.000	0.000	98.808	0.000	1.95
T7	60.00-40.00	A	1.564	0.000	0.000	172.615	0.000	2.79
		B		0.000	0.000	109.979	0.000	1.51
		C		0.000	0.000	97.889	0.000	1.91
T8	40.00-20.00	A	1.486	0.000	0.000	170.497	0.000	2.69
		B		0.000	0.000	117.461	0.000	1.54
		C		0.000	0.000	96.553	0.000	1.84
T9	20.00-0.00	A	1.331	0.000	0.000	145.998	0.000	2.09
		B		0.000	0.000	93.724	0.000	1.06
		C		0.000	0.000	84.712	0.000	1.55

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
T1	160.00-140.00	7.99	-1.84	8.05	-4.03
T2	140.00-126.67	3.13	0.14	3.80	-2.44

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Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
T3	126.67-120.00	3.18	0.16	3.94	-2.52
T4	120.00-100.00	4.10	0.48	5.61	-2.18
T5	100.00-80.00	4.74	0.82	7.24	-1.60
T6	80.00-60.00	5.76	1.01	8.66	-1.81
T7	60.00-40.00	6.62	1.01	9.92	-2.56
T8	40.00-20.00	7.48	1.00	11.86	-2.95
T9	20.00-0.00	6.52	2.10	11.42	-2.27

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	1	7/8" Coax	140.00 - 159.00	0.6000	0.6000
T1	2	1 1/4" Coax	140.00 - 157.00	0.6000	0.6000
T1	3	0.78" DC	140.00 - 157.00	0.6000	0.6000
T1	4	0.39" Fiber Trunk	140.00 - 157.00	0.6000	0.6000
T1	5	0.78" DC	140.00 - 157.00	0.6000	0.6000
T1	6	0.39" Fiber Trunk	140.00 - 157.00	0.6000	0.6000
T1	7	1 5/8" Coax	140.00 - 157.00	0.6000	0.6000
T1	8	Hybrid Cable	140.00 - 157.00	0.6000	0.6000
T1	9	1 1/4" Hybrid Cable	140.00 - 146.00	0.6000	0.6000
T1	10	1 5/8" Coax	140.00 - 146.00	0.6000	0.6000
T1	15	W/G Ladder A	140.00 - 147.00	0.6000	0.6000
T1	16	W/G Ladder B	140.00 - 160.00	0.6000	0.6000
T1	17	W/G Ladder C	140.00 - 152.00	0.6000	0.6000
T1	18	W/G Ladder D	140.00 - 147.00	0.6000	0.6000
T1	19	W/G Ladder E	140.00 - 160.00	0.6000	0.6000
T2	1	7/8" Coax	126.67 - 140.00	0.6000	0.6000
T2	2	1 1/4" Coax	126.67 - 140.00	0.6000	0.6000
T2	3	0.78" DC	126.67 - 140.00	0.6000	0.6000
T2	4	0.39" Fiber Trunk	126.67 - 140.00	0.6000	0.6000
T2	5	0.78" DC	126.67 - 140.00	0.6000	0.6000
T2	6	0.39" Fiber Trunk	126.67 - 140.00	0.6000	0.6000
T2	7	1 5/8" Coax	126.67 -	0.6000	0.6000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	8	Hybrid Cable	140.00 126.67 - 140.00	0.6000	0.6000
T2	9	1 1/4" Hybrid Cable	126.67 - 140.00	0.6000	0.6000
T2	10	1 5/8" Coax	126.67 - 140.00	0.6000	0.6000
T2	15	W/G Ladder A	126.67 - 140.00	0.6000	0.6000
T2	16	W/G Ladder B	126.67 - 140.00	0.6000	0.6000
T2	17	W/G Ladder C	126.67 - 140.00	0.6000	0.6000
T2	18	W/G Ladder D	126.67 - 140.00	0.6000	0.6000
T2	19	W/G Ladder E	126.67 - 140.00	0.6000	0.6000
T3	1	7/8" Coax	120.00 - 126.67	0.6000	0.6000
T3	2	1 1/4" Coax	120.00 - 126.67	0.6000	0.6000
T3	3	0.78" DC	120.00 - 126.67	0.6000	0.6000
T3	4	0.39" Fiber Trunk	120.00 - 126.67	0.6000	0.6000
T3	5	0.78" DC	120.00 - 126.67	0.6000	0.6000
T3	6	0.39" Fiber Trunk	120.00 - 126.67	0.6000	0.6000
T3	7	1 5/8" Coax	120.00 - 126.67	0.6000	0.6000
T3	8	Hybrid Cable	120.00 - 126.67	0.6000	0.6000
T3	9	1 1/4" Hybrid Cable	120.00 - 126.67	0.6000	0.6000
T3	10	1 5/8" Coax	120.00 - 126.67	0.6000	0.6000
T3	15	W/G Ladder A	120.00 - 126.67	0.6000	0.6000
T3	16	W/G Ladder B	120.00 - 126.67	0.6000	0.6000
T3	17	W/G Ladder C	120.00 - 126.67	0.6000	0.6000
T3	18	W/G Ladder D	120.00 - 126.67	0.6000	0.6000
T3	19	W/G Ladder E	120.00 - 126.67	0.6000	0.6000
T4	1	7/8" Coax	100.00 - 120.00	0.6000	0.6000
T4	2	1 1/4" Coax	100.00 - 120.00	0.6000	0.6000
T4	3	0.78" DC	100.00 - 120.00	0.6000	0.6000
T4	4	0.39" Fiber Trunk	100.00 - 120.00	0.6000	0.6000
T4	5	0.78" DC	100.00 - 120.00	0.6000	0.6000
T4	6	0.39" Fiber Trunk	100.00 - 120.00	0.6000	0.6000
T4	7	1 5/8" Coax	100.00 - 120.00	0.6000	0.6000
T4	8	Hybrid Cable	100.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
			120.00		
T4	9	1 1/4" Hybrid Cable	100.00 - 120.00	0.6000	0.6000
T4	10	1 5/8" Coax	100.00 - 120.00	0.6000	0.6000
T4	11	7/8" Coax	100.00 - 118.50	0.6000	0.6000
T4	15	W/G Ladder A	100.00 - 120.00	0.6000	0.6000
T4	16	W/G Ladder B	100.00 - 120.00	0.6000	0.6000
T4	17	W/G Ladder C	100.00 - 120.00	0.6000	0.6000
T4	18	W/G Ladder D	100.00 - 120.00	0.6000	0.6000
T4	19	W/G Ladder E	100.00 - 120.00	0.6000	0.6000
T5	1	7/8" Coax	80.00 - 100.00	0.6000	0.6000
T5	2	1 1/4" Coax	80.00 - 100.00	0.6000	0.6000
T5	3	0.78" DC	80.00 - 100.00	0.6000	0.6000
T5	4	0.39" Fiber Trunk	80.00 - 100.00	0.6000	0.6000
T5	5	0.78" DC	80.00 - 100.00	0.6000	0.6000
T5	6	0.39" Fiber Trunk	80.00 - 100.00	0.6000	0.6000
T5	7	1 5/8" Coax	80.00 - 100.00	0.6000	0.6000
T5	8	Hybrid Cable	80.00 - 100.00	0.6000	0.6000
T5	9	1 1/4" Hybrid Cable	80.00 - 100.00	0.6000	0.6000
T5	10	1 5/8" Coax	80.00 - 100.00	0.6000	0.6000
T5	11	7/8" Coax	80.00 - 100.00	0.6000	0.6000
T5	12	7/8" Coax	80.00 - 99.00	0.6000	0.6000
T5	15	W/G Ladder A	80.00 - 100.00	0.6000	0.6000
T5	16	W/G Ladder B	80.00 - 100.00	0.6000	0.6000
T5	17	W/G Ladder C	80.00 - 100.00	0.6000	0.6000
T5	18	W/G Ladder D	80.00 - 100.00	0.6000	0.6000
T5	19	W/G Ladder E	80.00 - 100.00	0.6000	0.6000
T6	1	7/8" Coax	60.00 - 80.00	0.6000	0.6000
T6	2	1 1/4" Coax	60.00 - 80.00	0.6000	0.6000
T6	3	0.78" DC	60.00 - 80.00	0.6000	0.6000
T6	4	0.39" Fiber Trunk	60.00 - 80.00	0.6000	0.6000
T6	5	0.78" DC	60.00 - 80.00	0.6000	0.6000
T6	6	0.39" Fiber Trunk	60.00 - 80.00	0.6000	0.6000
T6	7	1 5/8" Coax	60.00 - 80.00	0.6000	0.6000
T6	8	Hybrid Cable	60.00 - 80.00	0.6000	0.6000
T6	9	1 1/4" Hybrid Cable	60.00 - 80.00	0.6000	0.6000
T6	10	1 5/8" Coax	60.00 - 80.00	0.6000	0.6000
T6	11	7/8" Coax	60.00 - 80.00	0.6000	0.6000
T6	12	7/8" Coax	60.00 - 80.00	0.6000	0.6000
T6	15	W/G Ladder A	60.00 - 80.00	0.6000	0.6000
T6	16	W/G Ladder B	60.00 - 80.00	0.6000	0.6000
T6	17	W/G Ladder C	60.00 - 80.00	0.6000	0.6000
T6	18	W/G Ladder D	60.00 - 80.00	0.6000	0.6000
T6	19	W/G Ladder E	60.00 - 80.00	0.6000	0.6000
T7	1	7/8" Coax	40.00 - 60.00	0.6000	0.6000
T7	2	1 1/4" Coax	40.00 - 60.00	0.6000	0.6000
T7	3	0.78" DC	40.00 - 60.00	0.6000	0.6000
T7	4	0.39" Fiber Trunk	40.00 - 60.00	0.6000	0.6000
T7	5	0.78" DC	40.00 - 60.00	0.6000	0.6000
T7	6	0.39" Fiber Trunk	40.00 - 60.00	0.6000	0.6000
T7	7	1 5/8" Coax	40.00 - 60.00	0.6000	0.6000
T7	8	Hybrid Cable	40.00 - 60.00	0.6000	0.6000
T7	9	1 1/4" Hybrid Cable	40.00 - 60.00	0.6000	0.6000
T7	10	1 5/8" Coax	40.00 - 60.00	0.6000	0.6000
T7	11	7/8" Coax	40.00 - 60.00	0.6000	0.6000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T7	12	7/8" Coax	40.00 - 60.00	0.6000	0.6000
T7	13	1/2" Coax	40.00 - 47.50	0.6000	0.6000
T7	15	W/G Ladder A	40.00 - 60.00	0.6000	0.6000
T7	16	W/G Ladder B	40.00 - 60.00	0.6000	0.6000
T7	17	W/G Ladder C	40.00 - 60.00	0.6000	0.6000
T7	18	W/G Ladder D	40.00 - 60.00	0.6000	0.6000
T7	19	W/G Ladder E	40.00 - 60.00	0.6000	0.6000
T8	1	7/8" Coax	20.00 - 40.00	0.6000	0.6000
T8	2	1 1/4" Coax	20.00 - 40.00	0.6000	0.6000
T8	3	0.78" DC	20.00 - 40.00	0.6000	0.6000
T8	4	0.39" Fiber Trunk	20.00 - 40.00	0.6000	0.6000
T8	5	0.78" DC	20.00 - 40.00	0.6000	0.6000
T8	6	0.39" Fiber Trunk	20.00 - 40.00	0.6000	0.6000
T8	7	1 5/8" Coax	20.00 - 40.00	0.6000	0.6000
T8	8	Hybrid Cable	20.00 - 40.00	0.6000	0.6000
T8	9	1 1/4" Hybrid Cable	20.00 - 40.00	0.6000	0.6000
T8	10	1 5/8" Coax	20.00 - 40.00	0.6000	0.6000
T8	11	7/8" Coax	20.00 - 40.00	0.6000	0.6000
T8	12	7/8" Coax	20.00 - 40.00	0.6000	0.6000
T8	13	1/2" Coax	20.00 - 40.00	0.6000	0.6000
T8	14	1/2" Coax	20.00 - 37.50	0.6000	0.6000
T8	15	W/G Ladder A	20.00 - 40.00	0.6000	0.6000
T8	16	W/G Ladder B	20.00 - 40.00	0.6000	0.6000
T8	17	W/G Ladder C	20.00 - 40.00	0.6000	0.6000
T8	18	W/G Ladder D	20.00 - 40.00	0.6000	0.6000
T8	19	W/G Ladder E	20.00 - 40.00	0.6000	0.6000
T9	1	7/8" Coax	0.00 - 20.00	0.6000	0.6000
T9	2	1 1/4" Coax	0.00 - 20.00	0.6000	0.6000
T9	3	0.78" DC	0.00 - 20.00	0.6000	0.6000
T9	4	0.39" Fiber Trunk	0.00 - 20.00	0.6000	0.6000
T9	5	0.78" DC	0.00 - 20.00	0.6000	0.6000
T9	6	0.39" Fiber Trunk	0.00 - 20.00	0.6000	0.6000
T9	7	1 5/8" Coax	0.00 - 20.00	0.6000	0.6000
T9	8	Hybrid Cable	0.00 - 20.00	0.6000	0.6000
T9	9	1 1/4" Hybrid Cable	0.00 - 20.00	0.6000	0.6000
T9	10	1 5/8" Coax	0.00 - 20.00	0.6000	0.6000
T9	11	7/8" Coax	0.00 - 20.00	0.6000	0.6000
T9	12	7/8" Coax	0.00 - 20.00	0.6000	0.6000
T9	13	1/2" Coax	0.00 - 20.00	0.6000	0.6000
T9	14	1/2" Coax	0.00 - 20.00	0.6000	0.6000
T9	15	W/G Ladder A	10.00 - 20.00	0.6000	0.6000
T9	16	W/G Ladder B	11.00 - 20.00	0.6000	0.6000
T9	17	W/G Ladder C	12.00 - 20.00	0.6000	0.6000
T9	18	W/G Ladder D	14.50 - 20.00	0.6000	0.6000
T9	19	W/G Ladder E	12.00 - 20.00	0.6000	0.6000

User Defined Loads - Seismic

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
CCISeismic Tower Section 1	150.00	0.000	0.000	0.02	0.00	0.00	0.05
CCISeismic Tower Section 2	133.33	0.000	0.000	0.02	0.00	0.00	0.04
CCISeismic Tower Section 3	123.33	0.000	0.000	0.01	0.00	0.00	0.02

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	Client	KGI	Designed by	NathanW

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
CCISeismic Tower Section 4	110.00	0.000	0.000	0.04	0.00	0.00	0.07
CCISeismic Tower Section 5	90.00	0.000	0.000	0.04	0.00	0.00	0.06
CCISeismic Tower Section 6	70.00	0.000	0.000	0.05	0.00	0.00	0.05
CCISeismic Tower Section 7	50.00	0.000	0.000	0.06	0.00	0.00	0.04
CCISeismic Tower Section 8	30.00	0.000	0.000	0.06	0.00	0.00	0.03
CCISeismic Tower Section 9	10.00	0.000	0.000	0.07	0.00	0.00	0.01
CCISeismic 16 ft Whip	159.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic tower mounts	157.00	0.000	0.000	0.05	0.00	0.00	0.12
Platform w/Rail							
CCISeismic (4) amphenol BXA-70080/8CF w/8' Mount Pipe	157.00	0.000	0.000	0.01	0.00	0.00	0.01
CCISeismic (4) amphenol BXA-70080/8CF w/8' Mount Pipe	157.00	0.000	0.000	0.01	0.00	0.00	0.01
CCISeismic (4) amphenol BXA-70080/8CF w/8' Mount Pipe	157.00	0.000	0.000	0.01	0.00	0.00	0.01
CCISeismic (4) ericsson RRUS A2 Module	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (4) ericsson RRUS A2 Module	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (4) ericsson RRUS A2 Module	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) RRH 3JR52709AA 2x60	157.00	0.000	0.000	0.00	0.00	0.00	0.01
CCISeismic (2) RRH 3JR52709AA 2x60	157.00	0.000	0.000	0.00	0.00	0.00	0.01
CCISeismic (2) RRH 3JR52709AA 2x60	157.00	0.000	0.000	0.00	0.00	0.00	0.01
CCISeismic RRH 4x30-4T4R B13	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic RRH 4x30-4T4R B13	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic RRH 4x30-4T4R B13	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic RRH 4x30-4T4R B25	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic RRH 4x30-4T4R B25	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic RRH 4x30-4T4R B25	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (4) miscel 10"x7"x2" TMA	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (4) miscel 10"x7"x2" TMA	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (4) miscel 10"x7"x2" TMA	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic OVP Junction Box	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic OVP Junction Box	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic OVP Junction Box	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic Face Frame	157.00	0.000	0.000	0.00	0.00	0.00	0.01
CCISeismic 18 ft Pipe	157.00	0.000	0.000	0.01	0.00	0.00	0.03
CCISeismic Modified Mount	157.00	0.000	0.000	0.01	0.00	0.00	0.02
CCISeismic (3) T-Arms with Platform	157.00	0.000	0.000	0.02	0.00	0.00	0.04
CCISeismic kathrein 800-10965 w/6' Mount Pipe	157.00	0.000	0.000	0.00	0.00	0.00	0.01
CCISeismic kathrein 800-10965 w/6' Mount Pipe	157.00	0.000	0.000	0.00	0.00	0.00	0.01

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Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
CCISeismic kathrein 800-10964 w/6' Mount Pipe	157.00	0.000	0.000	0.00	0.00	0.00	0.01
CCISeismic (3) quintel QS66512-2 w/6' Mount Pipe	157.00	0.000	0.000	0.01	0.00	0.00	0.02
CCISeismic tower mounts 6'x2 1/2" Pipe Mount	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic tower mounts 6'x2 1/2" Pipe Mount	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic tower mounts 6'x2 1/2" Pipe Mount	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (3) ericsson RRUS 32 B30	157.00	0.000	0.000	0.00	0.00	0.00	0.01
CCISeismic (3) ericsson 4449 B5/B12 RRU	157.00	0.000	0.000	0.00	0.00	0.00	0.01
CCISeismic (3) ericsson 8843 B2/B66A RRU	157.00	0.000	0.000	0.00	0.00	0.00	0.01
CCISeismic DC6-48-60-18-8C	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic raycap DC6-48-60-18-8F	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic tower mounts Sector Frame	146.00	0.000	0.000	0.01	0.00	0.00	0.02
CCISeismic tower mounts Sector Frame	146.00	0.000	0.000	0.01	0.00	0.00	0.02
CCISeismic tower mounts Sector Frame	146.00	0.000	0.000	0.01	0.00	0.00	0.02
CCISeismic rfs	146.00	0.000	0.000	0.00	0.00	0.00	0.00
APX16DWV-16DWVS-C-A20 w/6' Mount Pipe	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic rfs	146.00	0.000	0.000	0.00	0.00	0.00	0.00
APX16DWV-16DWVS-C-A20 w/6' Mount Pipe	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic rfs	146.00	0.000	0.000	0.00	0.00	0.00	0.00
APXVAALL24_43-U-NA20 w/8' Mount Pipe	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic rfs	146.00	0.000	0.000	0.00	0.00	0.00	0.00
APXVAALL24_43-U-NA20 w/8' Mount Pipe	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic rfs	146.00	0.000	0.000	0.00	0.00	0.00	0.00
APXVAALL24_43-U-NA20 w/8' Mount Pipe	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic tower mounts 6'x2 1/2" Pipe Mount	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic tower mounts 6'x2 1/2" Pipe Mount	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic tower mounts 6'x2 1/2" Pipe Mount	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic ericsson 4449 B71/B85 RRU	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic ericsson 4449 B71/B85 RRU	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic ericsson 4449 B71/B85 RRU	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic 11"x6"x3.5" TMA	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic 11"x6"x3.5" TMA	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic 11"x6"x3.5" TMA	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic 7"x6"x2.5" TMA	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic 7"x6"x2.5" TMA	146.00	0.000	0.000	0.00	0.00	0.00	0.00

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<i>Description</i>	<i>Elevation</i>	<i>Offset From Centroid</i>	<i>Azimuth Angle</i>	<i>E_v</i>	<i>E_{rx}</i>	<i>E_{hz}</i>	<i>E_h</i>
	<i>ft</i>	<i>ft</i>	<i>°</i>	<i>K</i>	<i>K</i>	<i>K</i>	<i>K</i>
CCISEismic 7"x6"x2.5" TMA	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic 14 ft Face Mount	132.00	0.000	0.000	0.00	0.00	0.00	0.01
CCISEismic tower mounts 6 ft Sidearm	126.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic 16 ft Whip	126.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic tower mounts 6 ft Sidearm	107.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic 16 ft Whip	107.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic tower mounts 4 ft Sidearm	47.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic 10 ft Dipole	47.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic tower mounts 4 ft Sidearm	37.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic 12 ft Whip	37.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic Feed Line	163.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic Feed Line	163.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 159 (140ft to 159ft)	149.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 159 (126.667ft to 140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 159 (120ft to 126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 159 (100ft to 120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 159 (80ft to 100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 159 (60ft to 80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 159 (40ft to 60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 159 (20ft to 40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 159 (0ft to 20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic (6) general cable 1 1/4" Coax From 0 to 159 (140ft to 159ft)	149.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic (6) general cable 1 1/4" Coax From 0 to 159 (126.667ft to 140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic (6) general cable 1 1/4" Coax From 0 to 159 (120ft to 126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic (6) general cable 1 1/4" Coax From 0 to 159 (100ft to 120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic (6) general cable 1 1/4" Coax From 0 to 159 (80ft to 100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic (6) general cable 1 1/4" Coax From 0 to 159 (60ft to 80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic (6) general cable 1 1/4" Coax From 0 to 159 (40ft to 60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00

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<i>Description</i>	<i>Elevation</i>	<i>Offset From Centroid</i>	<i>Azimuth Angle</i>	<i>E_v</i>	<i>E_{lx}</i>	<i>E_{lz}</i>	<i>E_h</i>
	<i>ft</i>	<i>ft</i>	<i>°</i>	<i>K</i>	<i>K</i>	<i>K</i>	<i>K</i>
CCISeismic (6) general cable 1 1/4" Coax From 0 to 159 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (6) general cable 1 1/4" Coax From 0 to 159 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (140ft to157ft)	148.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (140ft to157ft)	148.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00

<p style="text-align: center;">tnxTower</p> <p>Semaan Engineering Solutions 1047 N 205th Street Elkhorn, NE 68022 Phone: 402.289.1888 FAX:</p>	Job	28229_Windsor	Page	17 of 53
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<i>Description</i>	<i>Elevation</i>	<i>Offset From Centroid</i>	<i>Azimuth Angle</i>	<i>E_v</i>	<i>E_{lx}</i>	<i>E_{lz}</i>	<i>E_h</i>
	<i>ft</i>	<i>ft</i>	<i>°</i>	<i>K</i>	<i>K</i>	<i>K</i>	<i>K</i>
CCISeismic (2) general cable 0.78" DC From 0 to 157 (140ft to157ft)	148.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (140ft to157ft)	148.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (12) general cable 1 5/8" Coax From 0 to 157 (140ft to157ft)	148.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (12) general cable 1 5/8" Coax From 0 to 157 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00

Job	28229_Windsor
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Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
CCISeismic (12) general cable 1 5/8" Coax From 0 to 157 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (12) general cable 1 5/8" Coax From 0 to 157 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (12) general cable 1 5/8" Coax From 0 to 157 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (12) general cable 1 5/8" Coax From 0 to 157 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (12) general cable 1 5/8" Coax From 0 to 157 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (12) general cable 1 5/8" Coax From 0 to 157 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (12) general cable 1 5/8" Coax From 0 to 157 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (3) Hybrid Cable From 0 to 157 (140ft to157ft)	148.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (3) Hybrid Cable From 0 to 157 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (3) Hybrid Cable From 0 to 157 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (3) Hybrid Cable From 0 to 157 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (3) Hybrid Cable From 0 to 157 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (3) Hybrid Cable From 0 to 157 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (3) Hybrid Cable From 0 to 157 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (3) Hybrid Cable From 0 to 157 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (3) Hybrid Cable From 0 to 157 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 1 1/4" Hybrid Cable From 0 to 157 (140ft to157ft)	148.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 1 1/4" Hybrid Cable From 0 to 157 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 1 1/4" Hybrid Cable From 0 to 157 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 1 1/4" Hybrid Cable From 0 to 157 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 1 1/4" Hybrid Cable From 0 to 157 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 1 1/4" Hybrid Cable From 0 to 157 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 1 1/4" Hybrid Cable From 0 to 157 (0ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00

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	Client	KGI	Designed by	NathanW

<i>Description</i>	<i>Elevation</i>	<i>Offset From Centroid</i>	<i>Azimuth Angle</i>	E_v	E_{hx}	E_{hz}	E_h
	<i>ft</i>	<i>ft</i>	<i>°</i>	<i>K</i>	<i>K</i>	<i>K</i>	<i>K</i>
1/4" Hybrid Cable From 0 to 157 (40ft to60ft)							
CCISEismic (2) general cable 1	30.00	0.000	0.000	0.00	0.00	0.00	0.00
1/4" Hybrid Cable From 0 to 157 (20ft to40ft)							
CCISEismic (2) general cable 1	10.00	0.000	0.000	0.00	0.00	0.00	0.00
1/4" Hybrid Cable From 0 to 157 (0ft to20ft)							
CCISEismic (12) general cable 1	143.00	0.000	0.000	0.00	0.00	0.00	0.00
5/8" Coax From 0 to 146 (140ft to146ft)							
CCISEismic (12) general cable 1	133.33	0.000	0.000	0.00	0.00	0.00	0.01
5/8" Coax From 0 to 146 (126.667ft to140ft)							
CCISEismic (12) general cable 1	123.33	0.000	0.000	0.00	0.00	0.00	0.00
5/8" Coax From 0 to 146 (120ft to126.667ft)							
CCISEismic (12) general cable 1	110.00	0.000	0.000	0.00	0.00	0.00	0.01
5/8" Coax From 0 to 146 (100ft to120ft)							
CCISEismic (12) general cable 1	90.00	0.000	0.000	0.00	0.00	0.00	0.01
5/8" Coax From 0 to 146 (80ft to100ft)							
CCISEismic (12) general cable 1	70.00	0.000	0.000	0.00	0.00	0.00	0.01
5/8" Coax From 0 to 146 (60ft to80ft)							
CCISEismic (12) general cable 1	50.00	0.000	0.000	0.00	0.00	0.00	0.00
5/8" Coax From 0 to 146 (40ft to60ft)							
CCISEismic (12) general cable 1	30.00	0.000	0.000	0.00	0.00	0.00	0.00
5/8" Coax From 0 to 146 (20ft to40ft)							
CCISEismic (12) general cable 1	10.00	0.000	0.000	0.00	0.00	0.00	0.00
5/8" Coax From 0 to 146 (0ft to20ft)							
CCISEismic general cable 7/8" Coax From 0 to 146 (140ft to146ft)	143.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 146 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 146 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 146 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 146 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 146 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 146 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 146 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 146 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 118.5 (100ft	109.25	0.000	0.000	0.00	0.00	0.00	0.00

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	Client	KGI	Designed by	NathanW

<i>Description</i>	<i>Elevation</i>	<i>Offset From Centroid</i>	<i>Azimuth Angle</i>	E_v	E_{hx}	E_{hz}	E_h
	<i>ft</i>	<i>ft</i>	$^{\circ}$	<i>K</i>	<i>K</i>	<i>K</i>	<i>K</i>
to118.5ft)							
CCISEismic general cable 7/8" Coax From 0 to 118.5 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 118.5 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 118.5 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 118.5 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 7/8" Coax From 0 to 118.5 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 1/2" Coax From 0 to 99 (80ft to99ft)	89.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 1/2" Coax From 0 to 99 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 1/2" Coax From 0 to 99 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 1/2" Coax From 0 to 99 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 1/2" Coax From 0 to 99 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 1/2" Coax From 0 to 47.5 (40ft to47.5ft)	43.75	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 1/2" Coax From 0 to 47.5 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic general cable 1/2" Coax From 0 to 47.5 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic W/G Ladder A From 0 to 37.5 (20ft to37.5ft)	28.75	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic W/G Ladder A From 0 to 37.5 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic W/G Ladder B From 10 to 147 (140ft to147ft)	143.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic W/G Ladder B From 10 to 147 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic W/G Ladder B From 10 to 147 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic W/G Ladder B From 10 to 147 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic W/G Ladder B From 10 to 147 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic W/G Ladder B From 10 to 147 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic W/G Ladder B From 10 to 147 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic W/G Ladder B From 10 to 147 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic W/G Ladder B From 10 to 147 (10ft to20ft)	15.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISEismic W/G Ladder C From 11 to 160 (140ft to160ft)	150.00	0.000	0.000	0.00	0.00	0.00	0.01

<p style="text-align: center;">tnxTower</p> <p>Semaan Engineering Solutions 1047 N 205th Street Elkhorn, NE 68022 Phone: 402.289.1888 FAX:</p>	Job	28229_Windsor	Page	21 of 53
	Project	REV06	Date	13:34:25 06/23/21
	Client	KGI	Designed by	NathanW

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
CCISeismic W/G Ladder C From 11 to 160 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder C From 11 to 160 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder C From 11 to 160 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder C From 11 to 160 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder C From 11 to 160 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder C From 11 to 160 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder C From 11 to 160 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder C From 11 to 160 (11ft to20ft)	15.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 12 to 152 (140ft to152ft)	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 12 to 152 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 12 to 152 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 12 to 152 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 12 to 152 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 12 to 152 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 12 to 152 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 12 to 152 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 12 to 152 (12ft to20ft)	16.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 14.5 to 147 (140ft to147ft)	143.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 14.5 to 147 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 14.5 to 147 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 14.5 to 147 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 14.5 to 147 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 14.5 to 147 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 14.5 to 147 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 14.5 to 147 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 14.5 to 147 (14.5ft to20ft)	17.25	0.000	0.000	0.00	0.00	0.00	0.00

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Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral Vert						
			ft	ft	°	ft	ft ²	ft ²	K	
16 ft Whip (City of Windsor)	A	From Leg	0.00	0.00	0.000	159.00	No Ice	4.70	4.70	0.04
			0.000				1/2" Ice	6.65	6.65	0.07
			9.000				1" Ice	8.60	8.60	0.10
							2" Ice	12.50	12.50	0.16
Platform w/Rail (Verizon)	C	None			0.000	157.00	No Ice	35.85	35.85	2.50
							1/2" Ice	40.46	40.46	3.50
							1" Ice	45.07	45.07	4.50
							2" Ice	54.29	54.29	6.50
(4) BXA-70080/8CF w/8' Mount Pipe (Verizon)	A	From Leg	3.00	0.000	0.000	157.00	No Ice	8.32	8.75	0.07
			0.000				1/2" Ice	8.92	10.16	0.14
			0.000				1" Ice	9.52	11.23	0.22
							2" Ice	10.75	13.41	0.42
(4) BXA-70080/8CF w/8' Mount Pipe (Verizon)	B	From Leg	3.00	0.000	0.000	157.00	No Ice	8.32	8.75	0.07
			0.000				1/2" Ice	8.92	10.16	0.14
			0.000				1" Ice	9.52	11.23	0.22
							2" Ice	10.75	13.41	0.42
(4) BXA-70080/8CF w/8' Mount Pipe (Verizon)	C	From Leg	3.00	0.000	0.000	157.00	No Ice	8.32	8.75	0.07
			0.000				1/2" Ice	8.92	10.16	0.14
			0.000				1" Ice	9.52	11.23	0.22
							2" Ice	10.75	13.41	0.42
(4) RRUS A2 Module (Verizon)	A	From Leg	3.00	0.000	0.000	157.00	No Ice	1.60	0.46	0.02
			0.000				1/2" Ice	1.76	0.56	0.03
			0.000				1" Ice	1.92	0.67	0.04
							2" Ice	2.28	0.91	0.08
(4) RRUS A2 Module (Verizon)	B	From Leg	3.00	0.000	0.000	157.00	No Ice	1.60	0.46	0.02
			0.000				1/2" Ice	1.76	0.56	0.03
			0.000				1" Ice	1.92	0.67	0.04
							2" Ice	2.28	0.91	0.08
(4) RRUS A2 Module (Verizon)	C	From Leg	3.00	0.000	0.000	157.00	No Ice	1.60	0.46	0.02
			0.000				1/2" Ice	1.76	0.56	0.03
			0.000				1" Ice	1.92	0.67	0.04
							2" Ice	2.28	0.91	0.08
(2) RRH 3JR52709AA 2x60 (Verizon)	A	From Leg	3.00	0.000	0.000	157.00	No Ice	3.36	2.00	0.06
			0.000				1/2" Ice	3.61	2.24	0.08
			0.000				1" Ice	3.88	2.48	0.10
							2" Ice	4.42	2.97	0.17
(2) RRH 3JR52709AA 2x60 (Verizon)	B	From Leg	3.00	0.000	0.000	157.00	No Ice	3.36	2.00	0.06
			0.000				1/2" Ice	3.61	2.24	0.08
			0.000				1" Ice	3.88	2.48	0.10
							2" Ice	4.42	2.97	0.17
(2) RRH 3JR52709AA 2x60 (Verizon)	C	From Leg	3.00	0.000	0.000	157.00	No Ice	3.36	2.00	0.06
			0.000				1/2" Ice	3.61	2.24	0.08
			0.000				1" Ice	3.88	2.48	0.10
							2" Ice	4.42	2.97	0.17
RRH 4x30-4T4R B13 (Verizon)	A	From Leg	3.00	0.000	0.000	157.00	No Ice	2.16	1.62	0.06
			0.000				1/2" Ice	2.35	1.79	0.08
			0.000				1" Ice	2.55	1.97	0.10
							2" Ice	2.97	2.36	0.15
RRH 4x30-4T4R B13 (Verizon)	B	From Leg	3.00	0.000	0.000	157.00	No Ice	2.16	1.62	0.06
			0.000				1/2" Ice	2.35	1.79	0.08
			0.000				1" Ice	2.55	1.97	0.10
							2" Ice	2.97	2.36	0.15

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	Client	KGI	Designed by	NathanW

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	K	
RRH 4x30-4T4R B13 (Verizon)	C	From Leg	3.00	0.000	0.000	157.00	2" Ice	2.97	2.36	0.15
			0.000	0.000			No Ice	2.16	1.62	0.06
			0.000	0.000			1/2" Ice	2.35	1.79	0.08
							1" Ice	2.55	1.97	0.10
RRH 4x30-4T4R B25 (Verizon)	A	From Leg	3.00	0.000	0.000	157.00	2" Ice	2.97	2.36	0.15
			0.000	0.000			No Ice	2.14	1.30	0.05
			0.000	0.000			1/2" Ice	2.33	1.46	0.07
							1" Ice	2.52	1.62	0.09
RRH 4x30-4T4R B25 (Verizon)	B	From Leg	3.00	0.000	0.000	157.00	2" Ice	2.94	1.98	0.14
			0.000	0.000			No Ice	2.14	1.30	0.05
			0.000	0.000			1/2" Ice	2.33	1.46	0.07
							1" Ice	2.52	1.62	0.09
RRH 4x30-4T4R B25 (Verizon)	C	From Leg	3.00	0.000	0.000	157.00	2" Ice	2.94	1.98	0.14
			0.000	0.000			No Ice	2.14	1.30	0.05
			0.000	0.000			1/2" Ice	2.33	1.46	0.07
							1" Ice	2.52	1.62	0.09
(4) 10"x7"x2" TMA (Verizon)	A	From Leg	3.00	0.000	0.000	157.00	2" Ice	2.94	1.98	0.14
			0.000	0.000			No Ice	0.58	0.18	0.02
			0.000	0.000			1/2" Ice	0.68	0.25	0.02
							1" Ice	0.79	0.33	0.02
(4) 10"x7"x2" TMA (Verizon)	B	From Leg	3.00	0.000	0.000	157.00	2" Ice	1.02	0.50	0.04
			0.000	0.000			No Ice	0.58	0.18	0.02
			0.000	0.000			1/2" Ice	0.68	0.25	0.02
							1" Ice	0.79	0.33	0.02
(4) 10"x7"x2" TMA (Verizon)	C	From Leg	3.00	0.000	0.000	157.00	2" Ice	1.02	0.50	0.04
			0.000	0.000			No Ice	0.58	0.18	0.02
			0.000	0.000			1/2" Ice	0.68	0.25	0.02
							1" Ice	0.79	0.33	0.02
OVP Junction Box (Verizon)	A	From Leg	3.00	0.000	0.000	157.00	2" Ice	1.02	0.50	0.04
			0.000	0.000			No Ice	3.25	1.04	0.02
			0.000	0.000			1/2" Ice	3.47	1.18	0.04
							1" Ice	3.70	1.33	0.07
OVP Junction Box (Verizon)	B	From Leg	3.00	0.000	0.000	157.00	2" Ice	4.19	1.66	0.13
			0.000	0.000			No Ice	3.25	1.04	0.02
			0.000	0.000			1/2" Ice	3.47	1.18	0.04
							1" Ice	3.70	1.33	0.07
OVP Junction Box (Verizon)	C	From Leg	3.00	0.000	0.000	157.00	2" Ice	4.19	1.66	0.13
			0.000	0.000			No Ice	3.25	1.04	0.02
			0.000	0.000			1/2" Ice	3.47	1.18	0.04
							1" Ice	3.70	1.33	0.07
***						2" Ice	4.19	1.66	0.13	
Face Frame (ATT)	C	From Face	0.00	0.000	0.000	157.00	No Ice	19.00	0.00	0.11
			0.000	0.000			1/2" Ice	21.30	0.00	0.17
			0.000	0.000			1" Ice	23.60	0.00	0.22
							2" Ice	28.20	0.00	0.33
18 ft Pipe (ATT)	C	From Leg	0.00	0.000	0.000	157.00	No Ice	15.53	15.53	0.51
			0.000	0.000			1/2" Ice	17.40	17.40	0.62
			5.500	0.000			1" Ice	19.27	19.27	0.73
				0.000			2" Ice	23.01	23.01	0.94
Modified Mount (ATT)	B	From Face	0.00	0.000	0.000	157.00	No Ice	17.00	0.00	0.40
			0.000	0.000			1/2" Ice	21.50	10.00	0.60
			0.000	0.000			1" Ice	26.00	12.00	0.80
				0.000			2" Ice	35.00	0.00	1.20
(3) T-Arms with Platform (ATT)	C	From Leg	0.00	0.000	0.000	157.00	No Ice	18.50	18.50	0.73
			0.000	0.000			1/2" Ice	25.00	25.00	0.90
			12.000	0.000			1" Ice	31.50	31.50	1.08

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	Client	KGI	Designed by	NathanW

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	K	
800-10965 w/6' Mount Pipe (ATT)	C	From Leg	0.00	0.00	0.000	157.00	2" Ice	44.50	44.50	1.44
			0.000				No Ice	13.81	7.56	0.14
			12.000				1/2" Ice	14.35	8.41	0.24
							1" Ice	14.89	9.28	0.34
800-10965 w/6' Mount Pipe (ATT)	C	From Leg	0.00	0.00	0.000	157.00	2" Ice	15.99	11.07	0.58
			0.000				No Ice	13.81	7.56	0.14
			12.000				1/2" Ice	14.35	8.41	0.24
							1" Ice	14.89	9.28	0.34
800-10964 w/6' Mount Pipe (ATT)	C	From Leg	0.00	0.00	0.000	157.00	2" Ice	15.99	11.07	0.58
			0.000				No Ice	10.31	5.83	0.13
			12.000				1/2" Ice	10.80	6.57	0.21
							1" Ice	11.30	7.33	0.29
(3) QS66512-2 w/6' Mount Pipe (ATT)	C	From Leg	0.00	0.00	0.000	157.00	2" Ice	12.33	8.86	0.49
			0.000				No Ice	8.13	8.53	0.15
			12.000				1/2" Ice	8.59	9.35	0.22
							1" Ice	9.05	10.18	0.31
6'x2 1/2" Pipe Mount (ATT)	C	From Leg	0.00	0.00	0.000	157.00	2" Ice	10.00	11.88	0.50
			0.000				No Ice	1.73	1.73	0.05
			12.000				1/2" Ice	2.09	2.09	0.06
							1" Ice	2.46	2.46	0.08
6'x2 1/2" Pipe Mount (ATT)	C	From Leg	0.00	0.00	0.000	157.00	2" Ice	3.23	3.23	0.12
			0.000				No Ice	1.73	1.73	0.05
			12.000				1/2" Ice	2.09	2.09	0.06
							1" Ice	2.46	2.46	0.08
6'x2 1/2" Pipe Mount (ATT)	C	From Leg	0.00	0.00	0.000	157.00	2" Ice	3.23	3.23	0.12
			0.000				No Ice	1.73	1.73	0.05
			12.000				1/2" Ice	2.09	2.09	0.06
							1" Ice	2.46	2.46	0.08
(3) RRUS 32 B30 (ATT)	C	From Leg	0.00	0.00	0.000	157.00	2" Ice	3.23	3.23	0.12
			0.000				No Ice	2.75	1.67	0.05
			12.000				1/2" Ice	2.97	1.86	0.07
							1" Ice	3.20	2.05	0.10
(3) 4449 B5/B12 RRU (ATT)	C	From Leg	0.00	0.00	0.000	157.00	2" Ice	3.68	2.46	0.16
			0.000				No Ice	1.97	1.41	0.07
			12.000				1/2" Ice	2.14	1.56	0.09
							1" Ice	2.33	1.73	0.11
(3) 8843 B2/B66A RRU (ATT)	C	From Leg	0.00	0.00	0.000	157.00	2" Ice	2.72	2.07	0.16
			0.000				No Ice	1.64	1.35	0.07
			12.000				1/2" Ice	1.80	1.50	0.09
							1" Ice	1.97	1.65	0.11
DC6-48-60-18-8C (ATT)	C	From Leg	0.00	0.00	0.000	157.00	2" Ice	2.32	1.99	0.16
			0.000				No Ice	1.14	1.14	0.03
			12.000				1/2" Ice	1.79	1.79	0.05
							1" Ice	2.00	2.00	0.07
DC6-48-60-18-8F (ATT)	C	From Leg	0.00	0.00	0.000	157.00	2" Ice	2.45	2.45	0.13
			0.000				No Ice	0.92	0.92	0.03
			12.000				1/2" Ice	1.46	1.46	0.05
							1" Ice	1.64	1.64	0.07
***						2" Ice	2.04	2.04	0.12	
Sector Frame (T-Mobile)	A	From Leg	1.50	0.000	0.000	146.00	No Ice	15.00	11.25	0.50
			0.000				1/2" Ice	20.34	15.24	0.65
			0.000				1" Ice	25.68	19.23	0.80
							2" Ice	36.36	27.21	1.10
Sector Frame (T-Mobile)	B	From Leg	1.50	0.000	0.000	146.00	No Ice	15.00	11.25	0.50
			0.000				1/2" Ice	20.34	15.24	0.65
			0.000				1" Ice	25.68	19.23	0.80
							2" Ice	36.36	27.21	1.10

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	K	
Sector Frame (T-Mobile)	C	From Leg	1.50	0.000	0.000	146.00	2" Ice	36.36	27.21	1.10
			0.000	No Ice			15.00	11.25	0.50	
			0.000	1/2" Ice			20.34	15.24	0.65	
			0.000	1" Ice			25.68	19.23	0.80	
APX16DWV-16DWVS-C-A 20 w/6' Mount Pipe (T-Mobile)	A	From Leg	3.00	0.000	0.000	146.00	2" Ice	36.36	27.21	1.10
			0.000	No Ice			6.97	3.87	0.08	
			1.000	1/2" Ice			7.43	4.58	0.13	
			1.000	1" Ice			7.89	5.30	0.19	
APX16DWV-16DWVS-C-A 20 w/6' Mount Pipe (T-Mobile)	B	From Leg	3.00	0.000	0.000	146.00	2" Ice	8.85	6.78	0.33
			0.000	No Ice			6.97	3.87	0.08	
			1.000	1/2" Ice			7.43	4.58	0.13	
			1.000	1" Ice			7.89	5.30	0.19	
APX16DWV-16DWVS-C-A 20 w/6' Mount Pipe (T-Mobile)	C	From Leg	3.00	0.000	0.000	146.00	2" Ice	8.85	6.78	0.33
			0.000	No Ice			6.97	3.87	0.08	
			1.000	1/2" Ice			7.43	4.58	0.13	
			1.000	1" Ice			7.89	5.30	0.19	
APXVAALL24_43-U-NA20 w/8' Mount Pipe (T-Mobile)	A	From Leg	3.00	0.000	0.000	146.00	2" Ice	8.85	6.78	0.33
			0.000	No Ice			20.24	11.03	0.10	
			1.000	1/2" Ice			20.89	12.46	0.24	
			1.000	1" Ice			21.55	13.56	0.39	
APXVAALL24_43-U-NA20 w/8' Mount Pipe (T-Mobile)	B	From Leg	3.00	0.000	0.000	146.00	2" Ice	22.88	15.79	0.72
			0.000	No Ice			20.24	11.03	0.10	
			1.000	1/2" Ice			20.89	12.46	0.24	
			1.000	1" Ice			21.55	13.56	0.39	
APXVAALL24_43-U-NA20 w/8' Mount Pipe (T-Mobile)	C	From Leg	3.00	0.000	0.000	146.00	2" Ice	22.88	15.79	0.72
			0.000	No Ice			20.24	11.03	0.10	
			1.000	1/2" Ice			20.89	12.46	0.24	
			1.000	1" Ice			21.55	13.56	0.39	
6'x2 1/2" Pipe Mount (T-Mobile)	A	From Leg	3.00	0.000	0.000	146.00	2" Ice	22.88	15.79	0.72
			0.000	No Ice			1.73	1.73	0.05	
			1.000	1/2" Ice			2.09	2.09	0.06	
			1.000	1" Ice			2.46	2.46	0.08	
6'x2 1/2" Pipe Mount (T-Mobile)	B	From Leg	3.00	0.000	0.000	146.00	2" Ice	3.23	3.23	0.12
			0.000	No Ice			1.73	1.73	0.05	
			1.000	1/2" Ice			2.09	2.09	0.06	
			1.000	1" Ice			2.46	2.46	0.08	
6'x2 1/2" Pipe Mount (T-Mobile)	C	From Leg	3.00	0.000	0.000	146.00	2" Ice	3.23	3.23	0.12
			0.000	No Ice			1.73	1.73	0.05	
			1.000	1/2" Ice			2.09	2.09	0.06	
			1.000	1" Ice			2.46	2.46	0.08	
4449 B71/B85 RRU (T-Mobile)	A	From Leg	3.00	0.000	0.000	146.00	2" Ice	3.23	3.23	0.12
			0.000	No Ice			1.95	1.58	0.07	
			1.000	1/2" Ice			2.13	1.74	0.09	
			1.000	1" Ice			2.31	1.91	0.12	
4449 B71/B85 RRU (T-Mobile)	B	From Leg	3.00	0.000	0.000	146.00	2" Ice	2.70	2.27	0.17
			0.000	No Ice			1.95	1.58	0.07	
			1.000	1/2" Ice			2.13	1.74	0.09	
			1.000	1" Ice			2.31	1.91	0.12	
4449 B71/B85 RRU (T-Mobile)	C	From Leg	3.00	0.000	0.000	146.00	2" Ice	2.70	2.27	0.17
			0.000	No Ice			1.95	1.58	0.07	
			1.000	1/2" Ice			2.13	1.74	0.09	
			1.000	1" Ice			2.31	1.91	0.12	
11"x6"x3.5" TMA (T-Mobile)	A	From Leg	3.00	0.000	0.000	146.00	2" Ice	2.70	2.27	0.17
			0.000	No Ice			0.55	0.33	0.01	
			1.000	1/2" Ice			0.70	0.45	0.02	
			1.000	1" Ice			0.85	0.58	0.02	
						2" Ice	1.15	0.83	0.03	

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	K	
11"x6"x3.5" TMA (T-Mobile)	B	From Leg	3.00	0.000	0.000	146.00	No Ice	0.55	0.33	0.01
			0.000				1/2" Ice	0.70	0.45	0.02
			1.000				1" Ice	0.85	0.58	0.02
							2" Ice	1.15	0.83	0.03
11"x6"x3.5" TMA (T-Mobile)	C	From Leg	3.00	0.000	0.000	146.00	No Ice	0.55	0.33	0.01
			0.000				1/2" Ice	0.70	0.45	0.02
			1.000				1" Ice	0.85	0.58	0.02
							2" Ice	1.15	0.83	0.03
7"x6"x2.5" TMA (T-Mobile)	A	From Leg	3.00	0.000	0.000	146.00	No Ice	0.35	0.15	0.01
			0.000				1/2" Ice	0.47	0.23	0.01
			1.000				1" Ice	0.58	0.32	0.02
							2" Ice	0.82	0.49	0.02
7"x6"x2.5" TMA (T-Mobile)	B	From Leg	3.00	0.000	0.000	146.00	No Ice	0.35	0.15	0.01
			0.000				1/2" Ice	0.47	0.23	0.01
			1.000				1" Ice	0.58	0.32	0.02
							2" Ice	0.82	0.49	0.02
7"x6"x2.5" TMA (T-Mobile)	C	From Leg	3.00	0.000	0.000	146.00	No Ice	0.35	0.15	0.01
			0.000				1/2" Ice	0.47	0.23	0.01
			1.000				1" Ice	0.58	0.32	0.02
							2" Ice	0.82	0.49	0.02

14 ft Face Mount	B	From Leg	0.00	0.000	0.000	132.00	No Ice	9.33	0.00	0.14
			0.000				1/2" Ice	11.74	0.00	0.19
			0.000				1" Ice	14.14	0.00	0.24
							2" Ice	18.95	0.00	0.34
6 ft Sidearm (City of Windsor)	C	From Leg	3.00	0.000	0.000	126.50	No Ice	5.15	5.15	0.07
			0.000				1/2" Ice	7.10	7.10	0.10
			0.000				1" Ice	9.05	9.05	0.13
							2" Ice	12.95	12.95	0.19
16 ft Whip (City of Windsor)	C	From Leg	6.00	0.000	0.000	126.50	No Ice	4.00	4.00	0.04
			0.000				1/2" Ice	5.63	5.63	0.07
			0.000				1" Ice	7.26	7.26	0.10
							2" Ice	10.52	10.52	0.16
6 ft Sidearm (City of Windsor)	C	From Leg	3.00	0.000	0.000	107.00	No Ice	5.15	5.15	0.07
			0.000				1/2" Ice	7.10	7.10	0.10
			0.000				1" Ice	9.05	9.05	0.13
							2" Ice	12.95	12.95	0.19
16 ft Whip (City of Windsor)	C	From Leg	6.00	0.000	0.000	107.00	No Ice	4.00	4.00	0.04
			0.000				1/2" Ice	5.63	5.63	0.07
			0.000				1" Ice	7.26	7.26	0.10
							2" Ice	10.52	10.52	0.16
4 ft Sidearm (Verizon)	A	From Leg	2.00	0.000	0.000	47.50	No Ice	3.50	3.50	0.05
			0.000				1/2" Ice	5.79	5.79	0.08
			0.000				1" Ice	8.08	8.08	0.11
							2" Ice	12.66	12.66	0.18
10 ft Dipole (Verizon)	A	From Leg	4.00	0.000	0.000	47.50	No Ice	3.00	3.00	0.02
			0.000				1/2" Ice	4.50	4.50	0.03
			4.500				1" Ice	6.00	6.00	0.04
							2" Ice	9.00	9.00	0.06
4 ft Sidearm (City of Windsor)	C	From Leg	2.00	0.000	0.000	37.50	No Ice	3.50	3.50	0.05
			0.000				1/2" Ice	5.79	5.79	0.08
			0.000				1" Ice	8.08	8.08	0.11
							2" Ice	12.66	12.66	0.18
12 ft Whip (City of Windsor)	C	From Leg	4.00	0.000	0.000	37.50	No Ice	2.10	2.10	0.03
			0.000				1/2" Ice	3.00	3.00	0.04
			7.500				1" Ice	3.90	3.90	0.05
							2" Ice	5.70	5.70	0.07

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	Client	KGI	Designed by	NathanW

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			ft ft ft	°	ft	ft ²	ft ²	K	

Feed Line (ATT)	A	From Face	0.00	0.000	163.00	No Ice	11.16	11.16	0.05
			0.000			1/2" Ice	18.49	18.49	0.14
			0.000			1" Ice	25.81	25.81	0.23
						2" Ice	40.46	40.46	0.41
Feed Line (ATT)	B	From Face	0.00	0.000	163.00	No Ice	4.68	4.68	0.03
			0.000			1/2" Ice	11.96	11.96	0.08
			0.000			1" Ice	19.25	19.25	0.13
						2" Ice	33.82	33.82	0.23

Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face	C _{AA} Out Face
ft	ft		ksf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
T1 160.00-140.00	150.00	1.11	0.032	177.708	A	12.814	9.583	9.583	42.79	45.066	0.000
					B	12.814	9.583	42.79	22.822	0.000	
					C	12.814	9.583	42.79	54.679	0.000	
T2 140.00-126.67	133.33	1.073	0.031	127.361	A	12.335	6.399	6.399	34.16	60.745	0.000
					B	12.335	6.399	34.16	21.124	0.000	
					C	12.335	6.399	34.16	44.846	0.000	
T3 126.67-120.00	123.33	1.049	0.031	70.352	A	8.215	3.200	3.200	28.03	30.375	0.000
					B	8.215	3.200	28.03	10.563	0.000	
					C	8.215	3.200	28.03	22.424	0.000	
T4 120.00-100.00	110.00	1.016	0.030	238.131	A	23.646	9.600	9.600	28.88	91.120	0.000
					B	23.646	9.600	28.88	33.740	0.000	
					C	23.646	9.600	28.88	67.270	0.000	
T5 100.00-80.00	90.00	0.959	0.028	279.695	A	32.454	11.686	11.686	26.48	91.120	0.000
					B	32.454	11.686	26.48	36.016	0.000	
					C	32.454	11.686	26.48	67.270	0.000	
T6 80.00-60.00	70.00	0.892	0.026	322.197	A	25.888	15.027	15.027	36.73	91.120	0.000
					B	25.888	15.027	36.73	36.127	0.000	
					C	25.888	15.027	36.73	67.270	0.000	
T7 60.00-40.00	50.00	0.811	0.024	364.699	A	23.175	18.574	18.574	44.49	91.120	0.000
					B	23.175	18.574	44.49	36.614	0.000	
					C	23.175	18.574	44.49	67.270	0.000	
T8 40.00-20.00	30.00	0.701	0.020	405.638	A	25.322	18.577	18.577	42.32	91.120	0.000
					B	25.322	18.577	42.32	38.564	0.000	
					C	25.322	18.577	42.32	67.270	0.000	
T9 20.00-0.00	10.00	0.7	0.020	448.347	A	31.305	22.120	22.120	41.40	77.870	0.000
					B	31.305	22.120	41.40	27.393	0.000	
					C	31.305	22.120	41.40	61.270	0.000	

Tower Pressure - With Ice

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	Client KGI	Designed by NathanW

$$G_H = 0.850$$

Section Elevation ft	z ft	K _Z	q _z ksf	t _z in	A _G ft ²	F a c e ft ²	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
T1 160.00-140.00	150.00	1.11	0.006	1.75	183.525	A	12.814	46.347	21.218	35.86	91.430	0.000
						B	12.814	46.347			76.054	0.000
						C	12.814	46.347			81.615	0.000
T2 140.00-126.67	133.33	1.073	0.006	1.72	131.199	A	12.335	34.708	14.078	29.92	118.001	0.000
						B	12.335	34.708			63.779	0.000
						C	12.335	34.708			67.105	0.000
T3 126.67-120.00	123.33	1.049	0.006	1.71	72.256	A	8.215	19.640	7.010	25.16	58.883	0.000
						B	8.215	19.640			31.740	0.000
						C	8.215	19.640			33.478	0.000
T4 120.00-100.00	110.00	1.016	0.005	1.69	243.778	A	23.646	52.917	20.899	27.30	176.110	0.000
						B	23.646	52.917			102.868	0.000
						C	23.646	52.917			100.095	0.000
T5 100.00-80.00	90.00	0.959	0.005	1.66	285.229	A	32.454	58.686	22.760	24.97	175.193	0.000
						B	32.454	58.686			110.676	0.000
						C	32.454	58.686			99.516	0.000
T6 80.00-60.00	70.00	0.892	0.005	1.62	327.595	A	25.888	53.782	25.827	32.42	174.071	0.000
						B	25.888	53.782			109.392	0.000
						C	25.888	53.782			98.808	0.000
T7 60.00-40.00	50.00	0.811	0.004	1.56	369.918	A	23.175	49.790	29.016	39.77	172.615	0.000
						B	23.175	49.790			109.979	0.000
						C	23.175	49.790			97.889	0.000
T8 40.00-20.00	30.00	0.701	0.004	1.49	410.598	A	25.322	50.063	28.500	37.81	170.497	0.000
						B	25.322	50.063			117.461	0.000
						C	25.322	50.063			96.553	0.000
T9 20.00-0.00	10.00	0.7	0.004	1.33	452.790	A	31.305	51.918	31.009	37.26	145.998	0.000
						B	31.305	51.918			93.724	0.000
						C	31.305	51.918			84.712	0.000

Tower Pressure - Service

$$G_H = 0.850$$

Section Elevation ft	z ft	K _Z	q _z ksf	A _G ft ²	F a c e ft ²	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
T1 160.00-140.00	150.00	1.11	0.009	177.708	A	12.814	9.583	9.583	42.79	45.066	0.000
					B	12.814	9.583			22.822	0.000
					C	12.814	9.583			42.79	54.679
T2 140.00-126.67	133.33	1.073	0.008	127.361	A	12.335	6.399	6.399	34.16	60.745	0.000
					B	12.335	6.399			21.124	0.000
					C	12.335	6.399			34.16	44.846
T3 126.67-120.00	123.33	1.049	0.008	70.352	A	8.215	3.200	3.200	28.03	30.375	0.000
					B	8.215	3.200			10.563	0.000
					C	8.215	3.200			28.03	22.424
T4 120.00-100.00	110.00	1.016	0.008	238.131	A	23.646	9.600	9.600	28.88	91.120	0.000
					B	23.646	9.600			33.740	0.000
					C	23.646	9.600			28.88	67.270
T5 100.00-80.00	90.00	0.959	0.007	279.695	A	32.454	11.686	11.686	26.48	91.120	0.000
					B	32.454	11.686			36.016	0.000
					C	32.454	11.686			26.48	67.270
T6 80.00-60.00	70.00	0.892	0.007	322.197	A	25.888	15.027	15.027	36.73	91.120	0.000
					B	25.888	15.027			36.73	36.127

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	Client KGI	Designed by NathanW

Section Elevation ft	z ft	K _Z	q _z ksf	A _G ft ²	F _a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	
T7 60.00-40.00	50.00	0.811	0.006	364.699	C	25.888	15.027	18.574	36.73	67.270	0.000	
					A	23.175	18.574			91.120	0.000	
					B	23.175	18.574			44.49	36.614	0.000
T8 40.00-20.00	30.00	0.701	0.005	405.638	C	23.175	18.574	18.577	44.49	67.270	0.000	
					A	25.322	18.577			42.32	91.120	0.000
					B	25.322	18.577			42.32	38.564	0.000
T9 20.00-0.00	10.00	0.7	0.005	448.347	C	25.322	18.577	22.120	42.32	67.270	0.000	
					A	31.305	22.120			41.40	77.870	0.000
					B	31.305	22.120			41.40	27.393	0.000
					C	31.305	22.120		41.40	61.270	0.000	

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	F _a c e	e	C _F	q _z ksf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 160.00-140.00	0.91	0.95	A	0.126	2.862	0.032	1	1	18.233	3.16	158.210	C
			B	0.126	2.862	1	1	18.233				
			C	0.126	2.862	1	1	18.233				
T2 140.00-126.67	0.93	1.00	A	0.147	2.782	0.031	1	1	15.966	2.90	217.379	A
			B	0.147	2.782	1	1	15.966				
			C	0.147	2.782	1	1	15.966				
T3 126.67-120.00	0.47	0.60	A	0.162	2.727	0.031	1	1	10.036	1.55	232.659	A
			B	0.162	2.727	1	1	10.036				
			C	0.162	2.727	1	1	10.036				
T4 120.00-100.00	1.40	1.88	A	0.14	2.81	0.030	1	1	29.085	4.53	226.267	A
			B	0.14	2.81	1	1	29.085				
			C	0.14	2.81	1	1	29.085				
T5 100.00-80.00	1.41	2.09	A	0.158	2.743	0.028	1	1	39.097	4.91	245.532	A
			B	0.158	2.743	1	1	39.097				
			C	0.158	2.743	1	1	39.097				
T6 80.00-60.00	1.41	2.44	A	0.127	2.858	0.026	1	1	34.267	4.37	218.322	A
			B	0.127	2.858	1	1	34.267				
			C	0.127	2.858	1	1	34.267				
T7 60.00-40.00	1.41	2.64	A	0.114	2.907	0.024	1	1	32.946	3.93	196.422	A
			B	0.114	2.907	1	1	32.946				
			C	0.114	2.907	1	1	32.946				
T8 40.00-20.00	1.41	2.77	A	0.108	2.931	0.020	1	1	35.347	3.55	177.563	A
			B	0.108	2.931	1	1	35.347				
			C	0.108	2.931	1	1	35.347				
T9 20.00-0.00	1.06	3.28	A	0.119	2.888	0.020	1	1	42.486	3.56	178.147	A
			B	0.119	2.888	1	1	42.486				
			C	0.119	2.888	1	1	42.486				
Sum Weight:	10.40	17.69						OTM	2636.36 kip-ft	32.46		

Tower Forces - No Ice - Wind 60 To Face

tnxTower Semaan Engineering Solutions 1047 N 205th Street Elkhorn, NE 68022 Phone: 402.289.1888 FAX:	Job 28229_Windsor	Page 30 of 53
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	Client KGI	Designed by NathanW

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z ksf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 160.00-140.00	0.91	0.95	A	0.126	2.862	0.032	0.8	1	15.671	2.96	148.145	A
			B	0.126	2.862		0.8	1	15.671			
			C	0.126	2.862		0.8	1	15.671			
T2 140.00-126.67	0.93	1.00	A	0.147	2.782	0.031	0.8	1	13.498	2.72	203.717	B
			B	0.147	2.782		0.8	1	13.498			
			C	0.147	2.782		0.8	1	13.498			
T3 126.67-120.00	0.47	0.60	A	0.162	2.727	0.031	0.8	1	8.393	1.43	215.217	B
			B	0.162	2.727		0.8	1	8.393			
			C	0.162	2.727		0.8	1	8.393			
T4 120.00-100.00	1.40	1.88	A	0.14	2.81	0.030	0.8	1	24.356	4.19	209.576	B
			B	0.14	2.81		0.8	1	24.356			
			C	0.14	2.81		0.8	1	24.356			
T5 100.00-80.00	1.41	2.09	A	0.158	2.743	0.028	0.8	1	32.606	4.49	224.416	B
			B	0.158	2.743		0.8	1	32.606			
			C	0.158	2.743		0.8	1	32.606			
T6 80.00-60.00	1.41	2.44	A	0.127	2.858	0.026	0.8	1	29.089	4.04	201.988	B
			B	0.127	2.858		0.8	1	29.089			
			C	0.127	2.858		0.8	1	29.089			
T7 60.00-40.00	1.41	2.64	A	0.114	2.907	0.024	0.8	1	28.311	3.66	182.914	B
			B	0.114	2.907		0.8	1	28.311			
			C	0.114	2.907		0.8	1	28.311			
T8 40.00-20.00	1.41	2.77	A	0.108	2.931	0.020	0.8	1	30.282	3.29	164.700	B
			B	0.108	2.931		0.8	1	30.282			
			C	0.108	2.931		0.8	1	30.282			
T9 20.00-0.00	1.06	3.28	A	0.119	2.888	0.020	0.8	1	36.225	3.25	162.492	B
			B	0.119	2.888		0.8	1	36.225			
			C	0.119	2.888		0.8	1	36.225			
Sum Weight:	10.40	17.69						OTM	2445.59 kip-ft	30.04		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z ksf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 160.00-140.00	0.91	0.95	A	0.126	2.862	0.032	0.85	1	16.311	3.09	154.408	B
			B	0.126	2.862		0.85	1	16.311			
			C	0.126	2.862		0.85	1	16.311			
T2 140.00-126.67	0.93	1.00	A	0.147	2.782	0.031	0.85	1	14.115	2.90	217.473	B
			B	0.147	2.782		0.85	1	14.115			
			C	0.147	2.782		0.85	1	14.115			
T3 126.67-120.00	0.47	0.60	A	0.162	2.727	0.031	0.85	1	8.803	1.53	229.690	B
			B	0.162	2.727		0.85	1	8.803			
			C	0.162	2.727		0.85	1	8.803			
T4 120.00-100.00	1.40	1.88	A	0.14	2.81	0.030	0.85	1	25.538	4.47	223.536	B
			B	0.14	2.81		0.85	1	25.538			
			C	0.14	2.81		0.85	1	25.538			
T5 100.00-80.00	1.41	2.09	A	0.158	2.743	0.028	0.85	1	34.228	4.78	238.937	B
			B	0.158	2.743		0.85	1	34.228			
			C	0.158	2.743		0.85	1	34.228			
T6 80.00-60.00	1.41	2.44	A	0.127	2.858	0.026	0.85	1	30.384	4.29	214.673	B
			B	0.127	2.858		0.85	1	30.384			
			C	0.127	2.858		0.85	1	30.384			

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	Client	KGI	Designed by	NathanW

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z ksf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T7 60.00-40.00	1.41	2.64	A	0.114	2.907	0.024	0.85	1	29.470	3.88	194.104	B
			B	0.114	2.907		0.85	1	29.470			
			C	0.114	2.907		0.85	1	29.470			
T8 40.00-20.00	1.41	2.77	A	0.108	2.931	0.020	0.85	1	31.548	3.49	174.668	B
			B	0.108	2.931		0.85	1	31.548			
			C	0.108	2.931		0.85	1	31.548			
T9 20.00-0.00	1.06	3.28	A	0.119	2.888	0.020	0.85	1	37.790	3.46	173.152	B
			B	0.119	2.888		0.85	1	37.790			
			C	0.119	2.888		0.85	1	37.790			
Sum Weight:	10.40	17.69						OTM	2594.64 kip-ft	31.90		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z ksf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 160.00-140.00	4.30	3.94	A	0.322	2.238	0.006	1	1	40.771	1.11	55.733	A
			B	0.322	2.238		1	1	40.771			
			C	0.322	2.238		1	1	40.771			
T2 140.00-126.67	4.31	3.53	A	0.359	2.152	0.006	1	1	33.691	1.00	75.012	A
			B	0.359	2.152		1	1	33.691			
			C	0.359	2.152		1	1	33.691			
T3 126.67-120.00	2.15	2.15	A	0.386	2.093	0.006	1	1	20.450	0.52	77.969	A
			B	0.386	2.093		1	1	20.450			
			C	0.386	2.093		1	1	20.450			
T4 120.00-100.00	6.47	6.18	A	0.314	2.259	0.005	1	1	55.444	1.51	75.701	A
			B	0.314	2.259		1	1	55.444			
			C	0.314	2.259		1	1	55.444			
T5 100.00-80.00	6.49	7.45	A	0.32	2.245	0.005	1	1	67.843	1.57	78.325	A
			B	0.32	2.245		1	1	67.843			
			C	0.32	2.245		1	1	67.843			
T6 80.00-60.00	6.36	6.83	A	0.243	2.458	0.005	1	1	57.139	1.40	70.129	A
			B	0.243	2.458		1	1	57.139			
			C	0.243	2.458		1	1	57.139			
T7 60.00-40.00	6.22	6.49	A	0.197	2.605	0.004	1	1	51.637	1.25	62.455	A
			B	0.197	2.605		1	1	51.637			
			C	0.197	2.605		1	1	51.637			
T8 40.00-20.00	6.09	6.64	A	0.184	2.652	0.004	1	1	53.837	1.12	55.761	A
			B	0.184	2.652		1	1	53.837			
			C	0.184	2.652		1	1	53.837			
T9 20.00-0.00	4.71	7.32	A	0.184	2.651	0.004	1	1	60.894	1.06	53.061	A
			B	0.184	2.651		1	1	60.894			
			C	0.184	2.651		1	1	60.894			
Sum Weight:	47.11	50.56						OTM	876.89 kip-ft	10.54		

Tower Forces - With Ice - Wind 60 To Face

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	Client KGI	Designed by NathanW

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				ksf			ft ²	K	plf	
T1 160.00-140.00	4.30	3.94	A	0.322	2.238	0.006	0.8	1	38.208	1.09	54.270	B
			B	0.322	2.238		0.8	1	38.208			
			C	0.322	2.238		0.8	1	38.208			
T2 140.00-126.67	4.31	3.53	A	0.359	2.152	0.006	0.8	1	31.224	0.97	73.049	B
			B	0.359	2.152		0.8	1	31.224			
			C	0.359	2.152		0.8	1	31.224			
T3 126.67-120.00	2.15	2.15	A	0.386	2.093	0.006	0.8	1	18.806	0.50	75.481	B
			B	0.386	2.093		0.8	1	18.806			
			C	0.386	2.093		0.8	1	18.806			
T4 120.00-100.00	6.47	6.18	A	0.314	2.259	0.005	0.8	1	50.715	1.46	73.208	B
			B	0.314	2.259		0.8	1	50.715			
			C	0.314	2.259		0.8	1	50.715			
T5 100.00-80.00	6.49	7.45	A	0.32	2.245	0.005	0.8	1	61.352	1.50	75.114	B
			B	0.32	2.245		0.8	1	61.352			
			C	0.32	2.245		0.8	1	61.352			
T6 80.00-60.00	6.36	6.83	A	0.243	2.458	0.005	0.8	1	51.962	1.35	67.519	B
			B	0.243	2.458		0.8	1	51.962			
			C	0.243	2.458		0.8	1	51.962			
T7 60.00-40.00	6.22	6.49	A	0.197	2.605	0.004	0.8	1	47.002	1.20	60.206	B
			B	0.197	2.605		0.8	1	47.002			
			C	0.197	2.605		0.8	1	47.002			
T8 40.00-20.00	6.09	6.64	A	0.184	2.652	0.004	0.8	1	48.772	1.07	53.599	B
			B	0.184	2.652		0.8	1	48.772			
			C	0.184	2.652		0.8	1	48.772			
T9 20.00-0.00	4.71	7.32	A	0.184	2.651	0.004	0.8	1	54.633	1.01	50.391	B
			B	0.184	2.651		0.8	1	54.633			
			C	0.184	2.651		0.8	1	54.633			
Sum Weight:	47.11	50.56						OTM	847.97 kip-ft	10.16		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				ksf			ft ²	K	plf	
T1 160.00-140.00	4.30	3.94	A	0.322	2.238	0.006	0.85	1	38.849	1.09	54.625	B
			B	0.322	2.238		0.85	1	38.849			
			C	0.322	2.238		0.85	1	38.849			
T2 140.00-126.67	4.31	3.53	A	0.359	2.152	0.006	0.85	1	31.840	0.96	72.145	B
			B	0.359	2.152		0.85	1	31.840			
			C	0.359	2.152		0.85	1	31.840			
T3 126.67-120.00	2.15	2.15	A	0.386	2.093	0.006	0.85	1	19.217	0.50	74.740	B
			B	0.386	2.093		0.85	1	19.217			
			C	0.386	2.093		0.85	1	19.217			
T4 120.00-100.00	6.47	6.18	A	0.314	2.259	0.005	0.85	1	51.897	1.45	72.512	B
			B	0.314	2.259		0.85	1	51.897			
			C	0.314	2.259		0.85	1	51.897			
T5 100.00-80.00	6.49	7.45	A	0.32	2.245	0.005	0.85	1	62.975	1.49	74.671	B
			B	0.32	2.245		0.85	1	62.975			
			C	0.32	2.245		0.85	1	62.975			
T6 80.00-60.00	6.36	6.83	A	0.243	2.458	0.005	0.85	1	53.256	1.34	67.012	B
			B	0.243	2.458		0.85	1	53.256			

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Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z ksf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T7 60.00-40.00	6.22	6.49	C	0.243	2.458	0.004	0.85	1	53.256	1.19	59.715	B
			A	0.197	2.605				48.161			
			B	0.197	2.605				48.161			
			C	0.197	2.605				48.161			
T8 40.00-20.00	6.09	6.64	A	0.184	2.652	0.004	0.85	1	50.038	1.06	53.229	B
			B	0.184	2.652				50.038			
			C	0.184	2.652				50.038			
T9 20.00-0.00	4.71	7.32	A	0.184	2.651	0.004	0.85	1	56.198	1.00	50.149	B
			B	0.184	2.651				56.198			
			C	0.184	2.651				56.198			
Sum Weight:	47.11	50.56						OTM	843.02 kip-ft	10.10		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z ksf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 160.00-140.00	0.91	0.95	A	0.126	2.862	0.009	1	1	18.233	0.85	42.327	C
			B	0.126	2.862				18.233			
			C	0.126	2.862				18.233			
T2 140.00-126.67	0.93	1.00	A	0.147	2.782	0.008	1	1	15.966	0.78	58.157	A
			B	0.147	2.782				15.966			
			C	0.147	2.782				15.966			
T3 126.67-120.00	0.47	0.60	A	0.162	2.727	0.008	1	1	10.036	0.41	62.245	A
			B	0.162	2.727				10.036			
			C	0.162	2.727				10.036			
T4 120.00-100.00	1.40	1.88	A	0.14	2.81	0.008	1	1	29.085	1.21	60.535	A
			B	0.14	2.81				29.085			
			C	0.14	2.81				29.085			
T5 100.00-80.00	1.41	2.09	A	0.158	2.743	0.007	1	1	39.097	1.31	65.689	A
			B	0.158	2.743				39.097			
			C	0.158	2.743				39.097			
T6 80.00-60.00	1.41	2.44	A	0.127	2.858	0.007	1	1	34.387	1.17	58.511	A
			B	0.127	2.858				34.387			
			C	0.127	2.858				34.387			
T7 60.00-40.00	1.41	2.64	A	0.114	2.907	0.006	1	1	33.667	1.06	53.113	A
			B	0.114	2.907				33.667			
			C	0.114	2.907				33.667			
T8 40.00-20.00	1.41	2.77	A	0.108	2.931	0.005	1	1	35.811	0.96	47.820	A
			B	0.108	2.931				35.811			
			C	0.108	2.931				35.811			
T9 20.00-0.00	1.06	3.28	A	0.119	2.888	0.005	1	1	43.806	0.97	48.544	A
			B	0.119	2.888				43.806			
			C	0.119	2.888				43.806			
Sum Weight:	10.40	17.69						OTM	706.40 kip-ft	8.72		

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Tower Forces - Service - Wind 60 To Face

Section Elevation <i>ft</i>	Add Weight <i>K</i>	Self Weight <i>K</i>	<i>F</i> <i>a</i> <i>c</i> <i>e</i>	<i>e</i>	<i>C_F</i>	<i>q_z</i> <i>ksf</i>	<i>D_F</i>	<i>D_R</i>	<i>A_E</i> <i>ft²</i>	<i>F</i> <i>K</i>	<i>w</i> <i>plf</i>	<i>Ctrl.</i> <i>Face</i>
T1 160.00-140.00	0.91	0.95	A	0.126	2.862	0.009	0.8	1	15.671	0.79	39.635	A
			B	0.126	2.862	0.8	1	15.671				
			C	0.126	2.862	0.8	1	15.671				
T2 140.00-126.67	0.93	1.00	A	0.147	2.782	0.008	0.8	1	13.498	0.73	54.502	B
			B	0.147	2.782	0.8	1	13.498				
			C	0.147	2.782	0.8	1	13.498				
T3 126.67-120.00	0.47	0.60	A	0.162	2.727	0.008	0.8	1	8.393	0.38	57.579	B
			B	0.162	2.727	0.8	1	8.393				
			C	0.162	2.727	0.8	1	8.393				
T4 120.00-100.00	1.40	1.88	A	0.14	2.81	0.008	0.8	1	24.356	1.12	56.070	B
			B	0.14	2.81	0.8	1	24.356				
			C	0.14	2.81	0.8	1	24.356				
T5 100.00-80.00	1.41	2.09	A	0.158	2.743	0.007	0.8	1	32.606	1.20	60.040	B
			B	0.158	2.743	0.8	1	32.606				
			C	0.158	2.743	0.8	1	32.606				
T6 80.00-60.00	1.41	2.44	A	0.127	2.858	0.007	0.8	1	29.209	1.08	54.141	B
			B	0.127	2.858	0.8	1	29.209				
			C	0.127	2.858	0.8	1	29.209				
T7 60.00-40.00	1.41	2.64	A	0.114	2.907	0.006	0.8	1	29.032	0.99	49.499	B
			B	0.114	2.907	0.8	1	29.032				
			C	0.114	2.907	0.8	1	29.032				
T8 40.00-20.00	1.41	2.77	A	0.108	2.931	0.005	0.8	1	30.746	0.89	44.379	B
			B	0.108	2.931	0.8	1	30.746				
			C	0.108	2.931	0.8	1	30.746				
T9 20.00-0.00	1.06	3.28	A	0.119	2.888	0.005	0.8	1	37.545	0.89	44.356	B
			B	0.119	2.888	0.8	1	37.545				
			C	0.119	2.888	0.8	1	37.545				
Sum Weight:	10.40	17.69						OTM	655.36 kip-ft	8.07		

Tower Forces - Service - Wind 90 To Face

Section Elevation <i>ft</i>	Add Weight <i>K</i>	Self Weight <i>K</i>	<i>F</i> <i>a</i> <i>c</i> <i>e</i>	<i>e</i>	<i>C_F</i>	<i>q_z</i> <i>ksf</i>	<i>D_F</i>	<i>D_R</i>	<i>A_E</i> <i>ft²</i>	<i>F</i> <i>K</i>	<i>w</i> <i>plf</i>	<i>Ctrl.</i> <i>Face</i>
T1 160.00-140.00	0.91	0.95	A	0.126	2.862	0.009	0.85	1	16.311	0.83	41.310	B
			B	0.126	2.862	0.85	1	16.311				
			C	0.126	2.862	0.85	1	16.311				
T2 140.00-126.67	0.93	1.00	A	0.147	2.782	0.008	0.85	1	14.115	0.78	58.182	B
			B	0.147	2.782	0.85	1	14.115				
			C	0.147	2.782	0.85	1	14.115				
T3 126.67-120.00	0.47	0.60	A	0.162	2.727	0.008	0.85	1	8.803	0.41	61.451	B
			B	0.162	2.727	0.85	1	8.803				
			C	0.162	2.727	0.85	1	8.803				
T4 120.00-100.00	1.40	1.88	A	0.14	2.81	0.008	0.85	1	25.538	1.20	59.804	B
			B	0.14	2.81	0.85	1	25.538				
			C	0.14	2.81	0.85	1	25.538				
T5 100.00-80.00	1.41	2.09	A	0.158	2.743	0.007	0.85	1	34.228	1.28	63.925	B
			B	0.158	2.743	0.85	1	34.228				
			C	0.158	2.743	0.85	1	34.228				

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				ksf			ft ²	K	plf	
T6 80.00-60.00	1.41	2.44	A	0.127	2.858	0.007	0.85	1	30.504	1.15	57.535	B
			B	0.127	2.858		0.85	1	30.504			
			C	0.127	2.858		0.85	1	30.504			
T7 60.00-40.00	1.41	2.64	A	0.114	2.907	0.006	0.85	1	30.191	1.05	52.493	B
			B	0.114	2.907		0.85	1	30.191			
			C	0.114	2.907		0.85	1	30.191			
T8 40.00-20.00	1.41	2.77	A	0.108	2.931	0.005	0.85	1	32.013	0.94	47.046	B
			B	0.108	2.931		0.85	1	32.013			
			C	0.108	2.931		0.85	1	32.013			
T9 20.00-0.00	1.06	3.28	A	0.119	2.888	0.005	0.85	1	39.110	0.94	47.208	B
			B	0.119	2.888		0.85	1	39.110			
			C	0.119	2.888		0.85	1	39.110			
Sum Weight:	10.40	17.69						OTM	695.24 kip-ft	8.57		

Force Totals

Load Case	Vertical Forces	Sum of Forces X	Sum of Forces Z	Sum of Overturning Moments, M _x	Sum of Overturning Moments, M _z	Sum of Torques
	K	K	K	kip-ft	kip-ft	kip-ft
Leg Weight	6.74					
Bracing Weight	10.90					
Total Member Self-Weight	17.65			16.54	8.58	
Gusset Weight	0.04					
Total Weight	39.07			16.54	8.58	
Wind 0 deg - No Ice		0.24	-42.95	-4278.63	-33.86	-1.87
Wind 30 deg - No Ice		19.34	-33.17	-3387.08	-1988.62	14.21
Wind 60 deg - No Ice		33.30	-19.32	-1973.33	-3408.75	3.76
Wind 90 deg - No Ice		41.02	-0.24	-25.90	-4127.53	8.08
Wind 120 deg - No Ice		37.62	21.53	2143.50	-3731.06	23.51
Wind 150 deg - No Ice		21.35	37.14	3720.73	-2113.15	27.41
Wind 180 deg - No Ice		-0.24	40.52	4120.94	51.02	1.87
Wind 210 deg - No Ice		-19.34	33.17	3420.16	2005.79	-14.21
Wind 240 deg - No Ice		-35.40	20.53	2101.80	3591.13	-3.76
Wind 270 deg - No Ice		-41.02	0.24	58.98	4144.69	-8.08
Wind 300 deg - No Ice		-35.52	-20.32	-2015.03	3583.01	-23.51
Wind 330 deg - No Ice		-21.35	-37.14	-3687.64	2130.32	-27.41
Member Ice	32.87					
Gusset Ice	0.08					
Total Weight Ice	128.63			44.98	21.54	
Wind 0 deg - Ice		0.04	-13.24	-1298.46	14.48	0.73
Wind 30 deg - Ice		6.28	-10.82	-1068.51	-626.42	3.21
Wind 60 deg - Ice		10.89	-6.30	-604.45	-1097.99	0.34
Wind 90 deg - Ice		13.29	-0.04	37.91	-1326.60	-0.32
Wind 120 deg - Ice		12.16	6.99	742.80	-1195.94	3.58
Wind 150 deg - Ice		6.78	11.76	1231.37	-660.36	4.23
Wind 180 deg - Ice		-0.04	12.86	1359.49	28.61	-0.73
Wind 210 deg - Ice		-6.28	10.82	1158.47	669.51	-3.21
Wind 240 deg - Ice		-11.22	6.49	708.87	1166.12	-0.34
Wind 270 deg - Ice		-13.29	0.04	52.04	1369.68	0.32
Wind 300 deg - Ice		-11.83	-6.80	-638.38	1213.98	-3.58
Wind 330 deg - Ice		-6.78	-11.76	-1141.42	703.44	-4.23
Total Weight	39.07			16.54	8.58	

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Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Wind 0 deg - Service		0.06	-11.53	-1142.57	2.57	-0.51
Wind 30 deg - Service		5.19	-8.91	-903.87	-521.03	3.80
Wind 60 deg - Service		8.94	-5.19	-525.19	-901.43	1.00
Wind 90 deg - Service		11.01	-0.06	-3.55	-1093.90	2.16
Wind 120 deg - Service		10.10	5.78	577.48	-987.66	6.29
Wind 150 deg - Service		5.73	9.97	999.91	-554.35	7.34
Wind 180 deg - Service		-0.06	10.88	1107.14	25.28	0.51
Wind 210 deg - Service		-5.19	8.91	919.49	548.88	-3.80
Wind 240 deg - Service		-9.50	5.51	566.32	973.48	-1.00
Wind 270 deg - Service		-11.01	0.06	19.16	1121.74	-2.16
Wind 300 deg - Service		-9.54	-5.46	-536.34	971.30	-6.29
Wind 330 deg - Service		-5.73	-9.97	-984.29	582.19	-7.34
Seismic Vertical	0.78					
Seismic Horizontal 0 deg		0.00	-1.09	-134.82	0.00	0.00
Seismic Horizontal 30 deg		0.54	-0.94	-116.76	-67.41	0.00
Seismic Horizontal 60 deg		0.94	-0.54	-67.41	-116.76	0.00
Seismic Horizontal 90 deg		1.09	0.00	0.00	-134.82	0.00
Seismic Horizontal 120 deg		0.94	0.54	67.41	-116.76	0.00
Seismic Horizontal 150 deg		0.54	0.94	116.76	-67.41	0.00
Seismic Horizontal 180 deg		0.00	1.09	134.82	0.00	0.00
Seismic Horizontal 210 deg		-0.54	0.94	116.76	67.41	0.00
Seismic Horizontal 240 deg		-0.94	0.54	67.41	116.76	0.00
Seismic Horizontal 270 deg		-1.09	0.00	0.00	134.82	0.00
Seismic Horizontal 300 deg		-0.94	-0.54	-67.41	116.76	0.00
Seismic Horizontal 330 deg		-0.54	-0.94	-116.76	67.41	0.00

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp

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Comb. No.	Description
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service
51	1.2 Dead+1.0 Ev+1.0 Eh 0 deg
52	0.9 Dead-1.0 Ev+1.0 Eh 0 deg
53	1.2 Dead+1.0 Ev+1.0 Eh 30 deg
54	0.9 Dead-1.0 Ev+1.0 Eh 30 deg
55	1.2 Dead+1.0 Ev+1.0 Eh 60 deg
56	0.9 Dead-1.0 Ev+1.0 Eh 60 deg
57	1.2 Dead+1.0 Ev+1.0 Eh 90 deg
58	0.9 Dead-1.0 Ev+1.0 Eh 90 deg
59	1.2 Dead+1.0 Ev+1.0 Eh 120 deg
60	0.9 Dead-1.0 Ev+1.0 Eh 120 deg
61	1.2 Dead+1.0 Ev+1.0 Eh 150 deg
62	0.9 Dead-1.0 Ev+1.0 Eh 150 deg
63	1.2 Dead+1.0 Ev+1.0 Eh 180 deg
64	0.9 Dead-1.0 Ev+1.0 Eh 180 deg
65	1.2 Dead+1.0 Ev+1.0 Eh 210 deg
66	0.9 Dead-1.0 Ev+1.0 Eh 210 deg
67	1.2 Dead+1.0 Ev+1.0 Eh 240 deg
68	0.9 Dead-1.0 Ev+1.0 Eh 240 deg
69	1.2 Dead+1.0 Ev+1.0 Eh 270 deg
70	0.9 Dead-1.0 Ev+1.0 Eh 270 deg
71	1.2 Dead+1.0 Ev+1.0 Eh 300 deg
72	0.9 Dead-1.0 Ev+1.0 Eh 300 deg
73	1.2 Dead+1.0 Ev+1.0 Eh 330 deg
74	0.9 Dead-1.0 Ev+1.0 Eh 330 deg

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	160 - 140	Leg	Max Tension	15	25.90	-0.12	1.23
			Max. Compression	18	-36.63	0.52	-0.30
			Max. Mx	20	-10.00	-2.64	0.04
			Max. My	14	-8.09	-0.03	3.04
			Max. Vy	10	6.66	-0.52	-0.23

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft	
T2	140 - 126.667	Diagonal	Max. Vx	2	-7.51	-0.05	0.58	
			Max Tension	4	5.78	0.00	0.00	
			Max. Compression	2	-5.88	0.00	0.00	
			Max. Mx	37	1.64	0.04	0.00	
			Max. My	14	-4.29	0.01	-0.01	
			Max. Vy	33	-0.03	0.04	-0.00	
			Max. Vx	14	-0.00	0.00	0.00	
			Top Girt	Max Tension	7	0.35	0.00	0.00
				Max. Compression	2	-0.42	0.00	0.00
				Max. Mx	29	-0.10	-0.14	0.00
				Max. My	12	-0.05	0.00	0.00
				Max. Vy	29	0.06	0.00	0.00
		Max. Vx		12	-0.00	0.00	0.00	
		Leg	Max Tension	15	39.72	0.01	-0.02	
			Max. Compression	18	-51.61	-0.23	-0.00	
			Max. Mx	2	-33.11	1.98	0.22	
			Max. My	24	-6.54	-0.04	0.91	
			Max. Vy	6	5.60	-1.88	0.02	
			Max. Vx	24	-2.67	-0.04	0.91	
			Diagonal	Max Tension	4	5.63	0.00	0.00
				Max. Compression	4	-5.74	-0.00	0.01
				Max. Mx	35	1.24	0.07	-0.01
				Max. My	2	-5.02	-0.01	0.01
				Max. Vy	35	-0.04	0.07	-0.01
				Max. Vx	33	-0.00	0.00	0.00
			Secondary Horizontal	Max Tension	2	0.68	0.00	0.00
				Max. Compression	15	-0.64	0.00	0.00
				Max. Mx	32	0.12	0.05	0.00
				Max. My	14	0.52	0.01	0.01
				Max. Vy	32	0.04	0.05	0.00
				Max. Vx	34	-0.00	0.00	0.00
		Top Girt		Max Tension	1	0.00	0.00	0.00
Max. Compression	33			-0.24	0.00	0.00		
Max. Mx	29			-0.24	-0.14	0.00		
Max. My	32			-0.21	0.00	0.00		
Max. Vy	29			-0.06	0.00	0.00		
Max. Vx	32			-0.00	0.00	0.00		
T3	126.667 - 120	Leg	Max Tension	15	53.88	1.40	0.10	
			Max. Compression	18	-66.89	0.13	-0.00	
			Max. Mx	2	-63.84	-1.69	-0.13	
			Max. My	24	-7.43	-0.07	-0.37	
			Max. Vy	2	-7.38	0.16	0.03	
			Max. Vx	24	-2.83	-0.05	0.34	
			Diagonal	Max Tension	9	5.75	0.02	-0.00
				Max. Compression	10	-6.27	0.00	0.00
				Max. Mx	34	1.36	0.06	0.01
				Max. My	10	-6.26	-0.01	-0.01
				Max. Vy	33	0.04	0.05	-0.01
				Max. Vx	33	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	10	0.66	0.00	0.00	
			Max. Compression	23	-0.60	0.01	0.01	
			Max. Mx	36	-0.05	0.04	0.01	
			Max. My	22	-0.59	0.02	0.01	
			Max. Vy	36	0.04	0.04	0.01	
			Max. Vx	34	-0.00	0.00	0.00	
			Top Girt	Max Tension	14	0.49	0.00	0.00
				Max. Compression	19	-0.46	0.00	0.00
				Max. Mx	29	0.24	-0.21	0.00
				Max. My	32	0.11	0.00	0.01

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T4	120 - 100	Leg	Max. Vy	29	0.08	0.00	0.00
			Max. Vx	32	-0.00	0.00	0.00
			Max Tension	15	80.11	1.63	0.10
			Max. Compression	18	-95.49	0.07	0.00
			Max. Mx	2	-63.85	1.99	0.18
			Max. My	24	-7.44	-0.03	1.05
		Diagonal	Max. Vy	10	-7.91	0.09	-0.04
			Max. Vx	24	-3.61	-0.03	0.32
			Max Tension	8	6.42	0.03	-0.00
			Max. Compression	8	-6.50	0.00	0.00
			Max. Mx	35	1.55	0.09	-0.01
			Max. My	32	-1.37	0.08	-0.01
		Secondary Horizontal	Max. Vy	33	0.06	0.09	0.01
			Max. Vx	32	-0.00	0.00	0.00
			Max Tension	10	0.72	0.01	0.00
			Max. Compression	23	-0.65	0.02	0.01
			Max. Mx	37	-0.12	0.08	0.01
			Max. My	32	-0.08	0.08	0.01
T5	100 - 80	Leg	Max. Vy	37	-0.06	0.08	0.01
			Max. Vx	35	-0.00	0.00	0.00
			Max Tension	15	105.77	1.80	0.05
			Max. Compression	18	-123.62	0.08	0.00
			Max. Mx	10	-122.98	-2.21	0.12
			Max. My	24	-8.59	-0.04	1.23
		Diagonal	Max. Vy	10	-9.31	0.12	-0.07
			Max. Vx	24	-3.93	-0.08	0.81
			Max Tension	9	6.90	0.05	-0.00
			Max. Compression	10	-7.20	0.00	0.00
			Max. Mx	35	1.58	0.15	-0.01
			Max. My	10	-6.32	-0.02	-0.02
		Secondary Horizontal	Max. Vy	35	-0.07	0.15	-0.01
			Max. Vx	37	0.00	0.00	0.00
			Max Tension	10	0.86	0.02	0.00
			Max. Compression	23	-0.83	0.03	0.01
			Max. Mx	32	0.23	0.12	0.01
			Max. My	32	-0.09	0.09	0.02
T6	80 - 60	Leg	Max. Vy	32	0.07	0.12	0.01
			Max. Vx	34	-0.00	0.00	0.00
			Max Tension	15	130.27	2.56	0.07
			Max. Compression	10	-152.26	-0.33	-0.02
			Max. Mx	10	-152.25	-3.09	0.17
			Max. My	24	-9.97	-0.06	1.88
		Diagonal	Max. Vy	10	-10.19	-0.33	-0.02
			Max. Vx	24	-4.06	-0.05	0.50
			Max Tension	9	7.84	0.08	-0.00
			Max. Compression	10	-8.22	0.00	0.00
			Max. Mx	35	1.76	0.18	0.02
			Max. My	37	-2.51	0.15	0.02
		Secondary Horizontal	Max. Vy	33	0.09	0.17	0.02
			Max. Vx	37	0.00	0.00	0.00
			Max Tension	10	0.88	0.05	-0.00
			Max. Compression	23	-0.91	0.04	0.02
			Max. Mx	37	0.16	0.14	0.03
			Max. My	32	-0.09	0.13	0.03
T7	60 - 40	Leg	Max. Vy	31	0.09	0.13	0.03
			Max. Vx	34	-0.01	0.00	0.00
			Max Tension	15	154.12	1.82	0.03
			Max. Compression	10	-181.11	0.65	-0.03

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T8	40 - 20	Diagonal	Max. Mx	10	-152.24	2.97	-0.25
			Max. My	24	-11.39	-0.01	1.77
			Max. Vy	10	-11.46	0.65	-0.03
			Max. Vx	24	-4.27	0.02	0.36
			Max. Tension	8	8.06	0.00	0.00
			Max. Compression	8	-8.25	0.00	0.00
		Leg	Max. Mx	35	2.03	0.26	-0.03
			Max. My	32	-0.88	0.19	-0.03
			Max. Vy	37	0.11	0.22	-0.03
			Max. Vx	32	-0.01	0.00	0.00
			Max. Tension	15	176.33	1.27	0.04
			Max. Compression	10	-208.32	1.44	-0.06
		Diagonal	Max. Mx	10	-181.15	3.39	-0.19
			Max. My	24	-12.85	0.06	1.43
			Max. Vy	10	-11.84	1.44	-0.06
			Max. Vx	24	-4.31	0.07	0.35
			Max. Tension	8	8.09	0.00	0.00
			Max. Compression	8	-8.30	0.00	0.00
T9	20 - 0	Leg	Max. Mx	37	1.44	0.30	0.04
			Max. My	37	-2.61	0.26	0.04
			Max. Vy	37	0.12	0.30	0.04
			Max. Vx	32	-0.01	0.00	0.00
			Max. Tension	15	198.36	1.64	0.01
			Max. Compression	10	-235.48	0.00	0.00
		Diagonal	Max. Mx	10	-208.29	4.54	-0.22
			Max. My	25	-10.71	0.09	1.43
			Max. Vy	10	-13.54	0.00	0.00
			Max. Vx	24	-4.32	0.12	1.43
			Max. Tension	8	8.66	0.00	0.00
			Max. Compression	10	-9.24	0.00	0.00
			Max. Mx	31	1.74	0.40	-0.04
			Max. My	37	-3.75	0.36	0.05
			Max. Vy	37	0.14	0.40	0.04
			Max. Vx	37	0.01	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	227.33	21.97	-12.56
	Max. H _x	18	227.33	21.97	-12.56
	Max. H _z	7	-188.27	-18.93	10.83
	Min. Vert	7	-188.27	-18.93	10.83
	Min. H _x	7	-188.27	-18.93	10.83
	Min. H _z	18	227.33	21.97	-12.56
Leg B	Max. Vert	10	234.36	-23.36	-12.78
	Max. H _x	23	-196.90	20.36	11.07
	Max. H _z	25	-175.49	17.57	11.31
	Min. Vert	23	-196.90	20.36	11.07
	Min. H _x	10	234.36	-23.36	-12.78
	Min. H _z	10	234.36	-23.36	-12.78
Leg A	Max. Vert	2	232.96	-0.06	26.40
	Max. H _x	21	8.80	3.01	0.69
	Max. H _z	2	232.96	-0.06	26.40
	Min. Vert	15	-197.34	0.05	-22.98
	Min. H _x	9	13.12	-3.02	1.01

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Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. H _z	15	-197.34	0.05	-22.98

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	39.07	-0.00	-0.00	16.63	8.68	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	46.88	0.24	-42.95	-4303.46	-32.32	-2.03
0.9 Dead+1.0 Wind 0 deg - No Ice	35.16	0.24	-42.95	-4301.25	-34.88	-1.98
1.2 Dead+1.0 Wind 30 deg - No Ice	46.88	19.34	-33.17	-3406.48	-2000.28	14.19
0.9 Dead+1.0 Wind 30 deg - No Ice	35.16	19.34	-33.17	-3405.67	-1999.48	14.19
1.2 Dead+1.0 Wind 60 deg - No Ice	46.88	33.30	-19.32	-1983.27	-3429.87	3.84
0.9 Dead+1.0 Wind 60 deg - No Ice	35.16	33.30	-19.32	-1984.88	-3426.64	3.82
1.2 Dead+1.0 Wind 90 deg - No Ice	46.88	41.02	-0.24	-22.76	-4153.10	8.24
0.9 Dead+1.0 Wind 90 deg - No Ice	35.16	41.02	-0.24	-27.71	-4148.71	8.19
1.2 Dead+1.0 Wind 120 deg - No Ice	46.88	37.62	21.53	2160.97	-3753.69	23.75
0.9 Dead+1.0 Wind 120 deg - No Ice	35.16	37.62	21.53	2152.35	-3750.04	23.68
1.2 Dead+1.0 Wind 150 deg - No Ice	46.88	21.35	37.14	3748.68	-2125.11	27.67
0.9 Dead+1.0 Wind 150 deg - No Ice	35.16	21.35	37.14	3737.37	-2124.19	27.60
1.2 Dead+1.0 Wind 180 deg - No Ice	46.88	-0.24	40.52	4151.83	53.31	2.07
0.9 Dead+1.0 Wind 180 deg - No Ice	35.16	-0.24	40.52	4139.76	50.56	2.02
1.2 Dead+1.0 Wind 210 deg - No Ice	46.88	-19.34	33.17	3446.65	2021.19	-14.13
0.9 Dead+1.0 Wind 210 deg - No Ice	35.16	-19.34	33.17	3435.72	2015.07	-14.14
1.2 Dead+1.0 Wind 240 deg - No Ice	46.88	-35.40	20.53	2119.29	3616.92	-3.83
0.9 Dead+1.0 Wind 240 deg - No Ice	35.16	-35.40	20.53	2110.66	3608.14	-3.81
1.2 Dead+1.0 Wind 270 deg - No Ice	46.88	-41.02	0.24	62.88	4174.08	-8.29
0.9 Dead+1.0 Wind 270 deg - No Ice	35.16	-41.02	0.24	57.73	4164.37	-8.24
1.2 Dead+1.0 Wind 300 deg - No Ice	46.88	-35.52	-20.32	-2024.89	3608.66	-23.80
0.9 Dead+1.0 Wind 300 deg - No Ice	35.16	-35.52	-20.32	-2026.50	3599.92	-23.73
1.2 Dead+1.0 Wind 330 deg - No Ice	46.88	-21.35	-37.14	-3708.48	2146.22	-27.68
0.9 Dead+1.0 Wind 330 deg - No Ice	35.16	-21.35	-37.14	-3707.28	2139.99	-27.61
1.2 Dead+1.0 Ice+1.0 Temp	136.45	-0.00	-0.00	49.67	24.52	0.00

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Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	136.45	0.04	-13.24	-1320.17	17.27	0.60
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	136.45	6.28	-10.82	-1085.91	-636.35	3.17
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	136.45	10.89	-6.30	-612.64	-1117.22	0.40
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	136.45	13.29	-0.04	42.45	-1350.10	-0.17
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	136.45	12.16	6.99	761.10	-1216.66	3.78
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	136.45	6.78	11.76	1259.34	-670.69	4.42
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	136.45	-0.04	12.86	1390.22	31.78	-0.60
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	136.45	-6.28	10.82	1185.34	685.39	-3.17
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	136.45	-11.22	6.49	726.75	1191.71	-0.40
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	136.45	-13.29	0.04	56.97	1399.15	0.17
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	136.45	-11.83	-6.80	-646.98	1240.29	-3.78
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	136.45	-6.78	-11.76	-1159.92	719.75	-4.42
Dead+Wind 0 deg - Service	39.07	0.06	-11.53	-1140.02	-2.72	-0.54
Dead+Wind 30 deg - Service	39.07	5.19	-8.91	-900.11	-529.26	3.79
Dead+Wind 60 deg - Service	39.07	8.94	-5.19	-519.31	-911.77	1.02
Dead+Wind 90 deg - Service	39.07	11.01	-0.06	5.25	-1105.23	2.20
Dead+Wind 120 deg - Service	39.07	10.10	5.78	589.47	-998.35	6.35
Dead+Wind 150 deg - Service	39.07	5.73	9.97	1014.23	-562.66	7.40
Dead+Wind 180 deg - Service	39.07	-0.06	10.88	1122.13	20.16	0.55
Dead+Wind 210 deg - Service	39.07	-5.19	8.91	933.49	546.69	-3.79
Dead+Wind 240 deg - Service	39.07	-9.50	5.51	578.32	973.60	-1.02
Dead+Wind 270 deg - Service	39.07	-11.01	0.06	28.13	1122.67	-2.21
Dead+Wind 300 deg - Service	39.07	-9.54	-5.46	-530.45	971.39	-6.35
Dead+Wind 330 deg - Service	39.07	-5.73	-9.97	-980.85	580.10	-7.40
1.2 Dead+1.0 Ev+1.0 Eh 0 deg	47.66	0.00	-1.09	-115.69	10.49	-0.01
0.9 Dead-1.0 Ev+1.0 Eh 0 deg	34.38	-0.00	-1.09	-120.49	7.83	-0.01
1.2 Dead+1.0 Ev+1.0 Eh 30 deg	47.66	0.54	-0.94	-97.49	-57.38	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 30 deg	34.38	0.54	-0.94	-102.34	-59.91	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 60 deg	47.66	0.94	-0.54	-47.81	-107.06	0.00
0.9 Dead-1.0 Ev+1.0 Eh 60 deg	34.38	0.94	-0.54	-52.74	-109.50	0.00
1.2 Dead+1.0 Ev+1.0 Eh 90 deg	47.66	1.09	-0.00	20.06	-125.26	0.01
0.9 Dead-1.0 Ev+1.0 Eh 90 deg	34.38	1.09	0.00	15.00	-127.66	0.01
1.2 Dead+1.0 Ev+1.0 Eh 120 deg	47.66	0.94	0.54	87.94	-107.07	0.01
0.9 Dead-1.0 Ev+1.0 Eh 120 deg	34.38	0.94	0.54	82.74	-109.51	0.01
1.2 Dead+1.0 Ev+1.0 Eh 150 deg	47.66	0.54	0.94	137.64	-57.39	0.01
0.9 Dead-1.0 Ev+1.0 Eh 150 deg	34.38	0.54	0.94	132.35	-59.92	0.01
1.2 Dead+1.0 Ev+1.0 Eh 180 deg	47.66	-0.00	1.09	155.83	10.49	0.01
0.9 Dead-1.0 Ev+1.0 Eh 180 deg	34.38	0.00	1.09	150.50	7.83	0.01
1.2 Dead+1.0 Ev+1.0 Eh 210 deg	47.66	-0.54	0.94	137.66	78.39	0.00
0.9 Dead-1.0 Ev+1.0 Eh 210 deg	34.38	-0.54	0.94	132.35	75.58	0.00
1.2 Dead+1.0 Ev+1.0 Eh 240 deg	47.66	-0.94	0.54	87.96	128.09	-0.00

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Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
deg						
0.9 Dead-1.0 Ev+1.0 Eh 240	34.38	-0.94	0.54	82.75	125.18	-0.00
deg						
1.2 Dead+1.0 Ev+1.0 Eh 270	47.66	-1.09	-0.00	20.07	146.28	-0.01
deg						
0.9 Dead-1.0 Ev+1.0 Eh 270	34.38	-1.09	0.00	15.00	143.33	-0.01
deg						
1.2 Dead+1.0 Ev+1.0 Eh 300	47.66	-0.94	-0.54	-47.82	128.07	-0.01
deg						
0.9 Dead-1.0 Ev+1.0 Eh 300	34.38	-0.94	-0.54	-52.75	125.18	-0.01
deg						
1.2 Dead+1.0 Ev+1.0 Eh 330	47.66	-0.54	-0.94	-97.50	78.37	-0.01
deg						
0.9 Dead-1.0 Ev+1.0 Eh 330	34.38	-0.54	-0.94	-102.34	75.57	-0.01
deg						

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-39.07	0.00	0.00	39.07	0.00	0.000%
2	0.24	-46.88	-42.95	-0.24	46.88	42.95	0.000%
3	0.24	-35.16	-42.95	-0.24	35.16	42.95	0.000%
4	19.34	-46.88	-33.17	-19.34	46.88	33.17	0.000%
5	19.34	-35.16	-33.17	-19.34	35.16	33.17	0.000%
6	33.30	-46.88	-19.32	-33.30	46.88	19.32	0.000%
7	33.30	-35.16	-19.32	-33.30	35.16	19.32	0.000%
8	41.02	-46.88	-0.24	-41.02	46.88	0.24	0.000%
9	41.02	-35.16	-0.24	-41.02	35.16	0.24	0.000%
10	37.62	-46.88	21.53	-37.62	46.88	-21.53	0.000%
11	37.62	-35.16	21.53	-37.62	35.16	-21.53	0.000%
12	21.35	-46.88	37.14	-21.35	46.88	-37.14	0.000%
13	21.35	-35.16	37.14	-21.35	35.16	-37.14	0.000%
14	-0.24	-46.88	40.52	0.24	46.88	-40.52	0.000%
15	-0.24	-35.16	40.52	0.24	35.16	-40.52	0.000%
16	-19.34	-46.88	33.17	19.34	46.88	-33.17	0.000%
17	-19.34	-35.16	33.17	19.34	35.16	-33.17	0.000%
18	-35.40	-46.88	20.53	35.40	46.88	-20.53	0.000%
19	-35.40	-35.16	20.53	35.40	35.16	-20.53	0.000%
20	-41.02	-46.88	0.24	41.02	46.88	-0.24	0.000%
21	-41.02	-35.16	0.24	41.02	35.16	-0.24	0.000%
22	-35.52	-46.88	-20.32	35.52	46.88	20.32	0.000%
23	-35.52	-35.16	-20.32	35.52	35.16	20.32	0.000%
24	-21.35	-46.88	-37.14	21.35	46.88	37.14	0.000%
25	-21.35	-35.16	-37.14	21.35	35.16	37.14	0.000%
26	0.00	-136.45	0.00	0.00	136.45	0.00	0.000%
27	0.04	-136.45	-13.24	-0.04	136.45	13.24	0.000%
28	6.28	-136.45	-10.82	-6.28	136.45	10.82	0.000%
29	10.89	-136.45	-6.30	-10.89	136.45	6.30	0.000%
30	13.29	-136.45	-0.04	-13.29	136.45	0.04	0.000%
31	12.16	-136.45	6.99	-12.16	136.45	-6.99	0.000%
32	6.78	-136.45	11.76	-6.78	136.45	-11.76	0.000%
33	-0.04	-136.45	12.86	0.04	136.45	-12.86	0.000%
34	-6.28	-136.45	10.82	6.28	136.45	-10.82	0.000%
35	-11.22	-136.45	6.49	11.22	136.45	-6.49	0.000%
36	-13.29	-136.45	0.04	13.29	136.45	-0.04	0.000%
37	-11.83	-136.45	-6.80	11.83	136.45	6.80	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
38	-6.78	-136.45	-11.76	6.78	136.45	11.76	0.000%
39	0.06	-39.07	-11.53	-0.06	39.07	11.53	0.000%
40	5.19	-39.07	-8.91	-5.19	39.07	8.91	0.000%
41	8.94	-39.07	-5.19	-8.94	39.07	5.19	0.000%
42	11.01	-39.07	-0.06	-11.01	39.07	0.06	0.000%
43	10.10	-39.07	5.78	-10.10	39.07	-5.78	0.000%
44	5.73	-39.07	9.97	-5.73	39.07	-9.97	0.000%
45	-0.06	-39.07	10.88	0.06	39.07	-10.88	0.000%
46	-5.19	-39.07	8.91	5.19	39.07	-8.91	0.000%
47	-9.50	-39.07	5.51	9.50	39.07	-5.51	0.000%
48	-11.01	-39.07	0.06	11.01	39.07	-0.06	0.000%
49	-9.54	-39.07	-5.46	9.54	39.07	5.46	0.000%
50	-5.73	-39.07	-9.97	5.73	39.07	9.97	0.000%
51	0.00	-47.66	-1.09	0.00	47.66	1.09	0.000%
52	0.00	-34.38	-1.09	0.00	34.38	1.09	0.000%
53	0.54	-47.66	-0.94	-0.54	47.66	0.94	0.000%
54	0.54	-34.38	-0.94	-0.54	34.38	0.94	0.000%
55	0.94	-47.66	-0.54	-0.94	47.66	0.54	0.000%
56	0.94	-34.38	-0.54	-0.94	34.38	0.54	0.000%
57	1.09	-47.66	0.00	-1.09	47.66	0.00	0.000%
58	1.09	-34.38	0.00	-1.09	34.38	-0.00	0.000%
59	0.94	-47.66	0.54	-0.94	47.66	-0.54	0.000%
60	0.94	-34.38	0.54	-0.94	34.38	-0.54	0.000%
61	0.54	-47.66	0.94	-0.54	47.66	-0.94	0.000%
62	0.54	-34.38	0.94	-0.54	34.38	-0.94	0.000%
63	0.00	-47.66	1.09	0.00	47.66	-1.09	0.000%
64	0.00	-34.38	1.09	-0.00	34.38	-1.09	0.000%
65	-0.54	-47.66	0.94	0.54	47.66	-0.94	0.000%
66	-0.54	-34.38	0.94	0.54	34.38	-0.94	0.000%
67	-0.94	-47.66	0.54	0.94	47.66	-0.54	0.000%
68	-0.94	-34.38	0.54	0.94	34.38	-0.54	0.000%
69	-1.09	-47.66	0.00	1.09	47.66	0.00	0.000%
70	-1.09	-34.38	0.00	1.09	34.38	-0.00	0.000%
71	-0.94	-47.66	-0.54	0.94	47.66	0.54	0.000%
72	-0.94	-34.38	-0.54	0.94	34.38	0.54	0.000%
73	-0.54	-47.66	-0.94	0.54	47.66	0.94	0.000%
74	-0.54	-34.38	-0.94	0.54	34.38	0.94	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.0000001	0.0000001
2	Yes	4	0.0000001	0.00000428
3	Yes	4	0.0000001	0.00000395
4	Yes	4	0.0000001	0.00000462
5	Yes	4	0.0000001	0.00000399
6	Yes	4	0.0000001	0.00000479
7	Yes	4	0.0000001	0.00000411
8	Yes	4	0.0000001	0.00000504
9	Yes	4	0.0000001	0.00000441
10	Yes	4	0.0000001	0.00000440
11	Yes	4	0.0000001	0.00000405
12	Yes	4	0.0000001	0.00000575
13	Yes	4	0.0000001	0.00000504
14	Yes	4	0.0000001	0.00000536

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15	Yes	4	0.00000001	0.00000460
16	Yes	4	0.00000001	0.00000472
17	Yes	4	0.00000001	0.00000407
18	Yes	4	0.00000001	0.00000384
19	Yes	4	0.00000001	0.00000354
20	Yes	4	0.00000001	0.00000505
21	Yes	4	0.00000001	0.00000442
22	Yes	4	0.00000001	0.00000527
23	Yes	4	0.00000001	0.00000453
24	Yes	4	0.00000001	0.00000566
25	Yes	4	0.00000001	0.00000498
26	Yes	4	0.00000001	0.00000378
27	Yes	4	0.00000001	0.00001990
28	Yes	4	0.00000001	0.00001945
29	Yes	4	0.00000001	0.00001972
30	Yes	4	0.00000001	0.00002006
31	Yes	4	0.00000001	0.00002067
32	Yes	4	0.00000001	0.00002150
33	Yes	4	0.00000001	0.00002196
34	Yes	4	0.00000001	0.00002167
35	Yes	4	0.00000001	0.00002146
36	Yes	4	0.00000001	0.00002166
37	Yes	4	0.00000001	0.00002182
38	Yes	4	0.00000001	0.00002098
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000001
41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00000001
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000001
50	Yes	4	0.00000001	0.00000001
51	Yes	4	0.00000001	0.00000001
52	Yes	4	0.00000001	0.00000001
53	Yes	4	0.00000001	0.00000001
54	Yes	4	0.00000001	0.00000001
55	Yes	4	0.00000001	0.00000001
56	Yes	4	0.00000001	0.00000001
57	Yes	4	0.00000001	0.00000001
58	Yes	4	0.00000001	0.00000001
59	Yes	4	0.00000001	0.00000001
60	Yes	4	0.00000001	0.00000001
61	Yes	4	0.00000001	0.00000001
62	Yes	4	0.00000001	0.00000001
63	Yes	4	0.00000001	0.00000001
64	Yes	4	0.00000001	0.00000001
65	Yes	4	0.00000001	0.00000001
66	Yes	4	0.00000001	0.00000001
67	Yes	4	0.00000001	0.00000001
68	Yes	4	0.00000001	0.00000001
69	Yes	4	0.00000001	0.00000001
70	Yes	4	0.00000001	0.00000001
71	Yes	4	0.00000001	0.00000001
72	Yes	4	0.00000001	0.00000001
73	Yes	4	0.00000001	0.00000001
74	Yes	4	0.00000001	0.00000001

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Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	160 - 140	4.512	47	0.265	0.046
T2	140 - 126.667	3.411	47	0.240	0.035
T3	126.667 - 120	2.768	44	0.213	0.029
T4	120 - 100	2.475	44	0.196	0.025
T5	100 - 80	1.688	44	0.166	0.017
T6	80 - 60	1.055	44	0.118	0.011
T7	60 - 40	0.604	44	0.083	0.007
T8	40 - 20	0.286	43	0.056	0.004
T9	20 - 0	0.084	43	0.027	0.002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
163.00	Feed Line	47	4.512	0.265	0.046	100493
159.00	16 ft Whip	47	4.455	0.264	0.045	100493
157.00	Platform w/Rail	47	4.342	0.262	0.044	100493
150.00	CCISeismic Tower Section 1	47	3.950	0.254	0.040	50246
149.50	CCISeismic general cable 7/8" Coax From 0 to 159 (140ft to159ft)	47	3.922	0.253	0.040	47854
148.50	CCISeismic (2) general cable 0.78" DC From 0 to 157 (140ft to157ft)	47	3.867	0.252	0.039	43692
146.00	Sector Frame	47	3.730	0.249	0.038	35890
143.50	CCISeismic W/G Ladder B From 10 to 147 (140ft to147ft)	47	3.596	0.245	0.037	30505
143.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 146 (140ft to146ft)	47	3.569	0.244	0.036	29675
133.33	CCISeismic Tower Section 2	47	3.076	0.228	0.032	27671
132.00	14 ft Face Mount	44	3.013	0.225	0.031	28244
126.50	6 ft Sidearm	44	2.760	0.212	0.029	30526
123.33	CCISeismic Tower Section 3	44	2.619	0.204	0.027	31225
110.00	CCISeismic Tower Section 4	44	2.064	0.180	0.021	31541
109.25	CCISeismic general cable 7/8" Coax From 0 to 118.5 (100ft to118.5ft)	44	2.034	0.179	0.021	31529
107.00	6 ft Sidearm	44	1.947	0.177	0.020	31493
90.00	CCISeismic Tower Section 5	44	1.349	0.143	0.013	26398
89.50	CCISeismic general cable 1/2" Coax From 0 to 99 (80ft to99ft)	44	1.333	0.142	0.013	26191
70.00	CCISeismic Tower Section 6	44	0.809	0.099	0.008	29008
50.00	CCISeismic Tower Section 7	43	0.431	0.069	0.006	42354
47.50	4 ft Sidearm	43	0.392	0.066	0.005	43012
43.75	CCISeismic general cable 1/2" Coax From 0 to 47.5 (40ft to47.5ft)	43	0.337	0.061	0.005	44023
37.50	4 ft Sidearm	43	0.254	0.052	0.004	42728
30.00	CCISeismic Tower Section 8	43	0.169	0.041	0.003	37228
28.75	CCISeismic W/G Ladder A From 0 to 37.5 (20ft to37.5ft)	43	0.157	0.040	0.003	36432
17.25	CCISeismic W/G Ladder D From 14.5 to 147 (14.5ft to20ft)	43	0.067	0.023	0.002	36952
16.00	CCISeismic W/G Ladder D From 12 to 152 (12ft to20ft)	43	0.060	0.021	0.001	39633
15.50	CCISeismic W/G Ladder C From	43	0.057	0.021	0.001	40892

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Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
15.00	11 to 160 (11ft to20ft) CCiSeismic W/G Ladder B From 10 to 147 (10ft to20ft)	43	0.055	0.020	0.001	42252
10.00	CCiSeismic Tower Section 9	43	0.033	0.013	0.001	63378

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	160 - 140	16.489	12	0.942	0.171
T2	140 - 126.667	12.633	10	0.865	0.130
T3	126.667 - 120	10.299	10	0.773	0.107
T4	120 - 100	9.215	10	0.717	0.095
T5	100 - 80	6.293	10	0.612	0.063
T6	80 - 60	3.939	10	0.441	0.040
T7	60 - 40	2.258	10	0.309	0.026
T8	40 - 20	1.069	10	0.208	0.016
T9	20 - 0	0.313	10	0.101	0.007

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
163.00	Feed Line	12	16.489	0.942	0.171	32008
159.00	16 ft Whip	12	16.292	0.939	0.169	32008
157.00	Platform w/Rail	12	15.898	0.933	0.164	32008
150.00	CCiSeismic Tower Section 1	12	14.529	0.910	0.150	16004
149.50	CCiSeismic general cable 7/8" Coax From 0 to 159 (140ft to159ft)	12	14.432	0.908	0.149	15242
148.50	CCiSeismic (2) general cable 0.78" DC From 0 to 157 (140ft to157ft)	12	14.239	0.904	0.147	13916
146.00	Sector Frame	12	13.759	0.894	0.142	11431
143.50	CCiSeismic W/G Ladder B From 10 to 147 (140ft to147ft)	12	13.285	0.883	0.137	9714
143.00	CCiSeismic (12) general cable 1 5/8" Coax From 0 to 146 (140ft to146ft)	12	13.191	0.880	0.136	9447
133.33	CCiSeismic Tower Section 2	10	11.438	0.825	0.119	8339
132.00	14 ft Face Mount	10	11.206	0.815	0.117	8410
126.50	6 ft Sidearm	10	10.271	0.772	0.107	8720
123.33	CCiSeismic Tower Section 3	10	9.750	0.744	0.101	8915
110.00	CCiSeismic Tower Section 4	10	7.690	0.663	0.079	8886
109.25	CCiSeismic general cable 7/8" Coax From 0 to 118.5 (100ft to118.5ft)	10	7.581	0.660	0.077	8868
107.00	6 ft Sidearm	10	7.257	0.650	0.074	8813
90.00	CCiSeismic Tower Section 5	10	5.035	0.531	0.050	7254
89.50	CCiSeismic general cable 1/2" Coax From 0 to 99 (80ft to99ft)	10	4.976	0.527	0.050	7196
70.00	CCiSeismic Tower Section 6	10	3.023	0.367	0.032	7903
50.00	CCiSeismic Tower Section 7	10	1.611	0.258	0.021	11385

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Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
47.50	4 ft Sidearm	10	1.466	0.246	0.019	11561
43.75	CCISEismic general cable 1/2" Coax From 0 to 47.5 (40ft to47.5ft)	10	1.261	0.227	0.018	11831
37.50	4 ft Sidearm	10	0.950	0.195	0.015	11475
30.00	CCISEismic Tower Section 8	10	0.631	0.155	0.011	9986
28.75	CCISEismic W/G Ladder A From 0 to 37.5 (20ft to37.5ft)	10	0.585	0.148	0.011	9770
17.25	CCISEismic W/G Ladder D From 14.5 to 147 (14.5ft to20ft)	10	0.249	0.087	0.006	9899
16.00	CCISEismic W/G Ladder D From 12 to 152 (12ft to20ft)	10	0.223	0.080	0.006	10617
15.50	CCISEismic W/G Ladder C From 11 to 160 (11ft to20ft)	10	0.214	0.077	0.005	10954
15.00	CCISEismic W/G Ladder B From 10 to 147 (10ft to20ft)	10	0.204	0.075	0.005	11319
10.00	CCISEismic Tower Section 9	10	0.121	0.050	0.003	16978

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load Allowable	Allowable Ratio	Criteria	
T1	160	Leg	A325N	0.63	4	6.47	20.34	0.318	✓	1	Bolt Tension
		Diagonal	A325N	0.63	1	5.78	6.67	0.868	✓	1	Member Block Shear
		Top Girt	A325N	0.63	1	0.35	10.44	0.033	✓	1	Gusset Bearing
T2	140	Diagonal	A325N	0.63	1	5.63	10.25	0.549	✓	1	Member Block Shear
		Secondary Horizontal	A325N	0.63	2	0.45	8.92	0.050	✓	1	Member Block Shear
		Top Girt	A325N	0.63	1	0.90	9.72	0.092	✓	1	Member Block Shear
T3	126.667	Leg	A325N	0.63	4	13.47	20.34	0.662	✓	1	Bolt Tension
		Diagonal	A325N	0.63	1	5.75	10.25	0.561	✓	1	Member Block Shear
		Secondary Horizontal	A325N	0.63	2	0.58	8.92	0.065	✓	1	Member Block Shear
		Top Girt	A325N	0.63	1	1.16	10.44	0.111	✓	1	Gusset Bearing
T4	120	Leg	A325N	0.75	4	20.03	30.10	0.665	✓	1	Bolt Tension
		Diagonal	A325N	0.63	1	6.42	9.72	0.660	✓	1	Member Block Shear
		Secondary Horizontal	A325N	0.75	2	0.83	8.00	0.103	✓	1	Member Block Shear
T5	100	Leg	A325N	0.88	4	26.44	41.56	0.636	✓	1	Bolt Tension
		Diagonal	A325N	0.63	1	6.90	10.44	0.661	✓	1	Gusset Bearing
		Secondary Horizontal	A325N	0.75	2	1.07	8.51	0.126	✓	1	Member Block Shear
T6	80	Leg	A325N	1.00	4	32.57	54.52	0.597	✓	1	Bolt Tension
		Diagonal	A325N	0.63	1	7.84	10.44	0.751	✓	1	Gusset Bearing
		Secondary Horizontal	A325N	0.75	2	1.32	11.35	0.116	✓	1	Member Block Shear

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Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load Allowable	Allowable Ratio	Criteria
T7	60	Leg	A325N	1.00	4	38.53	54.52	0.707 ✓	1	Bolt Tension
		Diagonal	A325N	0.63	1	8.06	10.44	0.772 ✓	1	Gusset Bearing
T8	40	Leg	A325N	1.00	6	29.39	54.52	0.539 ✓	1	Bolt Tension
		Diagonal	A325N	0.63	1	8.09	10.44	0.775 ✓	1	Gusset Bearing
T9	20	Diagonal	A325N	0.63	1	8.66	10.44	0.829 ✓	1	Gusset Bearing

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 P _u / φP _n ¹
T1	160 - 140	P2.5x.203<ERW>	20.00	4.88	61.4 K=1.00	1.59	-36.63	58.63	0.625 ¹ ✓
T2	140 - 126.667	P2.5x.276<ERW>	13.36	3.40	43.8 K=1.00	2.11	-51.61	89.00	0.580 ¹ ✓
T3	126.667 - 120	P2.5x.276<ERW>	6.68	3.31	42.8 K=1.00	2.11	-66.89	89.59	0.747 ¹ ✓
T4	120 - 100	P2.5x.552<ERW>	20.03	3.35	47.1 K=1.00	3.81	-95.49	157.07	0.608 ¹ ✓
T5	100 - 80	P3x.3<ERW>	20.03	3.34	35.0 K=1.00	2.82	-123.62	125.17	0.988 ¹ ✓
T6	80 - 60	P4x.337<ERW>	20.04	5.03	40.7 K=1.00	4.12	-152.26	177.12	0.860 ¹ ✓
T7	60 - 40	P5x.375<ERW>	20.03	9.73	63.2 K=1.00	5.71	-181.11	206.85	0.876 ¹ ✓
T8	40 - 20	P5x.375<ERW>	20.04	9.77	63.4 K=1.00	5.71	-208.32	206.44	1.009 ¹ ✗
T9	20 - 0	4.8.1 (1.01 CR) - 167 ROHN 6 EHS<ERW>	20.03	9.82	52.8 K=1.00	6.27	-235.48	247.98	0.950 ¹ ✓

¹ P_u / φP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n ¹
T1	160 - 140	L1 3/4x1 3/4x3/16	9.93	4.68	163.7 K=1.00	0.62	-5.88	6.64	0.885 ¹ ✓

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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	140 - 126.667	L2x2x1/4	11.66	5.74	176.3 K=1.00	0.94	-5.32	8.64	0.616 ¹ ✓
T3	126.667 - 120	L2x2x1/4	12.14	5.98	183.4 K=1.00	0.94	-6.27	7.98	0.786 ¹ ✓
T4	120 - 100	L2 1/2x2 1/2x3/16	13.94	6.88	166.8 K=1.00	0.90	-6.50	9.28	0.701 ¹ ✓
T5	100 - 80	L3x3x3/16	15.75	7.75	156.1 K=1.00	1.09	-7.20	12.80	0.562 ¹ ✓
T6	80 - 60	L3x3x1/4	18.93	9.40	190.6 K=1.00	1.44	-8.22	11.35	0.724 ¹ ✓
T7	60 - 40	L3 1/2x3 1/2x1/4	20.69	10.22	176.6 K=1.00	1.69	-8.25	15.50	0.532 ¹ ✓
T8	40 - 20	L3 1/2x3 1/2x1/4	22.55	11.16	193.0 K=1.00	1.69	-8.30	12.99	0.639 ¹ ✓
T9	20 - 0	L4x4x1/4	24.42	12.03	181.6 K=1.00	1.94	-9.24	16.83	0.549 ¹ ✓

¹ P_u / φP_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 $\frac{P_u}{\phi P_n}$
T2	140 - 126.667	L2x2x1/4	9.64	9.40	106.3 K=0.57	0.94	-0.90	21.77	0.041 ¹ ✓
T3	126.667 - 120	L2x2x1/4	10.29	10.05	109.5 K=0.55	0.94	-1.16	21.03	0.055 ¹ ✓
T4	120 - 100	L2 1/2x2 1/2x3/16	12.32	12.08	106.6 K=0.57	0.90	-1.66	20.87	0.079 ¹ ✓
T5	100 - 80	L3x3x3/16	14.34	14.05	104.9 K=0.58	1.09	-2.14	25.24	0.085 ¹ ✓
T6	80 - 60	L3x3x1/4	16.22	15.85	111.1 K=0.54	1.44	-2.64	31.71	0.083 ¹ ✓

¹ P_u / φP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140	L2x2x5/16	8.65	8.12	250.0 K=1.00	1.15	-0.42	5.27	0.079 ¹ ✓
T2	140 - 126.667	KL/R > 200 (C) - 4 L2 1/2x2 1/2x3/16	8.67	8.15	197.6 K=1.00	0.90	-0.90	6.61	0.135 ¹ ✓

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T3	126.667 - 120	L3x3x3/16	9.98	9.46	190.4 K=1.00	1.09	-1.16	8.60	0.135 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	160 - 140	P2.5x.203<ERW>	20.00	4.88	61.4	1.59	25.90	77.27	0.335 ¹ ✓
T2	140 - 126.667	P2.5x.276<ERW>	13.36	3.40	43.8	2.11	39.72	102.40	0.388 ¹ ✓
T3	126.667 - 120	P2.5x.276<ERW>	6.68	3.31	42.8	2.11	53.88	102.40	0.526 ¹ ✓
T4	120 - 100	P2.5x.552<ERW>	20.03	3.35	47.1	3.81	80.11	184.73	0.434 ¹ ✓
T5	100 - 80	P3x.3<ERW>	20.03	3.34	35.0	2.82	105.77	136.93	0.772 ¹ ✓
T6	80 - 60	P4x.337<ERW>	20.04	5.03	40.7	4.12	130.27	199.92	0.652 ¹ ✓
T7	60 - 40	P5x.375<ERW>	20.03	9.73	63.2	5.71	154.12	277.07	0.556 ¹ ✓
T8	40 - 20	P5x.375<ERW>	20.04	9.77	63.4	5.71	176.33	277.07	0.636 ¹ ✓
T9	20 - 0	4.8.1 (1.00 CR) - 168 ROHN 6 EHS<ERW>	20.03	9.82	52.8	6.27	198.36	303.95	0.653 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	160 - 140	L1 3/4x1 3/4x3/16	9.93	4.68	107.8	0.36	5.78	15.68	0.369 ¹ ✓
T2	140 - 126.667	L2x2x1/4	11.13	5.48	110.7	0.56	5.63	24.49	0.230 ¹ ✓
T3	126.667 - 120	L2x2x1/4	12.14	5.98	120.5	0.56	5.75	24.49	0.235 ¹ ✓

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T4	120 - 100	L2 1/2x2 1/2x3/16	13.94	6.88	108.3	0.57	6.42	24.84	0.259 ¹
T5	100 - 80	L3x3x3/16	15.75	7.75	100.9	0.71	6.90	30.97	0.223 ¹
T6	80 - 60	L3x3x1/4	18.93	9.40	123.1	0.94	7.84	40.86	0.192 ¹
T7	60 - 40	L3 1/2x3 1/2x1/4	20.69	10.22	114.0	1.13	8.06	49.02	0.164 ¹
T8	40 - 20	L3 1/2x3 1/2x1/4	22.55	11.16	124.4	1.13	8.09	49.02	0.165 ¹
T9	20 - 0	L4x4x1/4	24.42	12.03	116.9	1.31	8.66	57.18	0.151 ¹

¹ P_u / φP_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 $\frac{P_u}{\phi P_n}$
T2	140 - 126.667	L2x2x1/4	8.99	8.75	172.3	0.56	0.90	24.49	0.037 ¹
T3	126.667 - 120	L2x2x1/4	10.29	10.05	198.0	0.56	1.16	24.49	0.047 ¹
T4	120 - 100	L2 1/2x2 1/2x3/16	12.32	12.08	186.4	0.55	1.66	24.08	0.069 ¹
T5	100 - 80	L3x3x3/16	13.68	13.39	171.2	0.69	2.14	30.21	0.071 ¹
T6	80 - 60	L3x3x1/4	15.21	14.84	191.5	0.92	2.64	39.84	0.066 ¹

¹ P_u / φP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140	L2x2x5/16	8.65	8.12	167.8	0.69	0.35	29.87	0.012 ¹
T2	140 - 126.667	L2 1/2x2 1/2x3/16	8.67	8.15	130.0	0.57	0.90	24.84	0.036 ¹
T3	126.667 - 120	L3x3x3/16	9.98	9.46	124.5	0.71	1.16	30.97	0.037 ¹

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¹ $P_u / \phi P_n$ controls

Section Capacity Table

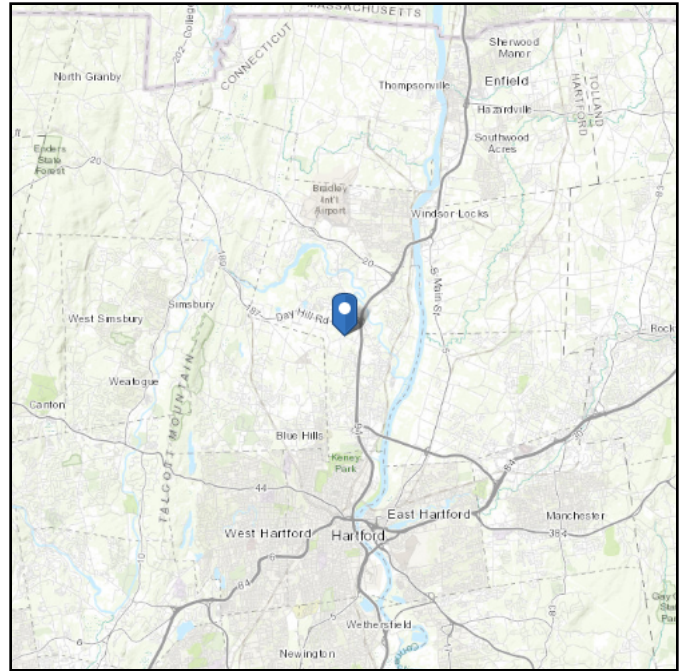
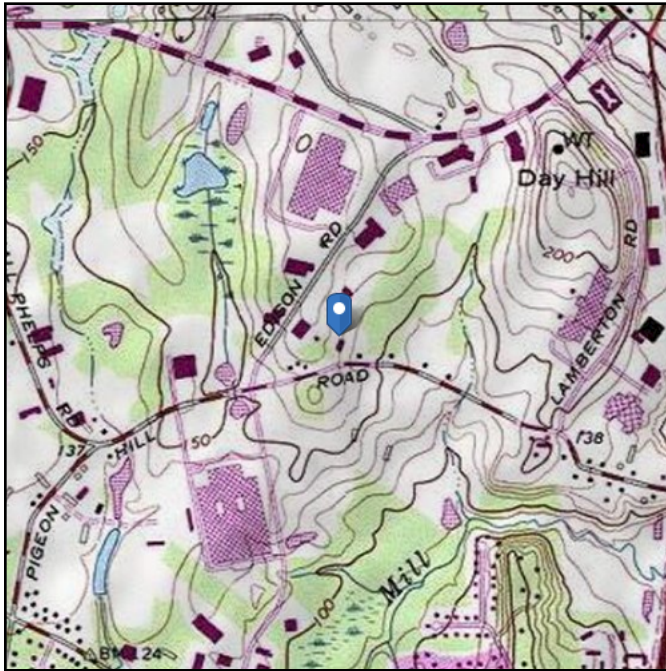
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	160 - 140	Leg	P2.5x.203<ERW>	1	-36.63	58.63	62.5	Pass
		Diagonal	L1 3/4x1 3/4x3/16	11	-5.88	6.64	88.5	Pass
		Top Girt	L2x2x5/16	4	-0.42	5.27	7.9	Pass
T2	140 - 126.667	Leg	P2.5x.276<ERW>	31	-51.61	89.00	58.0	Pass
		Diagonal	L2x2x1/4	38	-5.32	8.64	61.6	Pass
		Secondary Horizontal	L2x2x1/4	45	-0.90	21.77	4.1	Pass
		Top Girt	L2 1/2x2 1/2x3/16	36	-0.90	6.61	13.5	Pass
T3	126.667 - 120	Leg	P2.5x.276<ERW>	55	-66.89	89.59	74.7	Pass
		Diagonal	L2x2x1/4	62	-6.27	7.98	78.6	Pass
		Secondary Horizontal	L2x2x1/4	69	-1.16	21.03	5.5	Pass
		Top Girt	L3x3x3/16	60	-1.16	8.60	13.5	Pass
T4	120 - 100	Leg	P2.5x.552<ERW>	70	-95.49	157.07	60.8	Pass
		Diagonal	L2 1/2x2 1/2x3/16	74	-6.50	9.28	70.1	Pass
		Secondary Horizontal	L2 1/2x2 1/2x3/16	81	-1.66	20.87	7.9	Pass
T5	100 - 80	Leg	P3x.3<ERW>	100	-123.62	125.17	98.8	Pass
		Diagonal	L3x3x3/16	104	-7.20	12.80	56.2	Pass
		Secondary Horizontal	L3x3x3/16	111	-2.14	25.24	8.5	Pass
T6	80 - 60	Leg	P4x.337<ERW>	131	-152.26	177.12	86.0	Pass
		Diagonal	L3x3x1/4	134	-8.22	11.35	72.4	Pass
		Secondary Horizontal	L3x3x1/4	139	-2.64	31.71	8.3	Pass
T7	60 - 40	Leg	P5x.375<ERW>	152	-181.11	206.85	87.6	Pass
		Diagonal	L3 1/2x3 1/2x1/4	155	-8.25	15.50	53.2	Pass
T8	40 - 20	Leg	P5x.375<ERW>	167	-208.32	206.44	100.9	Acceptable
		Diagonal	L3 1/2x3 1/2x1/4	170	-8.30	12.99	63.9	Pass
T9	20 - 0	Leg	ROHN 6 EHS<ERW>	182	-235.48	247.98	95.0	Pass
		Diagonal	L4x4x1/4	185	-9.24	16.83	54.9	Pass
						Summary		
						Leg (T8)	100.9	Acceptable
						Diagonal (T1)	88.5	Pass
						Secondary Horizontal (T5)	8.5	Pass
						Top Girt (T2)	13.5	Pass
						Bolt Checks	86.8	Pass
						RATING =	100.9	Acceptable

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: B - Rock

Elevation: 169.4 ft (NAVD 88)
Latitude: 41.866639
Longitude: -72.674777



Wind

Results:

Wind Speed:	116 Vmph
10-year MRI	75 Vmph
25-year MRI	83 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4

Date Accessed: Fri Oct 16 2020

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 7-16 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 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

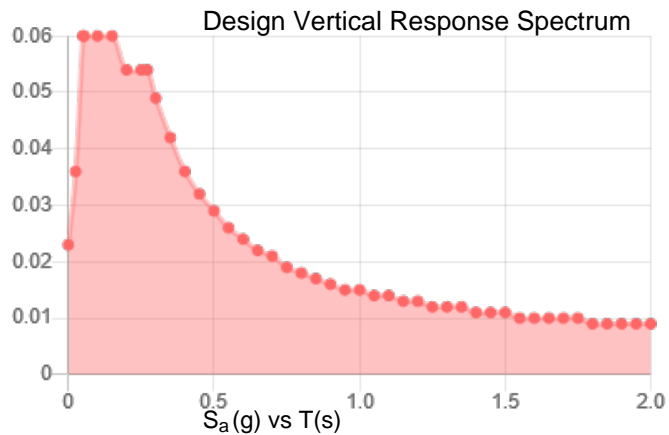
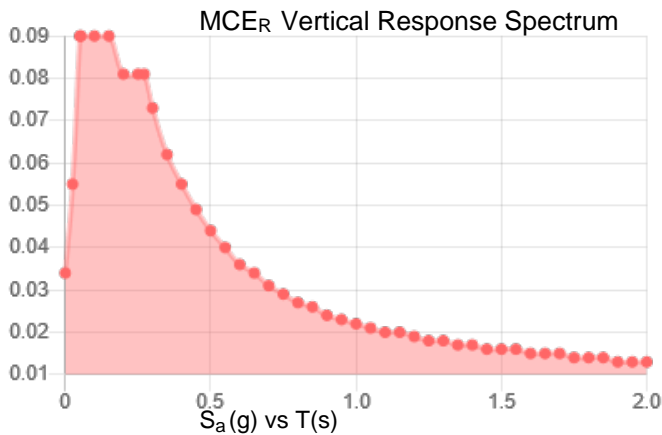
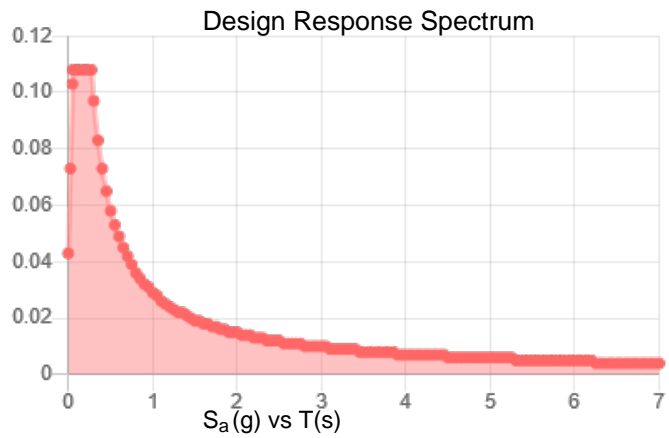
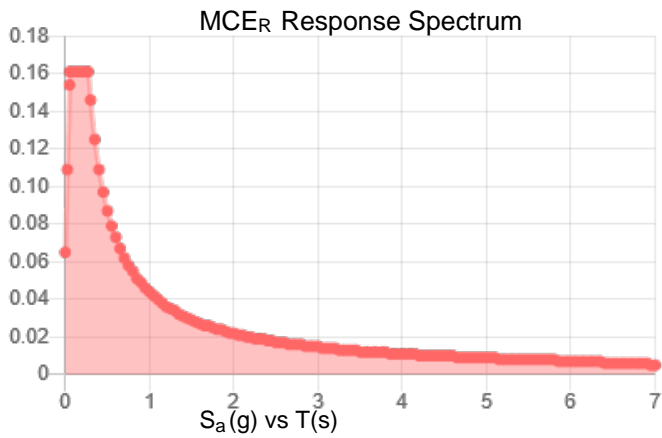
Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

Site Soil Class: B - Rock

Results:

S_s :	0.179	S_{D1} :	0.029
S_1 :	0.055	T_L :	6
F_a :	0.9	PGA :	0.095
F_v :	0.8	PGA _M :	0.086
S_{MS} :	0.161	F_{PGA} :	0.9
S_{M1} :	0.044	I_e :	1
S_{DS} :	0.108	C_v :	0.7

Seismic Design Category A



Data Accessed: Fri Oct 16 2020
Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness: 1.50 in.

Concurrent Temperature: 5 F

Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Fri Oct 16 2020

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 500-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.

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Site Name:	Windsor
Site Number:	28229
Engineer:	NDW
Engineering Number:	REV06
Date:	6/23/2021

Reactions

Compression/Leg (P):	234.4 k
Uplift/Leg (U):	197.3 k

Foundation Parameters

Equivalent Diameter of Caisson:	5.8 ft	Vertical Steel Rebar Size #:	1 3/8" R71
Bottom Pad Width:	8.0 ft	# of rebars:	4
Caisson Embedment:	11.5 ft	Rebar Area:	1.58 in ²
Caisson Height Above Ground:	1.5 ft	Rebar Yield Strength (F _y):	120 ksi
Minimum Embedment to Rock:	0.00 ft	Rebar Ultimate Strength (F _u):	150 ksi
Diameter of Drill Holes:	4.0 in		
Rock Anchors Circle:	5.0 ft		
Rock Anchor Bonding Length:	20 ft		

Soil Properties

Unit Weight of Soil above Rock:	110.0 pcf
Unit Weight of Rock:	165.0 pcf
Depth to Rock from Ground:	26.00 ft
Pullout Angle:	30 degrees
Ultimate End Bearing Pressure:	24000 psf
Ultimate Rock-Grout Bond Stress:	100 psi

Compression

P _u :	285.2 k
φ _s P _n :	1152.0 k
P _u /φ _s P _n :	0.25 Result: OK

Uplift

Bond Capacity / Anchor:	226.2 k
Total Bond Capacity:	904.8 k
T _u /φ _s T _n :	0.22 Result: OK

Rebar Capacity:	682.6 k
T _u /φ _s T _n :	0.29 Result: OK

Volume of Soil:	24072.5 cf
Volume of Rock:	20495.1 cf
Pullout Weight:	6080.5 k
φ _s T _n :	5472.5 k

Site Number: 28229
 Site Name: Windsor
 Job Number: REV06
 Engineer: NDW
 Date: 6/23/2021

Anchor Rod Capacity

Design Base Loads (Factored) - Analysis per TIA-222-H Standards (Section 4.9.9)

Bolts

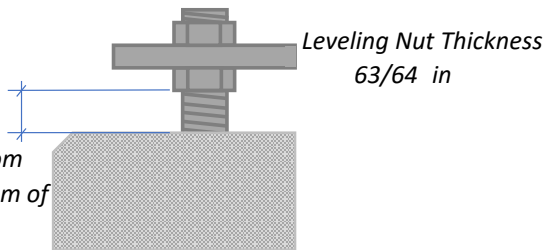
of Bolts: 6
 Ø (in): 1 Type Thread
 Grade: A354-BC -N Coarse
 F_y = 109 ksi
 F_u = 125 ksi

Applied Loads

	Comp.	Uplift
Axial, (k)	234.4	197.3
Shear, (k)	26.6	23.0

Grout Space: 3 in
 l_{ar} = 2 in

Anchor rod projection from supporting surface to bottom of leveling nut



Grouted? Y
 Grout Strength, f'_c (psi) = 6000

Demand

P _{ut} = 32.89 k	P _{uc} = 39.06 k
V _{ut} = 3.83 k	V _{uc} = 4.44 k
M _{ut} = 4.98 in-kips	M _{uc} = 5.77 in-kips

Capacity

φ _t R _{nt} = 56.79 k	φ _c R _{nc} = 66.03 k
φ _v R _{nv} = 36.82 k	φ _c R _{nvc} = 19.81 k
φ _r M _n = 11.07 in-kips	φ _c R _{nbc} = 64.78 k

Results:

1:	l _{ar} ≤ 1(d)	
EQH1.1	$\left(\frac{P_{ut}}{\phi_t R_{nt}}\right)^2 + \left(\frac{V_{ut}}{\phi_v R_{nv}}\right)^2 \leq 1.0$	34.6% Pass
EQH1.2	$\left \frac{P_{uc}}{\phi_c R_{nc}}\right + \left(\frac{V_{uc}}{\phi_c R_{nvc}}\right)^2 \leq 1.0$	64.2% Pass

Anchor Rod Capacity

Calculations

Properties

$l_{ar} = 2.00$ in	$l_{ar} =$ anchor rod projection from supporting surface to bottom of leveling nut
$d = 1$ in	$d =$ nominal anchor rod diameter
$F_y = 109$ ksi	$F_y =$ specified minimum yield strength of anchor rod
$F_u = 125$ ksi	$F_u =$ specified minimum tensile strength of anchor rod
$n = 8$	$n =$ number of threads per inch
$d_n = 0.88$ in	$d_n = d - 0.9743/n$ tensile root diameter
$A_g = 0.79$ in ²	$A_g =$ gross area of anchor rod $A_g = \frac{\pi d^2}{4}$
$A_{n_{drt}} = 0.61$ in ² $A_{n_{.75}} = 0.59$ in ²	$A_n =$ net area of anchor rod from 4.9.6.1 (based on tensile root diameter) 4.9.6.1 $A_n = \left(\frac{\pi}{4}\right) \left(d - \frac{0.9743}{n}\right)^2 = \frac{\pi d_n^2}{4}$ OR $A_n = 0.75A_g$
$Z = 0.11$ in ³	$Z =$ plastic section modulus of anchor rod based on tensile root diameter (d_n) $Z = \frac{d_n^3}{6}$

Demand

$P_{ut} = 32.89$ k	$P_{ut} =$ anchor rod axial tension force
$P_{uc} = 39.06$ k	$P_{uc} =$ anchor rod axial compression force
$V_{ut} = 3.83$ k	$V_{ut} =$ anchor rod shear force occurring with axial tension force
$V_{uc} = 4.44$ k	$V_{uc} =$ anchor rod shear force occurring with axial compression force
$M_{ut} = 4.98$ in-kips	$M_{ut} = 0.65l_{ar}V_{ut}$ bending moment corresponding to V_{ut}
$M_{uc} = 5.7681$ in-kips	$M_{uc} = 0.65l_{ar}V_{uc}$ bending moment corresponding to V_{uc}

Capacity

$f_{uta} = 125 \text{ ksi}$	$f_{uta} = \min (F_u, 1.9F_y, \text{ or } 125\text{ksi})$ <i>limited by ACI318-14 Section 17.4.1</i>
$F_{cr} = 106.94 \text{ ksi}$	$F_{cr} = \text{Critical compression stress from 4.5.4.2 for solid round members based on an effective length equal to } 1.2l_{ar} \text{ and the radius of gyration based on the tensile root diameter } (d_n).$
$r_n = 0.22 \text{ in}$ $\frac{1.2l_{ar}}{r_n} = 10.93$ $4.71 \sqrt{\frac{E}{F'_y}} = 76.83$ $F_e = 2395 \text{ ksi}$ $0.877F_e = 2101 \text{ ksi}$ $[0.658\frac{F'_y}{F_e}] F'_y = 106.94 \text{ ksi}$	<p>4.5.4.2 if $\frac{1.2l_{ar}}{r_n} \leq 4.71 \sqrt{\frac{E}{F'_y}}$ then $F_{cr} = [0.658\frac{F'_y}{F_e}] F'_y$</p> <p>if $\frac{1.2l_{ar}}{r_n} > 4.71 \sqrt{\frac{E}{F'_y}}$ then $F_{cr} = 0.877F_e$</p> <p>Where:</p> <p>$r_n = d_n/4$</p> <p>$F'_y = \text{effective yield stress as determined from 4.5.4.1}$</p> <p>4.5.4.1: For solid round members, the effective yield stress, F'_y, shall be equal to F_y</p> <p>$E = 29000 \text{ ksi}$ modulus of elasticity</p> $F_e = \frac{\pi^2 E}{\left(\frac{1.2l_{ar}}{r_n}\right)^2}$
$R_{nt} = 76 \text{ k}$	$R_{nt} = f_{uta}A_n$ <i>nominal tensile strength</i>
$R_{nc} = 66 \text{ k}$	$R_{nc} = F_yA_n$ <i>nominal compression yield strength</i>
$R_{nv} = 49 \text{ k}$	$R_{nv} = 0.5F_uA_g$ <i>nominal shear rupture strength</i>
$R_{nvc} = 20 \text{ k}$	$R_{nvc} = 0.6F_yA_n/2$ <i>nominal shear yield strength</i>
$M_n = 12 \text{ in-kips}$	$M_n = F_yZ$ <i>nominal flexural strength</i>
$R_{nb} = 65 \text{ k}$	$R_{nb} = F_{cr}A_n$ <i>nominal buckling strength of anchor rod acting as a column</i>
$\phi_t = 0.75$	$\phi_t = \text{tension}$
$\phi_v = 0.75$	$\phi_v = \text{shear}$
$\phi_c = 1.00$	$\phi_c = \text{compression}$
$\phi_f = 0.90$	$\phi_f = \text{bending}$
Grout? Y $f'c = 6000 \text{ psi}$	<i>When anchor rod projection, l_{ar}, exceeds $1(d)$ but is not more than 3 in, it shall be permitted to consider l_{ar} less than or equal to $1(d)$ when 5,000 psi minimum grout is installed.</i>



BU: 28229
 WO: Windsor
 Order: REV06

Structure:
 Rev: H

Location

	Decimal Degrees	Deg	Min	Sec	
Lat:	41.866361	+	41	51	58.90
Long:	-72.674777	-	72	40	29.20

Code and Site Parameters

Seismic Design Code:	TIA-222-H	
Site Soil:	B	Rock
Risk Category:	II	
<u>USGS Seismic Reference</u>		
S _s :	0.1790	g
S ₁ :	0.0550	g
T _L :	6	s

Seismic Design Category Determination

Importance Factor, I _e :	1
Acceleration-based site coefficient, F _a :	0.9000
Velocity-based site coefficient, F _v :	0.8000
Design spectral response acceleration short period, S _{DS} :	0.1074 g
Design spectral response acceleration 1 s period, S _{D1} :	0.0293 g
Seismic Design Category Based on S _{DS} :	A
Seismic Design Category Based on S _{D1} :	A
Seismic Design Category Based on S ₁ :	N/A
Controlling Seismic Design Category:	A



BU: 28229
 WO: Windsor
 Order: REV06

Structure:
 Rev: H

Tower Details

Tower Type: Self-Support
 Height, h: 160 ft
 Effective Seismic Weight, W: 36.21 kips
 Amplification Factor, A_s: 1.0 2.7.8.1

Seismic Base Shear

Response Modification Factor, R: 3

w_a: 14.8548 ft
 w₀: 22.8646 ft
 W₁: 20.7182 kips
 Weight of Structure and Appurtenances within top 5%, W₂: 8.4971 kips
 K_f: 4540 ft
 F_a: 2.2185 hz
 Approximate Fundamental Period Self-Support, T_a: 0.4508 s 2.7.7.1.3.2

Seismic Response Coefficient, C_s: 0.0358 2.7.7.1.1
 Seismic Response Coefficient Max 1, C_{smax}: 0.0217 2.7.7.1.1
 Seismic Response Coefficient Max 2, C_{smax}: N/A 2.7.7.1.1
 Seismic Response Coefficient Min 1, C_{smin}: 0.0300 2.7.7.1.1
 Seismic Response Coefficient Min 2, C_{smin}: N/A 2.7.7.1.1
 Controlling Seismic Response Coefficient, C_{sc}: 0.0300

Seismic Base Shear, V: 1.086 kips 2.7.7.1.1

Vertical Distribution Factors

Period Related Exponent, k: 1.000 2.7.7.1.2
 Sum of w_ih_i^k: 3423.24 2.7.7.1.2

Tower Section Loads								
Section Number	Length	Top Height	Mid Height, h_x	Section Weight, w_x	$w_x h_x^k$	C_{vx}	F_{xh}	F_{xv}
1	20.00	160.00	150.00	0.9535	143.03	0.0418	0.0454	0.0205
2	13.33	140.00	133.33	1.0068	134.24	0.0392	0.0426	0.0216
3	6.67	126.67	123.33	0.6024	74.29	0.0217	0.0236	0.0129
4	20.00	120.00	110.00	1.8805	206.86	0.0604	0.0657	0.0404
5	20.00	100.00	90.00	2.0920	188.28	0.0550	0.0598	0.0449
6	20.00	80.00	70.00	2.4458	171.21	0.0500	0.0543	0.0525
7	20.00	60.00	50.00	2.6482	132.41	0.0387	0.0420	0.0569
8	20.00	40.00	30.00	2.7784	83.35	0.0243	0.0265	0.0597
9	20.00	20.00	10.00	3.2805	32.80	0.0096	0.0104	0.0705
Sum				17.6881	1166.47			

Discrete Loads						
Name	h_x	w_x	$w_x h_x^k$	C_{vx}	F_{xh}	F_{xv}
16 ft Whip	159.00	0.0400	6.36	0.0019	0.0020	0.0009
tower mounts Platform w/Rail	157.00	2.5000	392.50	0.1147	0.1246	0.0537
(4) amphenol BXA-70080/8CF w/8' Mount Pipe	157.00	0.2773	43.53	0.0127	0.0138	0.0060
(4) amphenol BXA-70080/8CF w/8' Mount Pipe	157.00	0.2773	43.53	0.0127	0.0138	0.0060
(4) amphenol BXA-70080/8CF w/8' Mount Pipe	157.00	0.2773	43.53	0.0127	0.0138	0.0060
(4) ericsson RRUS A2 Module	157.00	0.0846	13.29	0.0039	0.0042	0.0018
(4) ericsson RRUS A2 Module	157.00	0.0846	13.29	0.0039	0.0042	0.0018
(4) ericsson RRUS A2 Module	157.00	0.0846	13.29	0.0039	0.0042	0.0018
(2) RRH 3JR52709AA 2x60	157.00	0.1100	17.27	0.0050	0.0055	0.0024
(2) RRH 3JR52709AA 2x60	157.00	0.1100	17.27	0.0050	0.0055	0.0024
(2) RRH 3JR52709AA 2x60	157.00	0.1100	17.27	0.0050	0.0055	0.0024
RRH 4x30-4T4R B13	157.00	0.0572	8.98	0.0026	0.0029	0.0012
RRH 4x30-4T4R B13	157.00	0.0572	8.98	0.0026	0.0029	0.0012
RRH 4x30-4T4R B13	157.00	0.0572	8.98	0.0026	0.0029	0.0012
RRH 4x30-4T4R B25	157.00	0.0510	8.01	0.0023	0.0025	0.0011
RRH 4x30-4T4R B25	157.00	0.0510	8.01	0.0023	0.0025	0.0011
RRH 4x30-4T4R B25	157.00	0.0510	8.01	0.0023	0.0025	0.0011
(4) misc 10"x7"x2" TMA	157.00	0.0600	9.42	0.0028	0.0030	0.0013
(4) misc 10"x7"x2" TMA	157.00	0.0600	9.42	0.0028	0.0030	0.0013
(4) misc 10"x7"x2" TMA	157.00	0.0600	9.42	0.0028	0.0030	0.0013
OVP Junction Box	157.00	0.0200	3.13	0.0009	0.0010	0.0004
OVP Junction Box	157.00	0.0200	3.13	0.0009	0.0010	0.0004
OVP Junction Box	157.00	0.0200	3.13	0.0009	0.0010	0.0004
Face Frame	157.00	0.1100	17.27	0.0050	0.0055	0.0024
18 ft Pipe	157.00	0.5140	80.70	0.0236	0.0256	0.0110
Modified Mount	157.00	0.4000	62.80	0.0183	0.0199	0.0086
(3) T-Arms with Platform	157.00	0.7260	113.98	0.0333	0.0362	0.0156
kathrein 800-10965 w/6' Mount Pipe	157.00	0.1433	22.50	0.0066	0.0071	0.0031
kathrein 800-10965 w/6' Mount Pipe	157.00	0.1433	22.50	0.0066	0.0071	0.0031
kathrein 800-10964 w/6' Mount Pipe	157.00	0.1295	20.34	0.0059	0.0065	0.0028
(3) quintel QS66512-2 w/6' Mount Pipe	157.00	0.4372	68.64	0.0201	0.0218	0.0094
tower mounts 6'x2 1/2" Pipe Mount	157.00	0.0463	7.28	0.0021	0.0023	0.0010
tower mounts 6'x2 1/2" Pipe Mount	157.00	0.0463	7.28	0.0021	0.0023	0.0010
tower mounts 6'x2 1/2" Pipe Mount	157.00	0.0463	7.28	0.0021	0.0023	0.0010
(3) ericsson RRUS 32 B30	157.00	0.1590	24.96	0.0073	0.0079	0.0034
(3) ericsson 4449 B5/B12 RRU	157.00	0.2130	33.44	0.0098	0.0106	0.0046
(3) ericsson 8843 B2/B66A RRU	157.00	0.2160	33.91	0.0099	0.0108	0.0046
DC6-48-60-18-8C	157.00	0.0262	4.11	0.0012	0.0013	0.0006
raycap DC6-48-60-18-8F	157.00	0.0328	5.15	0.0015	0.0016	0.0007
tower mounts Sector Frame	146.00	0.5000	73.00	0.0213	0.0232	0.0107
tower mounts Sector Frame	146.00	0.5000	73.00	0.0213	0.0232	0.0107
tower mounts Sector Frame	146.00	0.5000	73.00	0.0213	0.0232	0.0107
rfs APX16DWV-16DWVS-C-A20 w/6' Mount Pipe	146.00	0.0754	11.01	0.0032	0.0035	0.0016
rfs APX16DWV-16DWVS-C-A20 w/6' Mount Pipe	146.00	0.0754	11.01	0.0032	0.0035	0.0016
rfs APX16DWV-16DWVS-C-A20 w/6' Mount Pipe	146.00	0.0754	11.01	0.0032	0.0035	0.0016
rfs APXVAALL24_43-U-NA20 w/8' Mount Pipe	146.00	0.1020	14.89	0.0044	0.0047	0.0022
rfs APXVAALL24_43-U-NA20 w/8' Mount Pipe	146.00	0.1020	14.89	0.0044	0.0047	0.0022
rfs APXVAALL24_43-U-NA20 w/8' Mount Pipe	146.00	0.1020	14.89	0.0044	0.0047	0.0022
tower mounts 6'x2 1/2" Pipe Mount	146.00	0.0463	6.77	0.0020	0.0021	0.0010
tower mounts 6'x2 1/2" Pipe Mount	146.00	0.0463	6.77	0.0020	0.0021	0.0010
tower mounts 6'x2 1/2" Pipe Mount	146.00	0.0463	6.77	0.0020	0.0021	0.0010
ericsson 4449 B71/B85 RRU	146.00	0.0749	10.94	0.0032	0.0035	0.0016
ericsson 4449 B71/B85 RRU	146.00	0.0749	10.94	0.0032	0.0035	0.0016
ericsson 4449 B71/B85 RRU	146.00	0.0749	10.94	0.0032	0.0035	0.0016
11"x6"x3.5" TMA	146.00	0.0132	1.93	0.0006	0.0006	0.0003
11"x6"x3.5" TMA	146.00	0.0132	1.93	0.0006	0.0006	0.0003
11"x6"x3.5" TMA	146.00	0.0132	1.93	0.0006	0.0006	0.0003
7"x6"x2.5" TMA	146.00	0.0100	1.46	0.0004	0.0005	0.0002
7"x6"x2.5" TMA	146.00	0.0100	1.46	0.0004	0.0005	0.0002
7"x6"x2.5" TMA	146.00	0.0100	1.46	0.0004	0.0005	0.0002
14 ft Face Mount	132.00	0.1400	18.48	0.0054	0.0059	0.0030
tower mounts 6 ft Sidearm	126.50	0.0700	8.86	0.0026	0.0028	0.0015
16 ft Whip	126.50	0.0400	5.06	0.0015	0.0016	0.0009
tower mounts 6 ft Sidearm	107.00	0.0700	7.49	0.0022	0.0024	0.0015
16 ft Whip	107.00	0.0400	4.28	0.0013	0.0014	0.0009
tower mounts 4 ft Sidearm	47.50	0.0533	2.53	0.0007	0.0008	0.0011
10 ft Dipole	47.50	0.0200	0.95	0.0003	0.0003	0.0004
tower mounts 4 ft Sidearm	37.50	0.0533	2.00	0.0006	0.0006	0.0011
12 ft Whip	37.50	0.0300	1.13	0.0003	0.0004	0.0006
Feed Line	163.00	0.0475	7.75	0.0023	0.0025	0.0010
Feed Line	163.00	0.0298	4.85	0.0014	0.0015	0.0006
Sum			10.9693		1665.26	

Linear Loads								
Name	Start Height	End Height	h_x	w_x	$w_x h_x^k$	C_{vx}	F_{xh}	F_{xv}
general cable 7/8" Coax From 0 to 159	140.00	159.00	149.50	0.0099	1.48	0.0004	0.0005	0.0002
general cable 7/8" Coax From 0 to 159	126.67	140.00	133.33	0.0069	0.92	0.0003	0.0003	0.0001
general cable 7/8" Coax From 0 to 159	120.00	126.67	123.33	0.0035	0.43	0.0001	0.0001	0.0001
general cable 7/8" Coax From 0 to 159	100.00	120.00	110.00	0.0104	1.14	0.0003	0.0004	0.0002
general cable 7/8" Coax From 0 to 159	80.00	100.00	90.00	0.0104	0.94	0.0003	0.0003	0.0002
general cable 7/8" Coax From 0 to 159	60.00	80.00	70.00	0.0104	0.73	0.0002	0.0002	0.0002
general cable 7/8" Coax From 0 to 159	40.00	60.00	50.00	0.0104	0.52	0.0002	0.0002	0.0002
general cable 7/8" Coax From 0 to 159	20.00	40.00	30.00	0.0104	0.31	0.0001	0.0001	0.0002
general cable 7/8" Coax From 0 to 159	0.00	20.00	10.00	0.0104	0.10	0.0000	0.0000	0.0002
(6) general cable 1 1/4" Coax From 0 to 159	140.00	159.00	149.50	0.0752	11.25	0.0033	0.0036	0.0016
(6) general cable 1 1/4" Coax From 0 to 159	126.67	140.00	133.33	0.0528	7.04	0.0021	0.0022	0.0011
(6) general cable 1 1/4" Coax From 0 to 159	120.00	126.67	123.33	0.0264	3.26	0.0010	0.0010	0.0006
(6) general cable 1 1/4" Coax From 0 to 159	100.00	120.00	110.00	0.0792	8.71	0.0025	0.0028	0.0017
(6) general cable 1 1/4" Coax From 0 to 159	80.00	100.00	90.00	0.0792	7.13	0.0021	0.0023	0.0017
(6) general cable 1 1/4" Coax From 0 to 159	60.00	80.00	70.00	0.0792	5.54	0.0016	0.0018	0.0017
(6) general cable 1 1/4" Coax From 0 to 159	40.00	60.00	50.00	0.0792	3.96	0.0012	0.0013	0.0017
(6) general cable 1 1/4" Coax From 0 to 159	20.00	40.00	30.00	0.0792	2.38	0.0007	0.0008	0.0017
(6) general cable 1 1/4" Coax From 0 to 159	0.00	20.00	10.00	0.0792	0.79	0.0002	0.0003	0.0017
(2) general cable 0.78" DC From 0 to 157	140.00	157.00	148.50	0.0201	2.98	0.0009	0.0009	0.0004
(2) general cable 0.78" DC From 0 to 157	126.67	140.00	133.33	0.0157	2.10	0.0006	0.0007	0.0003
(2) general cable 0.78" DC From 0 to 157	120.00	126.67	123.33	0.0079	0.97	0.0003	0.0003	0.0002
(2) general cable 0.78" DC From 0 to 157	100.00	120.00	110.00	0.0236	2.60	0.0008	0.0008	0.0005
(2) general cable 0.78" DC From 0 to 157	80.00	100.00	90.00	0.0236	2.12	0.0006	0.0007	0.0005
(2) general cable 0.78" DC From 0 to 157	60.00	80.00	70.00	0.0236	1.65	0.0005	0.0005	0.0005
(2) general cable 0.78" DC From 0 to 157	40.00	60.00	50.00	0.0236	1.18	0.0003	0.0004	0.0005
(2) general cable 0.78" DC From 0 to 157	20.00	40.00	30.00	0.0236	0.71	0.0002	0.0002	0.0005
(2) general cable 0.78" DC From 0 to 157	0.00	20.00	10.00	0.0236	0.24	0.0001	0.0001	0.0005
general cable 0.39" Fiber Trunk From 0 to 157	140.00	157.00	148.50	0.0010	0.15	0.0000	0.0000	0.0000
general cable 0.39" Fiber Trunk From 0 to 157	126.67	140.00	133.33	0.0008	0.11	0.0000	0.0000	0.0000
general cable 0.39" Fiber Trunk From 0 to 157	120.00	126.67	123.33	0.0004	0.05	0.0000	0.0000	0.0000
general cable 0.39" Fiber Trunk From 0 to 157	100.00	120.00	110.00	0.0012	0.13	0.0000	0.0000	0.0000
general cable 0.39" Fiber Trunk From 0 to 157	80.00	100.00	90.00	0.0012	0.11	0.0000	0.0000	0.0000
general cable 0.39" Fiber Trunk From 0 to 157	60.00	80.00	70.00	0.0012	0.08	0.0000	0.0000	0.0000
general cable 0.39" Fiber Trunk From 0 to 157	40.00	60.00	50.00	0.0012	0.06	0.0000	0.0000	0.0000
general cable 0.39" Fiber Trunk From 0 to 157	20.00	40.00	30.00	0.0012	0.04	0.0000	0.0000	0.0000
general cable 0.39" Fiber Trunk From 0 to 157	0.00	20.00	10.00	0.0012	0.01	0.0000	0.0000	0.0000
(2) general cable 0.78" DC From 0 to 157	140.00	157.00	148.50	0.0201	2.98	0.0009	0.0009	0.0004
(2) general cable 0.78" DC From 0 to 157	126.67	140.00	133.33	0.0157	2.10	0.0006	0.0007	0.0003
(2) general cable 0.78" DC From 0 to 157	120.00	126.67	123.33	0.0079	0.97	0.0003	0.0003	0.0002
(2) general cable 0.78" DC From 0 to 157	100.00	120.00	110.00	0.0236	2.60	0.0008	0.0008	0.0005
(2) general cable 0.78" DC From 0 to 157	80.00	100.00	90.00	0.0236	2.12	0.0006	0.0007	0.0005
(2) general cable 0.78" DC From 0 to 157	60.00	80.00	70.00	0.0236	1.65	0.0005	0.0005	0.0005
(2) general cable 0.78" DC From 0 to 157	40.00	60.00	50.00	0.0236	1.18	0.0003	0.0004	0.0005
(2) general cable 0.78" DC From 0 to 157	20.00	40.00	30.00	0.0236	0.71	0.0002	0.0002	0.0005
(2) general cable 0.78" DC From 0 to 157	0.00	20.00	10.00	0.0236	0.24	0.0001	0.0001	0.0005
general cable 0.39" Fiber Trunk From 0 to 157	140.00	157.00	148.50	0.0010	0.15	0.0000	0.0000	0.0000
general cable 0.39" Fiber Trunk From 0 to 157	126.67	140.00	133.33	0.0008	0.11	0.0000	0.0000	0.0000
general cable 0.39" Fiber Trunk From 0 to 157	120.00	126.67	123.33	0.0004	0.05	0.0000	0.0000	0.0000
general cable 0.39" Fiber Trunk From 0 to 157	100.00	120.00	110.00	0.0012	0.13	0.0000	0.0000	0.0000
general cable 0.39" Fiber Trunk From 0 to 157	80.00	100.00	90.00	0.0012	0.11	0.0000	0.0000	0.0000
general cable 0.39" Fiber Trunk From 0 to 157	60.00	80.00	70.00	0.0012	0.08	0.0000	0.0000	0.0000
general cable 0.39" Fiber Trunk From 0 to 157	40.00	60.00	50.00	0.0012	0.06	0.0000	0.0000	0.0000
general cable 0.39" Fiber Trunk From 0 to 157	20.00	40.00	30.00	0.0012	0.04	0.0000	0.0000	0.0000
general cable 0.39" Fiber Trunk From 0 to 157	0.00	20.00	10.00	0.0012	0.01	0.0000	0.0000	0.0000
(12) general cable 1 5/8" Coax From 0 to 157	140.00	157.00	148.50	0.0122	1.82	0.0005	0.0006	0.0003
(12) general cable 1 5/8" Coax From 0 to 157	126.67	140.00	133.33	0.0096	1.28	0.0004	0.0004	0.0002
(12) general cable 1 5/8" Coax From 0 to 157	120.00	126.67	123.33	0.0048	0.59	0.0002	0.0002	0.0001
(12) general cable 1 5/8" Coax From 0 to 157	100.00	120.00	110.00	0.0144	1.58	0.0005	0.0005	0.0003
(12) general cable 1 5/8" Coax From 0 to 157	80.00	100.00	90.00	0.0144	1.30	0.0004	0.0004	0.0003
(12) general cable 1 5/8" Coax From 0 to 157	60.00	80.00	70.00	0.0144	1.01	0.0003	0.0003	0.0003
(12) general cable 1 5/8" Coax From 0 to 157	40.00	60.00	50.00	0.0144	0.72	0.0002	0.0002	0.0003
(12) general cable 1 5/8" Coax From 0 to 157	20.00	40.00	30.00	0.0144	0.43	0.0001	0.0001	0.0003
(12) general cable 1 5/8" Coax From 0 to 157	0.00	20.00	10.00	0.0144	0.14	0.0000	0.0000	0.0003
(3) Hybrid Cable From 0 to 157	140.00	157.00	148.50	0.0530	7.88	0.0023	0.0025	0.0011
(3) Hybrid Cable From 0 to 157	126.67	140.00	133.33	0.0416	5.55	0.0016	0.0018	0.0009
(3) Hybrid Cable From 0 to 157	120.00	126.67	123.33	0.0208	2.57	0.0007	0.0008	0.0004
(3) Hybrid Cable From 0 to 157	100.00	120.00	110.00	0.0624	6.86	0.0020	0.0022	0.0013
(3) Hybrid Cable From 0 to 157	80.00	100.00	90.00	0.0624	5.62	0.0016	0.0018	0.0013
(3) Hybrid Cable From 0 to 157	60.00	80.00	70.00	0.0624	4.37	0.0013	0.0014	0.0013
(3) Hybrid Cable From 0 to 157	40.00	60.00	50.00	0.0624	3.12	0.0009	0.0010	0.0013
(3) Hybrid Cable From 0 to 157	20.00	40.00	30.00	0.0624	1.87	0.0005	0.0006	0.0013
(3) Hybrid Cable From 0 to 157	0.00	20.00	10.00	0.0624	0.62	0.0002	0.0002	0.0013
(2) general cable 1 1/4" Hybrid Cable From 0 to 157	140.00	157.00	148.50	0.0605	8.99	0.0026	0.0029	0.0013
(2) general cable 1 1/4" Hybrid Cable From 0 to 157	126.67	140.00	133.33	0.0475	6.33	0.0018	0.0020	0.0010
(2) general cable 1 1/4" Hybrid Cable From 0 to 157	120.00	126.67	123.33	0.0237	2.93	0.0009	0.0009	0.0005
(2) general cable 1 1/4" Hybrid Cable From 0 to 157	100.00	120.00	110.00	0.0712	7.83	0.0023	0.0025	0.0015
(2) general cable 1 1/4" Hybrid Cable From 0 to 157	80.00	100.00	90.00	0.0712	6.41	0.0019	0.0020	0.0015
(2) general cable 1 1/4" Hybrid Cable From 0 to 157	60.00	80.00	70.00	0.0712	4.98	0.0015	0.0016	0.0015
(2) general cable 1 1/4" Hybrid Cable From 0 to 157	40.00	60.00	50.00	0.0712	3.56	0.0010	0.0011	0.0015
(2) general cable 1 1/4" Hybrid Cable From 0 to 157	20.00	40.00	30.00	0.0712	2.14	0.0006	0.0007	0.0015
(2) general cable 1 1/4" Hybrid Cable From 0 to 157	0.00	20.00	10.00	0.0712	0.71	0.0002	0.0002	0.0015

(12) general cable 1 5/8" Coax From 0 to 146	140.00	146.00	143.00	0.0684	9.78	0.0029	0.0031	0.0015
(12) general cable 1 5/8" Coax From 0 to 146	126.67	140.00	133.33	0.1520	20.27	0.0059	0.0064	0.0033
(12) general cable 1 5/8" Coax From 0 to 146	120.00	126.67	123.33	0.0760	9.37	0.0027	0.0030	0.0016
(12) general cable 1 5/8" Coax From 0 to 146	100.00	120.00	110.00	0.2280	25.08	0.0073	0.0080	0.0049
(12) general cable 1 5/8" Coax From 0 to 146	80.00	100.00	90.00	0.2280	20.52	0.0060	0.0065	0.0049
(12) general cable 1 5/8" Coax From 0 to 146	60.00	80.00	70.00	0.2280	15.96	0.0047	0.0051	0.0049
(12) general cable 1 5/8" Coax From 0 to 146	40.00	60.00	50.00	0.2280	11.40	0.0033	0.0036	0.0049
(12) general cable 1 5/8" Coax From 0 to 146	20.00	40.00	30.00	0.2280	6.84	0.0020	0.0022	0.0049
(12) general cable 1 5/8" Coax From 0 to 146	0.00	20.00	10.00	0.2280	2.28	0.0007	0.0007	0.0049
general cable 7/8" Coax From 0 to 146	140.00	146.00	143.00	0.0062	0.89	0.0003	0.0003	0.0001
general cable 7/8" Coax From 0 to 146	126.67	140.00	133.33	0.0139	1.85	0.0005	0.0006	0.0003
general cable 7/8" Coax From 0 to 146	120.00	126.67	123.33	0.0069	0.86	0.0002	0.0003	0.0001
general cable 7/8" Coax From 0 to 146	100.00	120.00	110.00	0.0208	2.29	0.0007	0.0007	0.0004
general cable 7/8" Coax From 0 to 146	80.00	100.00	90.00	0.0208	1.87	0.0005	0.0006	0.0004
general cable 7/8" Coax From 0 to 146	60.00	80.00	70.00	0.0208	1.46	0.0004	0.0005	0.0004
general cable 7/8" Coax From 0 to 146	40.00	60.00	50.00	0.0208	1.04	0.0003	0.0003	0.0004
general cable 7/8" Coax From 0 to 146	20.00	40.00	30.00	0.0208	0.62	0.0002	0.0002	0.0004
general cable 7/8" Coax From 0 to 146	0.00	20.00	10.00	0.0208	0.21	0.0001	0.0001	0.0004
general cable 7/8" Coax From 0 to 118.5	100.00	118.50	109.25	0.0096	1.05	0.0003	0.0003	0.0002
general cable 7/8" Coax From 0 to 118.5	80.00	100.00	90.00	0.0104	0.94	0.0003	0.0003	0.0002
general cable 7/8" Coax From 0 to 118.5	60.00	80.00	70.00	0.0104	0.73	0.0002	0.0002	0.0002
general cable 7/8" Coax From 0 to 118.5	40.00	60.00	50.00	0.0104	0.52	0.0002	0.0002	0.0002
general cable 7/8" Coax From 0 to 118.5	20.00	40.00	30.00	0.0104	0.31	0.0001	0.0001	0.0002
general cable 7/8" Coax From 0 to 118.5	0.00	20.00	10.00	0.0104	0.10	0.0000	0.0000	0.0002
general cable 1/2" Coax From 0 to 99	80.00	99.00	89.50	0.0099	0.88	0.0003	0.0003	0.0002
general cable 1/2" Coax From 0 to 99	60.00	80.00	70.00	0.0104	0.73	0.0002	0.0002	0.0002
general cable 1/2" Coax From 0 to 99	40.00	60.00	50.00	0.0104	0.52	0.0002	0.0002	0.0002
general cable 1/2" Coax From 0 to 99	20.00	40.00	30.00	0.0104	0.31	0.0001	0.0001	0.0002
general cable 1/2" Coax From 0 to 99	0.00	20.00	10.00	0.0104	0.10	0.0000	0.0000	0.0002
general cable 1/2" Coax From 0 to 47.5	40.00	47.50	43.75	0.0012	0.05	0.0000	0.0000	0.0000
general cable 1/2" Coax From 0 to 47.5	20.00	40.00	30.00	0.0032	0.10	0.0000	0.0000	0.0001
general cable 1/2" Coax From 0 to 47.5	0.00	20.00	10.00	0.0032	0.03	0.0000	0.0000	0.0001
W/G Ladder A From 0 to 37.5	20.00	37.50	28.75	0.0028	0.08	0.0000	0.0000	0.0001
W/G Ladder A From 0 to 37.5	0.00	20.00	10.00	0.0032	0.03	0.0000	0.0000	0.0001
W/G Ladder B From 10 to 147	140.00	147.00	143.50	0.0420	6.03	0.0018	0.0019	0.0009
W/G Ladder B From 10 to 147	126.67	140.00	133.33	0.0800	10.67	0.0031	0.0034	0.0017
W/G Ladder B From 10 to 147	120.00	126.67	123.33	0.0400	4.93	0.0014	0.0016	0.0009
W/G Ladder B From 10 to 147	100.00	120.00	110.00	0.1200	13.20	0.0039	0.0042	0.0026
W/G Ladder B From 10 to 147	80.00	100.00	90.00	0.1200	10.80	0.0032	0.0034	0.0026
W/G Ladder B From 10 to 147	60.00	80.00	70.00	0.1200	8.40	0.0025	0.0027	0.0026
W/G Ladder B From 10 to 147	40.00	60.00	50.00	0.1200	6.00	0.0018	0.0019	0.0026
W/G Ladder B From 10 to 147	20.00	40.00	30.00	0.1200	3.60	0.0011	0.0011	0.0026
W/G Ladder B From 10 to 147	10.00	20.00	15.00	0.0600	0.90	0.0003	0.0003	0.0013
W/G Ladder C From 11 to 160	140.00	160.00	150.00	0.1200	18.00	0.0053	0.0057	0.0026
W/G Ladder C From 11 to 160	126.67	140.00	133.33	0.0800	10.67	0.0031	0.0034	0.0017
W/G Ladder C From 11 to 160	120.00	126.67	123.33	0.0400	4.93	0.0014	0.0016	0.0009
W/G Ladder C From 11 to 160	100.00	120.00	110.00	0.1200	13.20	0.0039	0.0042	0.0026
W/G Ladder C From 11 to 160	80.00	100.00	90.00	0.1200	10.80	0.0032	0.0034	0.0026
W/G Ladder C From 11 to 160	60.00	80.00	70.00	0.1200	8.40	0.0025	0.0027	0.0026
W/G Ladder C From 11 to 160	40.00	60.00	50.00	0.1200	6.00	0.0018	0.0019	0.0026
W/G Ladder C From 11 to 160	20.00	40.00	30.00	0.1200	3.60	0.0011	0.0011	0.0026
W/G Ladder C From 11 to 160	11.00	20.00	15.50	0.0540	0.84	0.0002	0.0003	0.0012
W/G Ladder D From 12 to 152	140.00	152.00	146.00	0.0720	10.51	0.0031	0.0033	0.0015
W/G Ladder D From 12 to 152	126.67	140.00	133.33	0.0800	10.67	0.0031	0.0034	0.0017
W/G Ladder D From 12 to 152	120.00	126.67	123.33	0.0400	4.93	0.0014	0.0016	0.0009
W/G Ladder D From 12 to 152	100.00	120.00	110.00	0.1200	13.20	0.0039	0.0042	0.0026
W/G Ladder D From 12 to 152	80.00	100.00	90.00	0.1200	10.80	0.0032	0.0034	0.0026
W/G Ladder D From 12 to 152	60.00	80.00	70.00	0.1200	8.40	0.0025	0.0027	0.0026
W/G Ladder D From 12 to 152	40.00	60.00	50.00	0.1200	6.00	0.0018	0.0019	0.0026
W/G Ladder D From 12 to 152	20.00	40.00	30.00	0.1200	3.60	0.0011	0.0011	0.0026
W/G Ladder D From 12 to 152	12.00	20.00	16.00	0.0480	0.77	0.0002	0.0002	0.0010
W/G Ladder D From 14.5 to 147	140.00	147.00	143.50	0.0420	6.03	0.0018	0.0019	0.0009
W/G Ladder D From 14.5 to 147	126.67	140.00	133.33	0.0800	10.67	0.0031	0.0034	0.0017
W/G Ladder D From 14.5 to 147	120.00	126.67	123.33	0.0400	4.93	0.0014	0.0016	0.0009
W/G Ladder D From 14.5 to 147	100.00	120.00	110.00	0.1200	13.20	0.0039	0.0042	0.0026
W/G Ladder D From 14.5 to 147	80.00	100.00	90.00	0.1200	10.80	0.0032	0.0034	0.0026
W/G Ladder D From 14.5 to 147	60.00	80.00	70.00	0.1200	8.40	0.0025	0.0027	0.0026
W/G Ladder D From 14.5 to 147	40.00	60.00	50.00	0.1200	6.00	0.0018	0.0019	0.0026
W/G Ladder D From 14.5 to 147	20.00	40.00	30.00	0.1200	3.60	0.0011	0.0011	0.0026
W/G Ladder D From 14.5 to 147	14.50	20.00	17.25	0.0330	0.57	0.0002	0.0002	0.0007
Sum				7.5574	591.51			

Exhibit E

Mount Analysis

1) ANALYSIS CRITERIA

The analysis was performed for the existing and proposed appurtenances as specified in the loading information referenced below, and per the following loading criteria of Table 1.

Table 1 – Loading and Analysis Criteria

Rad Center	146'-9" and 147'-2"
Structure Type	Self-Support Tower
Exposure Category	C
Basic Wind Speed (3-Second Gust)	125 * $\sqrt{0.6}$ = 97 mph (ASD)
Ice Loading	1.00" with 50 mph Wind
Risk Category	II
Topographic Factor	Kzt = 1.0

Table 1.1 – Existing Appurtenance Configuration

Qty	Model
3	RFS APX16DWV-16DWV-S-E-A20 – Antennas
3	Andrew LNX-6515DS-A1M – Antennas
3	Generic Twin Style 1A-PCS – TMAs
3	Generic Twin Style 1B-AWS – TMAs

Table 1.2 – Proposed and Final Appurtenance Configuration

Qty	Model
3	RFS APX16DWV-16DWV-S-E-A20 – Antennas
3	RFS APXVAALL24_43-U-NA20 – Antennas
3	Radio 4449 B71 + B85 – RRUs*
3	Generic Twin Style 1A-PCS – TMAs*
3	Generic Twin Style 1B-AWS – TMAs*

* To be mounted behind the antennas

Table 1.3 – Assumed Material Properties

Member Type	ASTM Material Designation	Fy (ksi)	Fu (ksi)
Pipes	A53 Gr. B	35	60
Angles/Channels	A36	36	58
Rectangular HSS	A500 Gr. B - 46	46	58
Round HSS	A500 Gr. B - 42	42	58
Others (UNO)	A572 Gr. 50	50	65

2) ANALYSIS PROCEDURE

The analysis is based on the following information:

Table 2 – Documents

Document	Provided By	Date
RFDS	T-Mobile	12/19/2020
Appurtenance Mount Analysis Report	Semaan Engineering Solutions	04/23/2019
Tower Mapping Report	Hightower Solutions Inc.	02/20/2019
Site Photos	ForeSite, LLC.	04/18/2018
Construction Drawings	Centek Engineering	10/31/2016

2.1) Analysis Method

Risa-3D, a commercially available analysis software package, was used to create a three-dimensional model of the mount and calculate member stresses for various loading cases. Selected output from the analysis is included in the Appendix.

2.2) Analysis Conditions and Assumptions

- 1) The mount was built and installed in accordance with the manufacturer's specifications.
- 2) The mount has been maintained and will be maintained in accordance with the manufacturer's specifications. All structural members and connections of the mount are in good condition and can achieve theoretical strength.
- 3) The configuration of antennas is as specified in "1) Analysis Criteria".
- 4) The analysis was performed for the subject mount only. It does not include an evaluation of the other mounts or the tower, which should be analyzed by others.
- 5) The evaluation does not include any antenna rigging loads. The equipment should not be rigged using the subject antenna mount as the support.
- 6) The analysis includes a minimum 250 lbf maintenance point load at the worst-case location on the mount, as well as a minimum 250 lbf maintenance point load at each antenna location in conjunction with a 30 mph wind load.
- 7) Any steel grating represented in this model is for loading purposes only and it is not considered to provide any structural restraint or support.
- 8) Member sizes per the mount specifications, mount analysis report, site photos and assumed based on our experience with similar structures. Please refer to calculation output in the appendix of this report for sizes and lengths assumed.
- 9) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.

EFI Global, Inc. (EFI), must be notified immediately if any of these assumptions are discovered to be incorrect. The results of this analysis may be affected if any of the assumptions are not valid or have been made in error.

3) ANALYSIS RESULTS AND CONCLUSION

The analysis results are shown on the table below.

Table 3.1 – Mount Component Stresses vs. Capacity

Component	% Capacity	Pass / Fail
Horizontal Face Pipes	42.7	Pass
Stiff Arm Pipe	30.0	Pass
Antenna Mount Pipes	85.0	Pass

Sector Mounts: The existing sector mounts have **adequate** capacity for the proposed changes by T-Mobile. For the code specified load combinations and as a maximum, the mount members are stressed to **85.0%** of their structural capacity.

EFI Global, Inc. has assumed that Valmont/Microflect #99320 Sector Frames has been installed at each sector per Appurtenance Mount Analysis Report prepared by Semaan Engineering Solutions, dated 04/23/2019.

APPENDIX

INPUT LOADS
ANALYSIS OUTPUT

CLIENT: ForeSite
 PROJECT: CT11227D
 SUBJECT: Antenna Loads - G Code with Sections 16 Revisions

Tower Height 160.00 ft Type of Mount Sector
 Basic Wind Speed, V 97 mph (=Ultimate Speed* $\sqrt{0.6}$)
 Basic Wind Speed with Ice, V_i 50 mph
 Maintenance Load Factor, L_{FM} 0.0957 Load Factor for Maint. Load Cases (Basic Wind Speed=30 mph)
 Design Ice Thickness, t_i 1 inches

Table 2-3 Importance Factors

Structure Classification	Wind Load Without Ice	Wind Load With Ice	Ice Thickness	Earthquake
II	1	1	1	1

Table 2-4 Exposure Category Coefficients

Exposure Category	Z_g	α	K_{zmin}	K_e	m
C	900	9.5	0.85	1	0.6

Table 2-5 Topographic Categories
 K_{zt} 1.000

Table 2-2 Wind Directionality Factor, K_d

Structure Type	K_d
Lattice Tower	0.95 DOES NOT CHANGE

Gust Effect Factor G_h

Structure Type	G_h
Lattice Tower	1.00 DOES NOT CHANGE

Shielding Factor, K_a

Structure Type	K_a
Lattice Tower	0.90 DOES NOT CHANGE

CLIENT: ForeSite
 PROJECT: CT11227D
 SUBJECT: Antenna Loads - G Code with Sections 16 Revisions

Rad Center 147.17 ft

Antenna AND Mount Without Ice

Mounting Pole	Height (ft)	Model Number	#	Weight (lbs)	H (in)	*W (in)	D (in)	Ka	**A _N (ft2)	***A _T (ft2)	Aspect (FRONT)	Aspect (SIDE)	Ca (FRONT)	Ca (SIDE)	K _z	q _z (psf)	Pounds							
																	Wind Load (Front)	Wind Load (Side)	Dead Load	Total Wind Load (Front)	Total Wind Load (Side)	Total Dead Load		
Pos. 1		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0	0	0		
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0	0	0	
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0	0	0
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0	0	0
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0	0	0
Pos. 2	146.75	RFS APXVAALL24-43-U-NA20	1	149.9	95.9	24.0	8.5	0.90	15.98	5.66	4.00	11.28	1.27	1.54	1.372	31.4	572.0	246.7	149.9	572	292	223		
	146.75	Radio 4449 B71+B85	1	73.2	17.9	N/A	10.6	0.90	-	1.32	-	1.68	-	1.20	1.372	31.4	0.0	44.8	73.21	0	0	0		
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0	0	0		
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0	0	0		
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0	0	0		
Pos. 3	147.17	RFS APX16DWV-16DWV-S-E-A20	1	40.7	55.9	13.3	3.2	0.90	5.16	1.22	4.20	17.75	1.28	1.76	1.373	31.4	186.2	60.8	40.7	186	75	67		
	147.17	Generic Twin Style 1A-PCS	1	15.0	10.0	N/A	4.0	0.90	-	0.28	-	2.50	-	1.20	1.373	31.4	0.0	9.4	15	0	0	0		
	147.17	Generic Twin Style 1B-AWS	1	11.0	7.0	N/A	3.0	0.90	-	0.15	-	2.33	-	1.20	1.373	31.4	0.0	4.9	11	0	0	0		
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0	0	0		
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0	0	0		
Pos.4		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0	0	0		
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0	0	0		
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0	0	0		
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0	0	0		
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0	0	0		

* Enter N/A in the W column for front shielded apertures.

** A_N is the product of H and W

*** A_T is the product of H and D

DL #REF!

Mount	Height (ft)	Member	*L (in)	**W (in)	D (in)	*** Ca	K _z	q _z (psf)	Wind Load (PLF)
	147.17	4.0 STD Pipe	0.00	4.50	0.00	-	-	-	-
	147.17	2.5 STD Pipe	12.00	2.88	0.00	1.20	1.373	28.3	8
	147.17	2.0 STD Pipe	12.00	2.38	0.00	1.20	1.373	28.3	7
	147.17	1.5 STD Pipe	12.00	1.90	0.00	1.20	1.373	28.3	5
	147.17	3/4" SR	0.00	0.75	0.00	-	-	-	-
	147.17	L3x3x4	0.00	3.00	3.00	-	-	-	-
	147.17	L2x2x2	0.00	2.00	2.00	-	-	-	-
	147.17	Angle Diagonal	0.00	0.00	0.00	-	-	-	-
	147.17	Plate Horizontal (PL0.625x3.5)	0.00	0.63	3.50	-	-	-	-
	147.17	Plate Horizontal (PL 8 x 3/16)	0.00	8.00	0.19	-	-	-	-
	147.17	Tube Radial (2x2)	0.00	2.00	2.00	-	-	-	-
	147.17	Double Angle (LL2x2x3x0)	0.00	2.00	2.00	-	-	-	-
	147.17	Double Angle (LL3x3x4x0)	0.00	3.00	3.00	-	-	-	-
	147.17	Channel (Weak Axis Bending)	0.00	0.00	0.00	-	-	-	-
	147.17	Invert U 5.375x3.625x.375	0.00	3.63	5.38	-	-	-	-

* The dimension L is the longest dimension of the member

** The dimension W is the height or width of the member that resists wind load

*** Ca will equal 1.2 for round members and 2.0 for flat members

CLIENT: ForeSite
 PROJECT: CT11227D
 SUBJECT: Antenna Loads - G Code with Sections 16 Revisions

ti (in) 2.322521 Kiz 1.1612605 reduction 0.2657

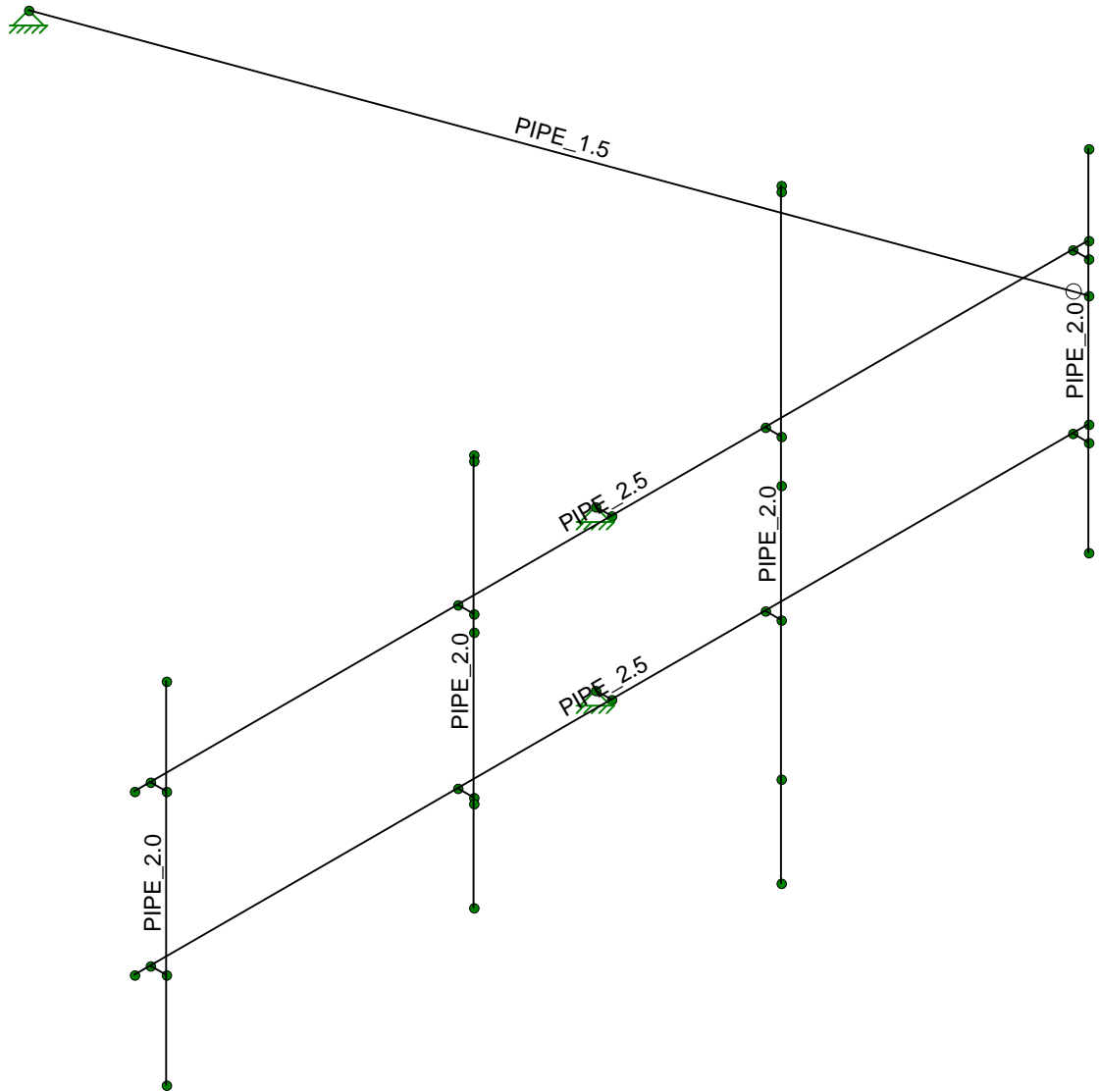
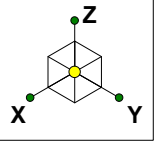
Antenna AND Mount With Ice

Mounting Pole	Height (ft)	Model Number	#	H (in)	W (in)	D (in)	Ka	*A _N (ft ²)	*A _T (ft ²)	*Volume Ice (ft ³)	*Weight Ice (lbs)	**Ca (FRONT)	**Ca (SIDE)	Kz	q _z (psf)	Pounds							
																Ice Wind Load (Front)	Ice Wind Load (Side)	Combined Wind Load (Front)	Combined Wind Load (Side)	Ice Dead Load	**Total Wind Load (Front)	**Total Wind Load (Side)	Total Ice Load
Pos. 1		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0
Pos. 2	146.75	RFS APXVAALL24-43-U-NA20	1	95.9	24.0	8.5	0.90	4.02	3.52	10.59	592.91	0.72	0.81	1.372	8.3	21.8	21.5	173.8	87.1	593	174	105	711
	146.75	Radio 4449 B71+B85	1	17.9	13.2	10.6	0.90	-	1.07	2.10	117.80	0.70	0.70	1.372	8.3	0.0	5.6	0.0	17.5	118	0	0	0
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0	0
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0	0
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0	0
Pos. 3	147.17	RFS APX16DWV-16DWV-S-E-A20	1	55.9	13.3	3.2	0.90	2.38	2.05	3.55	198.57	0.72	0.82	1.373	8.3	12.9	12.6	62.3	28.8	199	62	38	264
	147.17	Generic Twin Style 1A-PCS	1	10.0	7.0	4.0	0.90	-	0.60	0.69	38.71	0.70	0.70	1.373	8.3	0.0	3.2	0.0	5.7	39	0	0	0
	147.17	Generic Twin Style 1B-AWS	1	7.0	6.0	3.0	0.90	-	0.47	0.48	26.63	0.70	0.70	1.373	8.3	0.0	2.5	0.0	3.8	27	0	0	0
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0	0
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0	0
Pos.4		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0	0
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0	0
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0	0
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0	0
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0	0
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0	0
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0	0

* A_N, A_T, Volume Ice and Weight Ice are calculated per unit
 ** Ca will equal 1.2 for all ice load calculations

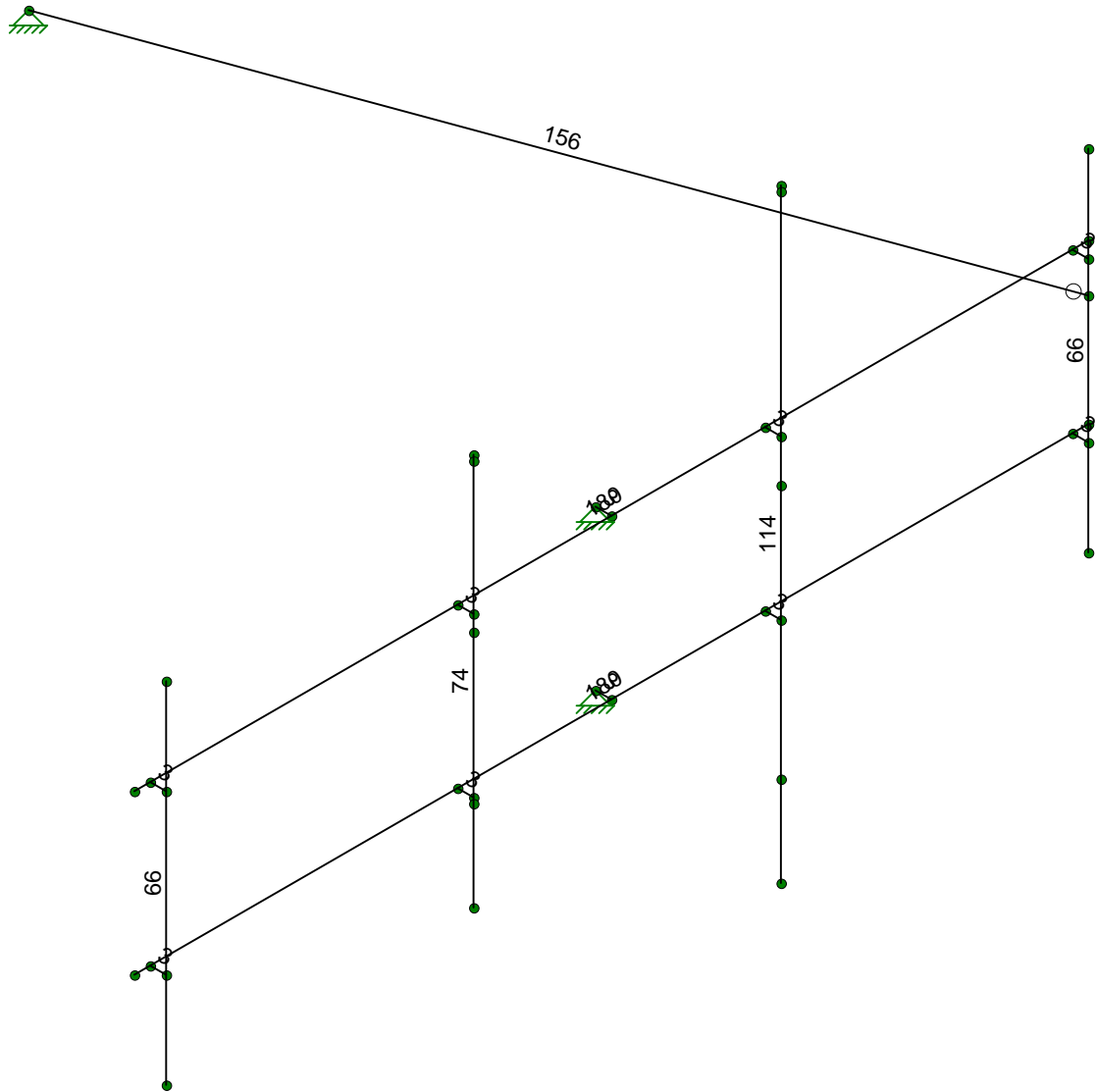
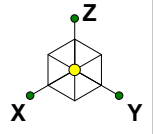
Mount	Height (ft)	Member	*L (in)	**W (in)	D (in)	***A _N (ft ²)	Volume Ice (ft ³)	Weight Ice (lbs)	****Ca (FRONT)	Kz	q _z (psf)	PLF		
												Ice Wind Load (Front)	Combined Wind Load (Front)	Ice Dead Load
	147.17	4.0 STD Pipe	0.00	4.50	0.00	-	-	-	-	-	-	-	-	-
	147.17	2.5 STD Pipe	12.00	2.88	0.00	0.63	0.26	14.76	1.20	1.373	7.5	5.7	7.8	15
	147.17	2.0 STD Pipe	12.00	2.38	0.00	0.61	0.24	13.33	1.20	1.373	7.5	5.5	7.3	13
	147.17	1.5 STD Pipe	12.00	1.90	0.00	0.60	0.21	11.98	1.20	1.373	7.5	5.4	6.8	12
	147.17	3/4" SR	0.00	0.75	0.00	-	-	-	-	-	-	-	-	-
	147.17	L3x3x4	0.00	3.00	3.00	-	-	-	-	-	-	-	-	-
	147.17	L2x2x2	0.00	2.00	2.00	-	-	-	-	-	-	-	-	-
	147.17	Angle Diagonal	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	147.17	Plate Horizontal (PL0.625x3.5)	0.00	0.63	3.50	-	-	-	-	-	-	-	-	-
	147.17	Plate Horizontal (PL 8 x 3/16)	0.00	8.00	0.19	-	-	-	-	-	-	-	-	-
	147.17	Tube Radial (2x2)	0.00	2.00	2.00	-	-	-	-	-	-	-	-	-
	147.17	Double Angle (LL2x2x3x0)	0.00	2.00	2.00	-	-	-	-	-	-	-	-	-
	147.17	Double Angle (LL3x3x4x0)	0.00	3.00	3.00	-	-	-	-	-	-	-	-	-
	147.17	Channel (Weak Axis Bending)	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	147.17	Invert U 5.375x3.625x.375	0.00	3.63	5.38	-	-	-	-	-	-	-	-	-

* The dimension L is the longest dimension of the member
 ** The dimension W is the height or width of the member that resists wind load
 *** A_N is the area of ice built up on the LW plane
 **** Ca will equal 1.2 for all ice load calculations



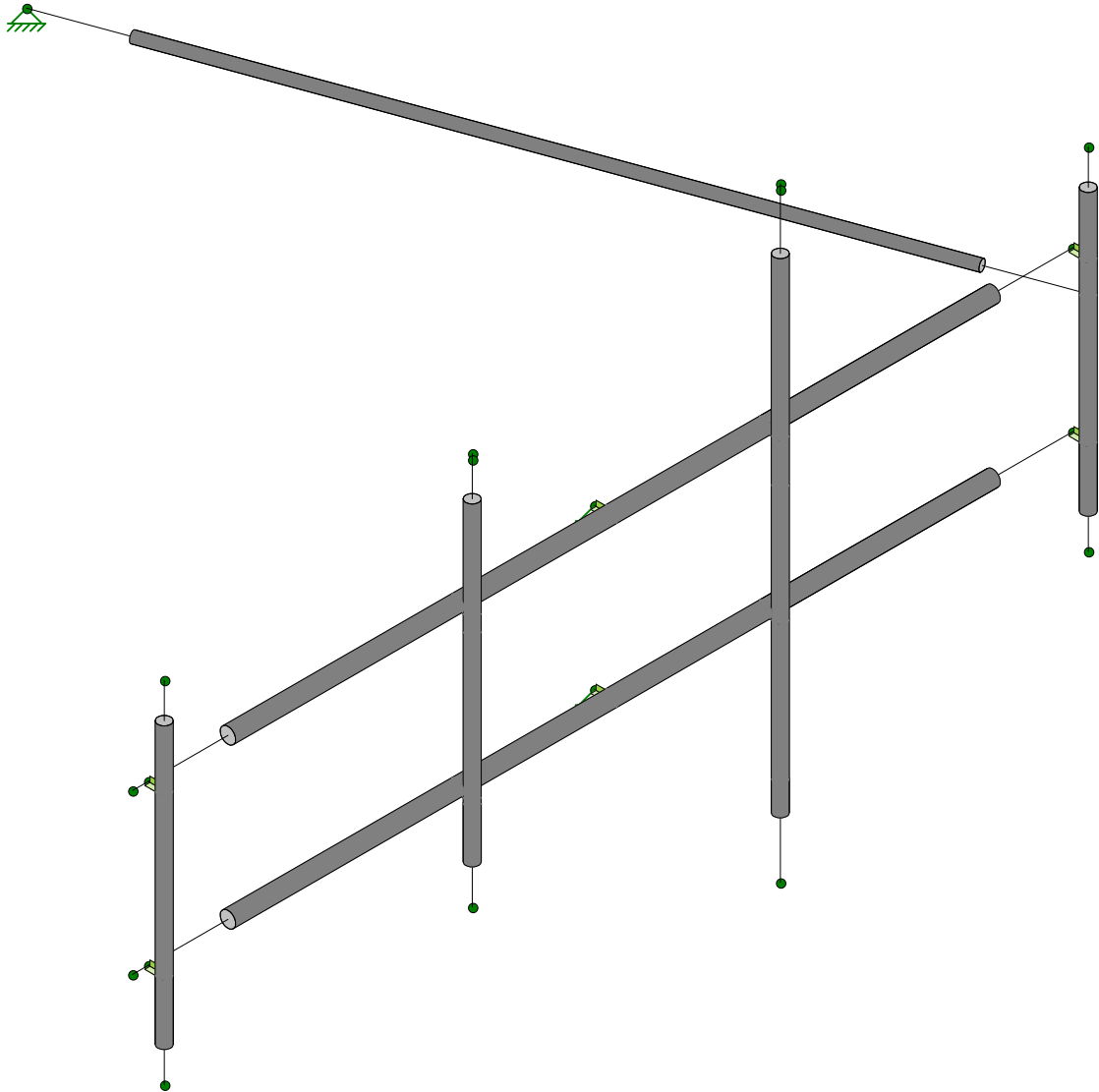
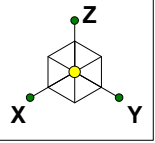
Envelope Only Solution

ForeSite/EFI	CT11227D	SK - 1
PK		Jan 28, 2021 at 7:54 PM
049.01159 - 2075095		CT11227D.r3d



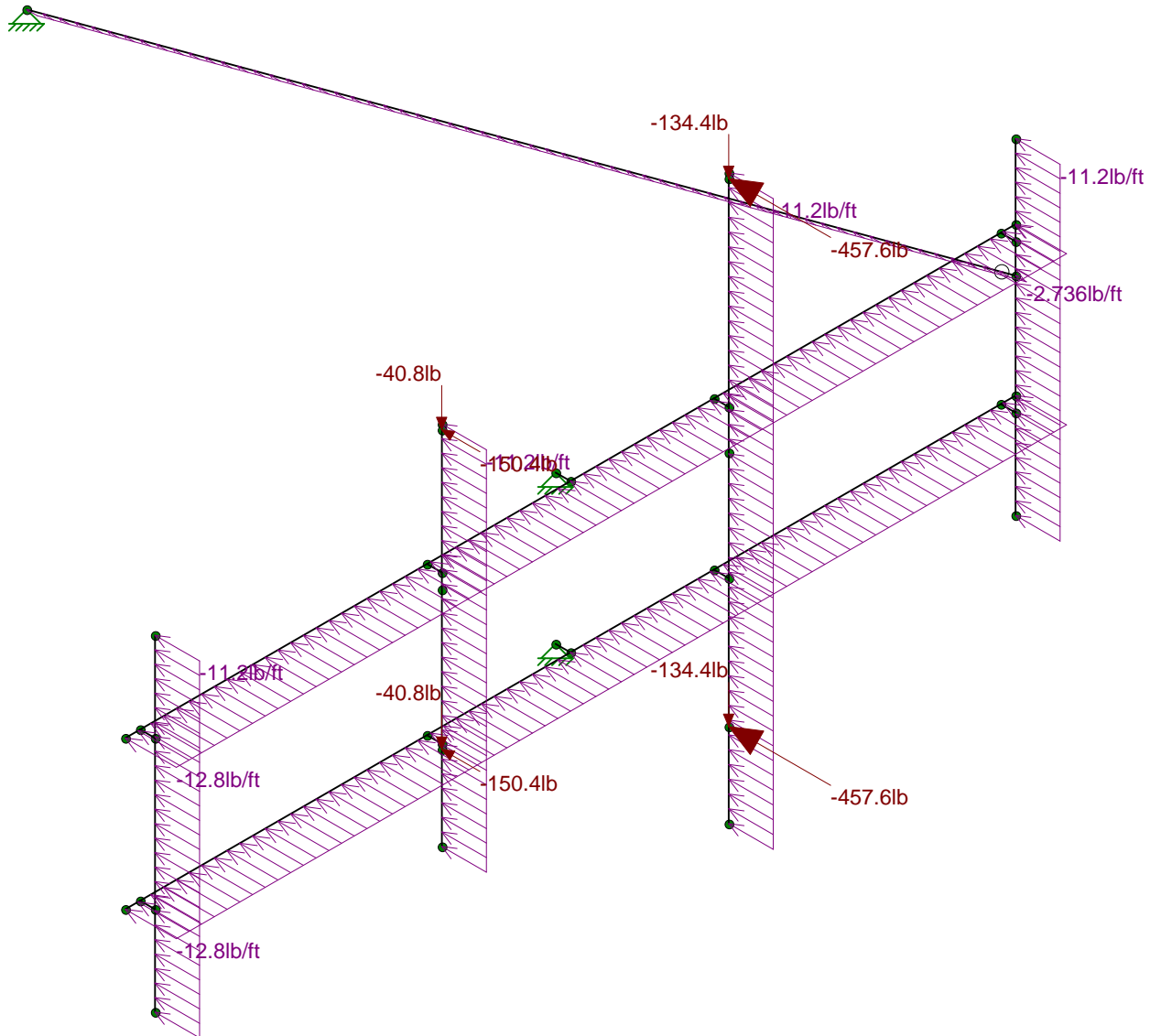
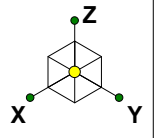
Member Length (in) Displayed
Envelope Only Solution

ForeSite/EFI	CT11227D	SK - 2
PK		Jan 28, 2021 at 7:55 PM
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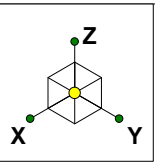
Envelope Only Solution

ForeSite/EFI	CT11227D	SK - 3
PK		Jan 28, 2021 at 7:55 PM
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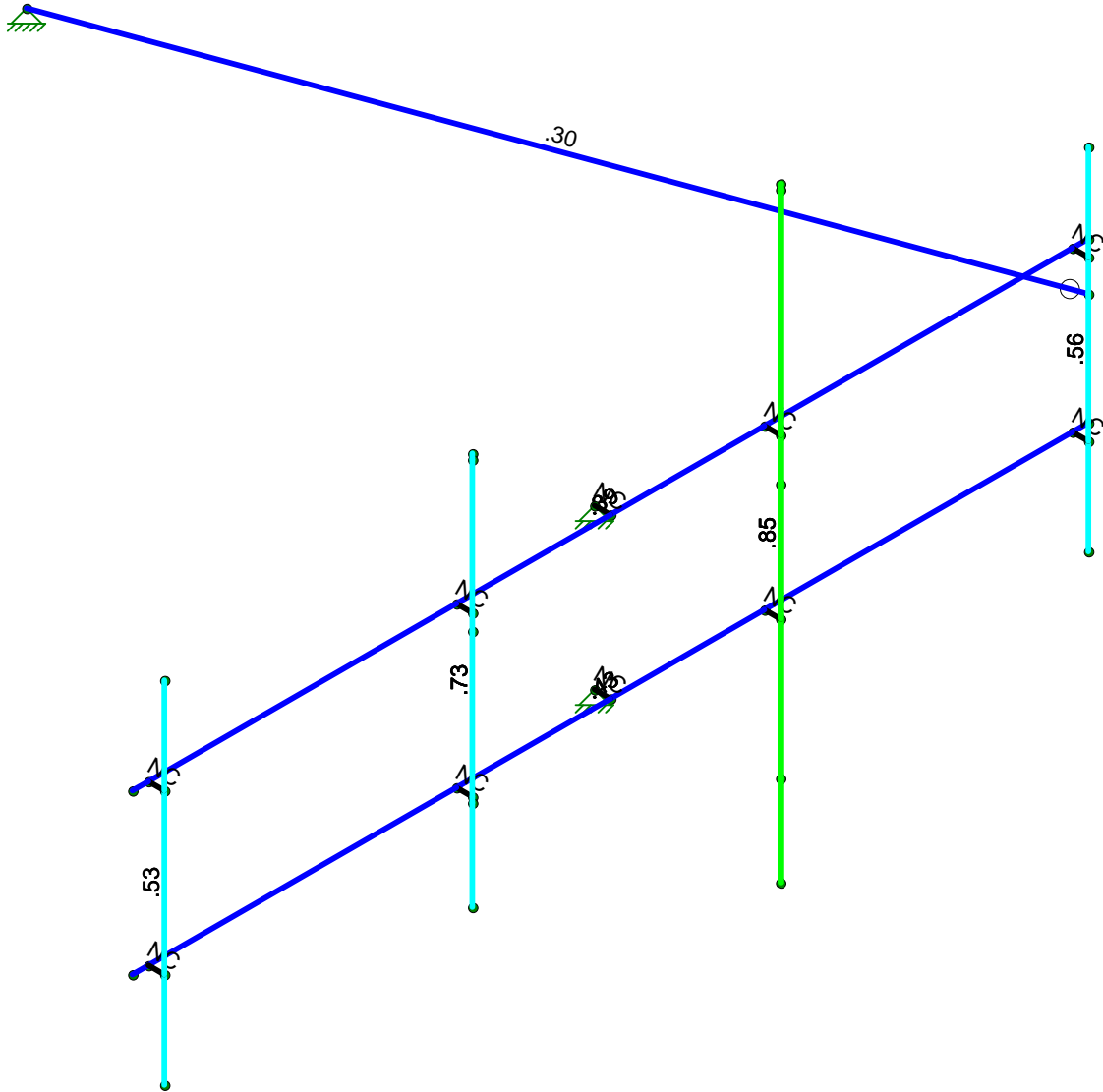


Loads: LC 1, DL + WL (NO ICE) 0 Degree
Envelope Only Solution

ForeSite/EFI	CT11227D	SK - 4
PK		Jan 28, 2021 at 7:55 PM
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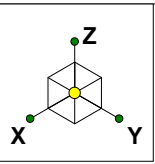


Code Check (Env)	
Black	No Calc
Red	> 1.0
Magenta	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0-.50

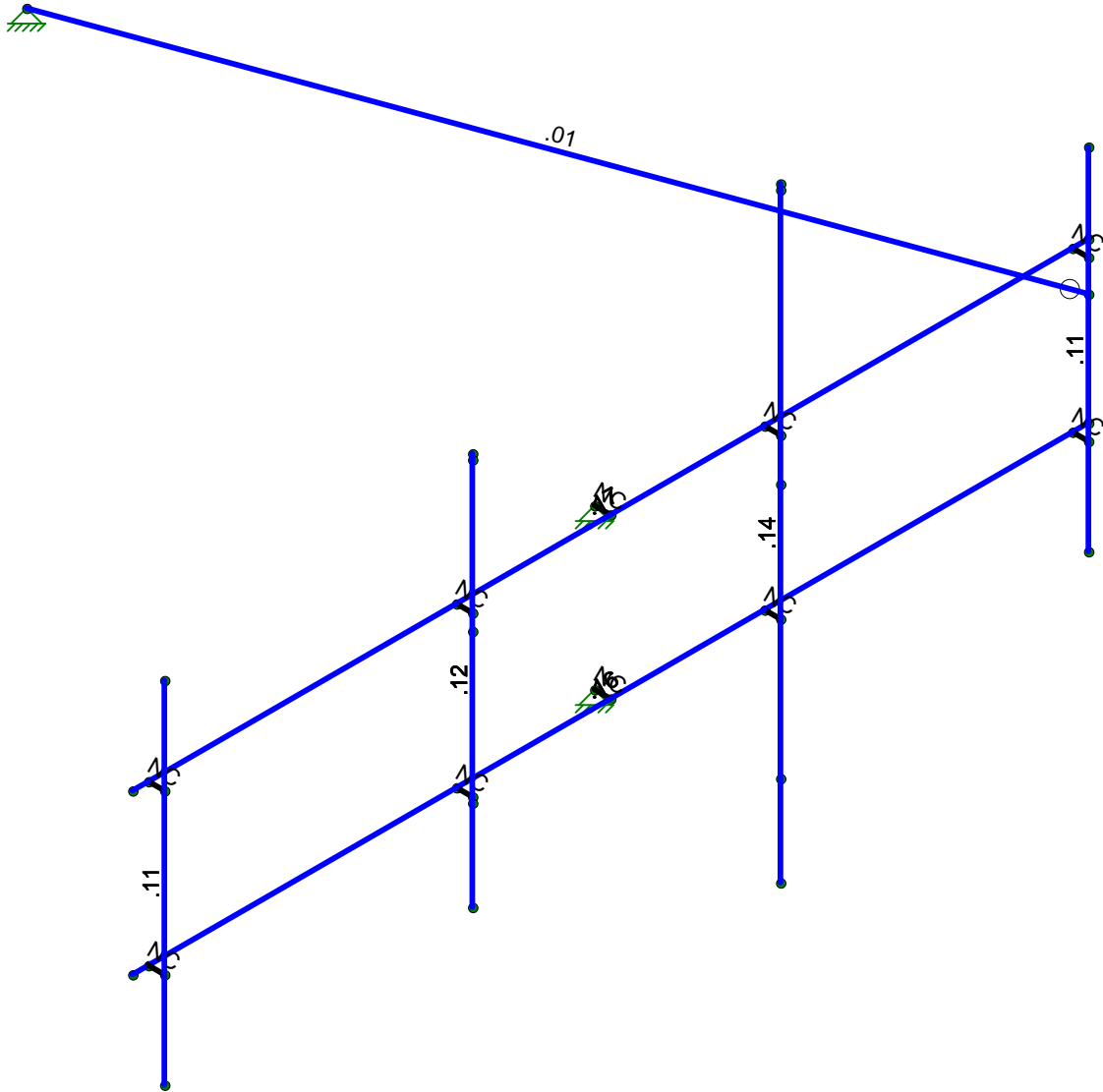


Member Code Checks Displayed (Enveloped)
Envelope Only Solution

ForeSite/EFI	CT11227D	SK - 5
PK		Jan 28, 2021 at 7:55 PM
049.01159 - 2075095		CT11227D.r3d

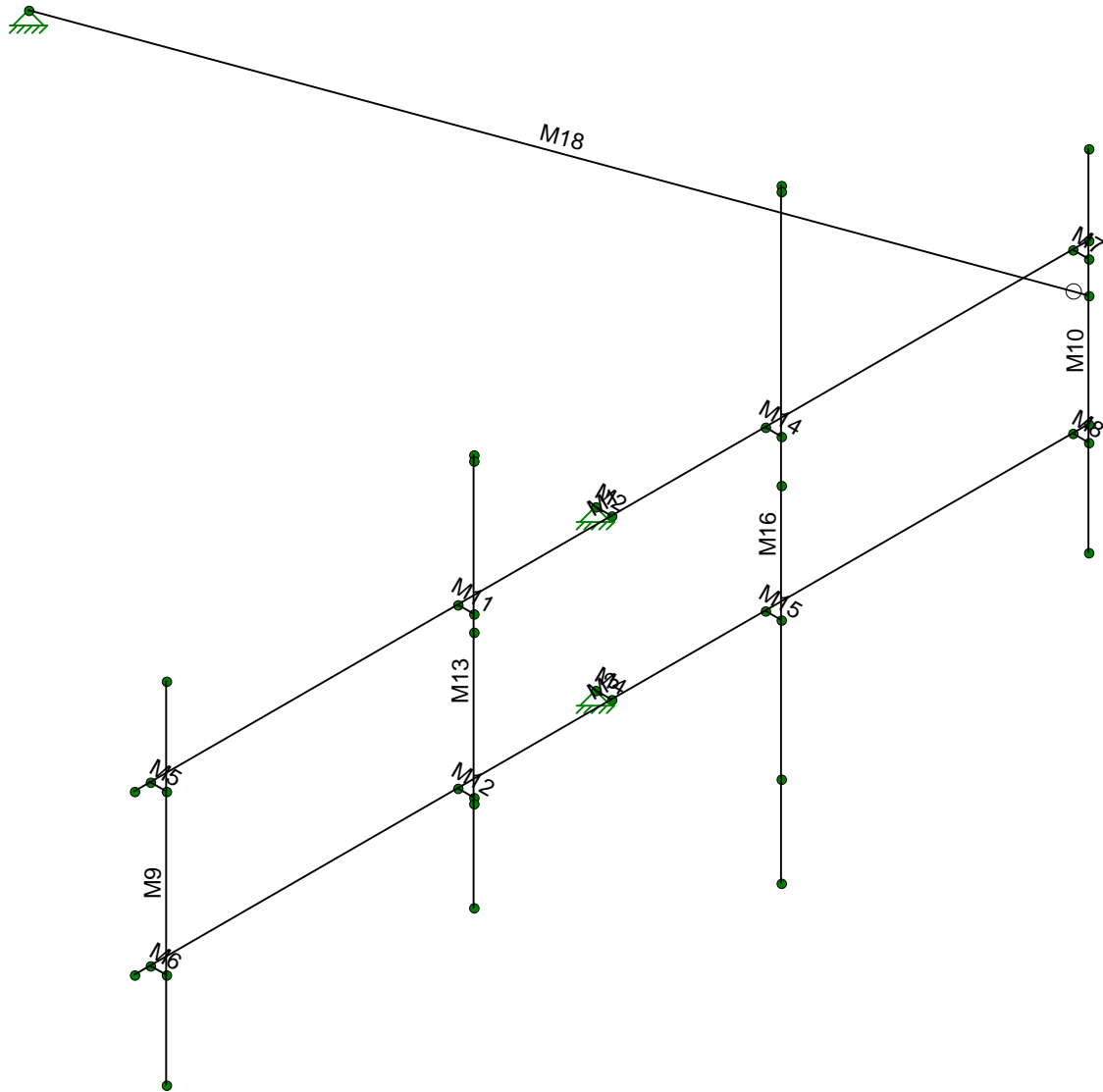
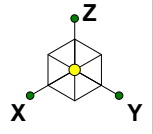


Shear Check (Env)	
No Calc	> 1.0
> 1.0	.90-1.0
.90-1.0	.75-.90
.75-.90	.50-.75
.50-.75	0-.50



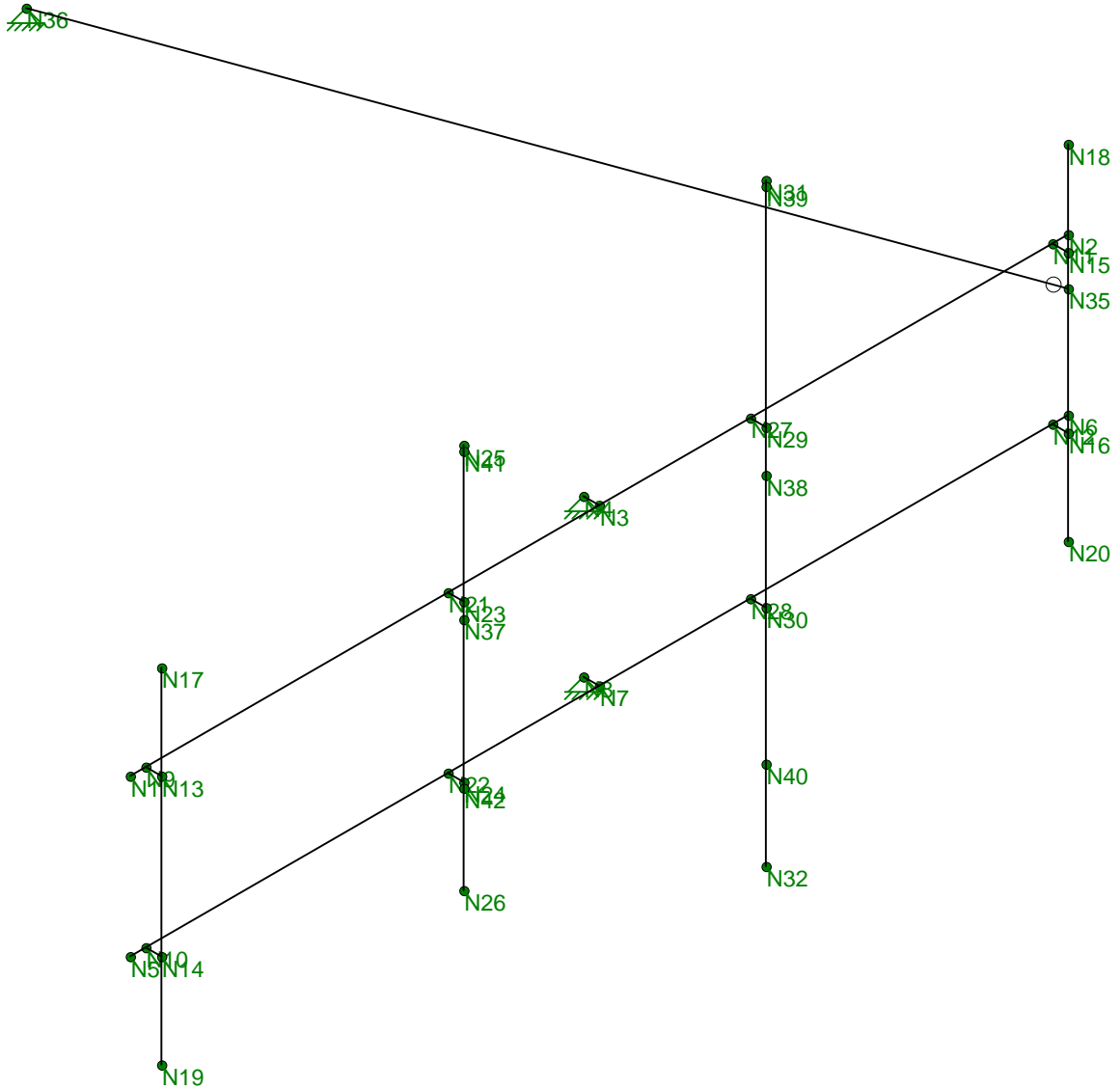
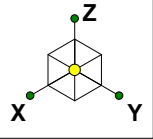
Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

ForeSite/EFI	CT11227D	SK - 6
PK		Jan 28, 2021 at 7:55 PM
049.01159 - 2075095		CT11227D.r3d



Envelope Only Solution

ForeSite/EFI	CT11227D	SK - 7
PK		Jan 28, 2021 at 7:56 PM
049.01159 - 2075095		CT11227D.r3d



Envelope Only Solution

ForeSite/EFI	CT11227D	SK - 8
PK		Jan 28, 2021 at 7:56 PM
049.01159 - 2075095		CT11227D.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?	No
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Z
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	AISI S100-12: LRFD
Wood Code	AF&PA NDS-05/08: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-05
Masonry Code	ACI 530-05: ASD
Aluminum Code	AA ADM1-05: ASD - Building AISC 14th(360-10): LRFD

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parame 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	.035
Ct Z	.035
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	8.5
R Z	8.5
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	Not Entered
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1

Project Grid Lines

Label	Start X [in]	End X [in]	Start Y [in]	End Y [in]	Start Bubble	End Bubble
No Data to Print ...						

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\...	Density[lb/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	490	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	490	50	1.1	65	1.2
3	A992	29000	11154	.3	.65	490	50	1.1	65	1.2
4	A500 Gr.42	29000	11154	.3	.65	490	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	.3	.65	490	46	1.2	58	1.1
6	A53 Gr.B	29000	11154	.3	.65	490	35	1.5	60	1.2
7	A529 Gr.50	29000	11154	.3	.65	490	50	1.1	65	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	HR1A	C15X50	Beam	Wide Flange	A36 Gr.36	Typical	14.7	11	404	2.65

Member Primary Data

	Label	I Joint J	JointK	JointRota...	Section/Shape	Type	Design...	Material	Desig...
1	M2	N4	N3		RIGID	None	None	LINK	Typical
2	M4	N8	N7		RIGID	None	None	LINK	Typical
3	M5	N9	N13		RIGID	None	None	LINK	Typical
4	M6	N10	N14		RIGID	None	None	LINK	Typical
5	M7	N11	N15		RIGID	None	None	LINK	Typical
6	M8	N12	N16		RIGID	None	None	LINK	Typical
7	M11	N21	N23		RIGID	None	None	LINK	Typical
8	M12	N22	N24		RIGID	None	None	LINK	Typical



Company : ForeSite/EFI
 Designer : PK
 Job Number : 049.01159 - 2075095
 Model Name : CT11227D

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 Checked By: _____

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rota...	Section/Shape	Type	Design...	Material	Desig...
9	M14	N27	N29			RIGID	None	None	LINK	Typical
10	M15	N28	N30			RIGID	None	None	LINK	Typical
11	M1	N1	N2			PIPE 2.5	Bea..	Wide F..	A53 Gr.B	Typical
12	M3	N5	N6			PIPE 2.5	Bea..	Wide F..	A53 Gr.B	Typical
13	M9	N17	N19			PIPE 2.0	Bea..	Wide F..	A53 Gr.B	Typical
14	M10	N18	N20			PIPE 2.0	Bea..	Wide F..	A53 Gr.B	Typical
15	M13	N25	N26			PIPE 2.0	Bea..	Wide F..	A53 Gr.B	Typical
16	M16	N31	N32			PIPE 2.0	Bea..	Wide F..	A53 Gr.B	Typical
17	M18	N35	N36			PIPE 1.5	Bea..	Wide F..	A53 Gr.B	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Analysis ...	Inactive	Seismic Design ...
1	M2						Yes			None
2	M4						Yes			None
3	M5						Yes			None
4	M6						Yes			None
5	M7						Yes			None
6	M8						Yes			None
7	M11						Yes			None
8	M12						Yes			None
9	M14						Yes			None
10	M15						Yes			None
11	M1						Yes			None
12	M3						Yes			None
13	M9						Yes			None
14	M10						Yes			None
15	M13						Yes			None
16	M16						Yes			None
17	M18		BenPIN				Yes			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torq...	Kyy	Kzz	Cb	Function
1	M1	PIPE 2.5	180			Lbyy						Lateral
2	M3	PIPE 2.5	180			Lbyy						Lateral
3	M9	PIPE 2.0	66			Lbyy						Lateral
4	M10	PIPE 2.0	66			Lbyy						Lateral
5	M13	PIPE 2.0	74			Lbyy						Lateral
6	M16	PIPE 2.0	114			Lbyy						Lateral
7	M18	PIPE 1.5	156			Lbyy						Lateral

Joint Coordinates and Temperatures

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
1	N1	0	0	0	0	
2	N2	-180	0	0	0	
3	N3	-90	0	0	0	
4	N4	-90	-3	0	0	
5	N5	0	0	-30	0	
6	N6	-180	0	-30	0	
7	N7	-90	0	-30	0	
8	N8	-90	-3	-30	0	
9	N9	-3	0	0	0	
10	N10	-3	0	-30	0	



Joint Coordinates and Temperatures (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
11	N11	-177	0	0	0	
12	N12	-177	0	-30	0	
13	N13	-3	3	0	0	
14	N14	-3	3	-30	0	
15	N15	-177	3	0	0	
16	N16	-177	3	-30	0	
17	N17	-3	3	18	0	
18	N18	-177	3	18	0	
19	N19	-3	3	-48	0	
20	N20	-177	3	-48	0	
21	N21	-61	0	0	0	
22	N22	-61	0	-30	0	
23	N23	-61	3	0	0	
24	N24	-61	3	-30	0	
25	N25	-61	3	26	0	
26	N26	-61	3	-48	0	
27	N27	-119	0	0	0	
28	N28	-119	0	-30	0	
29	N29	-119	3	0	0	
30	N30	-119	3	-30	0	
31	N31	-119	3	41	0	
32	N32	-119	3	-73	0	
33	N35	-177	3	-6	0	
34	N36	-123.644858	-143.592049	-6	0	
35	N37	-61	3	-3	0	
36	N38	-119	3	-8	0	
37	N39	-119	3	40	0	
38	N40	-119	3	-56	0	
39	N41	-61	3	25	0	
40	N42	-61	3	-31	0	

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	N36	Reaction	Reaction	Reaction			
2	N4	Reaction	Reaction	Reaction			
3	N8	Reaction	Reaction	Reaction			

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribu...	Area(M...Surface...
1	DEAD LOAD	None			-1	4			
2	DEAD LOAD ICE	None				4		7	
3	WIND LOAD (NO ICE) FRONT	None				4		7	
4	WIND LOAD (NO ICE) SIDE	None				4		7	
5	WIND LOAD (ICE) FRONT	None				4		7	
6	WIND LOAD (ICE) SIDE	None				4			
7	LIVE LOAD1	None				1			
8	LIVE LOAD2	None				1			
9	LIVE LOAD3	None							
10	MAINTENANCE LOAD 1	None				1			
11	MAINTENANCE LOAD 2	None				1			
12	MAINTENANCE LOAD 3	None				1			
13	MAINTENANCE LOAD 4	None				1			



Joint Loads and Enforced Displacements (BLC 1 : DEAD LOAD)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N39	L	Z	-112
2	N40	L	Z	-112
3	N41	L	Z	-34
4	N42	L	Z	-34

Joint Loads and Enforced Displacements (BLC 2 : DEAD LOAD ICE)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N39	L	Z	-356
2	N40	L	Z	-356
3	N41	L	Z	-132
4	N42	L	Z	-132

Joint Loads and Enforced Displacements (BLC 3 : WIND LOAD (NO ICE) FRONT)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N39	L	Y	-286
2	N40	L	Y	-286
3	N41	L	Y	-94
4	N42	L	Y	-94

Joint Loads and Enforced Displacements (BLC 4 : WIND LOAD (NO ICE) SIDE)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N39	L	X	-146
2	N40	L	X	-146
3	N41	L	X	-38
4	N42	L	X	-38

Joint Loads and Enforced Displacements (BLC 5 : WIND LOAD (ICE) FRONT)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N39	L	Y	-87
2	N40	L	Y	-87
3	N41	L	Y	-32
4	N42	L	Y	-32

Joint Loads and Enforced Displacements (BLC 6 : WIND LOAD (ICE) SIDE)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N39	L	X	-53
2	N40	L	X	-53
3	N41	L	X	-20
4	N42	L	X	-20

Joint Loads and Enforced Displacements (BLC 7 : LIVE LOAD1)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N6	L	Z	-250

Joint Loads and Enforced Displacements (BLC 8 : LIVE LOAD2)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N5	L	Z	-250

Joint Loads and Enforced Displacements (BLC 10 : MAINTENANCE LOAD 1)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N20	L	Z	-490



Joint Loads and Enforced Displacements (BLC 11 : MAINTENANCE LOAD 2)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N32	L	Z	-490

Joint Loads and Enforced Displacements (BLC 12 : MAINTENANCE LOAD 3)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N26	L	Z	-490

Joint Loads and Enforced Displacements (BLC 13 : MAINTENANCE LOAD 4)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N19	L	Z	-490

Member Point Loads

Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
No Data to Print ...			

Member Distributed Loads (BLC 2 : DEAD LOAD ICE)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,%]	End Location[in,%]
1	M1	Z	-15	-15	0	0
2	M3	Z	-15	-15	0	0
3	M9	Z	-13	-13	0	0
4	M10	Z	-13	-13	0	0
5	M13	Z	-13	-13	0	0
6	M16	Z	-13	-13	0	0
7	M18	Z	-12	-12	0	0

Member Distributed Loads (BLC 3 : WIND LOAD (NO ICE) FRONT)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,%]	End Location[in,%]
1	M1	PY	-8	-8	0	0
2	M3	PY	-8	-8	0	0
3	M9	PY	-7	-7	0	0
4	M10	PY	-7	-7	0	0
5	M13	PY	-7	-7	0	0
6	M16	PY	-7	-7	0	0
7	M18	PY	-5	-5	0	0

Member Distributed Loads (BLC 4 : WIND LOAD (NO ICE) SIDE)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,%]	End Location[in,%]
1	M1	PX	-8	-8	0	0
2	M3	PX	-8	-8	0	0
3	M9	PX	-7	-7	0	0
4	M10	PX	-7	-7	0	0
5	M13	PX	-7	-7	0	0
6	M16	PX	-7	-7	0	0
7	M18	PX	-5	-5	0	0

Member Distributed Loads (BLC 5 : WIND LOAD (ICE) FRONT)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,%]	End Location[in,%]
1	M1	PY	-7.8	-7.8	0	0
2	M3	PY	-7.8	-7.8	0	0
3	M9	PY	-7.3	-7.3	0	0
4	M10	PY	-7.3	-7.3	0	0
5	M13	PY	-7.3	-7.3	0	0



Member Distributed Loads (BLC 5 : WIND LOAD (ICE) FRONT) (Continued)

Member Label	Direction	Start Magnitude[lb/ft.F.psf]	End Magnitude[lb/ft.F.psf]	Start Location[in.%]	End Location[in.%]
6 M16	PY	-7.3	-7.3	0	0
7 M18	PY	-6.8	-6.8	0	0

Member Area Loads

Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
No Data to Print ...						

Load Combinations

Description	S...P...	S...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...
1 DL + WL (NO ICE) 0 Degree	Y..Y	1 1.2			3 1.6													
2 DL + WL (NO ICE) 30 Degree	Y..Y	1 1.2			3 1.6	4 .8												
3 DL + WL (NO ICE) 60 Degree	Y..Y	1 1.2			3 .8	4 1.6												
4 DL + WL (NO ICE) 90 Degree	Y..Y	1 1.2				4 1.6												
5 DL + WL (NO ICE) 120 Degree	Y..Y	1 1.2			3 -.8	4 1.6												
6 DL + WL (NO ICE) 150 Degree	Y..Y	1 1.2			3 -1.6	4 .8												
7 DL + WL (NO ICE) 180 Degree	Y..Y	1 1.2			3 -1.6													
8 DL + WL (NO ICE) 210 Degree	Y..Y	1 1.2			3 -1.6	4 -.8												
9 DL + WL (NO ICE) 240 Degree	Y..Y	1 1.2			3 -.8	4 -1.6												
10 DL + WL (NO ICE) 270 Degree	Y..Y	1 1.2				4 -1.6												
11 DL + WL (NO ICE) 300 Degree	Y..Y	1 1.2			3 .8	4 -1.6												
12 DL + WL (NO ICE) 330 Degree	Y..Y	1 1.2			3 1.6	4 -.8												
13 DL + DL ICE + WL (ICE) 0 Degree	Y..Y	1 1.2	2 1	5 1														
14 DL + DL ICE + WL (ICE) 30 Degree	Y..Y	1 1.2	2 1	5 .866	6 .5													
15 DL + DL ICE + WL (ICE) 60 Degree	Y..Y	1 1.2	2 1	5 .5	6 .866													
16 DL + DL ICE + WL (ICE) 90 Degree	Y..Y	1 1.2	2 1		6 1													
17 DL + DL ICE + WL (ICE) 120 Degree	Y..Y	1 1.2	2 1	5 -.5	6 .866													
18 DL + DL ICE + WL (ICE) 150 Degree	Y..Y	1 1.2	2 1	5 -.866	6 .5													
19 DL + DL ICE + WL (ICE) 180 Degree	Y..Y	1 1.2	2 1	5 -1														
20 DL + DL ICE + WL (ICE) 210 Degree	Y..Y	1 1.2	2 1	5 -.866	6 -.5													
21 DL + DL ICE + WL (ICE) 240 Degree	Y..Y	1 1.2	2 1	5 -.5	6 -.866													
22 DL + DL ICE + WL (ICE) 270 Degree	Y..Y	1 1.2	2 1		6 -1													
23 DL + DL ICE + WL (ICE) 300 Degree	Y..Y	1 1.2	2 1	5 .5	6 -.866													
24 DL + DL ICE + WL (ICE) 330 Degree	Y..Y	1 1.2	2 1	5 .866	6 -.5													
25 DEAD LOAD + LIVE LOAD1	Y..Y	1 1.2			7 1.5													
26 DEAD LOAD + LIVE LOAD2	Y..Y	1 1.2			8 1.5													
27 DEAD LOAD + LIVE LOAD3	Y..Y	1 1.2			9 1.5													
28 DL + MAIN L1+30MPH WL FRONT	Y..Y	1 1.2	10 1.5	3 .096														
29 DL + MAIN L2+30MPH WL FRONT	Y..Y	1 1.2	11 1.5	3 .096														
30 DL + MAIN L3+30MPH WL FRONT	Y..Y	1 1.2	12 1.5	3 .096														
31 DL + MAIN L4+30MPH WL FRONT	Y..Y	1 1.2	13 1.5	3 .096														
32 DL + MAIN L1+30MPH WL SIDE	Y..Y	1 1.2	10 1.5	4 .096														
33 DL + MAIN L2+30MPH WL SIDE	Y..Y	1 1.2	11 1.5	4 .096														
34 DL + MAIN L3+30MPH WL SIDE	Y..Y	1 1.2	12 1.5	4 .096														
35 DL + MAIN L4+30MPH WL SIDE	Y..Y	1 1.2	13 1.5	4 .096														
36 DL + MAIN L1+30MPH WL FRONT (REVERSED)	Y..Y	1 1.2	10 1.5	3 -0.096														
37 DL + MAIN L2+30MPH WL FRONT (REVERSED)	Y..Y	1 1.2	11 1.5	3 -0.096														
38 DL + MAIN L3+30MPH WL FRONT (REVERSED)	Y..Y	1 1.2	12 1.5	3 -0.096														
39 DL + MAIN L4+30MPH WL FRONT (REVERSED)	Y..Y	1 1.2	13 1.5	3 -0.096														
40 DL + MAIN L1+30MPH WL SIDE (REVERSED)	Y..Y	1 1.2	10 1.5	4 -0.096														
41 DL + MAIN L2+30MPH WL SIDE (REVERSED)	Y..Y	1 1.2	11 1.5	4 -0.096														
42 DL + MAIN L3+30MPH WL SIDE (REVERSED)	Y..Y	1 1.2	12 1.5	4 -0.096														
43 DL + MAIN L4+30MPH WL SIDE (REVERSED)	Y..Y	1 1.2	13 1.5	4 -0.096														



Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N36	max	88.263	6	258.565	1	98.091	19	0	1	0	1	0	1
2		min	-88.463	12	-259.047	7	19.648	2	0	1	0	1	0	1
3	N4	max	2421.169	32	1001.923	1	1391.447	24	0	1	0	1	0	1
4		min	-1917.329	43	-1232.437	7	-232.997	6	0	1	0	1	0	1
5	N8	max	1894.995	35	691.059	13	1384.754	18	0	1	0	1	0	1
6		min	-2399.562	40	-442.757	7	-234.307	12	0	1	0	1	0	1
7	Totals:	max	985.194	4	1934.24	1	2627.138	18						
8		min	-985.194	10	-1934.24	7	698.455	12						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC
1	N1	max	.009	12	.932	7	.173	32	2.368e-03	1	4.895e-03	39	1.219e-02	7
2		min	-.011	19	-.9	1	-.73	43	-4.097e-03	19	-4.242e-04	28	-1.219e-02	1
3	N2	max	.008	12	.021	7	.061	43	3.893e-03	1	2.987e-04	2	1.63e-03	8
4		min	-.013	19	-.015	1	-.842	32	-5.027e-03	7	-5.277e-03	36	-1.411e-03	2
5	N3	max	.008	12	0	7	.017	1	5.624e-03	1	5.025e-03	39	3.755e-03	19
6		min	-.011	19	0	1	-.024	7	-7.895e-03	7	-7.577e-03	28	-2.822e-03	12
7	N4	max	0	43	0	7	0	6	5.624e-03	1	5.025e-03	39	3.755e-03	19
8		min	0	32	0	1	0	24	-7.895e-03	7	-7.577e-03	28	-2.822e-03	12
9	N5	max	.01	13	.841	7	.173	32	1.081e-03	26	4.878e-03	31	1.212e-02	7
10		min	-.009	6	-.86	1	-.731	43	-3.541e-03	18	-4.334e-04	36	-1.2e-02	1
11	N6	max	.012	13	.033	25	.061	43	2.197e-03	8	2.466e-04	8	9.891e-04	8
12		min	-.008	6	-.074	35	-.843	32	-3.329e-03	2	-5.253e-03	28	-9.463e-04	2
13	N7	max	.01	13	0	7	.005	8	1.757e-03	8	5.046e-03	43	2.889e-03	6
14		min	-.009	6	0	13	-.015	13	-4.998e-03	13	-7.603e-03	32	-3.355e-03	13
15	N8	max	0	40	0	7	0	12	1.757e-03	8	5.046e-03	43	2.889e-03	6
16		min	0	35	0	13	0	18	-4.998e-03	13	-7.603e-03	32	-3.355e-03	13
17	N9	max	.009	12	.895	7	.171	32	2.368e-03	1	4.895e-03	39	1.219e-02	7
18		min	-.011	19	-.863	1	-.716	43	-4.097e-03	19	-4.243e-04	28	-1.219e-02	1
19	N10	max	.01	13	.804	7	.171	32	1.081e-03	26	4.878e-03	31	1.212e-02	7
20		min	-.009	6	-.824	1	-.716	43	-3.541e-03	18	-4.335e-04	36	-1.2e-02	1
21	N11	max	.008	12	.025	7	.061	43	3.893e-03	1	2.988e-04	2	1.63e-03	8
22		min	-.013	19	-.018	1	-.827	32	-5.027e-03	7	-5.277e-03	36	-1.411e-03	2
23	N12	max	.012	13	.031	25	.061	43	2.197e-03	8	2.467e-04	8	9.892e-04	8
24		min	-.008	6	-.073	35	-.827	32	-3.329e-03	2	-5.253e-03	28	-9.464e-04	2
25	N13	max	.044	12	.895	7	.162	32	2.368e-03	1	4.895e-03	39	1.219e-02	7
26		min	-.045	6	-.863	1	-.718	43	-4.097e-03	19	-4.243e-04	28	-1.219e-02	1
27	N14	max	.044	1	.804	7	.162	32	1.081e-03	26	4.878e-03	31	1.212e-02	7
28		min	-.044	6	-.824	1	-.718	43	-3.541e-03	18	-4.335e-04	36	-1.2e-02	1
29	N15	max	.01	12	.025	7	.052	43	3.893e-03	1	2.988e-04	2	1.63e-03	8
30		min	-.013	6	-.018	1	-.828	32	-5.027e-03	7	-5.277e-03	36	-1.411e-03	2
31	N16	max	.011	12	.031	25	.053	43	2.197e-03	8	2.467e-04	8	9.892e-04	8
32		min	-.009	6	-.073	35	-.829	32	-3.329e-03	2	-5.253e-03	28	-9.464e-04	2
33	N17	max	.097	31	.97	7	.162	32	2.43e-03	1	4.895e-03	39	1.219e-02	7
34		min	-.037	6	-.906	1	-.718	43	-4.154e-03	7	-4.243e-04	28	-1.219e-02	1
35	N18	max	.013	1	.117	7	.052	43	3.956e-03	1	2.676e-04	2	1.63e-03	8
36		min	-.105	36	-.089	1	-.828	32	-5.09e-03	7	-5.277e-03	36	-1.411e-03	2
37	N19	max	.033	12	.772	7	.162	32	1.081e-03	26	4.838e-03	31	1.212e-02	7
38		min	-.1	39	-.823	1	-.719	43	-3.505e-03	18	-4.335e-04	36	-1.2e-02	1
39	N20	max	.105	28	.056	25	.053	43	2.251e-03	8	2.155e-04	8	9.892e-04	8
40		min	-.01	8	-.128	31	-.829	32	-3.383e-03	2	-5.21e-03	28	-9.464e-04	2
41	N21	max	.009	12	.219	6	.122	32	3.85e-03	1	6.244e-03	31	1.025e-02	7
42		min	-.011	19	-.199	1	-.2	43	-5.383e-03	7	-1.824e-03	36	-9.754e-03	1
43	N22	max	.01	13	.171	6	.122	28	2.114e-04	8	6.254e-03	39	8.586e-03	7



Envelope Joint Displacements (Continued)

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC	
44		min	-0.009	6	-0.183	12	-0.201	39	-3.208e-03	14	-1.799e-03	28	-8.95e-03	1
45	N23	max	.037	12	.219	6	.114	28	3.85e-03	1	6.244e-03	31	1.025e-02	7
46		min	-.04	6	-.199	1	-.201	39	-5.383e-03	7	-1.824e-03	36	-9.754e-03	1
47	N24	max	.035	12	.171	6	.114	28	2.114e-04	8	6.254e-03	39	8.586e-03	7
48		min	-.034	6	-.183	12	-.201	39	-3.208e-03	14	-1.799e-03	28	-8.95e-03	1
49	N25	max	.169	31	.419	7	.114	28	7.275e-03	1	6.316e-03	43	1.025e-02	7
50		min	-.073	6	-.36	1	-.202	39	-8.809e-03	7	-1.915e-03	5	-9.754e-03	1
51	N26	max	.044	1	.17	7	.114	28	2.699e-04	8	6.254e-03	39	8.586e-03	7
52		min	-.123	39	-.224	13	-.201	39	-3.244e-03	14	-1.799e-03	28	-8.95e-03	1
53	N27	max	.008	12	.048	8	.061	39	9.808e-03	1	7.612e-04	9	2.001e-03	1
54		min	-.012	19	-.043	2	-.262	28	-1.102e-02	7	-7.482e-03	32	-2.094e-03	7
55	N28	max	.011	13	.027	10	.062	31	5.823e-03	7	6.429e-04	31	1.468e-03	2
56		min	-.008	6	-.054	19	-.263	36	-7.048e-03	1	-7.445e-03	36	-1.177e-03	8
57	N29	max	.007	10	.048	8	.054	43	9.808e-03	1	7.612e-04	9	2.001e-03	1
58		min	-.011	19	-.043	2	-.262	32	-1.102e-02	7	-7.482e-03	32	-2.094e-03	7
59	N30	max	.009	13	.027	10	.054	43	5.823e-03	7	6.429e-04	31	1.468e-03	2
60		min	-.009	35	-.054	19	-.262	32	-7.048e-03	1	-7.445e-03	36	-1.177e-03	8
61	N31	max	.407	10	1.218	7	.053	43	3.592e-02	1	1.412e-02	10	2.001e-03	1
62		min	-.523	4	-1.163	1	-.263	32	-3.714e-02	7	-1.69e-02	4	-2.094e-03	7
63	N32	max	.34	40	.642	7	.053	43	1.726e-02	7	5.782e-03	4	1.468e-03	2
64		min	-.201	4	-.704	1	-.262	32	-1.848e-02	1	-8.534e-03	10	-1.177e-03	8
65	N35	max	.01	12	.003	10	.052	43	2.276e-03	1	4.969e-04	2	1.502e-03	8
66		min	-.009	6	-.003	4	-.828	32	-3.353e-03	7	-1.018e-03	36	-1.318e-03	2
67	N36	max	0	12	0	7	0	2	-5.687e-03	43	-6.872e-04	39	1.374e-02	4
68		min	0	6	0	1	0	19	-3.069e-02	17	-1.086e-02	24	-1.375e-02	10
69	N37	max	.034	12	.207	6	.114	28	3.02e-03	1	3.208e-03	31	1.009e-02	7
70		min	-.038	6	-.19	12	-.201	39	-4.323e-03	7	-1.177e-03	36	-9.674e-03	1
71	N38	max	.021	13	.037	13	.054	43	4.67e-03	1	9.546e-04	8	1.84e-03	2
72		min	-.005	7	-.043	19	-.262	32	-5.056e-03	7	-6.516e-04	2	-1.837e-03	8
73	N39	max	.393	10	1.181	7	.053	43	3.592e-02	1	1.412e-02	10	2.001e-03	1
74		min	-.506	4	-1.127	1	-.263	32	-3.714e-02	7	-1.69e-02	4	-2.094e-03	7
75	N40	max	.208	40	.348	7	.053	43	1.721e-02	7	5.729e-03	4	1.468e-03	2
76		min	-.102	4	-.39	1	-.262	32	-1.843e-02	1	-8.481e-03	10	-1.177e-03	8
77	N41	max	.163	31	.41	7	.114	28	7.275e-03	1	6.316e-03	43	1.025e-02	7
78		min	-.072	6	-.353	1	-.202	39	-8.809e-03	7	-1.915e-03	5	-9.754e-03	1
79	N42	max	.036	12	.17	6	.114	28	2.244e-04	8	6.254e-03	39	8.586e-03	7
80		min	-.035	6	-.185	12	-.201	39	-3.215e-03	14	-1.799e-03	28	-8.95e-03	1

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

Member	Shape	Code Che...	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc ...	phi*Pnt [...]	phi*Mn y...	phi*Mn z...	Cb	Eqn
1	M16	PIPE 2.0	.850	40.375	7	.144	70.063	28	10899.2...	32130	1.872	1.872	1...	H1-1b
2	M13	PIPE 2.0	.728	26.208	43	.118	55.5	31	20365.5...	32130	1.872	1.872	1...	H1-1b
3	M10	PIPE 2.0	.561	18.563	36	.112	24.063	36	22356.0...	32130	1.872	1.872	3...	H1-1b
4	M9	PIPE 2.0	.527	18.563	39	.105	18.563	43	22356.0...	32130	1.872	1.872	4...	H1-1b
5	M3	PIPE 2.5	.427	90	13	.159	90	7	10110.2...	50715	3.596	3.596	1...	H1-1b
6	M1	PIPE 2.5	.392	90	1	.174	90	1	10110.2...	50715	3.596	3.596	1...	H1-1b
7	M18	PIPE 1.5	.300	78	13	.014	156	13	2719.933	23593.5	1.105	1.105	1...	H1-1b

Exhibit F

Power Density/RF Emissions Report



Non-Ionizing Radiation Report

Compiled For: Northeast Site Solutions on behalf of T-Mobile

Site Name: CT11227D

Site ID: CT11227D

482 Pigeon Hill Road, Windsor, CT 06095

Latitude: 41.86663 N; Longitude: -73.674812 W

Structure Type: Self-Support

Report Date: November 8, 2021

Report Written By: Tim Harris

Status: T-Mobile will be compliant with FCC rules on RF Exposure.

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 - Occupational / Controlled 11
 - General Population / Uncontrolled 11
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1. Executive Summary:

Northeast Site Solutions on behalf of T-Mobile has contracted Infinigy Solutions, LLC to determine whether the site CT11227D located at 482 Pigeon Hill Road in Windsor, CT Will Be Compliant with all Federal Communications Commission (FCC) rules and regulations for radio frequency (RF) exposure as indicated in **47CFR§1.1310**.

The report incorporates a theoretical RF field analysis in accordance with the FCC Rules and Regulations for all individuals classified as “Occupational or Controlled” and “General Public or Uncontrolled” (see Appendix A and B).

This document and the conclusions herein are based on information provided by Northeast Site Solutions on behalf of T-Mobile.

As a result of the analysis, **T-Mobile Will Be Compliant with FCC rules.**

T-Mobile, All Bands Cumulative Exposure %		
Uncontrolled / General Population	Exposure values at the site (mW/cm ²)	0.0115
	% Exposure	1.59 %
Controlled / Occupational	Exposure values at the site (mW/cm ²)	0.0115
	% Exposure	0.32 %

2. Site Summary:

Site Information	
Site Name: CT11227D	
Site Address: 482 Pigeon Hill Road, Windsor, CT 06095	
Site Type: Self-Support	
Compliance Status	Will Be Compliant
Mitigation Required	No
Signage Required	Yes
Barriers Required	No
Access Locked	No
Area Controlled or Uncontrolled	Uncontrolled

3. Site Compliance

This report also incorporates overview of the site information:

- Antenna Inventory Table
- Calculation Tables showing exposure for each carrier transmit frequency
- Total exposure for all carriers existing and proposed at ground level considering the centerline of all antennas and horizontal distance from the tower.
- Maximum Effective Radiated Power Assumed as Worst Case for Calculations used in this study
- Calculations based on flat ground around base of the structure

4. Site Compliance Recommendations

Infinigy recommends the following upon the installation of antennas at the site:

Base of tower

Install an RF caution sign. Note: The recommendation for alerting signage is moot if there is an RF caution, or greater already installed.

5. Antenna Inventory Table

Ant ID	Sector	Operator	Antenna manufacturer	Antenna Model	Operating Frequency/Technology	Rad Ctr (Ft)	Az (Deg)	Total ERP Power (Watts)
1a	Alpha	T-Mobile	RFS	APX16DW-16DWS	1900 MHz LTE	145	60	3052
1b	Alpha	T-Mobile	RFS	APX16DW-16DWS	1900 MHz GSM	145	60	3052
1c	Alpha	T-Mobile	RFS	APX16DW-16DWS	2100 MHz UMTS	145	60	2154
1d	Alpha	T-Mobile	RFS	APX16DW-16DWS	2100 MHz LTE	145	60	2154
2a	Alpha	T-Mobile	RFS	APXVAARR18_N43-U-NA20	700 MHz LTE	145	60	2256
2b	Alpha	T-Mobile	RFS	APXVAARR18_N43-U-NA20	600 MHz LTE	145	60	1128
2c	Alpha	T-Mobile	RFS	APXVAARR18_N43-U-NA20	600 MHz 5G	145	60	1128
3a	Beta	T-Mobile	RFS	APX16DW-16DWS	1900 MHz LTE	145	180	3052
3b	Beta	T-Mobile	RFS	APX16DW-16DWS	1900 MHz GSM	145	180	3052
3c	Beta	T-Mobile	RFS	APX16DW-16DWS	2100 MHz UMTS	145	180	2154
3d	Beta	T-Mobile	RFS	APX16DW-16DWS	2100 MHz LTE	145	180	2154
4a	Beta	T-Mobile	RFS	APXVAARR18_N43-U-NA20	700 MHz LTE	145	180	2256
4b	Beta	T-Mobile	RFS	APXVAARR18_N43-U-NA20	600 MHz LTE	145	180	1128
4c	Beta	T-Mobile	RFS	APXVAARR18_N43-U-NA20	600 MHz 5G	145	180	1128
5a	Gamma	T-Mobile	RFS	APX16DW-16DWS	1900 MHz LTE	145	320	3052
5b	Gamma	T-Mobile	RFS	APX16DW-16DWS	1900 MHz GSM	145	320	3052
5c	Gamma	T-Mobile	RFS	APX16DW-16DWS	2100 MHz UMTS	145	320	2154
5d	Gamma	T-Mobile	RFS	APX16DW-16DWS	2100 MHz LTE	145	320	2154
6a	Gamma	T-Mobile	RFS	APXVAARR18_N43-U-NA20	700 MHz LTE	145	320	2256
6b	Gamma	T-Mobile	RFS	APXVAARR18_N43-U-NA20	600 MHz LTE	145	320	1128
6c	Gamma	T-Mobile	RFS	APXVAARR18_N43-U-NA20	600 MHz 5G	145	320	1128

6. RF Guidelines

To ensure safety of company workers, the following points need to be taken into consideration and implemented at wireless sites in accordance with the Carriers policies:

- a) **Worksite:** Any employee at the site should avoid working directly in front of the antenna or in areas predicted to exceed general population exposure limits by 100%. Workers should insist that the transmitters be switched off during the work period.
- b) **RF Safety Training and Awareness:** All employees working in areas exceeding the general population limits should have a basic awareness of RF safety measures. Videos, classroom lectures and online courses are all appropriate training methods on these topics.
- c) **Site Access:** Restricting access to transmitting antenna locations is one of the most important elements of RF safety. This can be done with:
 - Locked doors/gates/ladder access
 - Alarmed doors
 - Restrictive barriers
- d) **Three-foot Buffer:** There is an inverse relationship between the strength of the field and the distance from the antenna. The RF field diminishes with distance from the antenna. Workers should maintain a three-foot distance from the antennas.
- e) **Antennas:** Workers should always assume that the antenna is transmitting and should never stop right in front of the antenna. If someone must pass by an antenna, he/she should move quickly, thus reducing RF exposure.

7. T-Mobile Exposure Analysis By Band and Technology

T-Mobile 600 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm ²)	0.4
	Exposure values at the site (mW/cm ²)	0.0009
	% Exposure	0.22%
Controlled / Occupational	FCC's Exposure limits(mW/cm ²)	2.0
	Exposure values at the site (mW/cm ²)	0.0009
	% Exposure	0.04%

T-Mobile 600 MHz 5G		
Uncontrolled / General Population	FCC's exposure limits (mW/cm ²)	0.4
	Exposure values at the site (mW/cm ²)	0.0009
	% Exposure	0.22%
Controlled / Occupational	FCC's Exposure limits(mW/cm ²)	2.0
	Exposure values at the site (mW/cm ²)	0.0009
	% Exposure	0.04%

T-Mobile 700 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm ²)	0.5
	Exposure values at the site (mW/cm ²)	0.0017
	% Exposure	0.35%
Controlled / Occupational	FCC's Exposure limits(mW/cm ²)	2.3
	Exposure values at the site (mW/cm ²)	0.0017
	% Exposure	0.08%

T-Mobile 1900 MHz GSM		
Uncontrolled / General Population	FCC's exposure limits (mW/cm ²)	1.0
	Exposure values at the site (mW/cm ²)	0.0024
	% Exposure	0.24%
Controlled / Occupational	FCC's Exposure limits(mW/cm ²)	5.0
	Exposure values at the site (mW/cm ²)	0.0024
	% Exposure	0.05%

T-Mobile 1900 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm ²)	1.0
	Exposure values at the site (mW/cm ²)	0.0024
	% Exposure	0.24%
Controlled / Occupational	FCC's Exposure limits(mW/cm ²)	5.0
	Exposure values at the site (mW/cm ²)	0.0024
	% Exposure	0.05%

T-Mobile 2100 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm ²)	1.0
	Exposure values at the site (mW/cm ²)	0.0017
	% Exposure	0.17%
Controlled / Occupational	FCC's Exposure limits(mW/cm ²)	5.0
	Exposure values at the site (mW/cm ²)	0.0017
	% Exposure	0.03%

T-Mobile 2100 MHz UMTS		
Uncontrolled / General Population	FCC's exposure limits (mW/cm ²)	1.0
	Exposure values at the site (mW/cm ²)	0.0017
	% Exposure	0.17%
Controlled / Occupational	FCC's Exposure limits(mW/cm ²)	5.0
	Exposure values at the site (mW/cm ²)	0.0017
	% Exposure	0.03%

8. Appendix A: FCC Guidelines

FCC Policies

The Federal Communications Commission (FCC) in 1996 implemented regulations and policies for analysis of RF propagation to evaluate RF emissions. All the analysis and results of this report are compared with FCC's (Federal Communications Commission) rules to determine whether a site is compliant for Occupational/Controlled or General Public/Uncontrolled exposure. All the analysis of RF propagation is done in terms of a percentage. The limits primarily indicate the power density and are generally expressed in terms of milliwatts per centimeter square, mW/cm².

FCC guidelines incorporate two separate tiers of exposure limits that are dependent on the scenario/ situation in which that exposure takes place or the status of the individuals who are subjected to that exposure. The decision as to which tier is applied to a scenario is based on the following definitions:

Occupational / Controlled

These limits apply in situations when someone is exposed to RF energy through his/her occupation, is fully aware of the harmful effects of the RF exposure and has an ability to exercise control over this exposure. Occupational / controlled exposure limits also apply when 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. limits for Occupational/Controlled exposure can be found on Table 1(A).

General Population / Uncontrolled

These limits apply to situations in which the general public may be exposed or in which persons who are exposed because of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure to RF. Therefore, members of the general public would always be considered under this category, for example, in the case of a telecommunications tower that exposes people in a nearby residential area. Exposure limits for General Population/Uncontrolled can be found on Table 1(B).

Table 1. LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

(A) Limits for Occupational/Controlled Exposure

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

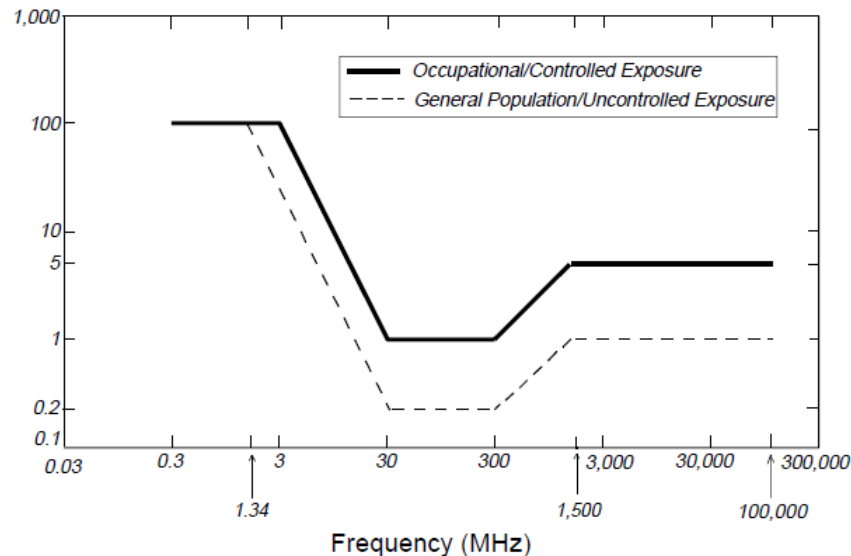
(B) Limits for General Population/Uncontrolled Exposure

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

f = frequency in MHz

*Plane-wave equivalent power density

Figure 1. FCC Limits for Maximum Permissible Exposure (MPE)
Plane-wave Equivalent Power Density



OSHA Statement:

The objective of the OSHA Act is to ensure the safety and health of the working men and women by enforcing certain standards. The act also assists and encourages the states in their efforts to ensure safe and healthy working conditions through means of research, information, education and training in the field of occupational safety and health and for other purposes.

According to OSHA Act section 5, important duties to be considered are:

(a) Each employer

- 1) Shall furnish to each of his employees' employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious harm to his employees
- 2) Shall comply with occupational safety and health standards promulgated under this act.

(b) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct.

9. Preparer Certification

I, Tim Harris, preparer of this report, certify that I am fully trained and aware of the rules and regulations of both the Federal Communications Commission and the Occupational Safety and Health Administration regarding Human Exposure to Radio Frequency Radiation. In addition, I have been trained in RF safety practices, rules, and regulations.

I certify that the information contained in this report is true and correct to the best of my knowledge.

Timothy A. Harris

11/8/2021

Signature

Date

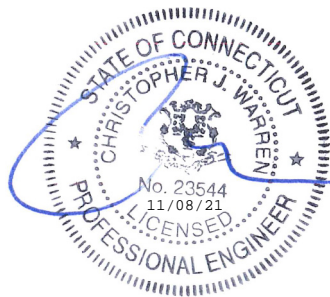
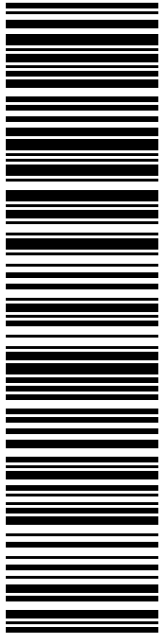


Exhibit G

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From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359


Re#: 227D-L700

To: DONALD S TRINKS
MAYOR OF WINDSOR
275 BROAD ST
WINDSOR CT 06095-2940

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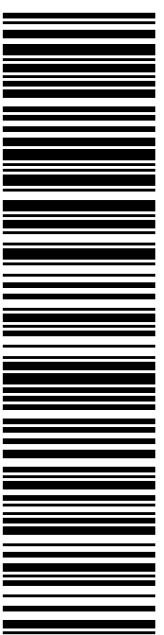
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0006

DEBORAH CHASE
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 STE 1
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C036

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 TO: ERIC BARZ
 WINDSOR-TOWN PLANNER
 275 BROAD ST
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 TOWN MANAGER
 275 BROAD ST
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Expected Delivery Date: 11/15/2021	

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Re#: 227D-L700

To: PETE SOUZA
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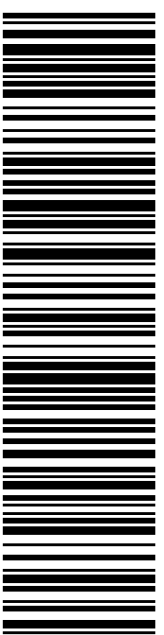
Expected Delivery Date: 11/15/21
 Re#: 227D-L700
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 420 MAIN ST
 STE 1
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B031

SHIP TO:
 CELLCO PATRNETERSHIP C/O VERIZON WIRELESS
 PO BOX 2549
 ADDISON TX 75001-2549

USPS TRACKING #



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Trans. #: 548126342	Priority Mail® Postage: \$8.70
Print Date: 11/11/2021	Total: \$8.70
Ship Date: 11/11/2021	
Expected Delivery Date: 11/15/2021	

From: DEBORAH CHASE Re#: 227D-L700
 NORTHEAST SITE SOLUTIONS
 420 MAIN ST
 STE 1
 STURBRIDGE MA 01566-1359

To: CELLCO PATRNETERSHIP C/O VERIZON WIRELESS
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 ADDISON TX 75001-2549

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Product	Qty	Unit Price	Price
Prepaid Mail Addison, TX 75001 Weight: 0 lb 13.90 oz Acceptance Date: Fri 11/12/2021 Tracking #: 9405 5036 9930 0059 2842 38	1		\$0.00
Prepaid Mail Windsor, CT 06095 Weight: 0 lb 13.90 oz Acceptance Date: Fri 11/12/2021 Tracking #: 9405 5036 9930 0059 2842 14	1		\$0.00
Prepaid Mail Windsor, CT 06095 Weight: 0 lb 13.80 oz Acceptance Date: Fri 11/12/2021 Tracking #: 9405 5036 9930 0059 2842 07	1		\$0.00
Prepaid Mail Windsor, CT 06095 Weight: 0 lb 13.80 oz Acceptance Date: Fri 11/12/2021 Tracking #: 9405 5036 9930 0059 2842 21	1		\$0.00
Grand Total:			\$0.00

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