Robinson+Cole

KENNETH C. BALDWIN

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Also admitted in Massachusetts
and New York

June 11, 2024

Via Electronic Mail

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

Re: **Notice of Exempt Modification – Facility Modification**
2 Tindall Avenue, Norwalk, Connecticut

Dear Attorney Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains an existing wireless telecommunications facility at the above-referenced property address (the "Property"). The facility consists of antennas on an existing tower and related equipment on the ground, near the base of the tower. The original tower was approved by the City of Norwalk ("City") in June of 2015 the Siting Council (the "Council") approved Petition No. 1156, a proposal by Eversource to extend the height of its existing tower from 120 feet to 150 feet in height. Construction of these improvements was completed on June 25, 2016. Cellco's shared use of the tower was approved by the Council in February of 2020 (TS-VER-103-200128). A copy of the original tower approval, Petition No. 1156 approval and staff report and Cellco's TS-VER-103-200128 approval are included in Attachment 1.

Cellco now intends to modify its facility by installing three (3) new antennas and six (6) new interference mitigation filters ("Filters") on its existing antenna platform and mounting assemblies. A set of project plans showing Cellco's proposed facility modifications and the specifications for Cellco's new antenna and Filters are included in Attachment 2.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Norwalk's Chief Elected Official and Land Use Officer. A copy of this letter is being sent to Eversource, the owner of the Property.

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

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's new antennas and Filters will be installed at the same height on the tower.

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, 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 installation of Cellco's new antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Included in Attachment 3 is a Calculated Radio Frequency Emissions Report demonstrating that the proposed modified facility will comply with the FCC safety standards. The modified facility will be capable of providing Cellco's 5G wireless service.

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

6. According to the attached Structural Analysis Report ("SA") and Antenna Mount Analysis Report ("MA"), the existing tower, tower foundation and antenna mounts can support Cellco's proposed modifications. Copies of the SA and MA are included in Attachment 4.

A copy of the parcel map and Property owner information is included in Attachment 5. A Certificate of Mailing verifying that this filing was sent to municipal officials and the property owner is included in Attachment 6.

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

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Harry Rilling, Mayor
Steven Kleppin, Director Planning and Zoning
Eversource, Property Owner
Aleksey Tyurin

ATTACHMENT 1

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

June 15, 2015

John R. Morissette
Manager, Transmission Siting & Permitting
Eversource Energy
P.O. Box 270
Hartford, CT 06141-0270

RE: **PETITION NO. 1156 –** Eversource Energy petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed replacement of an existing 120-foot tall telecommunications facility with a new 150-foot telecommunications facility located at property owned by Eversource Energy used as a service center and maintenance yard, 2 Tindall Avenue, Norwalk, Connecticut.

Dear Mr. Morissette:

At a public meeting held on June 11, 2015, the Connecticut Siting Council (Council) considered and ruled that the above-referenced proposal would not have a substantial adverse environmental effect, and pursuant to Connecticut General Statutes § 16-50k, would not require a Certificate of Environmental Compatibility and Public Need with the following conditions:

- Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed within three years from the date of the mailing of the Council's decision, this decision shall be void, and the facility owner/operator shall dismantle the facility and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The facility owner/operator shall provide written notice to the Executive Director of any schedule changes as soon as is practicable;

- Any request for extension of the time period to fully construct the facility shall be filed with the Council not later than 60 days prior to the expiration date of this decision and shall be served on all parties and intervenors, if applicable, and the City of Norwalk;

- Unless otherwise approved by the Council, the existing tower shall be removed within 180 days of the installation and operation of the new lattice tower;

- The Council shall be notified in writing when the existing tower is removed and the new tower is operational;

- The final structural design drawings of the tower and foundation shall be submitted prior to construction;

- Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by the Petitioner shall be removed within 60 days of the date the antenna ceased to function;

- The facility owner/operator shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v;

- This Declaratory Ruling may be transferred, provided the facility owner/operator/transferor is current with payments to the Council for annual assessments and invoices under Conn. Gen. Stat. §16-50v and the transferee provides written confirmation that the transferee agrees to comply with the terms, limitations and conditions contained in the Declaratory Ruling, including timely payments to the Council for annual assessments and invoices under Conn. Gen. Stat. §16-50v; and

- If the facility owner/operator is a wholly owned subsidiary of a corporation or other entity and is sold/transferred to another corporation or other entity, the Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the facility within 30 days of the sale and/or transfer.

This decision is under the exclusive jurisdiction of the Council and is not applicable to any other modification or construction. All work is to be implemented as specified in the petition dated April 23, 2015.

Enclosed for your information is a copy of the staff report on this project.

Very truly yours,

Robert Stein MAB

Robert Stein
Chairman

RS/MP/lm

Enclosure: Staff Report dated June 11, 2015

c: The Honorable Harry W. Rilling, Mayor, City of Norwalk
Michael Greene, Director of Planning and Zoning, City of Norwalk

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
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www.ct.gov/csc

Petition No. 1156

Eversource

Tower Replacement

2 Tindall Avenue, Norwalk

Staff Report

June 11, 2015

On April 28, 2015, the Connecticut Siting Council (Council) received a petition (Petition) from The Connecticut Light and Power Company d/b/a Eversource Energy (Eversource) for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed replacement of an existing telecommunications facility located in the City of Norwalk.

This Petition was field reviewed by Council member Dr. Barbara Bell and Michael Perrone of the Council staff on June 3, 2015. The following Eversource representatives also attended the field review: John Morissette, Project Manager, Transmission Siting; and Steven Florio, IT Telcom Engineer.; and Michael Libertine, Director of Siting & Permitting, All-Points Technology Corporation (representing Eversource).

Eversource currently owns and operates a 120-foot self-supporting lattice tower at 2 Tindall Avenue, Norwalk. This subject property is owned by Eversource and is currently used as a service center and maintenance yard. The existing tower (constructed in roughly the late 1960s) is currently used to operate two Eversource radio communications antennas.

Eversource is in the process of consolidating its service centers throughout the State of Connecticut, which requires the reconfiguration of its communications system. In Norwalk, this reconfiguration includes relocating five existing Eversource antennas currently located on the roof of the building at the NRG Norwalk Harbor Generating Station, a facility is that is now closed. These antennas are all currently located at 150-foot above ground level (agl). In addition, two Yankee Gas Service Company (i.e. part of Eversource Energy) antennas located at 9 Harbor Avenue, Norwalk would be relocated. Eversource's existing tower is not structurally cable of handling the new configuration. It is also not practical to reinforce the existing tower.

Thus, to accommodate this reconfiguration, Eversource seeks to remove the existing 120-foot self-supporting lattice tower and replace it with a new 150-foot self-supporting lattice tower approximately 325 feet to the east and on the same subject property. The proposed tower would be re-located to the eastern portion of the subject property to reduce the visual impact on the abutting property owned by the Clocktower Condominiums. The new location would also not disrupt the maintenance yard which can be quite active during a storm outage event. Furthermore, the existing tower has to remain until the new tower is installed and operational in order to maintain continuity of service.

Eversource would swap out its existing antennas and install new antennas and coaxial cables on the new tower to meet its needs for radio communications with field crews, paging services for local employees, and load management. Omni antennas would be installed at antenna centerline locations of 159-foot, 156-foot, 144-foot, 139-foot, 130-foot, 129-foot, 123-foot, and 121-foot levels of the tower to meet Eversource's

needs. The total height with appurtenances (or height to the top of the highest proposed antenna) would be 170 feet agl.

The proposed replacement tower would also serve as a microwave hub in the future to provide backhaul for a number of remote locations for Eversource. Accordingly, the preliminary microwave hub design is for a total of two six-foot diameter microwave dishes to be installed on the tower in the future. Eversource would file a Notice of Exempt Modification with the details of the microwave dish installation in the future.

To the north of the subject property is the State of Connecticut Metro-North Railroad (MNRR) right-of-way (ROW), and commercial properties are located on the opposite side of the tracks. The land use west of the subject property is commercial. Areas south and east of the subject property are residential.

The tower would be located within an irregular shaped compound in the northeast corner of the subject property adjacent to the MNRR ROW. In the unlikely event of a tower failure, the tower is designed to collapse upon itself and maintain the setback radius on the subject property and away from the abutting MNRR line.

The tower would be designed to accommodate up to four additional carriers. Eversource consulted with the City of Norwalk (City) regarding possible co-location of emergency services antennas on the proposed tower; however, the City does not plan to co-locate at this time. Eversource also offered space on the tower to MNRR. MNRR has not expressed an interest in co-locating at this time. The Council provided notice to the wireless telecommunications carriers to see if any are interested in co-locating at this time. On June 3, 2015, T-Mobile Northeast LLC indicated that it would not seek to co-locate on the facility in the foreseeable future. On June 4, 2015, Cellco Partnership d/b/a Verizon Wireless (Cellco) indicated that, while it does not have a lease in place with Eversource at this time, it is interested in co-locating on the tower. A preliminary analysis shows that the 110-foot level of the tower would be suitable for Cellco. No other wireless carriers have expressed an interest in co-locating at this time.

A Professional Engineer duly licensed in the State of Connecticut has certified that the proposed replacement tower would be structurally adequate to support the proposed loading. The maximum worst-case power density would be 19.5 percent of the applicable limit. This takes into account all of the proposed omni antennas.

The tower compound would have a seven-foot tall chain link fence without barbed wire. The chain link size would be the same or comparable to the existing fence on the subject property. Smaller anti-climb mesh and/or barbed wire would not be necessary for the tower compound because the subject property perimeter is already securely fenced. No new access would be necessary because the site is paved and has existing access already. Electric, telephone, and gas utilities would be trenched underground from the southern corner of the subject property to the fenced compound. The tower would have a 100-kW natural gas-fueled backup generator. The backup generator is sized to accommodate the needs of all future carriers as well as Eversource's needs. A natural gas-fueled generator is pipeline supplied, so it has virtually unlimited possible run time in an emergency.

The tower would be visible from about 91 acres within a two-mile radius. This is generally consistent with the existing site conditions associated with the existing tower. The majority of the views of the tower would occur from the areas within the immediate vicinity of the subject property, extending about 0.25 miles to the south and east and up to nearly 0.5 miles to the north and west. The new tower would be 30 feet taller than the existing tower and considerably more bulky, because it needs to support greater loading. The increase in the visual impact will be mitigated, however, by the commercial/industrial character of the area surrounding the tower site and the railroad ROW, especially along the approaches to the site from Main Street (north-south) and New Canaan Ave. (east-west).

No school or commercial child day care facilities are located within 250 feet of the subject property. The nearest school (Tracey Elementary School) is located at 20 Camp Street approximately 0.4 miles to the east. The nearest commercial child day care facility (Carousel Preschool Day Nursery) is located at 20 France Street, approximately 0.6 miles to the east. Neither of these locations would have views of the proposed facility. The only historic site on the National Register of Historic Places within a 0.5-mile radius is the Loth Joseph Company Building at 25 Grand Street. However, the new tower location would increase the distance from this property.

The site is paved and offers no significant wildlife habitat. The site is also just outside of the limits of the shaded area of the DEEP natural diversity database. The nearest Important Bird Area is Cove Island Park in Stamford, approximately six miles to the southwest. Further, the design of the tower would comply with the United States Fish and Wildlife Guidelines for Minimizing Impacts to Migratory Birds. The tower would not be lit or marked. No notice to the Federal Aviation administration would be required.

Notice was provided to the City of Norwalk and abutting property owners on or about the time of filing with the Council. No comments have been received.

Construction would begin as soon as possible and would be less than eight months in duration. Disassembly and removal of the existing tower would be completed as soon as practical following the completion of installation of all antenna systems on the replacement tower.

Staff recommends approval with the following conditions:

- Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed within three years from the date of the mailing of the Council's decision, this decision shall be void, and the facility owner/operator shall dismantle the facility and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The facility owner/operator shall provide written notice to the Executive Director of any schedule changes as soon as is practicable;

- Any request for extension of the time period to fully construct the facility shall be filed with the Council not later than 60 days prior to the expiration date of this decision and shall be served on all parties and intervenors, if applicable, and the City of Norwalk;

- Unless otherwise approved by the Council, the existing tower shall be removed within 180 days of the installation and operation of the new lattice tower;

- The Council shall be notified in writing when the existing tower is removed and the new tower is operational;

- The final structural design drawings of the tower and foundation shall be submitted prior to construction; and

- Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by the Petitioner shall be removed within 60 days of the date the antenna ceased to function.

Existing Tower Location

Proposed Tower Location

Photo-simulation of Proposed Tower

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
16	NEW CANAAN WAY	SOUTHEAST	+/- 0.11 MILE	YEAR ROUND

Site with Existing and Proposed Tower Locations

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

E-Mail: siting.council@ct.gov

www.ct.gov/csc

February 28, 2020

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597

RE: **TS-VER-103-200128**- Cellco Partnership d/b/a Verizon Wireless request for an order to approve tower sharing at an existing telecommunications facility located at 2 Tindall Avenue, Norwalk, Connecticut.

Dear Attorney Baldwin:

At a public meeting held on February 27, 2020, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures with the following conditions:

1. Approval of any minor changes be delegated to Council staff;

2. Any deviation from the proposed installation as specified in the original tower share request and supporting materials with the Council shall render this decision invalid;

3. Any material changes to the proposed installation as specified in the original tower share request and supporting materials filed with the Council shall require an explicit request for modification to the Council pursuant to Connecticut General Statutes § 16-50aa, including all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65;

4. Not less than 45 days after completion of the proposed installation, the Council shall be notified in writing that the installation has been completed;

5. Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by Verizon shall be removed within 60 days of the date the antenna ceased to function.

6. The validity of this action shall expire one year from the date of this letter; and

7. The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration.

This decision is under the exclusive jurisdiction of the Council and applies only to this request for tower sharing dated January 27, 2020. This facility has been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower. Any deviation from the approved tower sharing request is enforceable under the provisions of Connecticut General Statutes § 16-50u.

The proposed shared use is to be implemented as specified in your letter dated January 27, 2020, including the placement of all necessary equipment and shelters within the tower compound.

Please be advised that the validity of this action shall expire one year from the date of this letter.

Thank you for your attention and cooperation.

Sincerely,

Melanie Bachman
Executive Director

MAB/IN/emr

c: The Honorable Harry W. Rilling, Mayor, City of Norwalk
Steven Kleppin, Director of Planning & Zoning, City of Norwalk
Eversource Energy, Tower and Property Owner

ATTACHMENT 2

verizon

WIRELESS COMMUNICATIONS FACILITY

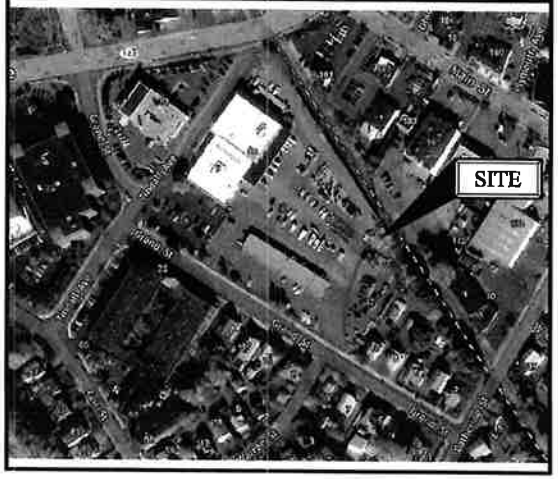
SITE NAME:
NORWALK 4 CT

EVERSOURCE TOWER
2 TINDALL AVE.
NORWALK, CT 06851

ANTENNA MODIFICATION

PROJECT SUMMARY	
SITE NAME:	NORWALK 4 CT
SITE ADDRESS:	2 TINDALL AVE. NORWALK, CT 06851
PROPERTY OWNER:	CONN. LIGHT & POWER CO. 107 SELDEN ST. BERLIN, CT 06037
TOWER OWNER/MGMT:	EVERSOURCE
PARCEL ID:	1-92-13-0
COORDINATES:	41° 07' 31.10" N 73° 25' 17.61" W
AMSL:	57 FT.
VERIZON CONSTRUCTION:	WALTER CHARCZYNSKI (860) 306-1806
VERIZON REAL ESTATE:	ALEX TYURIN (860) 550-3195

AERIAL MAP



SHEET INDEX	
DE-1	TITLE SHEET
DE-2	COMPOUND PLAN & ELEVATION
DE-3	ANTENNA PLAN & ELEVATION
DE-4	RF PLUMBING DIAGRAM & B.O.M.
DE-5	GENERAL CONSTRUCTION NOTES

verizon
WIRELESS COMMUNICATIONS FACILITY
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

On Air Engineering, LLC
88 Foundry Pond Road
Cold Spring, NY 10516
201-456-4624
onair@optonline.net

LICENSURE

STATE OF CONNECTICUT
DAVID A. WEINPAHL
NO. 22144
LICENSED PROFESSIONAL ENGINEER

DAVID WEINPAHL, P.E.
CT LIC NO. 22144

SUBMITTALS

NO	DATE	DESCRIPTION
0	01.11.23	REVIEW
1	06.03.23	PERMITTING/CONSTRUCTION

DRAWN BY:	MF
CHECKED BY:	DW

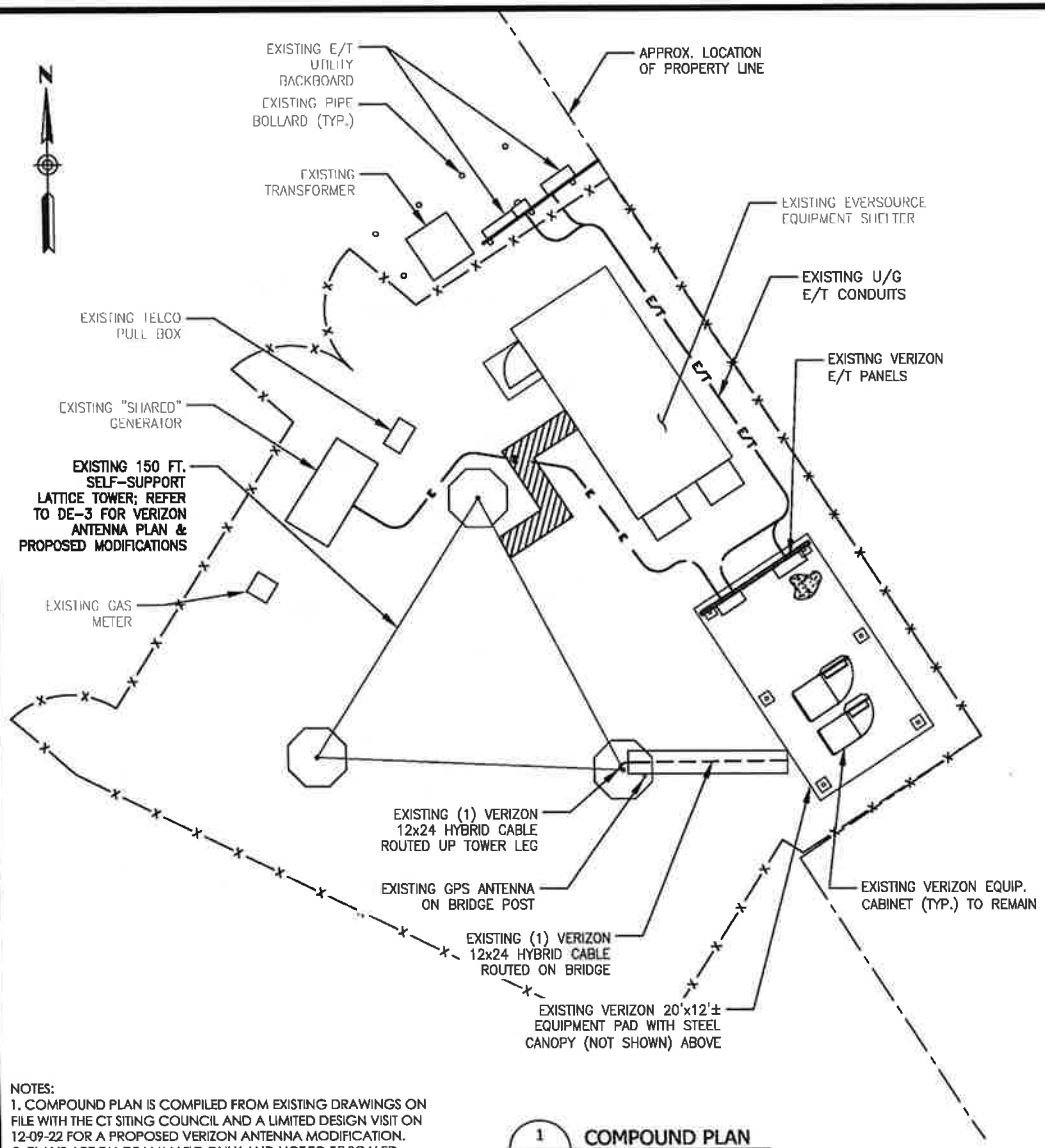
PROJECT NAME:
ANTMO MT6407
DESIGN EXHIBITS
FUZE #16883770

SITE NAME:
NORWALK 4 CT

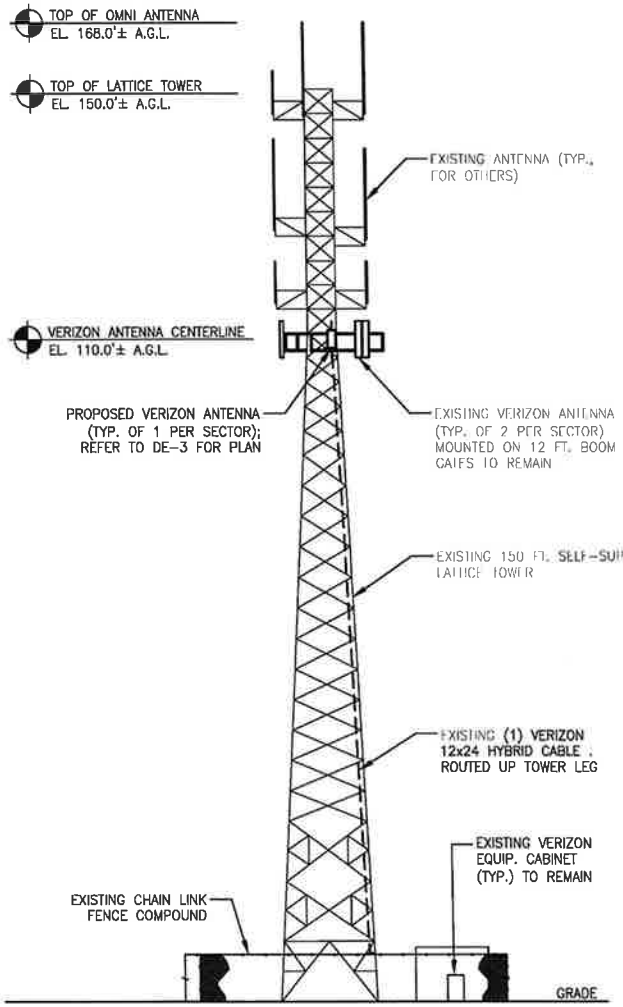
SITE ADDRESS:
EVERSOURCE TOWER
2 TINDALL AVE.
NORWALK, CT 06851

SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
DE-1



1 DE-2 **COMPOUND PLAN**
Scale: 3/32" = 1'-0"



2 DE-2 **ELEVATION**
Scale: NTS

NOTES:
1. COMPOUND PLAN IS COMPILED FROM EXISTING DRAWINGS ON FILE WITH THE CT SITING COUNCIL AND A LIMITED DESIGN VISIT ON 12-09-22 FOR A PROPOSED VERIZON ANTENNA MODIFICATION.
2. PLANS ARE DIAGRAMMATIC ONLY AND NOT TO BE SCALED.
3. REFER TO STRUCTURAL TOWER AND MOUNT ANALYSIS REPORTS, BY OTHERS UNDER SEPARATE COVER, FOR ANY REQUIRED TOWER & MOUNT REINFORCEMENTS, WHICH MUST BE PERFORMED PRIOR TO ANY OTHER VERIZON ANTENNA MODIFICATIONS.

verizon
WIRELESS COMMUNICATIONS FACILITY

20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

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LICENSURE

STATE OF CONNECTICUT · DAVID A. WEINPAHL · NO. 22144 · LICENSED PROFESSIONAL ENGINEER

DAVID WEINPAHL, P.E.
CT LIC NO. 22144

SUBMITTALS

NO	DATE	DESCRIPTION
0	06.11.23	REVIEW
1	08.03.23	PERMITTING/CONSTRUCTION

NO	DATE	DESCRIPTION

DRAWN BY:	MF
CHECKED BY:	DW

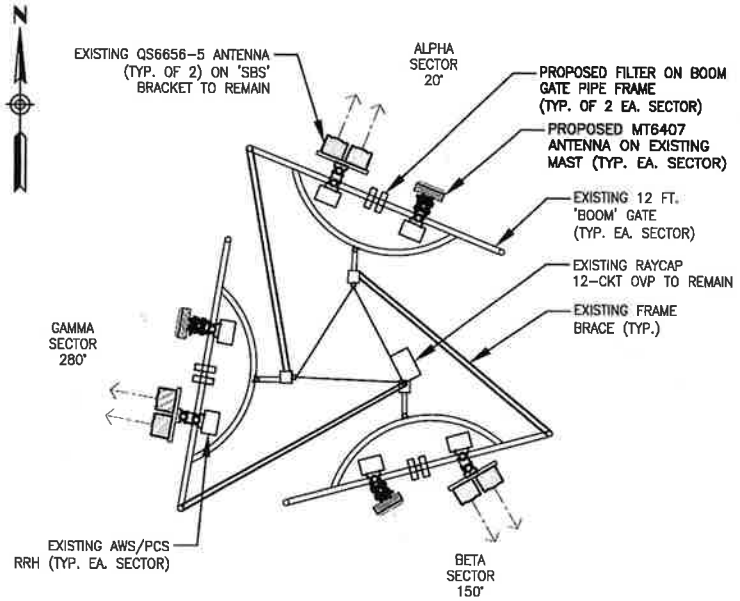
PROJECT NAME:
ANTMO MT6407
DESIGN EXHIBITS
FUZE #16883770

SITE NAME:
NORWALK 4 CT

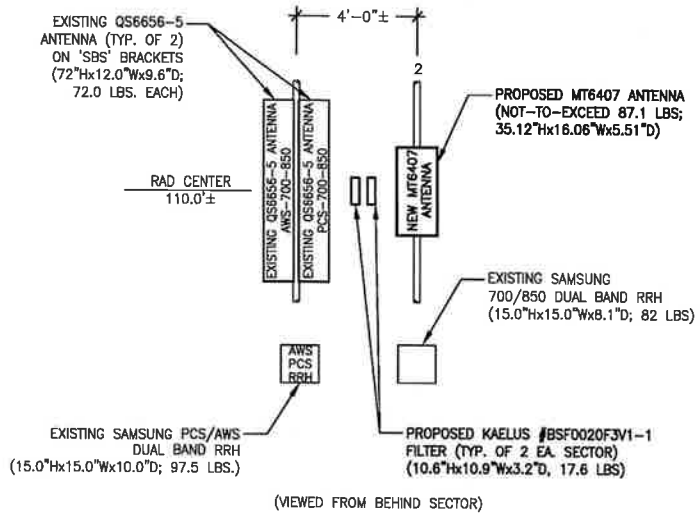
SITE ADDRESS:
EVERSOURCE TOWER
2 TINDALL AVE.
NORWALK, CT 06851

SHEET TITLE:
COMPOUND PLAN
& ELEVATION

SHEET NUMBER:
DE-2



1 DE-3 **ANTENNA PLAN @ 110 FT. - PROPOSED**
Scale: 3/16" = 1'-0"



2 DE-3 **ANTENNA ELEVATION (TYP.) - PROPOSED**
Scale: 1/4" = 1'-0"

verizon

WIRELESS COMMUNICATIONS FACILITY

20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

On Air Engineering, LLC
88 Foundry Pond Road
Cold Spring, NY 10516
201-456-4624
onair@optonline.net

LICENSURE

STATE OF CONNECTICUT — DAVID A. WEINPAHL — NO. 22144 — LICENSED PROFESSIONAL ENGINEER

DAVID WEINPAHL, P.E.
CT LIC NO. 22144

SUBMITTALS		
0	01.11.23	REVIEW
1	06.02.23	PERMITTING/CONSTRUCTION

NO	DATE	DESCRIPTION

DRAWN BY:	MF
CHECKED BY:	DW

PROJECT NAME:
ANTMO MT6407
DESIGN EXHIBITS
FUZE #16883770

SITE NAME:
NORWALK 4 CT

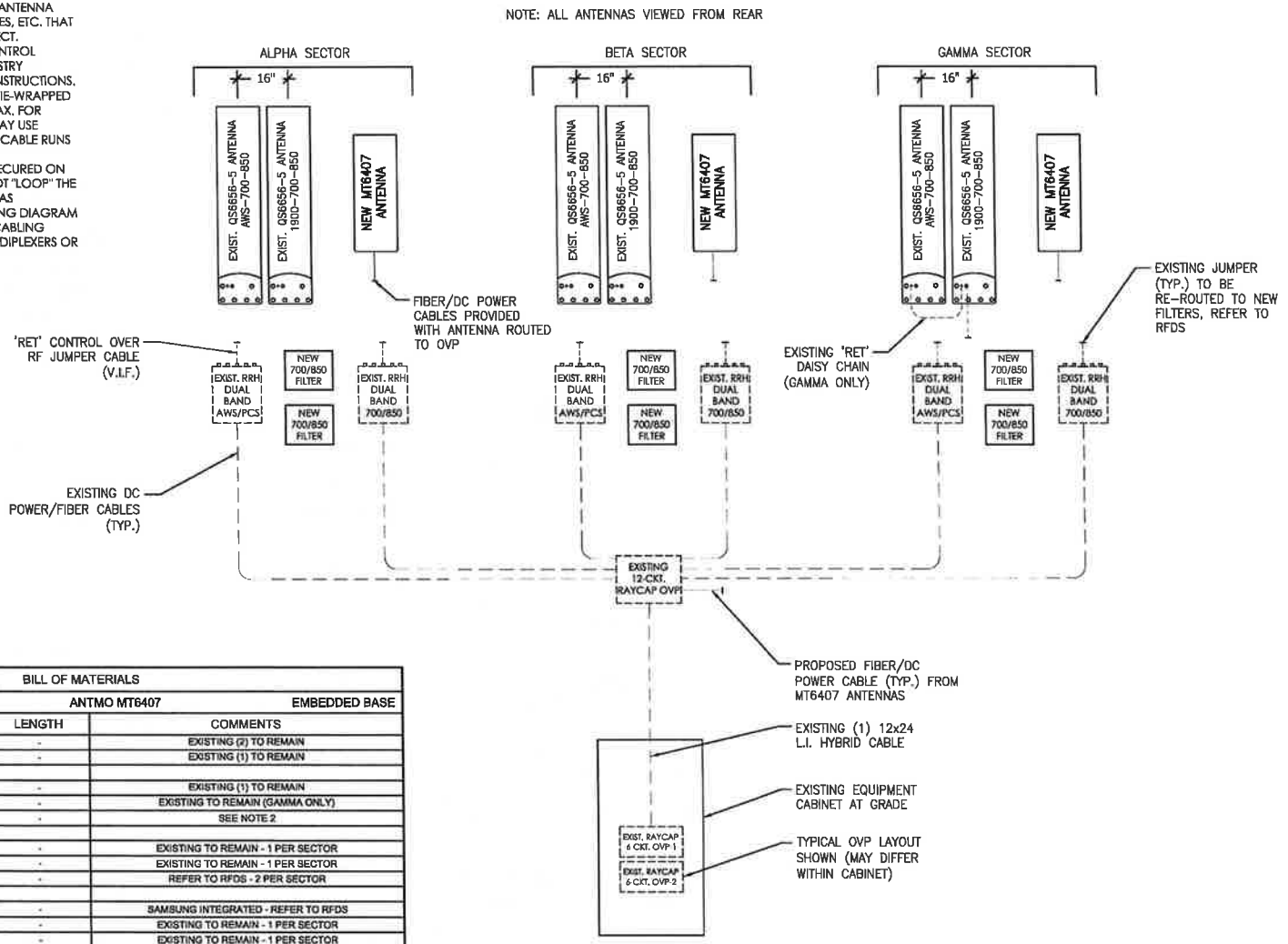
SITE ADDRESS:
EVERSOURCE TOWER
2 TINDALL AVE.
NORWALK, CT 06851

SHEET TITLE:
ANTENNA PLAN
& ELEVATION

SHEET NUMBER:
DE-3

GENERAL NOTES:

1. CONTRACTOR SHALL REFER TO THE LATEST VERIZON WIRELESS RFDS WHICH MAY INCLUDE ANTENNA SECTOR AZIMUTHS/ANTENNA CHANGES, ETC. THAT ARE REQUIRED AS PART OF THE PROJECT.
2. CONTRACTOR SHALL SECURE ALL CONTROL CABLES IN ACCORDANCE WITH INDUSTRY STANDARDS AND MANUFACTURERS INSTRUCTIONS. EXTERIOR CABLES MAY BE TAPED OR TIE-WRAPPED TO EXISTING SUPPORTS EVERY 4 FT. MAX. FOR HORIZONTAL RUNS. CONTRACTOR MAY USE HOISTING GRIPS AT TOP OF VERTICAL CABLE RUNS WHEN REQUIRED.
3. ALL CABLES SHALL BE ROUTED AND SECURED ON STRUCTURAL MEMBERS ONLY - DO NOT "LOOP" THE CABLES IN MID-AIR BETWEEN ANTENNAS
4. REFER TO RFDS FOR DETAILED PLUMBING DIAGRAM SHOWING ALL JUMPER AND OTHER CABLING CONNECTIONS AT ANTENNAS, RRH's, DIPLEXERS OR OTHER DEVICES.



1 DE-4 **RF PLUMBING DIAGRAM**
Scale: N.T.S

BILL OF MATERIALS			
SITE NAME: NORWALK 4 CT	ANTMO MT6407		EMBEDDED BASE
DESCRIPTION	QTY	LENGTH	COMMENTS
6-CKT. LOWER OVP	-	-	EXISTING (2) TO REMAIN
12-CKT. UPPER OVP	-	-	EXISTING (1) TO REMAIN
12x24 HYBRID CABLE	-	-	EXISTING (1) TO REMAIN
RET CONTROL CABLE	-	-	EXISTING TO REMAIN (GAMMA ONLY)
1/2" JUMPERS	-	-	SEE NOTE 2
AWS/PCS DUAL BAND RRH	-	-	EXISTING TO REMAIN - 1 PER SECTOR
700/850 DUAL BAND RRH	-	-	EXISTING TO REMAIN - 1 PER SECTOR
700/850 FILTER	8	-	REFER TO RFDS - 2 PER SECTOR
MT6407 ANTENNA/RRH	3	-	SAMSUNG INTEGRATED - REFER TO RFDS
QS6656-5 ANTENNA AWS-700-850	-	-	EXISTING TO REMAIN - 1 PER SECTOR
QS6656-5 ANTENNA PCS-700-850	-	-	EXISTING TO REMAIN - 1 PER SECTOR
SBS MOUNTING BRACKET	-	-	EXISTING TO REMAIN - 1 PER SECTOR

NOTES:
1. ITEMS SHOWN ARE FOR MAJOR DESIGN ELEMENTS ONLY. REFER TO VERIZON WIRELESS RFDS FOR ALL MANUFACTURER PART NUMBERS AND ACCESSORY ITEMS REQUIRED FOR A COMPLETE INSTALLATION.
2. CONTRACTOR SHALL DETERMINE AND PROVIDE ALL REQUIRED PRE-FAB JUMPER QUANTITIES AND LENGTHS, KEEPING ALL LENGTHS TO A MINIMUM.

verizon
WIRELESS COMMUNICATIONS FACILITY

20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

On Air Engineering, LLC
88 Foundry Pond Road
Cold Spring, NY 10516
201-456-4624
onair@optonline.net

LICENSURE

STATE OF CONNECTICUT
DAVID A. WEINPAHL
NO. 22144
LICENSED
LICENSED PROFESSIONAL ENGINEER

DAVID WEINPAHL, P.E.
CT LIC NO. 22144

SUBMITTALS		
0	01.11.23	REVIEW
1	04.02.23	PERMITTING/CONSTRUCTION
NO	DATE	DESCRIPTION

DRAWN BY: MF
CHECKED BY: DW

PROJECT NAME:
ANTMO MT6407
DESIGN EXHIBITS
FUZE #16883770

SITE NAME:
NORWALK 4 CT

SITE ADDRESS:
EVERSOURCE TOWER
2 TINDALL AVE.
NORWALK, CT 06851

SHEET TITLE:
RF PLUMBING
DIAGRAM & B.O.M.

SHEET NUMBER:
DE-4

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR SHALL NOT COMMENCE ANY WORK UNTIL HE OBTAINS, AT HIS OWN EXPENSE, ALL INSURANCE REQUIRED BY *CELLCO PARTNERSHIP d/b/a VERIZON, THE PROP*ERTY OWNER AND/OR PROPERTY MANAGEMENT COMPANY.

2. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE CODES AND REGULATIONS AND ALL LOCAL LAWS AND REGULATIONS, CURRENT EDITIONS.

3. CONTRACTOR SHALL VISIT THE JOB SITE AND FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.

4. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

5. CONTRACTOR IS TO REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUB-CONTRACTORS AND ALL RELATED PARTIES. THE SUB-CONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.

6. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON DRAWINGS OR WRITTEN IN SPECIFICATIONS.

7. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.

8. CONTRACTOR SHALL OBTAIN AT HIS OWN EXPENSE ALL PERMITS AND ALL INSPECTIONS REQUIRED FROM FEDERAL AND STATE GOVERNMENTS, COUNTIES, MUNICIPALITIES AND OTHER REGULATORY AGENCIES WHICH MAY BE REQUIRED FOR THE PROJECT.

10. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. MINOR MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.

11. ALL MATERIAL PROVIDED BY *CELLCO PARTNERSHIP d/b/a VERIZON IS TO BE* REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTOR PRIOR TO INSTALLATION. ANY DEFICIENCIES TO PROVIDED MATERIALS SHALL BE BROUGHT TO THE CONSTRUCTION MANAGERS ATTENTION IMMEDIATELY.

12. THE MATERIALS INSTALLED IN THE WORK SHALL MEET THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. NO SUBSTITUTIONS ARE ALLOWED.

13. CONTRACTOR IS SOLELY RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION, FOR SEQUENCES AND PROCEDURES TO BE USED, AND TO ENSURE THE SAFETY OF THE EXISTING BUILDING AND ITS COMPONENT DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.

14. CONTRACTOR SHALL COORDINATE ALL CIVIL, STRUCTURAL AND ELECTRICAL DRAWINGS FOR THE LOCATION OF ALL OPENINGS, RECESSES, BUILT-IN WORK, ETC.

15. CONTRACTOR SHALL RECEIVE CLARIFICATION IN WRITING AND SHALL RECEIVE IN WRITING AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEMS NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTRACT DOCUMENTS.

16. CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND TO BE IN THE FIELD.

17. ERECTION SHALL BE DONE IN A WORKMANLIKE MANNER BY COMPETENT EXPERIENCED WORKMEN IN ACCORDANCE WITH APPLICABLE CODES AND THE BEST-ACCEPTED PRACTICE. ALL MEMBERS SHALL BE LAID PLUMB AND TRUE AS INDICATED ON THE DRAWINGS.

18. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK AREA, ADJACENT AREAS, AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL O.S.H.A REQUIREMENTS.

19. CONTRACTOR SHALL COORDINATE HIS WORK AND SCHEDULE HIS ACTIVITIES AND WORKING HOURS IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROPERTY OWNER AND/OR PROPERTY MANAGEMENT COMPANY.

20. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH THE WORK OF OTHERS AS IT MAY RELATE TO RADIO EQUIPMENT, ANTENNAS AND ANY OTHER PORTIONS OF THE WORK.

21. CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OR WHERE LOCAL CODES OR REGULATIONS MAY TAKE PRECEDENCE.

22. CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SURFACES, EQUIPMENT, IMPROVEMENTS, PIPING, ANTENNA AND ANTENNA CABLES AND REPAIR ANY DAMAGE THAT OCCURS DUR NG CONSTRUCTION.

23. CONTRACTOR SHALL REPAIR ALL EXISTING SURFACES DAMAGED DURING CONSTRUCTION SUCH THAT THEY MATCH AND BLEND WITH ADJACENT SURFACES.

24. CONTRACTOR SHALL KEEP CONTRACT AREA CLEAN, HAZARD FREE AND DISPOSE OF ALL DEBRIS AND RUBBISH. EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY OF THE OWNER SHALL BE REMOVED. LEAVE PREMISES IN CLEAN CONDITIONS AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ITEMS UNTIL COMPLETION OF CONSTRUCTION.

25. BEFORE FINAL ACCEPTANCE OF THE WORK, CONTRACTOR SHALL REMOVE ALL EQUIPMENT, TEMPORARY WORKS, UNUSED AND USELESS MATERIALS, RUBBISH AND TEMPORARY STRUCTURES.

verizon

WIRELESS COMMUNICATIONS FACILITY

20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

On Air Engineering, LLC
88 Foundry Pond Road
Cold Spring, NY 10516
201-456-4624
onair@optonline.net

LICENSURE

DAVID WEINPAHL, P.E.
CT LIC NO. 22144

SUBMITTALS

NO	DATE	DESCRIPTION
0	01.11.23	REVIEW
1	06.05.23	PERMITTING/CONSTRUCTION

DRAWN BY:	MF
CHECKED BY:	DW

PROJECT NAME:

ANTMO MT6407
DESIGN EXHIBITS
FUZE #16883770

SITE NAME:

NORWALK 4 CT

SITE ADDRESS:

EVERSOURCE TOWER
2 TINDALL AVE.
NORWALK, CT 06851

SHEET TITLE:

GENERAL CONSTRUCTION NOTES

SHEET NUMBER:

DE-5

SAMSUNG

SAMSUNG C-Band 64T64R Massive MIMO Radio

for High Capacity and Wide Coverage

Samsung C-Band 64T64R Massive MIMO Radio enables mobile operators to increase coverage range, boost data speeds and ultimately offer enriched 5G experiences to users in the U.S..

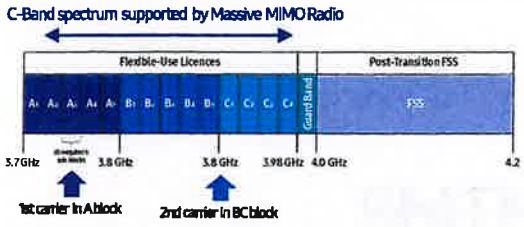
Model Code : MT6407-77A

Points of Differentiation

Wide Bandwidth

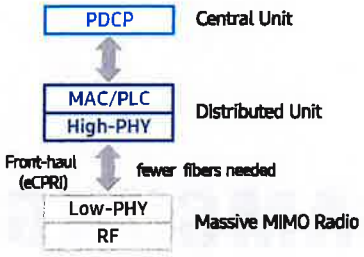
With capability to support up to 2 CC carrier configuration, Samsung C-Band massive MIMO Radio supports 200 MHz bandwidth in the C-Band spectrum.

Samsung C-Band massive MIMO Radio covers the entire C-Band 280 MHz spectrum, so it can meet the operator's needs in current A block and future B/C blocks



Future Proof Product

Samsung C-Band 64T64R Massive MIMO radio supports not only CPRI but also eCPRI as front-haul interface.
It enables operators can cut down on OPEX/CAPEX by reducing front-haul bandwidth through low layer split and using ethernet based higher efficient line.



Enhanced Performance

C-Band massive MIMO Radio creates sharp beams and extends networks' coverage on the critical mid-band spectrum using a large number of antenna elements and high output power to boost data speeds.

This helps operators reduce their CAPEX as they now need less products to cover the same area than before.

Furthermore, as C-Band massive MIMO Radio supports MU-MIMO(Multi-user MIMO) , it enables to increase user throughput by minimizing interference.

Well Matched Design

Samsung C-Band Massive MIMO radio utilizes 64 antennas, supports up to 280MHz bandwidth, and delivers a 200W output power. despite the above advanced performance, the Radio has a compact size of 50.9L and 79.4lbs. This makes it easy to install the Radio.

It is designed to look solid and compact, with a low profile appearance so that, when installed, harmonizes well with the surrounding environment..

Technical Specifications

Item	Specification
Tech	NR
Band	n77
Frequency Band	3700 - 3980 MHz
EIRP	78.5dBm (53.0 dBm+25.5 dBi)
IBW/OBW	280 MHz / 200 MHz
Installation	Pole/Wall
Size/ Weight	16.06 x 35.06 x 5.51 inch (50.86L)/ 79.4 lbs

SAMSUNG

About Samsung Electronics Co., Ltd.

Samsung inspires the world and shapes the future with transformative ideas and technologies. The company is redefining the worlds of TVs, smartphones, wearable devices, tablets, digital appliances, network systems, and memory, system LSI, foundry and LED solutions.

129 Samsung-ro, Yeongtong-gu, Suwon-si Gyeonggi-do, Korea

BSF0020F3V1-1

TWIN BANDSTOP 900MHZ INTERFERENCE MITIGATION FILTER

The BSF0020 is ideal for co-located 700, 850 and 900 networks. Utilising a 2.6MHz guardband the BSF0020 provides rejection of the 900 UL band while passing 700/850 UL and DL bands. Capable of being used in an outdoor environment the BSF0020 contains two identical bandstop filters, suitable for 2x2 MIMO configuration, offering excellent insertion loss, group delay and rejection.

FEATURES

- Passes full 700 and 850 bands
- Low insertion loss
- Rejection of 900MHz uplink
- DC/AISG pass
- Twin unit
- Dual twin mounting available

TECHNICAL SPECIFICATIONS

BAND NAME	700 PATH / 850 UPLINK PATH	850 DOWNLINK PATH
Passband	698 - 849MHz	869 - 891.5MHz
Insertion loss	0.1dB typical / 0.3dB maximum	0.5dB typical, 1.45dB maximum
Return loss	24dB typical, 18dB minimum	
Maximum input power (Per Port)	100W average	200W average and 66W per 5MHz
Rejection	53dB minimum @ 894.1 - 896.5MHz	

ELECTRICAL	
Impedance	50Ohms
Intermodulation products	-160dBc maximum in UL Band (assuming 20MHz Signal), with 2 x 43dBm carriers -153dBc maximum with 2 x 43dBm

DC / AISG	
Passband	0 - 13MHz
Insertion loss	0.3dB maximum
Return loss	15dB minimum
Input voltage range	± 33V
DC current rating	2A continuous, 4A peak
Compliance	3GPP TS 25.461

ENVIRONMENTAL	
For further details of environmental compliance, please contact Kaelus.	
Temperature range	-20°C to +60°C | -4°F to +140°F
Ingress protection	IP67
Altitude	2600m | 8530ft
Lightning protection	RF port: ±5kA maximum (8/20us), IEC 61000-4-5 – Unit must be terminated with some lightning protection circuits.
MTBF	>1,000,000 hours
Compliance	ETSI EN 300 019 class 4.1H, RoHS, NEBS GR-487-CORE

MECHANICAL	
Dimensions H x D x W	269 x 277 x 80mm | 10.60 x 10.90 x 3.15in (Excluding brackets and connectors)
Weight	8.0 kg | 17.6 lbs (no bracket)
Finish	Powder coated, light grey (RAL7035)
Connectors	RF: 4.3-10 (F) x 4
Mounting	Optional pole/wall bracket supplied with two metal clamps 45-178mm diameter poles or custom bracket. See ordering information.

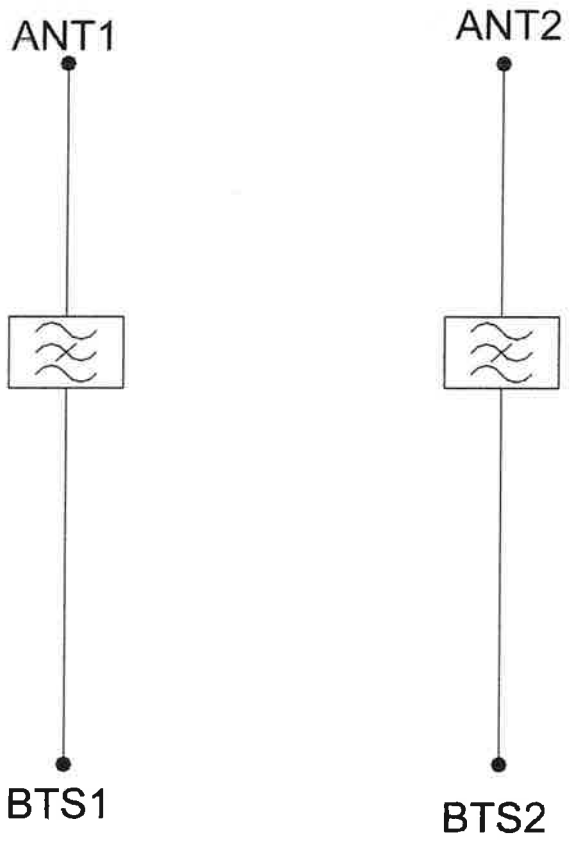
Contact Us: +1 303 768 8080 | +61 (0) 7 3907 1200 | www.kaelus.com

ORDERING INFORMATION

PART NUMBER	CONFIGURATION	OPTIONAL FEATURES	CONNECTORS
BSF0020F3V1	TWIN, 2 in / 2 out	DC/AISG PASS NO BRACKET	4.3-10 (F)
BSF0020F3V1-1	TWIN, 2 in / 2 out	DC/AISG PASS	4.3-10 (F)
BSF0020F3V1-2	QUAD, 4 in / 4 out	DC/AISG PASS	4.3-10 (F)

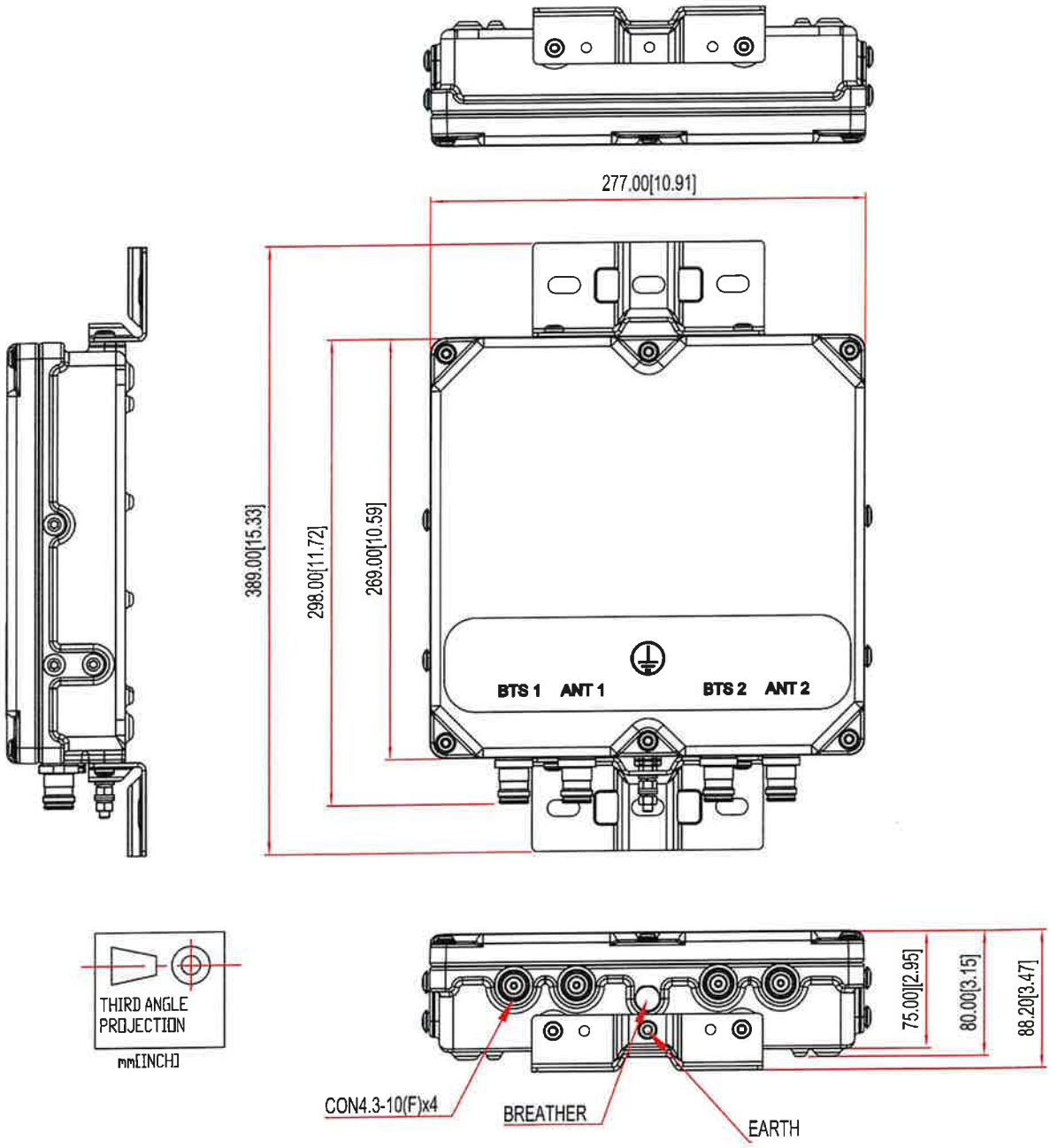
Contact Us: +1 303 768 8080 | +61 (0) 7 3907 1200 | www.kaelus.com

ELECTRICAL BLOCK DIAGRAM



Contact Us: +1 303 768 8080 | +61 (0) 7 3907 1200 | www.kaelus.com

MECHANICAL BLOCK DIAGRAM



Contact Us: +1 303 768 8080 | +61 (0) 7 3907 1200 | www.kaelus.com

ATTACHMENT 3

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

Calculated Radio Frequency Emissions Report

Norwalk 4 CT

2 Tindall Ave, Norwalk, CT 06851

December 13, 2023

Table of Contents

List of Figures

List of Tables

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modification of Verizon's antenna arrays to be mounted at 110' AGL on an existing self-support tower located at 2 Tindall Ave in Norwalk, CT. The coordinates of the self-support tower are 41° 7' 31.1" N, 73° 25' 17.61" W.

Verizon is proposing the following:

1) Retain six (6) multi-band antennas, two (2) per sector to support its commercial LTE network.
2) Install three (3) C-Band antenna, one (1) per sector.

This report considers the proposed antenna configuration for Verizon[1] as well as existing antenna configuration[2] for VHF and UHF antennas to derive the resulting % MPE of its proposed modification.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

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

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

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

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

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

[1] As referenced to Verizon's Radio Frequency Design Sheet updated 01/26/2023.

[2] As referenced to Eversource's filing for Connecticut Siting Council – Notice of Exempt Modfication, dated June 25, 2020

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

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

Where:

EIRP = Effective Isotropic Radiated Power

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

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Off Beam Loss is determined by the selected antenna patterns

Ground reflection factor (GRF) of 1.6

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

4. Antenna Inventory

Table 1 below outlines Verizon's proposed antenna configuration for the site. The associated data sheets and antenna patterns for these specific antenna models are included in Attachments C.

Operator	Sector / Call Sign	TX Freq (MHz)	Power at Antenna (Watts)	Ant Gain (dBi)	Power EIRP (Watts)	Antenna Model	Beam Width (degree)	Mech. Tilt	Length (ft)	Antenna Centerline Height (ft)
Verizon	Alpha / 20°	700	160	13.3	3421	QS6656-5	67	0	6	110
		850	160	13.8	3838		63			
		1900	160	17.2	8397		67			
		2100	240	18.0	15143		60			
		3700	200	25.5	70963	MT6407-77A	-	0	2.92	110
	Beta / 150°	700	160	13.3	3421	QS6656-5	67	0	6	110
		850	160	13.8	3838		63			
		1900	160	17.2	8397		67			
		2100	240	18.0	15143		60			
		3700	200	25.5	70963	MT6407-77A	-	0	2.92	110
	Gamma / 280°	700	160	13.3	3421	QS6656-5	67	0	6	110
		850	160	13.8	3838		63			
		1900	160	17.2	8397		67			
		2100	240	18.0	15143		60			
		3700	200	25.5	70963	MT6407-77A	-	0	2.92	110

Table 1: Proposed Antenna Inventory[3][4]

[3] Antenna heights are in reference to Verizon's Radio Frequency Design Sheet updated 01/26/2023.

[4] Transmit power assumes 0 dB of cable loss.

5. Calculation Results

The calculated power density results are shown in Figure 1 below. For completeness, the calculations for this analysis range from 0 feet horizontal distance (directly below the antennas) to a value of 3,000 feet horizontal distance from the site. In addition to the other worst-case scenario considerations that were previously mentioned, the power density calculations to each horizontal distance point away from the antennas was completed using a local maximum off beam antenna gain (within ± 5 degrees of the true mathematical angle) to incorporate a realistic worst-case scenario.

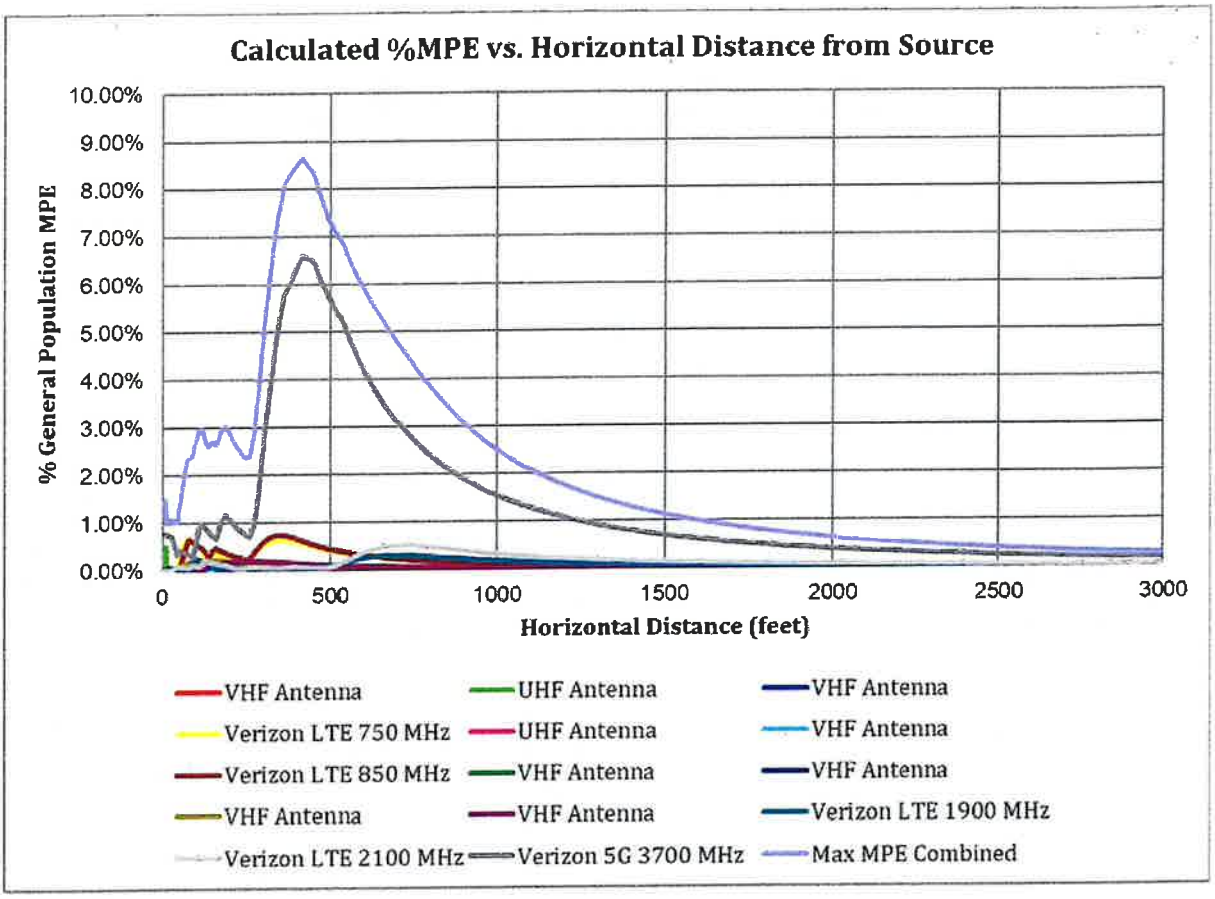


Figure 1: Graph of General Population % MPE vs. Distance

The highest percent of MPE (8.64% of the General Population limit) is calculated to occur at a horizontal distance of 417 feet from antennas. Please note that the percent of MPE calculations close to the site take into account off beam loss, which is determined from the vertical pattern of the antennas used. Therefore, RF power density levels may increase as the distance from the site increases. At distances of approximately 1500 feet and beyond, one would now be in the main beam of the antenna pattern and off beam loss is no longer considered. Beyond this point, RF levels become calculated solely on distance from the site and the percent of MPE decreases significantly as distance from the site increases.

Table 2 below lists percent of MPE values as well as the associated parameters that were included in the calculations. The highest percent of MPE value was calculated to occur at a horizontal distance of 417 feet from the site (reference Figure 1).

As stated in Section 3, all calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. In addition, a six foot height offset was considered in this analysis to account for average human height. As a result, the predicted signal levels are significantly higher than the actual signal levels will be from the final configuration. The results presented in Figure 1 and Table 2 assume level ground elevation from the base of the tower out to the horizontal distances calculated.

Carrier	Number of Transmitters	Power out of Base Station Per Transmitter (Watts)	Antenna Height (Feet)	Distance to the Base of Antennas (Feet)	Power Density (mW/cm^2)	Limit (mW/cm^2)	% MPE
UHF Antenna	1	100.0	158.0	417	0.000163	0.600	0.03%
UHF Antenna	1	100.0	151.5	417	0.000046	0.300	0.02%
Verizon 5G 3700 MHz	1	200.0	110.0	417	0.065948	1.000	6.59%
Verizon LTE 1900 MHz	1	160.0	110.0	417	0.000155	1.000	0.02%
Verizon LTE 2100 MHz	1	240.0	110.0	417	0.000622	1.000	0.06%
Verizon LTE 750 MHz	1	160.0	110.0	417	0.002829	0.500	0.57%
Verizon LTE 850 MHz	1	160.0	110.0	417	0.003537	0.567	0.62%
VHF Antenna	1	100.0	160.0	417	0.000211	0.200	0.11%
VHF Antenna	1	100.0	154.0	417	0.000222	0.200	0.11%
VHF Antenna	1	100.0	138.0	417	0.000251	0.200	0.13%
VHF Antenna	1	100.0	132.0	417	0.000166	0.200	0.08%
VHF Antenna	1	100.0	126.0	417	0.000170	0.200	0.09%
VHF Antenna	1	100.0	122.0	417	0.000173	0.200	0.09%
VHF Antenna	1	100.0	120.0	417	0.000282	0.200	0.14%
						Total	**8.64%**

Table 2: Maximum Percent of General Population Exposure Values[5]

[5] In the case where pattern data was unavailable from the manufacturer, vertical patterns with similar specifications were used

6. Conclusion

The above analysis verifies that RF exposure levels from the site with Verizon's proposed antenna configuration will be well below the maximum permissible levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using the conservative calculation methods and parameters detailed above, the maximum cumulative percent of MPE in consideration of all transmitters is calculated to be **8.64% of the FCC limit (General Population/Uncontrolled).** This maximum cumulative percent of MPE value is calculated to occur 417 feet away from the site.

7. Statement of Certification

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

Report Prepared By: Ram Acharya
RF Engineer 1
C Squared Systems, LLC

December 13, 2023
Date

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

December 13, 2023
Date

Attachment A: References

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

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

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

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

(A) Limits for Occupational/Controlled Exposure[6]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $|E|^2$, $|H|^2$ or S (minutes)
0.3-3.0	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[7]

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

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

Table 3: FCC Limits for Maximum Permissible Exposure

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

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

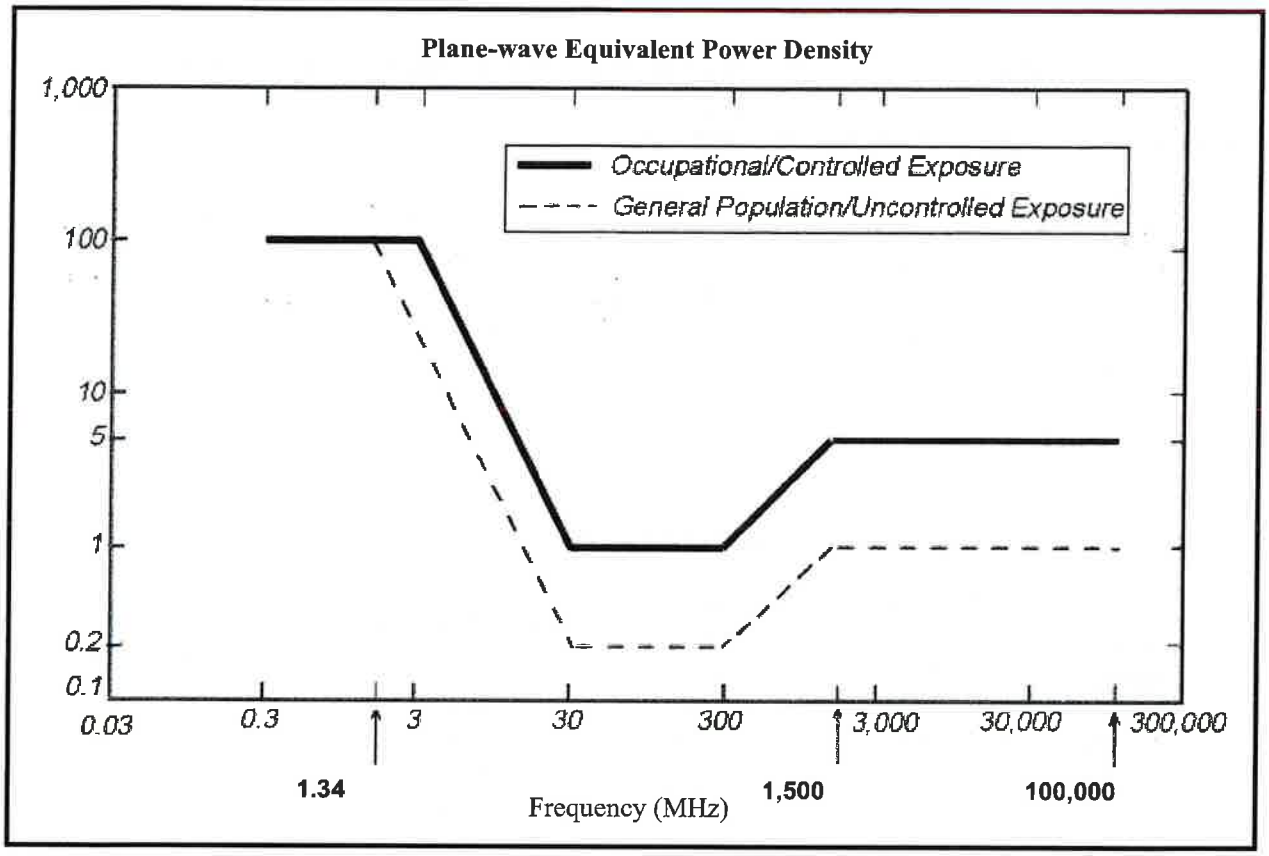
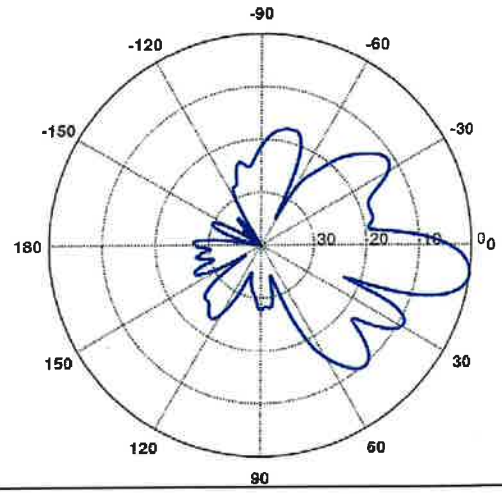


Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Verizon Antenna Model Data Sheets and Electrical Patterns

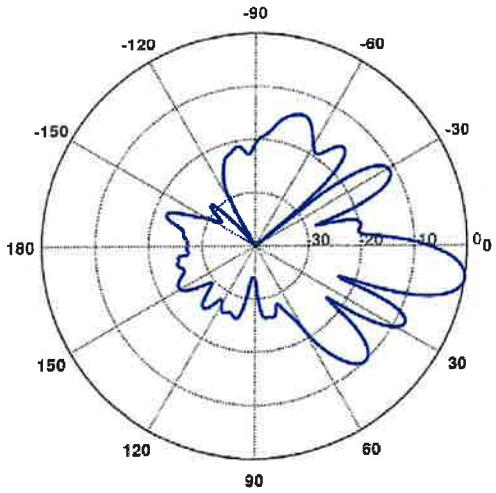
739 MHz

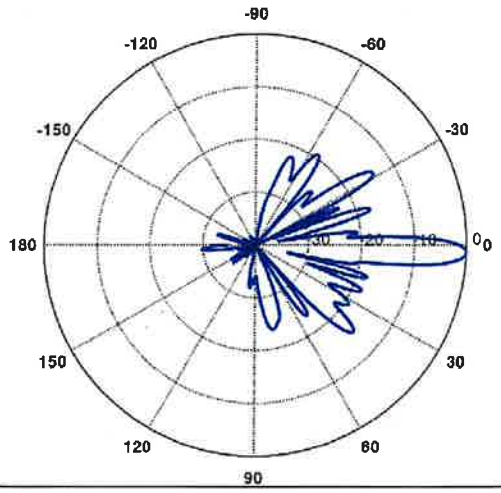
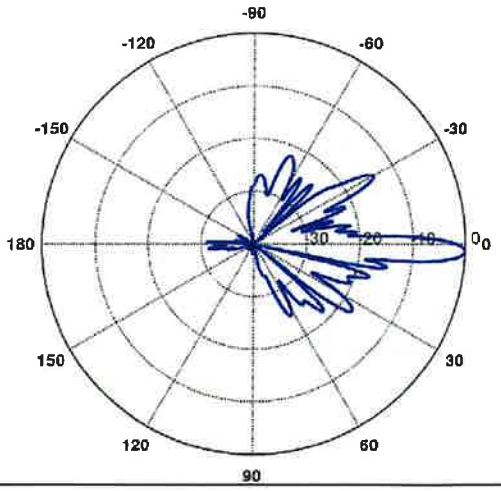
Manufacturer:	QUINTEL
Model #:	QS6656-5
Frequency Band:	698-806 MHz
Gain:	13.3 dBi
Vertical Beamwidth:	12.5°
Horizontal Beamwidth:	67°
Polarization:	±45°
Size L x W x D:	72" x 12" x 9.6"



885 MHz

Manufacturer:	QUINTEL
Model #:	QS6656-5
Frequency Band:	814 - 894 MHz
Gain:	13.8 dBi
Vertical Beamwidth:	10.5°
Horizontal Beamwidth:	63°
Polarization:	±45°
Size L x W x D:	72" x 12" x 9.6"



1900 MHz Manufacturer: QUINTEL Model #: QS6656-5 Frequency Band: 1850-1990 MHz Gain: 17.2 dBi Vertical Beamwidth: 5.8° Horizontal Beamwidth: 67° Polarization: ±45° Size L x W x D: 72" x 12" x 9.6"	
2100 MHz Manufacturer: QUINTEL Model #: QS6656-5 Frequency Band: 2110-2180 MHz Gain: 18.0 dBi Vertical Beamwidth: 5.2° Horizontal Beamwidth: 60° Polarization: ±45° Size L x W x D: 72" x 12" x 9.6"	

ATTACHMENT 4

PAUL J. FORD & COMPANY

Report Date: January 16, 2023

Client:
On Air Engineering, LLC
ATTN: David Weinpahl, P.E.
88 Foundry Pond Road
Cold Spring, NY, 10516
Phone: (201) 456-4624
Email: dweinpahl@onaireng.com

Structure: 150ft Self Support Tower
Site Name: Norwalk 4 CT
Site Address: 2 Tindall Ave
City, County, State: Norwalk, Fairfield County, CT
Latitude, Longitude: 41.125392, -73.421578

PJF Project Number: 42923-0001.001.8700

Paul J. Ford and Company is pleased to submit this **Structural Analysis Report** to determine the tower stress level.

Analysis Criteria:
This analysis has been performed in accordance with the 2022 Connecticut Building Code based upon an ultimate 3-second gust wind speed of 128 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Proposed Appurtenance Loads:
The structure was analyzed with the proposed loading configuration shown in Table 1 combined with the other considered equipment shown in Table 2 of this report.

Summary of Analysis Results:

Existing Structure:	Pass	61.1%
Existing Foundation:	Pass	49.4%

We at Paul J. Ford and Company appreciate the opportunity of providing our continuing professional services to you and On Air Engineering, LLC. If you have any questions or need further assistance on this or any other projects, please give us a call.

Respectfully Submitted By:
Paul J. Ford and Company

Chris Sandlin, P.E.
Project Engineer 2
csandlin@pauljford.com

STATE OF CONNECTICUT
THOMAS J. DEHNKE
36064
LICENSED PROFESSIONAL ENGINEER
01/18/2023

TABLE OF CONTENTS

1) INTRODUCTION

This is a 150ft Self Support Tower designed by Rohn in July of 2014.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	III
Wind Speed:	128 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1 in
Ice Wind Speed:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
110.0	110.0	3	armor tower engineering	12-Ft Arch Frame	1	1-5/8 Hybrid	-
		6	kaelus	BSF0020F3V1-1			
		6	quintel technology	QS6656-5 w/ Mount Pipe			
		1	raycap	OVP			
		3	samsung telecommunications	MT6407-77A			
		3	samsung telecommunications	RFV01U-D1A			
		3	samsung telecommunications	RFV01U-D2A			

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
149.0	159.0	1	dbspectra	DS9A09F36D-N	4	1-5/8	1
		1	telewave	ANT150F6			
	156.6	1	rfs celwave	1151-3			
	149.0	3	tower mounts	Rohn 6' Side-Arm(1)			
141.0	143.5	1	telewave	ANT150F2	2	1-5/8	1
	143.2	1	telewave	ANT220F2			
	141.0	2	tower mounts	Rohn 6' Side-Arm(1)			
135.0	135.0	1	rfs celwave	PAL6-59	1	E65	2
		1	tower mounts	6'x2" Pipe Mount			
132.0	138.0	1	kreco	CO-36A	1	1-5/8	1
	132.0	1	tower mounts	Rohn 6' Side-Arm(1)			
124.0	126.5	1	telewave	ANT150F2	1	1-5/8	1
	124.0	1	tower mounts	Rohn 6' Side-Arm(1)			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
123.0	129.0	1	kreco	CO-36A	1	1-5/8	1
	123.0	1	tower mounts	Rohn 6' Side-Arm(1)			
120.0	120.0	1	rfs celwave	PAL6-59	1	E65	2
		1	tower mounts	6'x2" Pipe Mount			
118.0	124.0	1	kreco	CO-36A	2	1-5/8	1
	120.2	1	telewave	ANT220F2			
	118.0	2	tower mounts	Rohn 6' Side-Arm(1)			
100.0	100.0	9	alcatel lucent	RRH2X40-AWS	3 2	1-5/8 1-5/8 Fiber	2
		6	antel	BXA-171063-12CF-EDIN-X w/ Mount Pipe			
		6	antel	BXA-70063-6CF-EDIN-0 w/ Mount Pipe			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		3	tower mounts	Pirod 12' T-Frame Sector Mount (1)			
90.0	90.0	3	alcatel lucent	FD-RRH-2x50-800	3 3	1-5/8 1-5/8 Fiber	2
		3	rfs celwave	APXVSPP18-C w/ Mount Pipe			
		3	tower mounts	Pirod 12' T-Frame Sector Mount (1)			
80.0	80.0	6	ericsson	AIR 21	6 2	1-5/8 1-5/8 Fiber	2
		3	ericsson	KRY 112 144/1			
		3	tower mounts	Pirod 12' T-Frame Sector Mount (1)			

Notes:
1) Existing Equipment
2) Reserved Equipment

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference
Tower Drawings	Rohn, 7/14/2014	210856-01-D1
Tower Design	Rohn, 7/11/2014	210856
Foundation Drawings	Rohn, 7/14/2014	210856-01-F1
Geotechincal Report	Doctor Clarence Welti Geotechnical Engineering, 4/21/2014	

3.1) Analysis Method

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

3.2) Assumptions

1) Tower and structures were maintained in accordance with the TIA-222 standard.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	150 - 130	Leg	2 1/4" solid	3	-18.50	110.31	16.8	Pass
T2	130 - 110	Leg	2 1/2" solid	39	-68.09	150.69	45.2	Pass
T3	110 - 94	Leg	2 3/4" solid	70	-112.06	196.26	57.1	Pass
T4	94 - 90	Leg	2 3/4" solid	97	-122.30	255.20	47.9	Pass
T5	90 - 80	Leg	3 1/4" solid	109	-148.19	262.72	56.4	Pass
T6	80 - 70	Leg	3 1/4" solid	124	-174.82	352.52	49.6	Pass
T7	70 - 55	Leg	3 3/4" solid	145	-211.55	386.40	54.7	Pass
T8	55 - 50	Leg	3 3/4" solid	166	-222.85	482.32	46.2	Pass
T9	50 - 30	Leg	4 1/4" solid	178	-266.61	530.47	50.3	Pass
T10	30 - 10	Leg	4 1/2" solid	205	-302.53	609.93	49.6	Pass
T11	10 - 0	Leg	4 1/2" solid	220	-313.30	609.93	51.4	Pass
T1	150 - 130	Diagonal	L 1.5 x 1.5 x 3/16	9	-4.45	11.88	37.5 48.0 (b)	Pass
T2	130 - 110	Diagonal	L 1.75 x 1.75 x 3/16	42	-9.14	18.19	50.3	Pass
T3	110 - 94	Diagonal	L 2 x 2 x 3/16	76	-7.72	18.03	42.8 59.8 (b)	Pass
T4	94 - 90	Diagonal	L 2 x 2 x 3/16	102	-7.60	16.80	45.2 55.2 (b)	Pass
T5	90 - 80	Diagonal	L 2.5 x 2.5 x 3/16	114	-8.10	23.02	35.2 58.6 (b)	Pass
T6	80 - 70	Diagonal	L 2.5 x 2.5 x 3/16	129	-8.44	20.03	42.1 61.1 (b)	Pass
T7	70 - 55	Diagonal	L 2.5 x 2.5 x 1/4	150	-7.98	20.57	38.8 40.5 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T8	55 - 50	Diagonal	L 2.5 x 2.5 x 1/4	171	-8.17	18.93	43.1	Pass
T9	50 - 30	Diagonal	L 3 x 3 x 3/16	186	-7.95	18.95	41.9 44.9 (b)	Pass
T10	30 - 10	Diagonal	L 3.5 x 3.5 x 1/4	213	-9.94	48.93	20.3 34.3 (b)	Pass
T11	10 - 0	Diagonal	L 3.5 x 3.5 x 1/4	241	-13.18	29.35	44.9 45.5 (b)	Pass
T11	10 - 0	Horizontal	L 3.5 x 3.5 x 1/4	237	-8.00	34.91	22.9 27.6 (b)	Pass
T4	94 - 90	Secondary Horizontal	L 2 x 2 x 1/4	108	-2.12	25.27	8.4 14.6 (b)	Pass
T6	80 - 70	Secondary Horizontal	L 2.5 x 2.5 x 3/16	135	-3.03	23.35	13.0 20.9 (b)	Pass
T8	55 - 50	Secondary Horizontal	L 2.5 x 2.5 x 1/4	177	-3.86	24.60	15.7 19.8 (b)	Pass
T1	150 - 130	Top Girt	L 1.5 x 1.5 x 3/16	5	-0.22	5.47	4.1	Pass
T11	10 - 0	Redund Horz 1 Bracing	L 2.5 x 2.5 x 1/4	225	-5.43	35.87	15.1 37.5 (b)	Pass
T11	10 - 0	Redund Diag 1 Bracing	L 2.5 x 2.5 x 1/4	226	-4.45	20.55	21.7 30.7 (b)	Pass
T11	10 - 0	Inner Bracing	L 3 x 3 x 1/4	246	-0.01	19.09	0.2	Pass
							Summary	
						Leg (T3)	57.1	Pass
						Diagonal (T6)	61.1	Pass
						Horizontal (T11)	27.6	Pass
						Secondary Horizontal (T6)	20.9	Pass
						Top Girt (T1)	4.1	Pass
						Redund Horz 1 Bracing (T11)	37.5	Pass
						Redund Diag 1 Bracing (T11)	30.7	Pass
						Inner Bracing (T11)	0.2	Pass
						Bolt Checks	61.1	Pass
						Rating =	61.1	Pass

Table 5 - Tower Component Stresses vs Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	31.9	Pass
1	Base Foundation (Structure)	0	22.5	Pass
1	Base Foundation (Soil Interaction)	0	49.4	Pass
	Structure Rating (max from all components) =		**61.1%**	

Notes:

- All structural ratings are per TIA-222-H Section 15.5

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

Table 6 - Microwave Dish Tilt (Sway) Results for 60 mph Rev H Service Wind Table

Dish Elevation ft	Dish	Dish Diameter ft	Dish Frequency GHz	Analysis Results Tilt at Service Wind deg	Analysis Results Twist at Service Wind deg	Note
135.0	PAL6-59	6	-	0.1868	0.1653	1
120.0	PAL6-59	6	-	0.1702	0.1364	1

Notes:

1) Reserved Equipment

4.1) Recommendations

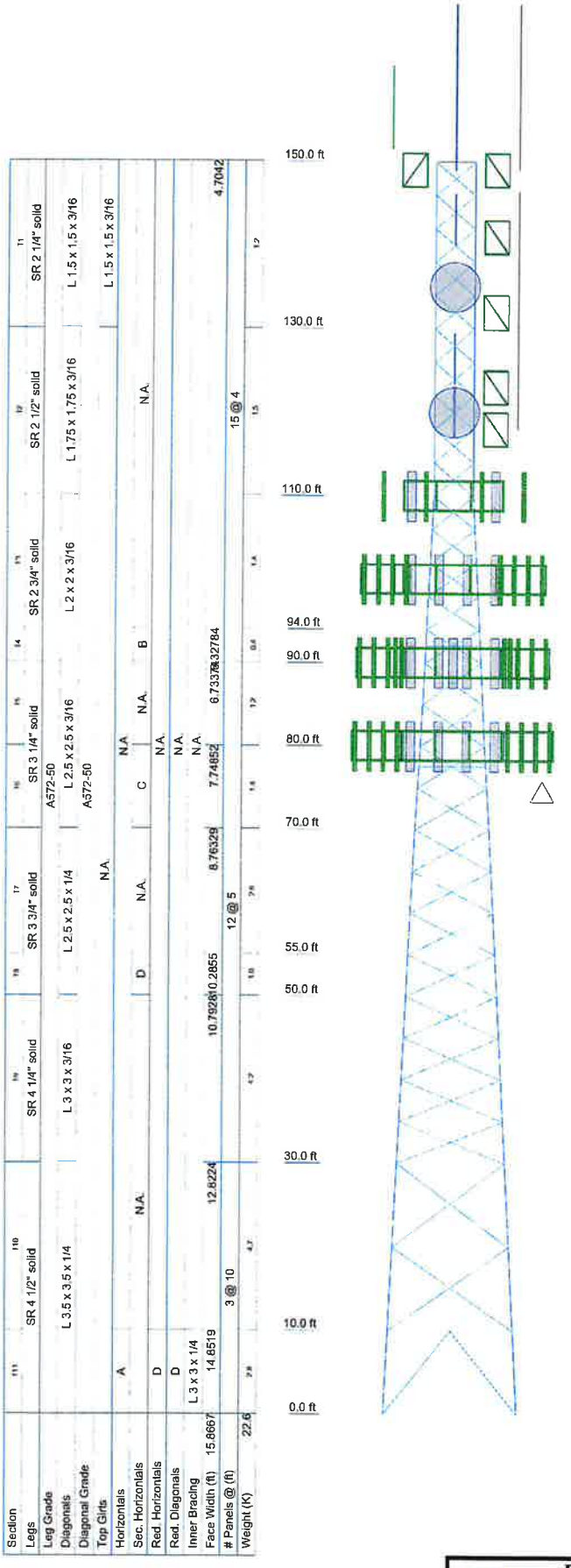
The tower and its foundation(s) have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES BY PAUL J. FORD AND COMPANY

1) Paul J. Ford and Company has not made a field inspection to verify the tower member sizes or the antenna/coax loading. If the existing conditions are not as represented on these sketches, we should be contacted immediately to reevaluate any conclusions stated in this report.
2) No allowance was made for any damaged, missing, or rusted materials. The analysis of this structure assumes that no physical deterioration has occurred in any of the structural components of the tower and that all the structural members have the same load carrying capacity as the day the tower was erected.
3) It is not possible to have all the detailed information to perform a thorough analysis of every structural sub-component of an existing structure. The structural analysis provided by Paul J. Ford and Company verifies the adequacy of the main structural members of the tower. Paul J. Ford and Company provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc.

APPENDIX A

TNXTOWER OUTPUT



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
ANT150F6	149	(2) BXA-171063-12CF-EDIN-X w/ Mount Pipe	100
DS9A09F36D-N	149	(2) BXA-171063-12CF-EDIN-X w/ Mount Pipe	100
1151-3	149	(2) BXA-171063-12CF-EDIN-X w/ Mount Pipe	100
Rohn 6' Side-Arm(1)	149	(3) RRH2X40-AWS	100
Rohn 6' Side-Arm(1)	149	(3) RRH2X40-AWS	100
Rohn 6' Side-Arm(1)	149	(3) RRH2X40-AWS	100
ANT220F2	141	DB-T1-6Z-8AB-0Z	100
ANT150F2	141	Pirod 12' T-Frame Sector Mount (1)	100
Rohn 6' Side-Arm(1)	141	Pirod 12' T-Frame Sector Mount (1)	100
Rohn 6' Side-Arm(1)	141	Pirod 12' T-Frame Sector Mount (1)	100
6'x2" Pipe Mount	135	(2) BXA-70063-6CF-EDIN-0 w/ Mount Pipe	100
PAL6-59	135	(2) BXA-70063-6CF-EDIN-0 w/ Mount Pipe	100
Rohn 6' Side-Arm(1)	132	APXVSPP18-C_TIA w/ Mount Pipe	90
CO-36A	132	FD-RRH-2x50-800	90
Rohn 6' Side-Arm(1)	124	FD-RRH-2x50-800	90
ANT150F2	124	FD-RRH-2x50-800	90
Rohn 6' Side-Arm(1)	123	Pirod 12' T-Frame Sector Mount (1)	90
CO-36A	123	Pirod 12' T-Frame Sector Mount (1)	90
6'x2" Pipe Mount	120	Pirod 12' T-Frame Sector Mount (1)	90
PAL6-59	120	APXVSPP18-C_TIA w/ Mount Pipe	90
Rohn 6' Side-Arm(1)	118	APXVSPP18-C_TIA w/ Mount Pipe	90
Rohn 6' Side-Arm(1)	118	(2) AIR 21	80
ANT220F2	118	KRY 112 144/1	80
CO-36A	118	KRY 112 144/1	80
(2) QS6656-5_TIA w/ Mount Pipe	110	KRY 112 144/1	80
RFV01U-D1A_VZW CFD	110	Pirod 12' T-Frame Sector Mount (1)	80
RFV01U-D1A_VZW CFD	110	Pirod 12' T-Frame Sector Mount (1)	80
RFV01U-D1A_VZW CFD	110	Pirod 12' T-Frame Sector Mount (1)	80
RFV01U-D2A_VZW CFD	110	(2) AIR 21	80
RFV01U-D2A_VZW CFD	110	(2) AIR 21	80
RFV01U-D2A_VZW CFD	110	Secondarty Members 30'-20'	25
RVZDC-6627-PF-48_VZW CFD	110	Secondarty Members 30'-20'	25
MT6407-77A_VZW CFD	110	Secondarty Members 30'-20'	25
MT6407-77A_VZW CFD	110	Secondarty Members 20'-10'	15
MT6407-77A_VZW CFD	110	Secondarty Members 20'-10'	15
(2) BSF0020F3V1-1	110	Secondarty Members 20'-10'	15
(2) BSF0020F3V1-1	110		
(2) BSF0020F3V1-1	110		
(3) Armor Tower Engineering 12-Ft Arch Frame	110		
(2) QS6656-5_TIA w/ Mount Pipe	110		
(2) QS6656-5_TIA w/ Mount Pipe	110		
(2) BXA-70063-6CF-EDIN-0 w/ Mount Pipe	100		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L 3.5 x 3.5 x 1/4	C	L 2.5 x 2.5 x 3/16
B	L 2 x 2 x 1/4	D	L 2.5 x 2.5 x 1/4

MATERIAL STRENGTH

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

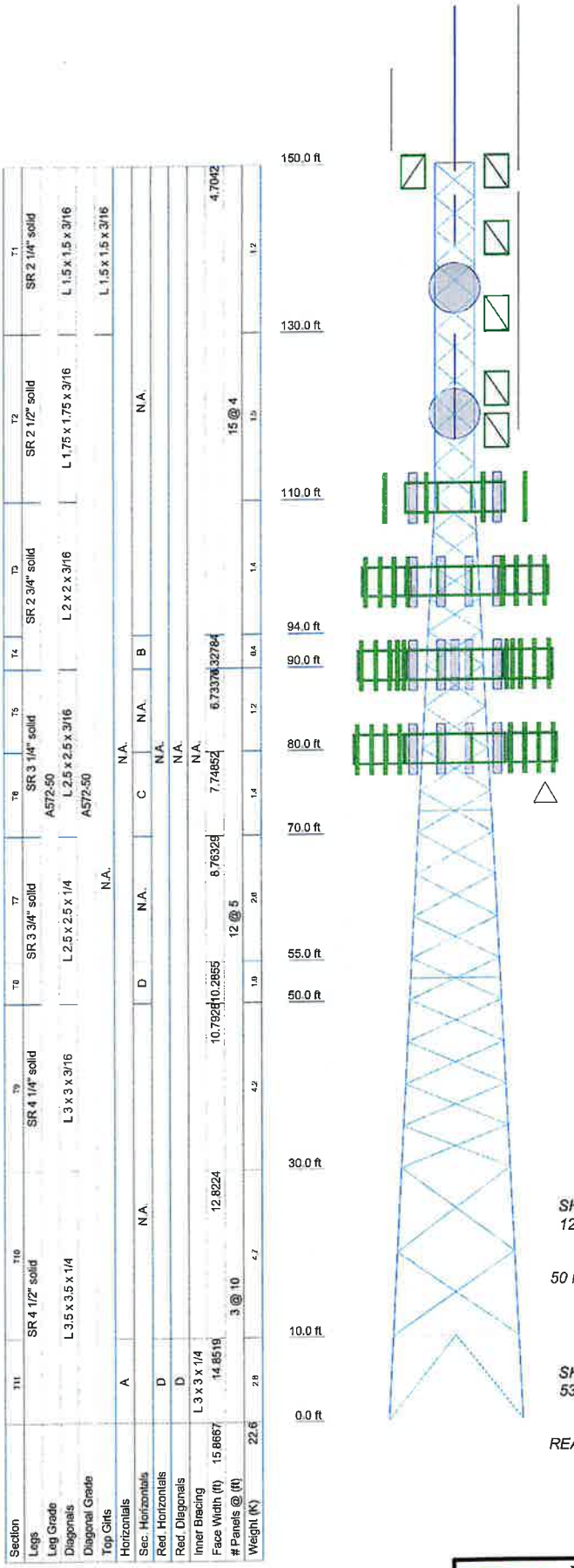
TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 128 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category III.
7. Topographic Category 1 with Crest Height of 57.00 ft

PJFLogo

Paul J. Ford and Company
250 East Broad Street, STE 600
Columbus, Ohio
Phone: 614-221-6679
FAX:

Job: *150-Ft Self-Support Tower: Norwalk 4: Norwalk, C*			
Project: *42923-0001.001.8700*			
Client: On-Air Engineering	Drawn by: csandlin	App'd:	
Code: TIA-222-H	Date: 01/16/23	Scale: NTS	
Path:		Dwg No. E-1	



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L 3.5 x 3.5 x 1/4	C	L 2.5 x 2.5 x 3/16
B	L 2 x 2 x 1/4	D	L 2.5 x 2.5 x 1/4

MATERIAL STRENGTH

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

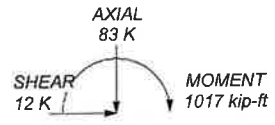
TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 128 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category III.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 61.1%

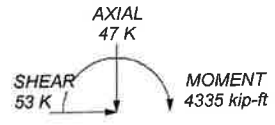
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 331 K
SHEAR: 31 K

UPLIFT: -294 K
SHEAR: 29 K



TORQUE 9 kip-ft
50 mph WIND - 0.7500 in ICE



TORQUE 42 kip-ft
REACTIONS - 128 mph WIND

PJFLogo
Paul J. Ford and Company
250 East Broad Street, STE 600
Columbus, Ohio
Phone: 614-221-6679
FAX:

Job: 150-Ft Self-Support Tower: Norwalk 4: Norwalk, C		
Project: 42923-0001.001.8700		
Client: On-Air Engineering	Drawn by: csandlin	App'd:
Code: TIA-222-H	Date: 01/16/23	Scale: NTS
Path:		Dwg No. E-1

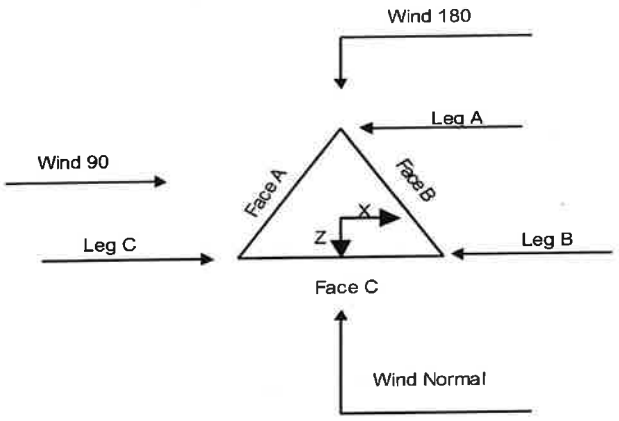
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 150.00 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 4.70 ft at the top and 15.87 ft at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

- Tower is located in Fairfield County, Connecticut.
- Tower base elevation above sea level: 57.00 ft.
- Basic wind speed of 128 mph.
- Risk Category III.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 0.7500 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in tower member design is 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	150.00-130.00			4.70	1	20.00
T2	130.00-110.00			4.70	1	20.00
T3	110.00-94.00			4.70	1	16.00
T4	94.00-90.00			6.33	1	4.00
T5	90.00-80.00			6.73	1	10.00
T6	80.00-70.00			7.75	1	10.00
T7	70.00-55.00			8.76	1	15.00
T8	55.00-50.00			10.29	1	5.00
T9	50.00-30.00			10.79	1	20.00
T10	30.00-10.00			12.82	1	20.00
T11	10.00-0.00			14.85	1	10.00

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
	ft	ft				in	in
T1	150.00-130.00	4.00	X Brace	No	No	0.0000	0.0000
T2	130.00-110.00	4.00	X Brace	No	No	0.0000	0.0000
T3	110.00-94.00	4.00	X Brace	No	No	0.0000	0.0000
T4	94.00-90.00	4.00	X Brace	No	Yes	0.0000	0.0000
T5	90.00-80.00	5.00	X Brace	No	No	0.0000	0.0000
T6	80.00-70.00	5.00	X Brace	No	Yes	0.0000	0.0000
T7	70.00-55.00	5.00	X Brace	No	No	0.0000	0.0000
T8	55.00-50.00	5.00	X Brace	No	Yes	0.0000	0.0000
T9	50.00-30.00	5.00	X Brace	No	No	0.0000	0.0000
T10	30.00-10.00	10.00	X Brace	No	No	0.0000	0.0000
T11	10.00-0.00	10.00	K1 Down	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 150.00-130.00	Solid Round	2 1/4" solid	A572-50 (50 ksi)	Single Angle	L 1.5 x 1.5 x 3/16	A572-50 (50 ksi)
T2 130.00-110.00	Solid Round	2 1/2" solid	A572-50 (50 ksi)	Single Angle	L 1.75 x 1.75 x 3/16	A572-50 (50 ksi)
T3 110.00-94.00	Solid Round	2 3/4" solid	A572-50 (50 ksi)	Single Angle	L 2 x 2 x 3/16	A572-50 (50 ksi)
T4 94.00-90.00	Solid Round	2 3/4" solid	A572-50 (50 ksi)	Single Angle	L 2 x 2 x 3/16	A572-50 (50 ksi)
T5 90.00-80.00	Solid Round	3 1/4" solid	A572-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 3/16	A572-50 (50 ksi)
T6 80.00-70.00	Solid Round	3 1/4" solid	A572-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 3/16	A572-50 (50 ksi)
T7 70.00-55.00	Solid Round	3 3/4" solid	A572-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 1/4	A572-50 (50 ksi)
T8 55.00-50.00	Solid Round	3 3/4" solid	A572-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 1/4	A572-50 (50 ksi)
T9 50.00-30.00	Solid Round	4 1/4" solid	A572-50 (50 ksi)	Single Angle	L 3 x 3 x 3/16	A572-50 (50 ksi)
T10 30.00-10.00	Solid Round	4 1/2" solid	A572-50 (50 ksi)	Single Angle	L 3.5 x 3.5 x 1/4	A572-50 (50 ksi)
T11 10.00-0.00	Solid Round	4 1/2" solid	A572-50 (50 ksi)	Single Angle	L 3.5 x 3.5 x 1/4	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 150.00-130.00	Single Angle	L 1.5 x 1.5 x 3/16	A572-50 (50 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T11 10.00-0.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L 3.5 x 3.5 x 1/4	A572-50 (50 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
T4 94.00-90.00	Single Angle	L 2 x 2 x 1/4	A572-50 (50 ksi)	Single Angle		A572-50 (50 ksi)
T6 80.00-70.00	Single Angle	L 2.5 x 2.5 x 3/16	A572-50	Single Angle		A572-50

Tower Elevation	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
ft						
T8 55.00-50.00	Single Angle	L 2.5 x 2.5 x 1/4	(50 ksi) A572-50 (50 ksi)	Single Angle		(50 ksi) A572-50 (50 ksi)
T11 10.00-0.00	Solid Round		A572-50 (50 ksi)	Single Angle	L 3 x 3 x 1/4	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
ft					
T11 10.00-0.00	A572-50 (50 ksi)	Horizontal (1)	Single Angle	L 2.5 x 2.5 x 1/4	1
		Diagonal (1)	Single Angle	L 2.5 x 2.5 x 1/4	1

Tower Section Geometry *(cont'd)*

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft^2	in					in	in	in
T1 150.00-130.00	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T2 130.00-110.00	0.00	0.3750	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T3 110.00-94.00	0.00	0.3750	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T4 94.00-90.00	0.00	0.3750	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T5 90.00-80.00	0.00	0.3750	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T6 80.00-70.00	0.00	0.3750	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T7 70.00-55.00	0.00	0.3750	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T8 55.00-50.00	0.00	0.3750	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T9 50.00-30.00	0.00	0.3750	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T10 30.00-10.00	0.00	0.3750	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T11 10.00-0.00	0.00	0.3750	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Brace Diags X	K Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
ft																	
T1 150.00-130.00	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T2 130.00-110.00	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T3 110.00-94.00	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T4 94.00-90.00	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T5 90.00-80.00	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T6 80.00-70.00	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T7 70.00-55.00	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T8 55.00-50.00	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T9 50.00-30.00	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T10 30.00-10.00	Yes	No	0.5	0.5	1	1	1	1	1	1
				1	1	1	1	1	1	1
T11 10.00-0.00	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 150.00-130.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 130.00-110.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 110.00-94.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 94.00-90.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 90.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 80.00-70.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 70.00-55.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 55.00-50.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 50.00-30.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 30.00-10.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 10.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 150.00-130.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 130.00-110.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 110.00-94.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 94.00-90.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 90.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 80.00-70.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 70.00-55.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 55.00-50.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 50.00-30.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 30.00-10.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 10.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

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 150.00-130.00	Flange	0.8750 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 130.00-110.00	Flange	1.0000 A325N	5	0.6250 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 110.00-94.00	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 94.00-90.00	Flange	1.0000 A325N	5	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T5 90.00-80.00	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 80.00-70.00	Flange	1.0000 A325N	7	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T7 70.00-55.00	Flange	1.5000 A325N	0	0.7500 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 55.00-50.00	Flange	1.5000 A325N	5	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	0	0.7500 A325N	1
T9 50.00-30.00	Flange	1.5000 A325N	5	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 30.00-10.00	Flange	1.5000 A325N	0	0.6250 A325N	2	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 10.00-0.00	Flange	1.5000 F1554-105	0	0.6250 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	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 150.00-130.00	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 130.00-110.00	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 110.00-94.00	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 94.00-90.00	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 90.00-80.00	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 80.00-70.00	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 70.00-55.00	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 55.00-50.00	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 50.00-30.00	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 30.00-10.00	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 10.00-0.00	0.6250 A325N	1	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	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
1.5" flat Cable Ladder Rail	B	No	No	Af (CaAa)	150.00 - 0.00	0.0000	-0.3	2	2	30.0000 1.5000	1.5000		1.80
LDF7-50A (1 5/8" foam)	B	No	No	Ar (CaAa)	149.00 - 141.00	0.0000	-0.3	4	4	1.0000 0.5000	1.9800		0.92
LDF7-50A (1 5/8" foam)	B	No	No	Ar (CaAa)	141.00 - 132.00	0.0000	-0.3	6	6	1.0000 0.5000	1.9800		0.92
EP65(ELLIPTICAL)	B	No	No	Ar (CaAa)	135.00 - 0.00	0.0000	-0.25	1	1	2.0000	2.0000		0.67
LDF7-50A (1 5/8" foam)	B	No	No	Ar (CaAa)	132.00 - 124.00	0.0000	-0.3	7	7	1.0000 0.5000	1.9800		0.92
LDF7-50A (1 5/8" foam)	B	No	No	Ar (CaAa)	124.00 - 123.00	0.0000	-0.3	8	8	1.0000 0.5000	1.9800		0.92
LDF7-50A (1 5/8" foam)	B	No	No	Ar (CaAa)	123.00 - 118.00	0.0000	-0.3	9	9	1.0000 0.5000	1.9800		0.92
EP65(ELLIPTICAL)	B	No	No	Ar (CaAa)	120.00 - 0.00	0.0000	-0.23	1	1	2.0000	2.0000		0.67
LDF7-50A (1 5/8" foam) ****	B	No	No	Ar (CaAa)	118.00 - 0.00	0.0000	-0.3	11	11	1.0000 0.5000	1.9800		0.92
T-Brackets (Af)	B	No	No	Af (CaAa)	110.00 - 0.00	- 6.0000	0.4	1	1	1.0000	1.0000		8.40
HB158-1-08U8-S8F18(1 5/8") ****	B	No	No	Ar (CaAa)	110.00 - 0.00	- 6.0000	0.4	1	1	1.0000	1.9800		1.70
1.5" flat Cable Ladder Rail	C	No	No	Af (CaAa)	100.00 - 0.00	0.0000	-0.3	2	2	30.0000 1.5000	1.5000		1.80
LDF7-50A (1 5/8" foam) ***	C	No	No	Ar (CaAa)	100.00 - 0.00	0.0000	-0.3	5	5	1.0000 0.5000	1.9800		0.92

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
1.5" flat Cable Ladder Rail	C	No	No	Af (CaAa)	90.00 - 0.00	0.0000	0.3	2	2	30.0000 1.5000	1.5000		1.80
LDF7-50A (1 5/8" foam) ***	C	No	No	Ar (CaAa)	90.00 - 0.00	0.0000	0.3	6	6	1.0000 0.5000	1.9800		0.92
1.5" flat Cable Ladder Rail	A	No	No	Af (CaAa)	80.00 - 0.00	0.0000	-0.3	2	2	30.0000 1.5000	1.5000		1.80
LDF7-50A (1 5/8" foam)	A	No	No	Ar (CaAa)	80.00 - 0.00	0.0000	-0.3	8	8	1.0000 0.5000	1.9800		0.92

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
T1	150.00-130.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	30.800	0.000	0.17
		C	0.000	0.000	0.000	0.000	0.00
T2	130.00-110.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	52.234	0.000	0.26
		C	0.000	0.000	0.000	0.000	0.00
T3	110.00-94.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	55.083	0.000	0.40
		C	0.000	0.000	8.940	0.000	0.05
T4	94.00-90.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	13.771	0.000	0.10
		C	0.000	0.000	5.960	0.000	0.03
T5	90.00-80.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	34.427	0.000	0.25
		C	0.000	0.000	31.780	0.000	0.17
T6	80.00-70.00	A	0.000	0.000	20.840	0.000	0.11
		B	0.000	0.000	34.427	0.000	0.25
		C	0.000	0.000	31.780	0.000	0.17
T7	70.00-55.00	A	0.000	0.000	31.260	0.000	0.16
		B	0.000	0.000	51.640	0.000	0.38
		C	0.000	0.000	47.670	0.000	0.26
T8	55.00-50.00	A	0.000	0.000	10.420	0.000	0.05
		B	0.000	0.000	17.213	0.000	0.13
		C	0.000	0.000	15.890	0.000	0.09
T9	50.00-30.00	A	0.000	0.000	41.680	0.000	0.22
		B	0.000	0.000	68.853	0.000	0.50
		C	0.000	0.000	63.560	0.000	0.35
T10	30.00-10.00	A	0.000	0.000	41.680	0.000	0.22
		B	0.000	0.000	68.853	0.000	0.50
		C	0.000	0.000	63.560	0.000	0.35
T11	10.00-0.00	A	0.000	0.000	20.840	0.000	0.11
		B	0.000	0.000	34.427	0.000	0.25
		C	0.000	0.000	31.780	0.000	0.17

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
T1	150.00-130.00	A	0.997	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	60.731	0.000	0.68
		C		0.000	0.000	0.000	0.000	0.00
T2	130.00-110.00	A	0.981	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	101.021	0.000	1.14
		C		0.000	0.000	0.000	0.000	0.00
T3	110.00-94.00	A	0.966	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	106.647	0.000	1.32
		C		0.000	0.000	17.548	0.000	0.19
T4	94.00-90.00	A	0.956	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	26.603	0.000	0.33
		C		0.000	0.000	11.671	0.000	0.13
T5	90.00-80.00	A	0.948	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	66.397	0.000	0.82
		C		0.000	0.000	61.881	0.000	0.68
T6	80.00-70.00	A	0.936	0.000	0.000	40.009	0.000	0.44
		B		0.000	0.000	66.223	0.000	0.81
		C		0.000	0.000	61.716	0.000	0.67
T7	70.00-55.00	A	0.919	0.000	0.000	59.840	0.000	0.65
		B		0.000	0.000	98.959	0.000	1.20
		C		0.000	0.000	92.220	0.000	1.00
T8	55.00-50.00	A	0.903	0.000	0.000	19.892	0.000	0.22
		B		0.000	0.000	32.869	0.000	0.40
		C		0.000	0.000	30.629	0.000	0.33
T9	50.00-30.00	A	0.879	0.000	0.000	79.236	0.000	0.85
		B		0.000	0.000	130.761	0.000	1.55
		C		0.000	0.000	121.839	0.000	1.29
T10	30.00-10.00	A	0.820	0.000	0.000	78.431	0.000	0.81
		B		0.000	0.000	129.023	0.000	1.49
		C		0.000	0.000	120.197	0.000	1.23
T11	10.00-0.00	A	0.714	0.000	0.000	38.490	0.000	0.37
		B		0.000	0.000	62.945	0.000	0.69
		C		0.000	0.000	58.620	0.000	0.56

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	150.00-130.00	1.8791	-8.7076	1.9409	-9.0107
T2	130.00-110.00	2.5001	-11.1961	2.6008	-11.5825
T3	110.00-94.00	5.4429	-10.7154	6.5832	-10.3756
T4	94.00-90.00	7.0986	-9.7516	8.7170	-9.2793
T5	90.00-80.00	2.5716	-9.2788	2.8882	-8.3030
T6	80.00-70.00	-1.9914	-5.5815	-1.4283	-4.8693
T7	70.00-55.00	-2.3939	-6.7084	-1.6848	-5.8269
T8	55.00-50.00	-2.2701	-6.4387	-1.6480	-5.7741
T9	50.00-30.00	-2.5655	-7.2807	-1.8729	-6.6307
T10	30.00-10.00	-3.1745	-8.9980	-2.3272	-8.3112
T11	10.00-0.00	-2.9688	-8.5151	-2.3372	-8.3593

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	1.5" flat Cable Ladder Rail	130.00 - 150.00	0.6000	0.6000
T1	2	LDF7-50A (1 5/8" foam)	141.00 - 149.00	0.6000	0.6000
T1	3	LDF7-50A (1 5/8" foam)	132.00 - 141.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	4	EP65(ELLIPTICAL)	130.00 - 135.00	0.6000	0.6000
T1	5	LDF7-50A (1 5/8" foam)	130.00 - 132.00	0.6000	0.6000
T2	1	1.5" flat Cable Ladder Rail	110.00 - 130.00	0.6000	0.6000
T2	4	EP65(ELLIPTICAL)	110.00 - 130.00	0.6000	0.6000
T2	5	LDF7-50A (1 5/8" foam)	124.00 - 130.00	0.6000	0.6000
T2	6	LDF7-50A (1 5/8" foam)	123.00 - 124.00	0.6000	0.6000
T2	7	LDF7-50A (1 5/8" foam)	118.00 - 123.00	0.6000	0.6000
T2	8	EP65(ELLIPTICAL)	110.00 - 120.00	0.6000	0.6000
T2	9	LDF7-50A (1 5/8" foam)	110.00 - 118.00	0.6000	0.6000
T3	1	1.5" flat Cable Ladder Rail	94.00 - 110.00	0.6000	0.6000
T3	4	EP65(ELLIPTICAL)	94.00 - 110.00	0.6000	0.6000
T3	8	EP65(ELLIPTICAL)	94.00 - 110.00	0.6000	0.6000
T3	9	LDF7-50A (1 5/8" foam)	94.00 - 110.00	0.6000	0.6000
T3	11	T-Brackets (Af)	94.00 - 110.00	0.6000	0.6000
T3	12	HB158-1-08U8-S8F18(1 5/8")	94.00 - 110.00	0.6000	0.6000
T3	14	1.5" flat Cable Ladder Rail	94.00 - 100.00	0.6000	0.6000
T3	15	LDF7-50A (1 5/8" foam)	94.00 - 100.00	0.6000	0.6000
T4	1	1.5" flat Cable Ladder Rail	90.00 - 94.00	0.6000	0.6000
T4	4	EP65(ELLIPTICAL)	90.00 - 94.00	0.6000	0.6000
T4	8	EP65(ELLIPTICAL)	90.00 - 94.00	0.6000	0.6000
T4	9	LDF7-50A (1 5/8" foam)	90.00 - 94.00	0.6000	0.6000
T4	11	T-Brackets (Af)	90.00 - 94.00	0.6000	0.6000
T4	12	HB158-1-08U8-S8F18(1 5/8")	90.00 - 94.00	0.6000	0.6000
T4	14	1.5" flat Cable Ladder Rail	90.00 - 94.00	0.6000	0.6000
T4	15	LDF7-50A (1 5/8" foam)	90.00 - 94.00	0.6000	0.6000
T5	1	1.5" flat Cable Ladder Rail	80.00 - 90.00	0.6000	0.6000
T5	4	EP65(ELLIPTICAL)	80.00 - 90.00	0.6000	0.6000
T5	8	EP65(ELLIPTICAL)	80.00 - 90.00	0.6000	0.6000
T5	9	LDF7-50A (1 5/8" foam)	80.00 - 90.00	0.6000	0.6000
T5	11	T-Brackets (Af)	80.00 - 90.00	0.6000	0.6000
T5	12	HB158-1-08U8-S8F18(1 5/8")	80.00 - 90.00	0.6000	0.6000
T5	14	1.5" flat Cable Ladder Rail	80.00 - 90.00	0.6000	0.6000
T5	15	LDF7-50A (1 5/8" foam)	80.00 - 90.00	0.6000	0.6000
T5	17	1.5" flat Cable Ladder Rail	80.00 - 90.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	18	LDF7-50A (1 5/8" foam)	80.00 - 90.00	0.6000	0.6000
T6	1	1.5" flat Cable Ladder Rail	70.00 - 80.00	0.6000	0.6000
T6	4	EP65(ELLIPTICAL)	70.00 - 80.00	0.6000	0.6000
T6	8	EP65(ELLIPTICAL)	70.00 - 80.00	0.6000	0.6000
T6	9	LDF7-50A (1 5/8" foam)	70.00 - 80.00	0.6000	0.6000
T6	11	T-Brackets (Af)	70.00 - 80.00	0.6000	0.6000
T6	12	HB158-1-08U8-S8F18(1 5/8")	70.00 - 80.00	0.6000	0.6000
T6	14	1.5" flat Cable Ladder Rail	70.00 - 80.00	0.6000	0.6000
T6	15	LDF7-50A (1 5/8" foam)	70.00 - 80.00	0.6000	0.6000
T6	17	1.5" flat Cable Ladder Rail	70.00 - 80.00	0.6000	0.6000
T6	18	LDF7-50A (1 5/8" foam)	70.00 - 80.00	0.6000	0.6000
T6	20	1.5" flat Cable Ladder Rail	70.00 - 80.00	0.6000	0.6000
T6	21	LDF7-50A (1 5/8" foam)	70.00 - 80.00	0.6000	0.6000
T7	1	1.5" flat Cable Ladder Rail	55.00 - 70.00	0.6000	0.6000
T7	4	EP65(ELLIPTICAL)	55.00 - 70.00	0.6000	0.6000
T7	8	EP65(ELLIPTICAL)	55.00 - 70.00	0.6000	0.6000
T7	9	LDF7-50A (1 5/8" foam)	55.00 - 70.00	0.6000	0.6000
T7	11	T-Brackets (Af)	55.00 - 70.00	0.6000	0.6000
T7	12	HB158-1-08U8-S8F18(1 5/8")	55.00 - 70.00	0.6000	0.6000
T7	14	1.5" flat Cable Ladder Rail	55.00 - 70.00	0.6000	0.6000
T7	15	LDF7-50A (1 5/8" foam)	55.00 - 70.00	0.6000	0.6000
T7	17	1.5" flat Cable Ladder Rail	55.00 - 70.00	0.6000	0.6000
T7	18	LDF7-50A (1 5/8" foam)	55.00 - 70.00	0.6000	0.6000
T7	20	1.5" flat Cable Ladder Rail	55.00 - 70.00	0.6000	0.6000
T7	21	LDF7-50A (1 5/8" foam)	55.00 - 70.00	0.6000	0.6000
T8	1	1.5" flat Cable Ladder Rail	50.00 - 55.00	0.6000	0.6000
T8	4	EP65(ELLIPTICAL)	50.00 - 55.00	0.6000	0.6000
T8	8	EP65(ELLIPTICAL)	50.00 - 55.00	0.6000	0.6000
T8	9	LDF7-50A (1 5/8" foam)	50.00 - 55.00	0.6000	0.6000
T8	11	T-Brackets (Af)	50.00 - 55.00	0.6000	0.6000
T8	12	HB158-1-08U8-S8F18(1 5/8")	50.00 - 55.00	0.6000	0.6000
T8	14	1.5" flat Cable Ladder Rail	50.00 - 55.00	0.6000	0.6000
T8	15	LDF7-50A (1 5/8" foam)	50.00 - 55.00	0.6000	0.6000
T8	17	1.5" flat Cable Ladder Rail	50.00 - 55.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T8	18	LDF7-50A (1 5/8" foam)	50.00 - 55.00	0.6000	0.6000
T8	20	1.5" flat Cable Ladder Rail	50.00 - 55.00	0.6000	0.6000
T8	21	LDF7-50A (1 5/8" foam)	50.00 - 55.00	0.6000	0.6000
T9	1	1.5" flat Cable Ladder Rail	30.00 - 50.00	0.6000	0.6000
T9	4	EP65(ELLIPTICAL)	30.00 - 50.00	0.6000	0.6000
T9	8	EP65(ELLIPTICAL)	30.00 - 50.00	0.6000	0.6000
T9	9	LDF7-50A (1 5/8" foam)	30.00 - 50.00	0.6000	0.6000
T9	11	T-Brackets (Af)	30.00 - 50.00	0.6000	0.6000
T9	12	HB158-1-08U8-S8F18(1 5/8")	30.00 - 50.00	0.6000	0.6000
T9	14	1.5" flat Cable Ladder Rail	30.00 - 50.00	0.6000	0.6000
T9	15	LDF7-50A (1 5/8" foam)	30.00 - 50.00	0.6000	0.6000
T9	17	1.5" flat Cable Ladder Rail	30.00 - 50.00	0.6000	0.6000
T9	18	LDF7-50A (1 5/8" foam)	30.00 - 50.00	0.6000	0.6000
T9	20	1.5" flat Cable Ladder Rail	30.00 - 50.00	0.6000	0.6000
T9	21	LDF7-50A (1 5/8" foam)	30.00 - 50.00	0.6000	0.6000
T10	1	1.5" flat Cable Ladder Rail	10.00 - 30.00	0.6000	0.6000
T10	4	EP65(ELLIPTICAL)	10.00 - 30.00	0.6000	0.6000
T10	8	EP65(ELLIPTICAL)	10.00 - 30.00	0.6000	0.6000
T10	9	LDF7-50A (1 5/8" foam)	10.00 - 30.00	0.6000	0.6000
T10	11	T-Brackets (Af)	10.00 - 30.00	0.6000	0.6000
T10	12	HB158-1-08U8-S8F18(1 5/8")	10.00 - 30.00	0.6000	0.6000
T10	14	1.5" flat Cable Ladder Rail	10.00 - 30.00	0.6000	0.6000
T10	15	LDF7-50A (1 5/8" foam)	10.00 - 30.00	0.6000	0.6000
T10	17	1.5" flat Cable Ladder Rail	10.00 - 30.00	0.6000	0.6000
T10	18	LDF7-50A (1 5/8" foam)	10.00 - 30.00	0.6000	0.6000
T10	20	1.5" flat Cable Ladder Rail	10.00 - 30.00	0.6000	0.6000
T10	21	LDF7-50A (1 5/8" foam)	10.00 - 30.00	0.6000	0.6000
T11	1	1.5" flat Cable Ladder Rail	0.00 - 10.00	0.6000	0.6000
T11	4	EP65(ELLIPTICAL)	0.00 - 10.00	0.6000	0.6000
T11	8	EP65(ELLIPTICAL)	0.00 - 10.00	0.6000	0.6000
T11	9	LDF7-50A (1 5/8" foam)	0.00 - 10.00	0.6000	0.6000
T11	11	T-Brackets (Af)	0.00 - 10.00	0.6000	0.6000
T11	12	HB158-1-08U8-S8F18(1 5/8")	0.00 - 10.00	0.6000	0.6000
T11	14	1.5" flat Cable Ladder Rail	0.00 - 10.00	0.6000	0.6000
T11	15	LDF7-50A (1 5/8" foam)	0.00 - 10.00	0.6000	0.6000
T11	17	1.5" flat Cable Ladder Rail	0.00 - 10.00	0.6000	0.6000
T11	18	LDF7-50A (1 5/8" foam)	0.00 - 10.00	0.6000	0.6000
T11	20	1.5" flat Cable Ladder Rail	0.00 - 10.00	0.6000	0.6000
T11	21	LDF7-50A (1 5/8" foam)	0.00 - 10.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
ANT150F6	A	From Leg	6.00 0.00 10.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	4.80 6.83 8.87	4.80 6.83 8.87	0.03 0.07 0.11
DS9A09F36D-N	B	From Leg	6.00 0.00 10.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	5.76 7.71 9.68	5.76 7.71 9.68	0.05 0.09 0.14
1151-3	C	From Leg	6.00 0.00 7.60	0.0000	149.00	No Ice 1/2" Ice 1" Ice	4.18 5.73 7.30	4.18 5.73 7.30	0.02 0.05 0.09
Rohn 6' Side-Arm(1)	A	From Leg	3.00 0.00 0.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	10.60 15.40 20.20	10.60 15.40 20.20	0.14 0.21 0.28
Rohn 6' Side-Arm(1)	B	From Leg	3.00 0.00 0.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	10.60 15.40 20.20	10.60 15.40 20.20	0.14 0.21 0.28
Rohn 6' Side-Arm(1)	C	From Leg	3.00 0.00 0.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	10.60 15.40 20.20	10.60 15.40 20.20	0.14 0.21 0.28
***									
ANT220F2	A	From Leg	6.00 0.00 2.20	0.0000	141.00	No Ice 1/2" Ice 1" Ice	1.03 1.29 1.56	1.03 1.29 1.56	0.01 0.02 0.03
ANT150F2	B	From Leg	6.00 0.00 2.50	0.0000	141.00	No Ice 1/2" Ice 1" Ice	1.29 1.60 1.91	1.29 1.60 1.91	0.01 0.02 0.04
Rohn 6' Side-Arm(1)	A	From Leg	3.00 0.00 0.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice	10.60 15.40 20.20	10.60 15.40 20.20	0.14 0.21 0.28
Rohn 6' Side-Arm(1)	B	From Leg	3.00 0.00 0.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice	10.60 15.40 20.20	10.60 15.40 20.20	0.14 0.21 0.28
****									
6'x2" Pipe Mount	A	From Leg	1.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	1.20 1.80 2.17	1.20 1.80 2.17	0.07 0.08 0.09
****									
CO-36A	B	From Leg	6.00 0.00 6.00	0.0000	132.00	No Ice 1/2" Ice 1" Ice	0.75 1.96 3.19	0.75 1.96 3.19	0.01 0.02 0.04
Rohn 6' Side-Arm(1)	B	From Leg	3.00 0.00 0.00	0.0000	132.00	No Ice 1/2" Ice 1" Ice	10.60 15.40 20.20	10.60 15.40 20.20	0.14 0.21 0.28
****									

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
ANT150F2	A	From Leg	6.00 0.00 2.50	0.0000	124.00	No Ice 1/2" Ice 1" Ice	1.29 1.60 1.91	1.29 1.60 1.91	0.01 0.02 0.04
Rohn 6' Side-Arm(1)	A	From Leg	3.00 0.00 0.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	10.60 15.40 20.20	10.60 15.40 20.20	0.14 0.21 0.28
****									
CO-36A	B	From Leg	6.00 0.00 6.00	0.0000	123.00	No Ice 1/2" Ice 1" Ice	0.75 1.96 3.19	0.75 1.96 3.19	0.01 0.02 0.04
Rohn 6' Side-Arm(1)	B	From Leg	3.00 0.00 0.00	0.0000	123.00	No Ice 1/2" Ice 1" Ice	10.60 15.40 20.20	10.60 15.40 20.20	0.14 0.21 0.28
****									
6'x2" Pipe Mount	A	From Leg	1.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	1.20 1.80 2.17	1.20 1.80 2.17	0.07 0.08 0.09
****									
ANT220F2	A	From Leg	6.00 0.00 2.20	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.03 1.29 1.56	1.03 1.29 1.56	0.01 0.02 0.03
CO-36A	B	From Leg	6.00 0.00 6.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.75 1.96 3.19	0.75 1.96 3.19	0.01 0.02 0.04
Rohn 6' Side-Arm(1)	A	From Leg	3.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	10.60 15.40 20.20	10.60 15.40 20.20	0.14 0.21 0.28
Rohn 6' Side-Arm(1)	B	From Leg	3.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	10.60 15.40 20.20	10.60 15.40 20.20	0.14 0.21 0.28
****									
(2) QS6656-5_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	8.37 8.93 9.46	8.46 9.66 10.55	0.09 0.17 0.25
(2) QS6656-5_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	8.37 8.93 9.46	8.46 9.66 10.55	0.09 0.17 0.25
(2) QS6656-5_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	8.37 8.93 9.46	8.46 9.66 10.55	0.09 0.17 0.25
RFV01U-D1A_VZW CFD	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	1.55 2.39 2.59	1.04 1.62 1.80	0.08 0.10 0.12
RFV01U-D1A_VZW CFD	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	1.55 2.39 2.59	1.04 1.62 1.80	0.08 0.10 0.12
RFV01U-D1A_VZW CFD	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	1.55 2.39 2.59	1.04 1.62 1.80	0.08 0.10 0.12

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RFV01U-D2A_VZW CFD	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	1.55 2.39 2.59	0.85 1.34 1.50	0.07 0.09 0.11
RFV01U-D2A_VZW CFD	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	1.55 2.39 2.59	0.85 1.34 1.50	0.07 0.09 0.11
RFV01U-D2A_VZW CFD	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	1.55 2.39 2.59	0.85 1.34 1.50	0.07 0.09 0.11
RVZDC-6627-PF-48_VZW CFD	A	From Leg	0.50 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	3.17 4.72 5.02	2.41 3.16 3.43	0.03 0.06 0.10
MT6407-77A_VZW CFD	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	3.92 5.81 6.15	1.35 2.15 2.42	0.08 0.11 0.14
MT6407-77A_VZW CFD	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	3.92 5.81 6.15	1.35 2.15 2.42	0.08 0.11 0.14
MT6407-77A_VZW CFD	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	3.92 5.81 6.15	1.35 2.15 2.42	0.08 0.11 0.14
(2) BSF0020F3V1-1	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	0.96 1.09 1.22	0.29 0.36 0.45	0.02 0.02 0.03
(2) BSF0020F3V1-1	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	0.96 1.09 1.22	0.29 0.36 0.45	0.02 0.02 0.03
(2) BSF0020F3V1-1	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	0.96 1.09 1.22	0.29 0.36 0.45	0.02 0.02 0.03
(3) Armor Tower Engineering 12-Ft Arch Frame ****	A	None		0.0000	110.00	No Ice 1/2" Ice 1" Ice	24.41 31.39 38.37	24.41 31.39 38.37	0.93 1.36 1.79
(2) BXA-70063-6CF-EDIN-0_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	7.81 8.36 8.87	5.80 6.95 7.82	0.04 0.10 0.17
(2) BXA-70063-6CF-EDIN-0_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	7.81 8.36 8.87	5.80 6.95 7.82	0.04 0.10 0.17
(2) BXA-70063-6CF-EDIN-0_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	7.81 8.36 8.87	5.80 6.95 7.82	0.04 0.10 0.17
(2) BXA-171063-12CF-EDIN-X_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	5.04 5.59 6.11	5.30 6.47 7.36	0.05 0.09 0.15
(2) BXA-171063-12CF-EDIN-X_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	5.04 5.59 6.11	5.30 6.47 7.36	0.05 0.09 0.15

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) BXA-171063-12CF-EDIN-X_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	100.00	1" Ice No Ice 1/2" Ice 1" Ice	5.04 5.59 6.11	5.30 6.47 7.36	0.05 0.09 0.15
(3) RRH2X40-AWS	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	2.16 2.36 2.57	1.42 1.59 1.77	0.04 0.06 0.08
(3) RRH2X40-AWS	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	2.16 2.36 2.57	1.42 1.59 1.77	0.04 0.06 0.08
(3) RRH2X40-AWS	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	2.16 2.36 2.57	1.42 1.59 1.77	0.04 0.06 0.08
DB-T1-6Z-8AB-0Z	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	4.80 5.07 5.35	2.00 2.19 2.39	0.04 0.08 0.12
Pirod 12' T-Frame Sector Mount (1)	A	From Leg	0.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	0.47 0.60 0.73
Pirod 12' T-Frame Sector Mount (1)	B	None		0.0000	100.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	0.47 0.60 0.73
Pirod 12' T-Frame Sector Mount (1)	C	None		0.0000	100.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	0.47 0.60 0.73
****									
APXVSPP18-C_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	7.47 8.66 9.56	0.09 0.16 0.24
APXVSPP18-C_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	7.47 8.66 9.56	0.09 0.16 0.24
APXVSPP18-C_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	7.47 8.66 9.56	0.09 0.16 0.24
FD-RRH-2x50-800	A	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	1.36 1.52 1.68	3.01 3.22 3.45	0.05 0.08 0.10
FD-RRH-2x50-800	B	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	1.36 1.52 1.68	3.01 3.22 3.45	0.05 0.08 0.10
FD-RRH-2x50-800	C	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	1.36 1.52 1.68	3.01 3.22 3.45	0.05 0.08 0.10
Pirod 12' T-Frame Sector Mount (1)	A	From Leg	0.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	0.47 0.60 0.73
Pirod 12' T-Frame Sector Mount (1)	B	None		0.0000	90.00	No Ice	13.60 18.40	13.60 18.40	0.47 0.60

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / Azimuth Adjustment ° / Placement ft			C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
					1/2" Ice	23.20	23.20	0.73
					1" Ice			
Pirod 12' T-Frame Sector Mount (1)	C	None	0.0000	90.00	No Ice	13.60	13.60	0.47
					1/2" Ice	18.40	18.40	0.60
					1" Ice	23.20	23.20	0.73
****								
(2) AIR 21	A	From Face	4.00 / 0.00 / 0.00	0.0000	80.00	No Ice	3.19	1.98	0.10
						1/2" Ice	3.52	2.28	0.14
						1" Ice	3.85	2.59	0.18
(2) AIR 21	B	From Face	4.00 / 0.00 / 0.00	0.0000	80.00	No Ice	3.19	1.98	0.10
						1/2" Ice	3.52	2.28	0.14
						1" Ice	3.85	2.59	0.18
(2) AIR 21	C	From Face	4.00 / 0.00 / 0.00	0.0000	80.00	No Ice	3.19	1.98	0.10
						1/2" Ice	3.52	2.28	0.14
						1" Ice	3.85	2.59	0.18
KRY 112 144/1	A	From Face	4.00 / 0.00 / 0.00	0.0000	80.00	No Ice	0.35	0.17	0.01
						1/2" Ice	0.43	0.23	0.01
						1" Ice	0.51	0.30	0.02
KRY 112 144/1	B	From Face	4.00 / 0.00 / 0.00	0.0000	80.00	No Ice	0.35	0.17	0.01
						1/2" Ice	0.43	0.23	0.01
						1" Ice	0.51	0.30	0.02
KRY 112 144/1	C	From Face	4.00 / 0.00 / 0.00	0.0000	80.00	No Ice	0.35	0.17	0.01
						1/2" Ice	0.43	0.23	0.01
						1" Ice	0.51	0.30	0.02
Pirod 12' T-Frame Sector Mount (1)	A	From Leg	0.00 / 0.00 / 0.00	0.0000	80.00	No Ice	13.60	13.60	0.47
						1/2" Ice	18.40	18.40	0.60
						1" Ice	23.20	23.20	0.73
Pirod 12' T-Frame Sector Mount (1)	B	None		0.0000	80.00	No Ice	13.60	13.60	0.47
						1/2" Ice	18.40	18.40	0.60
						1" Ice	23.20	23.20	0.73
Pirod 12' T-Frame Sector Mount (1)	C	None		0.0000	80.00	No Ice	13.60	13.60	0.47
						1/2" Ice	18.40	18.40	0.60
						1" Ice	23.20	23.20	0.73
****								
Secondarty Members 30'-20'	A	None		0.0000	25.00	No Ice	9.58	9.58	0.09
						1/2" Ice	14.03	14.03	0.13
						1" Ice	18.48	18.48	0.18
Secondarty Members 30'-20'	B	None		0.0000	25.00	No Ice	9.58	9.58	0.09
						1/2" Ice	14.03	14.03	0.13
						1" Ice	18.48	18.48	0.18
Secondarty Members 30'-20'	C	None		0.0000	25.00	No Ice	9.58	9.58	0.09
						1/2" Ice	14.03	14.03	0.13
						1" Ice	18.48	18.48	0.18
Secondarty Members 20'-10'	A	None		0.0000	15.00	No Ice	9.88	9.88	0.09
						1/2" Ice	14.46	14.46	0.14
						1" Ice	19.04	19.04	0.19
Secondarty Members 20'-10'	B	None		0.0000	15.00	No Ice	9.88	9.88	0.09
						1/2" Ice	14.46	14.46	0.14
							19.04	19.04	0.19

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Secondarty Members 20'-10'	C	None		0.0000	15.00	1" Ice			
						No Ice	9.88	9.88	0.09
						1/2" Ice	14.46	14.46	0.14
						1" Ice	19.04	19.04	0.19

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
PAL6-59	A	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	Worst		135.00	6.00	No Ice	28.27	0.19
									1/2" Ice	29.07	0.33
									1" Ice	29.86	0.48
****											
PAL6-59	A	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	Worst		120.00	6.00	No Ice	28.27	0.19
									1/2" Ice	29.07	0.33
									1" Ice	29.86	0.48

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
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice

Comb. No.	Description
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
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

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	331.25	26.81	-16.48
	Max. H_x	18	331.25	26.81	-16.48
	Max. H_z	7	-293.90	-24.41	15.17
	Min. Vert	7	-293.90	-24.41	15.17
	Min. H_x	7	-293.90	-24.41	15.17
	Min. H_z	18	331.25	26.81	-16.48
Leg B	Max. Vert	10	320.68	-25.98	-15.93
	Max. H_x	23	-281.83	23.55	14.58
	Max. H_z	23	-281.83	23.55	14.58
	Min. Vert	23	-281.83	23.55	14.58
	Min. H_x	10	320.68	-25.98	-15.93
	Min. H_z	10	320.68	-25.98	-15.93
Leg A	Max. Vert	2	324.30	0.30	30.80
	Max. H_x	21	12.28	5.61	0.73
	Max. H_z	2	324.30	0.30	30.80
	Min. Vert	15	-284.56	-0.30	-28.02
	Min. H_x	9	12.27	-5.60	0.73
	Min. H_z	15	-284.56	-0.30	-28.02

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	39.36	-0.00	0.00	-7.16	-5.69	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	47.23	0.00	-51.50	-4239.92	-6.86	8.36
0.9 Dead+1.0 Wind 0 deg - No Ice	35.42	0.00	-51.50	-4234.68	-5.15	8.35
1.2 Dead+1.0 Wind 30 deg - No Ice	47.23	25.46	-44.20	-3696.83	-2130.52	-0.74
0.9 Dead+1.0 Wind 30 deg - No Ice	35.42	25.47	-44.21	-3691.97	-2127.26	-0.74
1.2 Dead+1.0 Wind 60 deg - No Ice	47.23	43.52	-25.18	-2110.92	-3638.34	-24.72

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead+1.0 Wind 60 deg - No Ice	35.42	43.52	-25.18	-2107.22	-3633.96	-24.71
1.2 Dead+1.0 Wind 90 deg - No Ice	47.23	49.20	0.00	-8.57	-4145.68	-42.23
0.9 Dead+1.0 Wind 90 deg - No Ice	35.42	49.20	0.00	-6.41	-4140.91	-42.20
1.2 Dead+1.0 Wind 120 deg - No Ice	47.23	44.06	25.49	2089.78	-3631.87	-22.76
0.9 Dead+1.0 Wind 120 deg - No Ice	35.42	44.07	25.50	2090.41	-3627.51	-22.73
1.2 Dead+1.0 Wind 150 deg - No Ice	47.23	23.55	40.88	3363.55	-1948.34	-3.53
0.9 Dead+1.0 Wind 150 deg - No Ice	35.42	23.55	40.89	3363.26	-1945.20	-3.50
1.2 Dead+1.0 Wind 180 deg - No Ice	47.23	-0.00	49.15	4073.14	-7.02	-8.36
0.9 Dead+1.0 Wind 180 deg - No Ice	35.42	0.00	49.15	4072.32	-5.29	-8.34
1.2 Dead+1.0 Wind 210 deg - No Ice	47.23	-25.47	44.20	3679.47	2116.96	0.74
0.9 Dead+1.0 Wind 210 deg - No Ice	35.42	-25.47	44.20	3678.95	2117.14	0.74
1.2 Dead+1.0 Wind 240 deg - No Ice	47.23	-45.55	26.35	2168.28	3754.20	24.72
0.9 Dead+1.0 Wind 240 deg - No Ice	35.42	-45.55	26.36	2168.88	3753.19	24.71
1.2 Dead+1.0 Wind 270 deg - No Ice	47.23	-49.20	0.00	-8.67	4131.98	42.23
0.9 Dead+1.0 Wind 270 deg - No Ice	35.42	-49.20	0.00	-6.48	4130.65	42.21
1.2 Dead+1.0 Wind 300 deg - No Ice	47.23	-42.03	-24.32	-2032.45	3488.58	22.76
0.9 Dead+1.0 Wind 300 deg - No Ice	35.42	-42.03	-24.32	-2028.80	3487.74	22.73
1.2 Dead+1.0 Wind 330 deg - No Ice	47.23	-23.55	-40.88	-3380.94	1934.43	3.53
0.9 Dead+1.0 Wind 330 deg - No Ice	35.42	-23.55	-40.89	-3376.32	1934.73	3.50
1.2 Dead+1.0 Ice	83.04	-0.00	0.00	-20.34	-7.60	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	83.04	-0.00	-11.65	-990.35	-7.62	3.16
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	83.04	5.85	-10.15	-878.38	-501.85	1.24
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	83.04	10.22	-5.91	-521.28	-873.23	-5.52
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	83.04	11.30	0.00	-20.41	-971.15	-8.66
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	83.04	9.86	5.70	456.31	-831.45	-4.21
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	83.04	5.43	9.42	767.12	-461.24	-1.46
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	83.04	-0.00	11.34	929.95	-7.67	-3.16
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	83.04	-5.85	10.15	837.52	486.58	-1.24
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	83.04	-10.49	6.07	490.20	874.90	5.52
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	83.04	-11.30	0.00	-20.42	955.91	8.66
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	83.04	-9.58	-5.54	-487.40	799.23	4.21
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	83.04	-5.43	-9.42	-807.98	445.95	1.46
Dead+Wind 0 deg - Service	39.36	-0.00	-11.34	-937.13	-5.71	1.84
Dead+Wind 30 deg - Service	39.36	5.61	-9.73	-817.75	-472.44	-0.13
Dead+Wind 60 deg - Service	39.36	9.58	-5.54	-469.23	-803.83	-5.43
Dead+Wind 90 deg - Service	39.36	10.83	0.00	-7.17	-915.34	-9.27

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+Wind 120 deg - Service	39.36	9.70	5.61	453.99	-802.41	-5.00
Dead+Wind 150 deg - Service	39.36	5.18	9.00	733.98	-432.40	-0.77
Dead+Wind 180 deg - Service	39.36	-0.00	10.82	889.92	-5.72	-1.84
Dead+Wind 210 deg - Service	39.36	-5.61	9.73	803.36	461.04	0.16
Dead+Wind 240 deg - Service	39.36	-10.03	5.80	471.23	820.87	5.43
Dead+Wind 270 deg - Service	39.36	-10.83	0.00	-7.19	903.93	9.27
Dead+Wind 300 deg - Service	39.36	-9.25	-5.35	-451.99	762.54	5.00
Dead+Wind 330 deg - Service	39.36	-5.18	-9.00	-748.37	420.98	0.77

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-39.36	0.00	0.00	39.36	-0.00	0.000%
2	-0.00	-47.23	-51.51	-0.00	47.23	51.50	0.018%
3	-0.00	-35.42	-51.51	-0.00	35.42	51.50	0.014%
4	25.47	-47.23	-44.21	-25.46	47.23	44.20	0.019%
5	25.47	-35.42	-44.21	-25.47	35.42	44.21	0.016%
6	43.53	-47.23	-25.19	-43.52	47.23	25.18	0.020%
7	43.53	-35.42	-25.19	-43.52	35.42	25.18	0.017%
8	49.21	-47.23	0.00	-49.20	47.23	-0.00	0.019%
9	49.21	-35.42	0.00	-49.20	35.42	-0.00	0.016%
10	44.07	-47.23	25.50	-44.06	47.23	-25.49	0.018%
11	44.07	-35.42	25.50	-44.07	35.42	-25.50	0.015%
12	23.55	-47.23	40.89	-23.55	47.23	-40.88	0.018%
13	23.55	-35.42	40.89	-23.55	35.42	-40.89	0.015%
14	-0.00	-47.23	49.16	0.00	47.23	-49.15	0.019%
15	-0.00	-35.42	49.16	-0.00	35.42	-49.15	0.017%
16	-25.47	-47.23	44.21	25.47	47.23	-44.20	0.019%
17	-25.47	-35.42	44.21	25.47	35.42	-44.20	0.016%
18	-45.56	-47.23	26.36	45.55	47.23	-26.35	0.018%
19	-45.56	-35.42	26.36	45.55	35.42	-26.36	0.014%
20	-49.21	-47.23	0.00	49.20	47.23	-0.00	0.019%
21	-49.21	-35.42	0.00	49.20	35.42	-0.00	0.016%
22	-42.04	-47.23	-24.33	42.03	47.23	24.32	0.020%
23	-42.04	-35.42	-24.33	42.03	35.42	24.32	0.017%
24	-23.55	-47.23	-40.89	23.55	47.23	40.88	0.018%
25	-23.55	-35.42	-40.89	23.55	35.42	40.89	0.015%
26	0.00	-83.04	0.00	0.00	83.04	-0.00	0.000%
27	0.00	-83.04	-11.66	0.00	83.04	11.65	0.007%
28	5.85	-83.04	-10.15	-5.85	83.04	10.15	0.008%
29	10.22	-83.04	-5.91	-10.22	83.04	5.91	0.008%
30	11.31	-83.04	0.00	-11.30	83.04	-0.00	0.007%
31	9.86	-83.04	5.70	-9.86	83.04	-5.70	0.007%
32	5.43	-83.04	9.42	-5.43	83.04	-9.42	0.006%
33	0.00	-83.04	11.34	0.00	83.04	-11.34	0.006%
34	-5.85	-83.04	10.15	5.85	83.04	-10.15	0.007%
35	-10.49	-83.04	6.07	10.49	83.04	-6.07	0.007%
36	-11.31	-83.04	0.00	11.30	83.04	-0.00	0.007%
37	-9.59	-83.04	-5.55	9.58	83.04	5.54	0.007%
38	-5.43	-83.04	-9.42	5.43	83.04	9.42	0.007%
39	0.00	-39.36	-11.34	0.00	39.36	11.34	0.006%
40	5.61	-39.36	-9.73	-5.61	39.36	9.73	0.015%
41	9.58	-39.36	-5.54	-9.58	39.36	5.54	0.006%
42	10.83	-39.36	0.00	-10.83	39.36	-0.00	0.006%
43	9.70	-39.36	5.61	-9.70	39.36	-5.61	0.006%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
44	5.19	-39.36	9.00	-5.18	39.36	-9.00	0.005%
45	0.00	-39.36	10.82	0.00	39.36	-10.82	0.006%
46	-5.61	-39.36	9.73	5.61	39.36	-9.73	0.006%
47	-10.03	-39.36	5.80	10.03	39.36	-5.80	0.006%
48	-10.83	-39.36	0.00	10.83	39.36	-0.00	0.006%
49	-9.25	-39.36	-5.36	9.25	39.36	5.35	0.006%
50	-5.19	-39.36	-9.00	5.18	39.36	9.00	0.006%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00002845
2	Yes	4	0.00024265	0.00050752
3	Yes	4	0.00017810	0.00037329
4	Yes	4	0.00025414	0.00053108
5	Yes	4	0.00018974	0.00039728
6	Yes	4	0.00026706	0.00055783
7	Yes	4	0.00020224	0.00042325
8	Yes	4	0.00025782	0.00053939
9	Yes	4	0.00019256	0.00040368
10	Yes	4	0.00024555	0.00051365
11	Yes	4	0.00018034	0.00037807
12	Yes	4	0.00025685	0.00053633
13	Yes	4	0.00019197	0.00040181
14	Yes	4	0.00026664	0.00055618
15	Yes	4	0.00020190	0.00042212
16	Yes	4	0.00025403	0.00053010
17	Yes	4	0.00018973	0.00039683
18	Yes	4	0.00024218	0.00050604
19	Yes	4	0.00017770	0.00037219
20	Yes	4	0.00025810	0.00053935
21	Yes	4	0.00019284	0.00040391
22	Yes	4	0.00026969	0.00056285
23	Yes	4	0.00020416	0.00042708
24	Yes	4	0.00025694	0.00053667
25	Yes	4	0.00019202	0.00040200
26	Yes	4	0.00000001	0.00011671
27	Yes	4	0.00048971	0.00092179
28	Yes	4	0.00049092	0.00093128
29	Yes	4	0.00049511	0.00094025
30	Yes	4	0.00049621	0.00093352
31	Yes	4	0.00049301	0.00091507
32	Yes	4	0.00000001	0.00089453
33	Yes	4	0.00000001	0.00089276
34	Yes	4	0.00000001	0.00088821
35	Yes	4	0.00048474	0.00089426
36	Yes	4	0.00049426	0.00090954
37	Yes	4	0.00049897	0.00091880
38	Yes	4	0.00049500	0.00091451
39	Yes	4	0.00000001	0.00042877
40	Yes	4	0.00000001	0.00043673
41	Yes	4	0.00000001	0.00044055
42	Yes	4	0.00000001	0.00043878
43	Yes	4	0.00000001	0.00043194
44	Yes	4	0.00000001	0.00043202
45	Yes	4	0.00000001	0.00043499
46	Yes	4	0.00000001	0.00042869
47	Yes	4	0.00000001	0.00042500
48	Yes	4	0.00000001	0.00043585
49	Yes	4	0.00000001	0.00044151
50	Yes	4	0.00000001	0.00043401

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	150 - 130	3.112	40	0.1906	0.1714
T2	130 - 110	2.311	40	0.1831	0.1588
T3	110 - 94	1.571	40	0.1522	0.1082
T4	94 - 90	1.096	40	0.1178	0.0689
T5	90 - 80	0.996	40	0.1088	0.0613
T6	80 - 70	0.772	40	0.0919	0.0477
T7	70 - 55	0.583	40	0.0744	0.0360
T8	55 - 50	0.364	47	0.0544	0.0251
T9	50 - 30	0.304	47	0.0477	0.0218
T10	30 - 10	0.114	47	0.0273	0.0094
T11	10 - 0	0.018	47	0.0089	0.0039

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.00	ANT150F6	40	3.072	0.1905	0.1712	449215
141.00	ANT220F2	40	2.749	0.1892	0.1693	249563
135.00	PAL6-59	40	2.509	0.1868	0.1653	149738
132.00	CO-36A	40	2.390	0.1848	0.1618	121747
124.00	ANT150F2	40	2.078	0.1762	0.1466	54813
123.00	CO-36A	40	2.040	0.1748	0.1441	50469
120.00	PAL6-59	40	1.926	0.1702	0.1364	40775
118.00	ANT220F2	40	1.852	0.1669	0.1309	36147
110.00	(2) QS6656-5_TIA w/ Mount Pipe	40	1.571	0.1522	0.1082	25757
100.00	(2) BXA-70063-6CF-EDIN-0_TIA w/ Mount Pipe	40	1.260	0.1314	0.0823	25576
90.00	APXVSPP18-C_TIA w/ Mount Pipe	40	0.996	0.1088	0.0613	29869
80.00	(2) AIR 21	40	0.772	0.0919	0.0477	36218
25.00	Secondarty Members 30'-20'	47	0.081	0.0227	0.0076	48168
15.00	Secondarty Members 20'-10'	47	0.033	0.0135	0.0052	52211

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	150 - 130	13.837	19	0.8373	0.7807
T2	130 - 110	10.340	19	0.8059	0.7236
T3	110 - 94	7.083	19	0.6735	0.4929
T4	94 - 90	4.973	18	0.5243	0.3141
T5	90 - 80	4.525	18	0.4849	0.2791
T6	80 - 70	3.522	18	0.4115	0.2172
T7	70 - 55	2.667	18	0.3351	0.1641
T8	55 - 50	1.664	18	0.2460	0.1142
T9	50 - 30	1.391	18	0.2161	0.0995
T10	30 - 10	0.519	18	0.1244	0.0427
T11	10 - 0	0.080	19	0.0407	0.0177

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.00	ANT150F6	19	13.661	0.8369	0.7801	111135
141.00	ANT220F2	19	12.254	0.8316	0.7716	61741
135.00	PAL6-59	19	11.205	0.8215	0.7530	37045
132.00	CO-36A	19	10.685	0.8130	0.7372	30047
124.00	ANT150F2	19	9.316	0.7764	0.6678	13047
123.00	CO-36A	19	9.148	0.7705	0.6567	11982
120.00	PAL6-59	19	8.651	0.7511	0.6214	9623
118.00	ANT220F2	19	8.325	0.7370	0.5964	8507
110.00	(2) QS6656-5_TIA w/ Mount Pipe	19	7.083	0.6735	0.4929	6016
100.00	(2) BXA-70063-6CF-EDIN-0_TIA w/ Mount Pipe	18	5.704	0.5835	0.3749	5890
90.00	APXVSPP18-C_TIA w/ Mount Pipe	18	4.525	0.4849	0.2791	6792
80.00	(2) AIR 21	18	3.522	0.4115	0.2172	8284
25.00	Secondarty Members 30'-20'	18	0.368	0.1036	0.0346	10525
15.00	Secondarty Members 20'-10'	18	0.150	0.0616	0.0237	11533

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	150	Leg	A325N	0.8750	4	4.22	41.56	0.101 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.5000	1	4.45	8.84	0.504 ✔	1.05	Bolt Shear
		Top Girt	A325N	0.5000	1	0.22	8.84	0.025 ✔	1.05	Bolt Shear
T2	130	Leg	A325N	1.0000	5	13.03	54.52	0.239 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.6250	2	4.41	8.80	0.501 ✔	1.05	Member Block Shear
T3	110	Diagonal	A325N	0.6250	1	7.89	12.57	0.628 ✔	1.05	Member Block Shear
T4	94	Leg	A325N	1.0000	5	22.70	54.52	0.416 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.6250	1	7.29	12.57	0.580 ✔	1.05	Member Block Shear
		Secondary Horizontal	A325N	0.6250	1	2.12	13.81	0.154 ✔	1.05	Bolt Shear
T5	90	Diagonal	A325N	0.6250	1	8.50	13.81	0.616 ✔	1.05	Bolt Shear
T6	80	Leg	A325N	1.0000	7	22.79	54.52	0.418 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.6250	1	8.86	13.81	0.642 ✔	1.05	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	3.03	13.81	0.220 ✔	1.05	Bolt Shear
T7	70	Diagonal	A325N	0.7500	1	7.91	18.59	0.425 ✔	1.05	Member Block Shear
T8	55	Leg	A325N	1.5000	5	40.43	126.47	0.320 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.7500	1	7.67	18.59	0.413 ✔	1.05	Member Block Shear
		Secondary Horizontal	A325N	0.7500	1	3.86	18.59	0.208 ✔	1.05	Member Block Shear
T9	50	Leg	A325N	1.5000	5	48.01	126.47	0.380 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.7500	1	7.75	16.45	0.471 ✔	1.05	Member Bearing
T10	30	Diagonal	A325N	0.6250	2	4.97	13.81	0.360 ✔	1.05	Bolt Shear
T11	10	Diagonal	A325N	0.6250	2	6.59	13.81	0.477 ✔	1.05	Bolt Shear
		Horizontal	A325N	0.6250	2	4.00	13.81	0.290 ✔	1.05	Bolt Shear

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
		Redund Horz 1 Bracing	A325N	0.6250	1	5.43	13.81	0.394 ✔	1.05	Bolt Shear
		Redund Diag 1 Bracing	A325N	0.6250	1	4.45	13.81	0.322 ✔	1.05	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	150 - 130	2 1/4" solid	20.00	4.00	85.3 K=1.00	3.9761	-18.50	105.06	0.176 [1] ✔
T2	130 - 110	2 1/2" solid	20.00	4.00	76.8 K=1.00	4.9087	-68.09	143.51	0.474 [1] ✔
T3	110 - 94	2 3/4" solid	16.03	4.01	69.9 K=1.00	5.9396	-112.06	186.92	0.600 [1] ✔
T4	94 - 90	2 3/4" solid	4.01	2.07	36.1 K=1.00	5.9396	-122.30	243.04	0.503 [1] ✔
T5	90 - 80	3 1/4" solid	10.02	5.01	74.0 K=1.00	8.2958	-148.19	250.21	0.592 [1] ✔
T6	80 - 70	3 1/4" solid	10.02	2.58	38.1 K=1.00	8.2958	-174.82	335.74	0.521 [1] ✔
T7	70 - 55	3 3/4" solid	15.03	5.01	64.1 K=1.00	11.044 7	-211.55	368.00	0.575 [1] ✔
T8	55 - 50	3 3/4" solid	5.01	2.56	32.8 K=1.00	11.044 7	-222.85	459.35	0.485 [1] ✔
T9	50 - 30	4 1/4" solid	20.03	5.01	56.6 K=1.00	14.186 3	-266.61	505.21	0.528 [1] ✔
T10	30 - 10	4 1/2" solid	20.03	10.02	53.4 K=0.50	15.904 3	-302.53	580.89	0.521 [1] ✔
T11	10 - 0	4 1/2" solid	10.02	5.01	53.4 K=1.00	15.904 3	-313.30	580.89	0.539 [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 $\frac{P_u}{\phi P_n}$
T1	150 - 130	L 1.5 x 1.5 x 3/16	6.17	2.79	115.5 K=1.01	0.5273	-4.45	11.31	0.393 [1] ✔
T2	130 - 110	L 1.75 x 1.75 x 3/16	6.17	2.70	100.6 K=1.07	0.6211	-9.14	17.32	0.528 [1] ✔
T3	110 - 94	L 2 x 2 x 3/16	7.32	3.47	109.2 K=1.03	0.7150	-7.72	17.17	0.450 [1] ✔
T4	94 - 90	L 2 x 2 x 3/16	7.66	3.64	113.1 K=1.02	0.7150	-7.60	16.00	0.475 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T5	90 - 80	L 2.5 x 2.5 x 3/16	9.01	4.32	108.5 K=1.04	0.9020	-8.10	21.93	0.370 [1] ✔
T6	80 - 70	L 2.5 x 2.5 x 3/16	9.87	4.75	116.3 K=1.01	0.9020	-8.44	19.08	0.442 [1] ✔
T7	70 - 55	L 2.5 x 2.5 x 1/4	11.21	5.39	131.9 K=1.00	1.1900	-7.98	19.59	0.407 [1] ✔
T8	55 - 50	L 2.5 x 2.5 x 1/4	11.67	5.62	137.4 K=1.00	1.1900	-8.17	18.03	0.453 [1] ✔
T9	50 - 30	L 3 x 3 x 3/16	13.53	6.53	131.5 K=1.00	1.0898	-7.95	18.05	0.440 [1] ✔
T10	30 - 10	L 3.5 x 3.5 x 1/4	17.49	8.57	100.7 K=1.07	1.6900	-9.94	46.60	0.213 [1] ✔
T11	10 - 0	L 3.5 x 3.5 x 1/4	12.77	11.96	131.6 K=1.00	1.6900	-13.18	27.95	0.472 [1] ✔

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	10 - 0	L 3.5 x 3.5 x 1/4	14.85	6.98	120.6 K=1.00	1.6900	-8.00	33.25	0.241 [1] ✔

[1] $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T4	94 - 90	L 2 x 2 x 1/4	6.52	2.97	105.6 K=1.16	0.9380	-2.12	24.07	0.088 [1] ✔
T6	80 - 70	L 2.5 x 2.5 x 3/16	8.50	3.94	107.7 K=1.13	0.9020	-3.03	22.24	0.136 [1] ✔
T8	55 - 50	L 2.5 x 2.5 x 1/4	10.53	4.93	120.6 K=1.00	1.1900	-3.86	23.43	0.165 [1] ✔

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	150 - 130	L 1.5 x 1.5 x 3/16	4.70	4.16	170.3 K=1.00	0.5273	-0.22	5.21	0.043 [1] ✔

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T11	10 - 0	L 2.5 x 2.5 x 1/4	3.71	3.17	98.8 K=1.27	1.1900	-5.43	34.16	0.159 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T11	10 - 0	L 2.5 x 2.5 x 1/4	6.08	5.40	131.9 K=1.00	1.1900	-4.45	19.57	0.227 [1] ✔

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T11	10 - 0	L 3 x 3 x 1/4	7.43	7.43	150.4 K=1.00	1.4375	-0.01	18.18	0.001 [1] ✔

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	150 - 130	2 1/4" solid	20.00	4.00	85.3	3.9761	16.86	178.92	0.094 [1] ✔
T2	130 - 110	2 1/2" solid	20.00	4.00	76.8	4.9087	65.13	220.89	0.295 [1] ✔
T3	110 - 94	2 3/4" solid	16.03	4.01	69.9	5.9396	103.95	267.28	0.389 [1] ✔
T4	94 - 90	2 3/4" solid	4.01	1.94	33.9	5.9396	113.54	267.28	0.425 [1] ✔
T5	90 - 80	3 1/4" solid	10.02	5.01	74.0	8.2958	136.53	373.31	0.366 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T6	80 - 70	3 1/4" solid	10.02	2.43	35.9	8.2958	159.66	373.31	0.428 [1] ✔
T7	70 - 55	3 3/4" solid	15.03	5.01	64.1	11.0447	192.40	497.01	0.387 [1] ✔
T8	55 - 50	3 3/4" solid	5.01	2.44	31.3	11.0447	202.29	497.01	0.407 [1] ✔
T9	50 - 30	4 1/4" solid	20.03	5.01	56.6	14.1863	240.07	638.38	0.376 [1] ✔
T10	30 - 10	4 1/2" solid	20.03	10.02	106.8	15.9043	270.39	715.69	0.378 [1] ✔
T11	10 - 0	4 1/2" solid	10.02	5.01	53.4	15.9043	277.77	715.69	0.388 [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	150 - 130	L 1.5 x 1.5 x 3/16	6.17	2.79	77.9	0.3076	4.43	15.00	0.295 [1] ✔
T2	130 - 110	L 1.75 x 1.75 x 3/16	6.17	2.70	65.9	0.3604	8.82	17.57	0.502 [1] ✔
T3	110 - 94	L 2 x 2 x 3/16	7.32	3.47	70.8	0.4308	7.89	21.00	0.376 [1] ✔
T4	94 - 90	L 2 x 2 x 3/16	7.66	3.64	74.2	0.4308	7.29	21.00	0.347 [1] ✔
T5	90 - 80	L 2.5 x 2.5 x 3/16	8.59	4.11	66.1	0.5710	8.23	27.84	0.296 [1] ✔
T6	80 - 70	L 2.5 x 2.5 x 3/16	9.44	4.53	72.6	0.5710	8.46	27.84	0.304 [1] ✔
T7	70 - 55	L 2.5 x 2.5 x 1/4	10.31	4.95	80.0	0.7284	7.91	35.51	0.223 [1] ✔
T8	55 - 50	L 2.5 x 2.5 x 1/4	11.67	5.62	90.6	0.7284	7.67	35.51	0.216 [1] ✔
T9	50 - 30	L 3 x 3 x 3/16	13.06	6.30	82.7	0.6943	7.75	33.85	0.229 [1] ✔
T10	30 - 10	L 3.5 x 3.5 x 1/4	17.49	8.57	97.1	1.1269	9.24	54.94	0.168 [1] ✔
T11	10 - 0	L 3.5 x 3.5 x 1/4	12.77	11.96	137.2	1.1269	12.78	54.94	0.233 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	10 - 0	L 3.5 x 3.5 x 1/4	14.85	6.98	79.6	1.1269	7.97	54.94	0.145 [1] ✔

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T4	94 - 90	L 2 x 2 x 1/4	6.52	2.97	124.0	0.5629	2.12	27.44	0.077 [1] ✔
T6	80 - 70	L 2.5 x 2.5 x 3/16	7.99	3.68	119.0	0.5710	3.03	27.84	0.109 [1] ✔
T8	55 - 50	L 2.5 x 2.5 x 1/4	10.53	4.93	159.6	0.7284	3.86	35.51	0.109 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	150 - 130	L 1.5 x 1.5 x 3/16	4.70	4.16	118.7	0.3076	0.20	15.00	0.014 [1] ✔

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T11	10 - 0	L 2.5 x 2.5 x 1/4	3.71	3.17	55.0	0.7519	5.43	36.65	0.148 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T11	10 - 0	L 2.5 x 2.5 x 1/4	6.08	5.40	89.8	0.7519	4.45	36.65	0.121 [1] ✔

[1] P_u / ϕP_n controls

Inner Bracing 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 $\frac{P_u}{\phi P_n}$
T11	10 - 0	L 3 x 3 x 1/4	7.43	7.43	95.8	1.4375	0.01	64.69	0.000 [1] ✔

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	150 - 130	Leg	2 1/4" solid	3	-18.50	110.31	16.8	Pass
T2	130 - 110	Leg	2 1/2" solid	39	-68.09	150.69	45.2	Pass
T3	110 - 94	Leg	2 3/4" solid	70	-112.06	196.26	57.1	Pass
T4	94 - 90	Leg	2 3/4" solid	97	-122.30	255.20	47.9	Pass
T5	90 - 80	Leg	3 1/4" solid	109	-148.19	262.72	56.4	Pass
T6	80 - 70	Leg	3 1/4" solid	124	-174.82	352.52	49.6	Pass
T7	70 - 55	Leg	3 3/4" solid	145	-211.55	386.40	54.7	Pass
T8	55 - 50	Leg	3 3/4" solid	166	-222.85	482.32	46.2	Pass
T9	50 - 30	Leg	4 1/4" solid	178	-266.61	530.47	50.3	Pass
T10	30 - 10	Leg	4 1/2" solid	205	-302.53	609.93	49.6	Pass
T11	10 - 0	Leg	4 1/2" solid	220	-313.30	609.93	51.4	Pass
T1	150 - 130	Diagonal	L 1.5 x 1.5 x 3/16	9	-4.45	11.88	37.5 48.0 (b)	Pass
T2	130 - 110	Diagonal	L 1.75 x 1.75 x 3/16	42	-9.14	18.19	50.3	Pass
T3	110 - 94	Diagonal	L 2 x 2 x 3/16	76	-7.72	18.03	42.8 59.8 (b)	Pass
T4	94 - 90	Diagonal	L 2 x 2 x 3/16	102	-7.60	16.80	45.2 55.2 (b)	Pass
T5	90 - 80	Diagonal	L 2.5 x 2.5 x 3/16	114	-8.10	23.02	35.2 58.6 (b)	Pass
T6	80 - 70	Diagonal	L 2.5 x 2.5 x 3/16	129	-8.44	20.03	42.1 61.1 (b)	Pass
T7	70 - 55	Diagonal	L 2.5 x 2.5 x 1/4	150	-7.98	20.57	38.8 40.5 (b)	Pass
T8	55 - 50	Diagonal	L 2.5 x 2.5 x 1/4	171	-8.17	18.93	43.1	Pass
T9	50 - 30	Diagonal	L 3 x 3 x 3/16	186	-7.95	18.95	41.9 44.9 (b)	Pass
T10	30 - 10	Diagonal	L 3.5 x 3.5 x 1/4	213	-9.94	48.93	20.3 34.3 (b)	Pass
T11	10 - 0	Diagonal	L 3.5 x 3.5 x 1/4	241	-13.18	29.35	44.9 45.5 (b)	Pass
T11	10 - 0	Horizontal	L 3.5 x 3.5 x 1/4	237	-8.00	34.91	22.9 27.6 (b)	Pass
T4	94 - 90	Secondary Horizontal	L 2 x 2 x 1/4	108	-2.12	25.27	8.4 14.6 (b)	Pass
T6	80 - 70	Secondary Horizontal	L 2.5 x 2.5 x 3/16	135	-3.03	23.35	13.0 20.9 (b)	Pass
T8	55 - 50	Secondary Horizontal	L 2.5 x 2.5 x 1/4	177	-3.86	24.60	15.7 19.8 (b)	Pass
T1	150 - 130	Top Girt	L 1.5 x 1.5 x 3/16	5	-0.22	5.47	4.1	Pass
T11	10 - 0	Redund Horz 1 Bracing	L 2.5 x 2.5 x 1/4	225	-5.43	35.87	15.1 37.5 (b)	Pass
T11	10 - 0	Redund Diag 1 Bracing	L 2.5 x 2.5 x 1/4	226	-4.45	20.55	21.7 30.7 (b)	Pass
T11	10 - 0	Inner Bracing	L 3 x 3 x 1/4	246	-0.01	19.09	0.2	Pass
							Summary	
							Leg (T3)	57.1 Pass
							Diagonal (T6)	61.1 Pass
							Horizontal (T11)	27.6 Pass

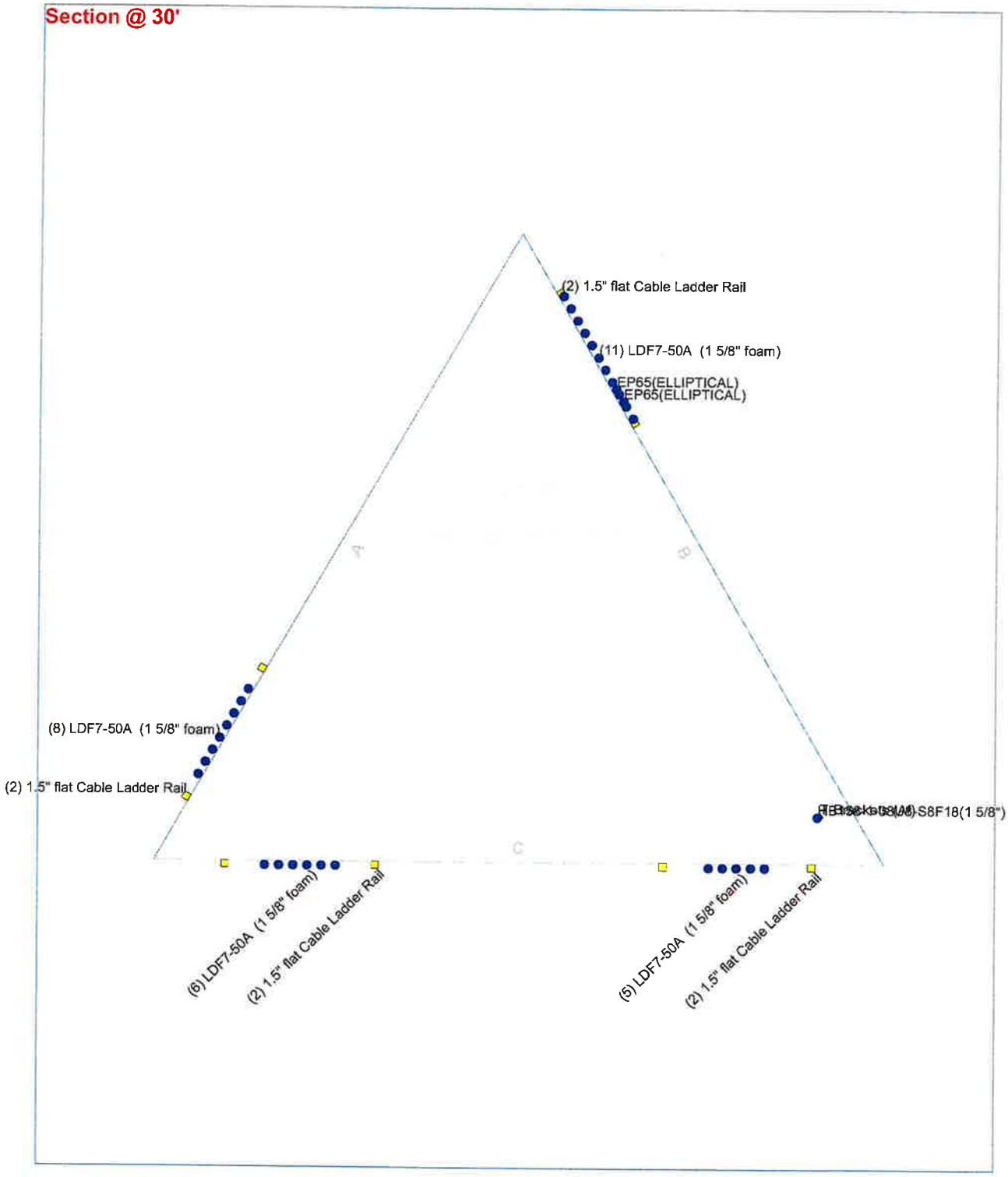
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
						Secondary Horizontal (T6)	20.9	Pass
						Top Girt (T1)	4.1	Pass
						Redund Horz 1 Bracing (T11)	37.5	Pass
						Redund Diag 1 Bracing (T11)	30.7	Pass
						Inner Bracing (T11)	0.2	Pass
						Bolt Checks	61.1	Pass
						RATING =	**61.1**	**Pass**

APPENDIX B

BASE LEVEL DRAWING

Feed Line Plan
30'

Round _____ Flat _____ App In Face App Out Face



PJFLogo	Paul J. Ford and Company 250 East Broad Street, STE 600 Columbus, Ohio Phone: 614-221-6679 FAX:	Job: 150-Ft Self-Support Tower: Norwalk 4: Norwalk, C	
		Project: 42923-0001.001.8700	
		Client: On-Air Engineering	Drawn by: csandlin / App'd:
		Code: TIA-222-H	Date: 01/16/23 / Scale: NTS
		Path:	Dwg No. E-7

APPENDIX C

ADDITIONAL CALCULATIONS

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

Self-Support Tower Anchor Rod Capacity - TIA-H

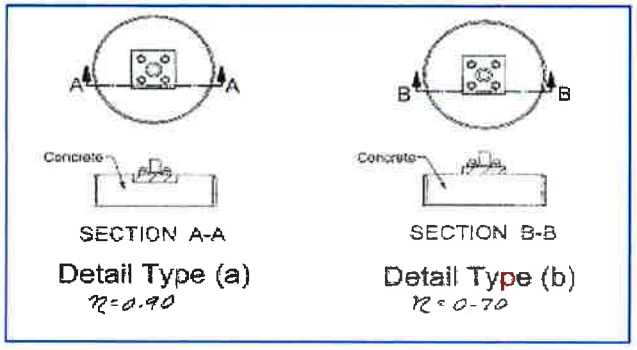
Loads

Compression :	331	kips	Tension :	294	kips
Comp. Shear :	31	kips	Ten.Shear :	29	kips

Code:	TIA-H
Maximum Ratio:	1.00
Grout f'c ≥ 5000 psi:	No

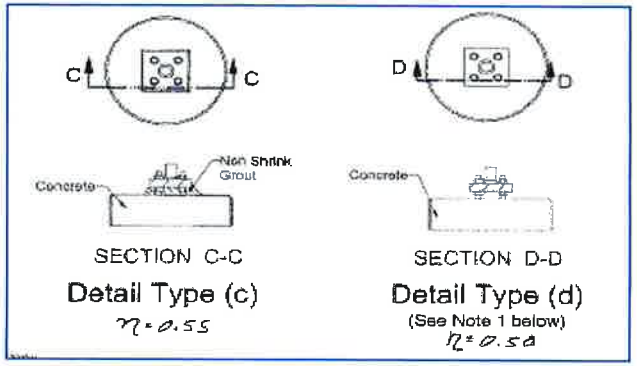
Existing Anchor Rods

Anchor Rod ø :	1 1/2	in	l_{ar} :	1.5	inches		
Anchor Rod Quantity :	7		Comp. M_u :	30.23	k-in	Ten. M_u :	28.28 k-in
Anchor Rod Grade :	F1554 Gr. 105		ϕ_c :	0.90			
F_y :	105	ksi	ϕ_v :	0.75			
F_u :	125	ksi	ϕ_f :	0.90			
Threads per Inch	6		$\phi_v R_{nv}$:	579.84	kips		
Net Tensile Area	1.41	in^2					
ϕ_t :	0.75		$\phi_f M_n$:	350.69	k-in		
$\phi_t R_{nt}$:	922.19	kip	$\phi_c R_{nc}$:	1168.97	kips		
Anchor Rod Ratio :	0.319		$\phi_c R_{nvc}$:	526.04	kips		



SECTION A-A
Detail Type (a)
η=0.90

SECTION B-B
Detail Type (b)
η=0.70



SECTION C-C
Detail Type (c)
η=0.55

SECTION D-D
Detail Type (d)
(See Note 1 below)
η=0.50

SST Unit Base Foundation

Site Name:	Norwalk 4 CT
TIA-222 Revision:	H

Top & Bot. Pad Rein. Different?:	☐
Tower Centroid Offset?:	☑
Block Foundation?:	☐
Rectangular Pad?:	☐

Superstructure Analysis Reactions		
Global Moment, **M**:	4335.37	ft-kips
Global Axial, **P**:	47.23	kips
Global Shear, **V**:	52.62	kips
Leg Compression, P_{comp}:	331.25	kips
Leg Comp. Shear, V_{u_comp}:	31.47	kips
Leg Uplift, P_{uplift}:	293.9	kips
Leg Uplift. Shear, V_{u_uplift}:	28.74	kips
Tower Height, **H**:	150	ft
Base Face Width, **BW**:	15.87	ft
BP Dist. Above Fdn, bp_{dist}:	3	in

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, **dpier**:	4.5	ft
Ext. Above Grade, **E**:	0.50	ft
Pier Rebar Size, **Sc**:	9	
Pier Rebar Quantity, **mc**:	18	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	16	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties		
Depth, **D**:	6.00	ft
Pad Width, W_1:	30.00	ft
Pad Thickness, **T**:	2.75	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	9	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	52	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	4.5	ksi
Dry Concrete Density, **δc**:	150	pcf

Soil Properties		
Total Soil Unit Weight, **γ**:	125	pcf
Ultimate Gross Bearing, **Qult**:	8.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, **φ**:	34	degrees
SPT Blow Count, N_{blows}:	46	
Base Friction, **μ**:	0.3	
Neglected Depth, **N**:	3.5	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	25	ft

<-- Toggle between Gross and Net

Foundation Analysis Checks				
	Capacity	**Demand**	**Rating***	**Check**
Lateral (Sliding) (kips)	276.83	52.62	**18.1%**	**Pass**
Bearing Pressure (ksf)	6.00	1.80	**28.5%**	**Pass**
*Overturning (kip*ft)*	9762.44	4827.02	**49.4%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	2237.33	118.01	**5.0%**	**Pass**
*Pier Flexure (Tension) (kip*ft)*	1339.57	107.78	**7.7%**	**Pass**
Pier Compression (kip)	11388.12	341.99	**2.9%**	**Pass**
*Pad Flexure (kip*ft)*	6358.97	542.06	**8.1%**	**Pass**
Pad Shear - 1-way (kips)	1025.44	112.29	**10.4%**	**Pass**
Pad Shear - Comp 2-way (ksi)	0.201	0.048	**22.5%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	5408.14	70.81	**1.2%**	**Pass**
Pad Shear - Tension 2-way (ksi)	0.201	0.045	**21.1%**	**Pass**
*Flexural 2-way (Tension) (kip*ft)*	5408.14	64.67	**1.1%**	**Pass**

**Rating per TIA-222-H Section 15.5*

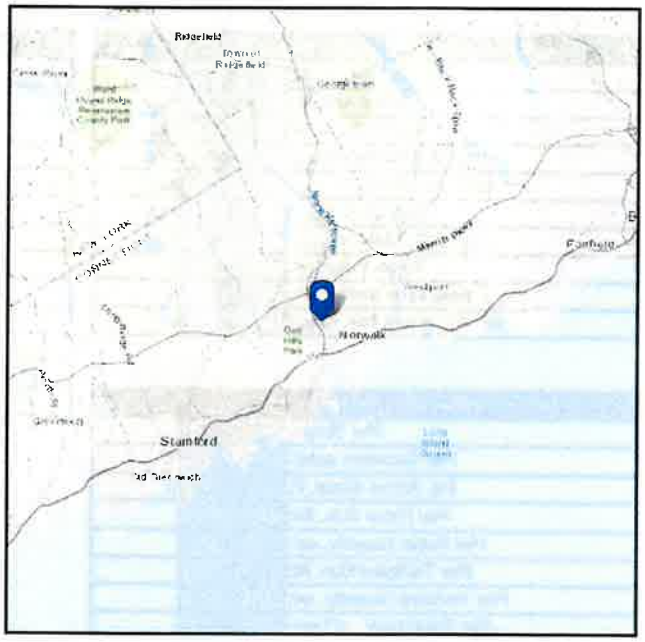
Structural Rating*:	**22.5%**
Soil Rating*:	**49.4%**

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: III
Soil Class: D - Stiff Soil

Latitude: 41.125392
Longitude: -73.421578
Elevation: 57.3 ft (NAVD 88)



Wind

Results:

Wind Speed	128 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1C and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Fri Jan 13 2023

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 3% probability of exceedance in 50 years (annual exceedance probability = 0.000588, MRI = 1,700 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.

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

Seismic

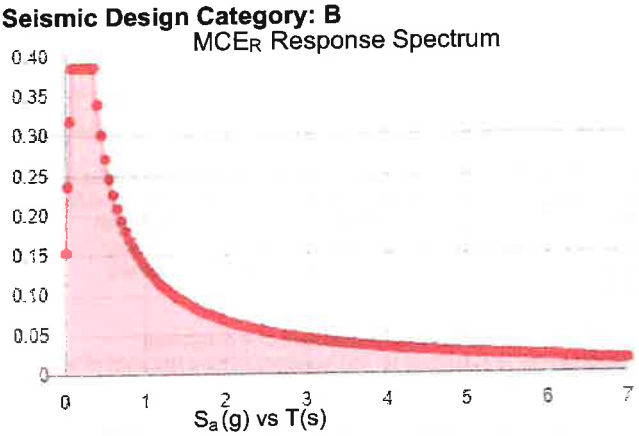
D - Stiff Soil

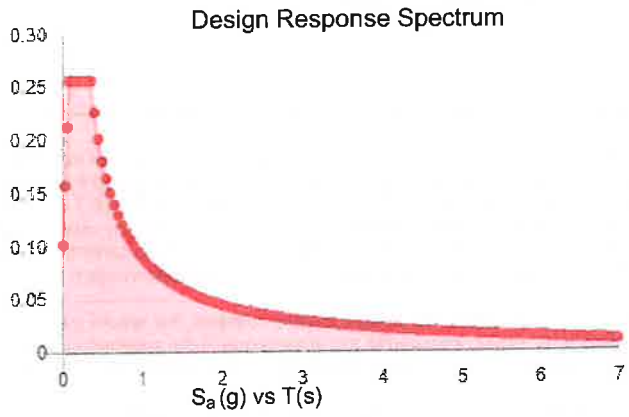
Site Soil Class:

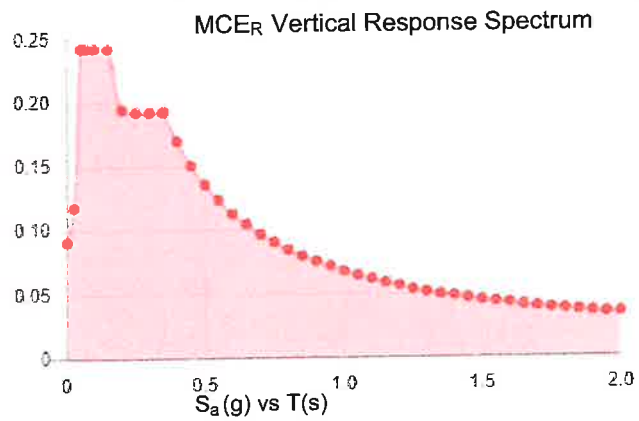
Results:

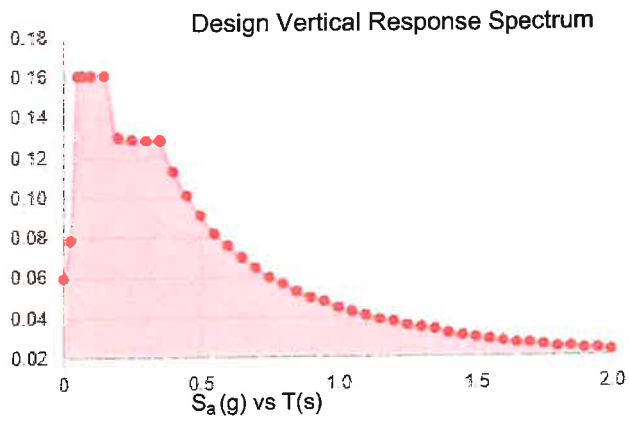
S_S :	0.241	S_{D1} :	0.091
S_1 :	0.057	T_L :	6
F_a :	1.6	PGA :	0.142
F_v :	2.4	PGA_M :	0.216
S_{MS} :	0.386	F_{PGA} :	1.515
S_{M1} :	0.136	I_e :	1.25
S_{DS} :	0.257	C_v :	0.783

Seismic Design Category: B









Data Accessed: **Fri Jan 13 2023**

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.

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Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Fri Jan 13 2023

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.

Colliers Engineering & Design,
Architecture, Landscape Architecture, Surveying, CT P.C.
1055 Washington Boulevard
Stamford, CT 06901
203.324.0800
peter.albano@collierseng.com

Antenna Mount Analysis Report and PMI Requirements

Mount ReAnalysis-VZW

SMART Tool Project #: 10216880
Colliers Engineering & Design Project #: 22777352 (Rev. 1)

January 4, 2024

Site Information	*Site ID:*	*5000386718-VZW / NORWALK 4 CT - NU Tindall Ave*
	Site Name:	*NORWALK 4 CT - NU Tindall Ave*
	Carrier Name:	*Verizon Wireless*
	Address:	*2 Tindall Ave* *Norwalk, Connecticut 06851* *Fairfield County*
	Latitude:	*41.12530556°*
	Longitude:	*-73.42155833°*
Structure Information	*Tower Type:*	*Self-Support*
	Mount Type:	*12.00-Ft Sector Frame*

FUZE ID # 16883770

Analysis Results

Sector Frame: **77.8% Pass***

***Antennas and equipment to be installed in compliance with PMI Requirements of this mount analysis.**

******Contractor PMI Requirements:***
Included at the end of this MA report
Available & Submitted via portal at https://pmi.vzwsmart.com

For additional questions and support, please reach out to:
pmisupport@colliersengineering.com

Report Prepared By: Madison Shell

01/04/2024

Executive Summary:

The objective of this report is to determine the capacity of the antenna support mount at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

This analysis is inclusive of the mount structure only and does not address the structural capacity of the supporting structure. This mounting frame was not analyzed as an anchor attachment point for fall protection. All climbing activities are required to have a fall protection plan completed by a competent person.

Sources of Information:

Document Type	Remarks
Radio Frequency Data Sheet (RFDS)	*Verizon RFDS, Site ID: 2242416, dated October 4, 2022 (Rev3_01.26.2023)*
Desktop Mount Mapping Form	*Colliers Engineering & Design, Project #: 22777352A, dated October 24, 2022*

Analysis Criteria:

Analysis Criteria:

Codes and Standards:	ANSI/TIA-222-H 2022 Connecticut State Building Code (CSBC), Effective October 1, 2022	
Wind Parameters:	Basic Wind Speed (Ultimate 3-sec. Gust), V_{ULT}:	120 mph
	Ice Wind Speed (3-sec. Gust):	50 mph
	Design Ice Thickness:	1.00 in
	Risk Category:	II
	Exposure Category:	C
	Topographic Category:	1
	Topographic Feature Considered:	N/A
	Topographic Method:	N/A
	Ground Elevation Factor, K_e:	0.998
Seismic Parameters:	S_S:	0.240 g
	S_1:	0.056 g
Maintenance Parameters:	Wind Speed (3-sec. Gust):	30 mph
	Maintenance Load, Lv:	250 lbs.
	Maintenance Load, Lm:	500 lbs.
Analysis Software:	RISA-3D (V20)	

Final Loading Configuration:

The following equipment has been considered for the analysis of the mounts:

Mount Elevation (ft)	Equipment Elevation (ft)	Quantity	Manufacturer	Model	Status
109.50	110.00	6	Quintel	QS6656-5	Retained
		3	Samsung	B2/B66A RRH-BR049	
		3	Samsung	B5/B13 RRH-BR04C	
		1	Raycap	OVP*	
		3	Samsung	MT6407-77A	Added
		6	KAelus	BSF0020F3V1-1	

* Equipment is flush mounted directly to the Self Support. They are not mounted on Sector Frames and are not included in this mount analysis.

Any proposed antennas not currently installed should be mounted such that the centerline of the antennas does not exceed 6 inches vertically from the center of the antenna mounts.

It is acceptable to install up to any three (3) of the OVP model numbers listed below as required at any location other than the mount face without affecting the structural capacity of the mount. If OVP units are installed on the mount face, a mount re-analysis may be required unless replacing an existing OVP.

Model Number	Ports	AKA
DB-B1-6C-12AB-0Z	6	OVP-6
RVZDC-6627-PF-48	12	OVP-12

Standard Conditions:

1. All engineering services are performed on the basis that the information provided to Colliers Engineering & Design and used in this analysis is current and correct. The existing equipment loading has been applied at locations determined from the supplied documentation. Any deviation from the loading locations specified in this report shall be communicated to Colliers Engineering & Design to verify deviation will not adversely impact the analysis.

2. Mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.

   Obvious safety and structural issues/deficiencies noticed at the time of the mount mapping and reported in the Mount Mapping Report are assumed to be corrected and documented as part of the PMI process and are not considered in the mount analysis.

   The mount analysis and the mount mapping are not a condition assessment of the mount. Proper maintenance and condition assessments are still required post analysis.

3. For mount analyses completed from other data sources (including new replacement mounts) and not specifically mapped in accordance with the NSTD-446 Standard, the mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.

4. 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.

5. The mount was checked up to, and including, the bolts that fasten it to the mount collar/attachment and threaded rod connections in collar members if applicable. Local deformation and interaction between the mount collar/attachment and the supporting tower structure are outside the scope of this analysis.

6. All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Colliers Engineering & Design is not responsible for the conclusion, opinions, and recommendations made by others based on the information supplied.

7. Structural Steel Grades have been assumed as follows, if applicable, unless otherwise noted in this analysis:
   - Channel, Solid Round, Angle, Plate — ASTM A36 (Gr. 36)
   - HSS (Rectangular) — ASTM 500 (Gr. B-46)
   - Pipe — ASTM A53 (Gr. B-35)
   - Threaded Rod — F1554 (Gr. 36)
   - Bolts — ASTM A325

Discrepancies between in-field conditions and the assumptions listed above may render this analysis invalid unless explicitly approved by Colliers Engineering & Design.

Analysis Results:

Component	Utilization %	Pass/Fail
Tieback	*29.5%*	*Pass*
Plate	*25.2%*	*Pass*
HSS Standoff	*32.5%*	*Pass*
HSS Standoff Support	*20.6%*	*Pass*
Mast Pipe	*44.8%*	*Pass*
Antenna Pipe	*30.8%*	*Pass*
Vertical Pipe	*40.5%*	*Pass*
Standoff Vertical	*46.0%*	*Pass*
Horizontal Face	*77.8%*	*Pass*
Circular Standoff	*74.0%*	*Pass*
Mount Connection	*20.9%*	*Pass*

Structure Rating – *(Controlling Utilization of all Components)*	**77.8%**

Mount Connection Envelope Reactions:

Connection Description	Elev. AGL (Ft)	Node Label	Envelope Wind Reactions				Envelope Wind + Ice Reactions			
			Axial (Lbs)	Lateral (Lbs)	Moment (K-Ft)	Torsion (K-Ft)	Axial (Lbs)	Lateral (Lbs)	Moment (K-Ft)	Torsion (K-Ft)
Top Standoff	111.4	N261	534	1891	0.161	0.000	935	1933	0.296	0.000
Bottom Standoff	107.6	N261A	529	1774	0.174	0.000	922	1907	0.296	0.000

Notes:
- Axial loads act along the axis of the tower leg
- Lateral reactions act perpendicular to the tower leg
- Moment loads introduce bending moment to the tower leg
- Torsion loads introduce twisting moment to the tower leg
- Batch solutions by individual load cases are included at the end of this document

Mount Steel (EPA)a per ANSI/TIA-222-H Section 2.6.11.2:

Ice Thickness (In)	Mount Pipes Excluded		Mount Pipes Included	
	Front (EPA)a (Sq. Ft.)	Side (EPA)a (Sq. Ft.)	Front (EPA)a (Sq. Ft.)	Side (EPA)a (Sq. Ft.)
0	17.8	10.8	22.4	15.3
0.5	26.2	16.2	32.7	22.7
1	33.3	20.5	41.7	28.9

Notes:
- (EPA)a values listed above may be used in the absence of more precise information
- (EPA)a values in the table above include 1 sector(s).
- Ka factors included in (EPA)a calculations

Requirements:

The existing mounts are **SUFFICIENT** for the final loading configuration shown in attachment 2 and do not require modifications. Additional requirements are noted below.

Contractor shall record all dimensions and member sizes requested in the Mount Geometry Verification Requirements section of the Mount Analysis report. Contractor shall provide the requested information to Colliers Engineering & Design for structural verification while on site. Contact EOR if these documents are not available to the general contractor.

Contractor shall inspect climbing facilities and safety climb, if present, and ensure they are in good condition. Contractor shall install safety climb wire rope guides in locations where wire rope is rubbing against the mount or mount-to-tower connection steel. Wire brush clean any observed corrosion and protect with two (2) coats of cold galvanization (Zinga or Zinc Kote). Contractor shall provide photos of wire rope guide installation as part of PMI documents. Contact EOR if additional guidance is required.

Contractor shall install the proposed filter units on new Site Pro 1 Dual Swivel Mount Kit (Part #: RRUDSM or EOR approved equivalent) in the location shown in the placement diagrams.

If required, ANSI/ASSP rigging plan review services compliant with the requirements of ANSI/TIA 322 are available for a Construction Class IV site or other. Separate review fees will apply.

Attachments:

1. **Contractor Required Post Installation Inspection (PMI) Report Deliverables**
2. Antenna Placement Diagrams
3. Mount Photos
4. Desktop Mount Mapping Form (for reference only)
5. Analysis Calculations

Mount Desktop – Post Modification Inspection (PMI) Report Requirements

Documents & Photos Required from Contractor – Passing Mount Analysis

Passing Mount Analysis requires a PMI due to a modification in loading.

Electronic pdf version of this can be downloaded at https://pmi.vzwsmart.com.

For additional questions and support, please reach out to pmisupport@colliersengineering.com

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MDG #: 5000386718 SMART Project #: 10216880 Fuze Project ID: 16883770

Purpose – to provide SMART Tool structural vendor the proper documentation in order to complete the required Mount Desktop review of the Post Modification Inspection Report.

- Contractor is responsible for making certain the photos provided as noted below provide confirmation that the installation was completed in accordance with this Passing Mount Analysis.
- Contractor shall relay any data that can impact the performance of the mount, this includes safety issues.

Base Requirements:

- If installation will cause damage to the structure, the climbing facility, or safety climb if present or any installed system, SMART Tool vendor to be notified prior to install. Any special photos outside of the standard requirements will be indicated on the drawings.
- Provide "as built mount drawings" showing contractor's name, contact information, preparer's signature, and date. Any deviations from the drawings (Proposed modification) shall be shown. NOTE: If loading is different than what is conveyed in the passing mount analysis (MA) contact the SMART Tool vendor immediately.
- Each photo should be time and date stamped
- Photos should be high resolution.
- Contractor shall ensure that the safety climb wire rope is supported and not adversely impacted by the install of the modification components. This may involve the install of wire rope guides, or other items to protect the wire rope. If there is conflict, contact the SMART Tool engineer for recommendations.
- The PMI can be accessed at the following portal: ***https://pmi.vzwsmart.com***

Photo Requirements:

- *Photos taken at ground level*
  - Photo of Gate Signs showing the tower owner, site name, and number.
  - Overall tower structure after installation.
  - Photos of the mount after installation; if the mounts are at different rad elevations, pictures must be provided for all elevations that equipment was installed.
- *Photos taken at Mount Elevation*
  - Photos showing the safety climb wire rope above and below the mount prior to installation.
  - Photos showing the climbing facility and safety climb if present.

- Photos showing each individual sector after installation. Each entire sector shall be in one photo to show the interconnection of members.
  - These photos shall also certify that the placement and geometry of the equipment on the mount is as depicted in the antenna placement diagram in this form.
- Photos that show the model number of each antenna and piece of equipment installed per sector.

Antenna & equipment placement and Geometry Confirmation:

- The contractor shall certify that the antenna & equipment placement and geometry is in accordance with the sketch and table as included in the mount analysis and noted below.

☐ The contractor certifies that the photos support and the equipment on the mount is as depicted on the sketch and table included in this form and with the mount analysis provided.

OR

☐ The contractor notes that the equipment on the mount is not in accordance with the sketch and has noted the differences below and provided photo documentation of any alterations.

Special Instructions / Validation as required from the MA or any other information the contractor deems necessary to share that was identified:

Issue:

Contractor shall record all dimensions and member sizes requested in the Mount Geometry Verification Requirements section of the Mount Analysis report. Contractor shall provide the requested information to Colliers Engineering & Design for structural verification while on site. Contact EOR if these documents are not available to the general contractor.

Contractor shall inspect climbing facilities and safety climb, if present, and ensure they are in good condition. Contractor shall install safety climb wire rope guides in locations where wire rope is rubbing against the mount or mount-to-tower connection steel. Wire brush clean any observed corrosion and protect with two (2) coats of cold galvanization (Zinga or Zinc Kote). Contractor shall provide photos of wire rope guide installation as part of PMI documents. Contact EOR if additional guidance is required.

Contractor shall install the proposed filter units on new Site Pro 1 Dual Swivel Mount Kit (Part #: RRUDSM or EOR approved equivalent) in the location shown in the placement diagrams.

Response:

Special Instruction Confirmation:

☐ The contractor has read and acknowledges the above special instructions.

☐ All hardware listed in the Special Instructions above (if applicable) has been properly installed, and the existing hardware was inspected.

☐ The material utilized was as specified in the SMART Tool engineering vendor Special Instructions above (if applicable) and included in the material certification folder is a packing list or invoice for these materials.

OR

☐ The material utilized was approved by a SMART Tool engineering vendor as an "equivalent" and this approval is included as part of the contractor submission.

Comments:

Contractor certifies that the climbing facility / safety climb was not damaged prior to starting work:

☐ Yes ☐ No

Contractor certifies no new damage created during the current installation:

☐ Yes ☐ No

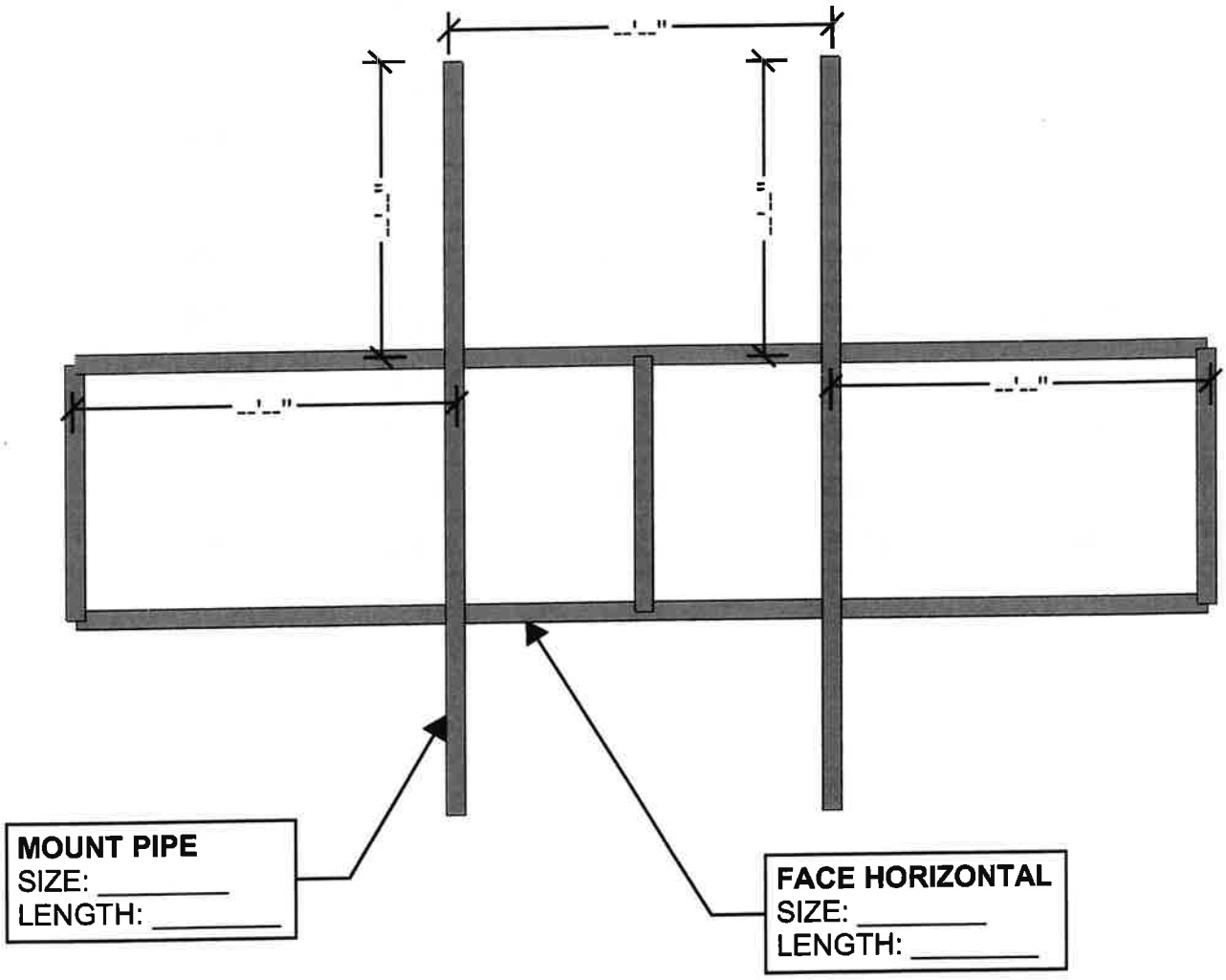
Contractor to certify the condition of the safety climb and verify no damage when leaving the site:

☐ Safety Climb in Good Condition ☐ Safety Climb Damaged

Certifying Individual:

Company:	
Employee Name:	
Contact Phone:	
Email:	
Date:	

MOUNT GEOMETRY VERIFICATION



MOUNT FRONT ELEVATION VIEW (TYP. ALL SECTORS)
N.T.S.

TOWER GEOMETRY VERIFICATION
TOWER FACE WIDTH: _____"

CONTRACTOR SHALL MEASURE ALL DIMENSIONS AND MEMBER SIZES REQUESTED ON THIS SKETCH. RECORD VIA PHOTOS AND MARKUPS ON THIS PAGE. PROVIDE PHOTOS AND MARKED-UP SKETCH TO THE EOR FOR EVALUATION.

MOUNT GEOMETRY VERIFICATION

STANDARD PIPE DIMENSIONS				
		THICKNESS (IN.)		
PIPE SIZE	O.D. (IN.)	STD	XSTR	XXSTR
P1 1/2	1.900	0.145	0.200	0.400
P2	2.375	0.154	0.218	0.436
P2 1/2	2.875	0.203	0.276	0.552
P3	3.500	0.216	0.300	0.600
P3 1/2	4.000	0.226	0.318	0.636
P4	4.500	0.237	0.337	0.674
P4 1/2	5.000	0.247	0.355	0.710
P5	5.563	0.258	0.375	0.750
P6	6.625	0.280	0.432	0.864

CONTRACTOR SHALL USE MEMBER SIZES AND DETAILS TO FACILITATE GEOMETRY VERIFICATION. CONTACT EOR FOR ADDITIONAL CLARIFICATION IF NEEDED

Structure: 5000386718-VZW - NORWALK 4 CT - NU Tindall Ave

Sector: A

Structure Type: Self Support

Mount Elev: 109.50

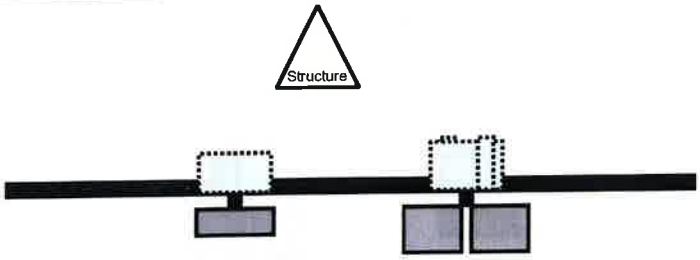
10216880

1/4/2024

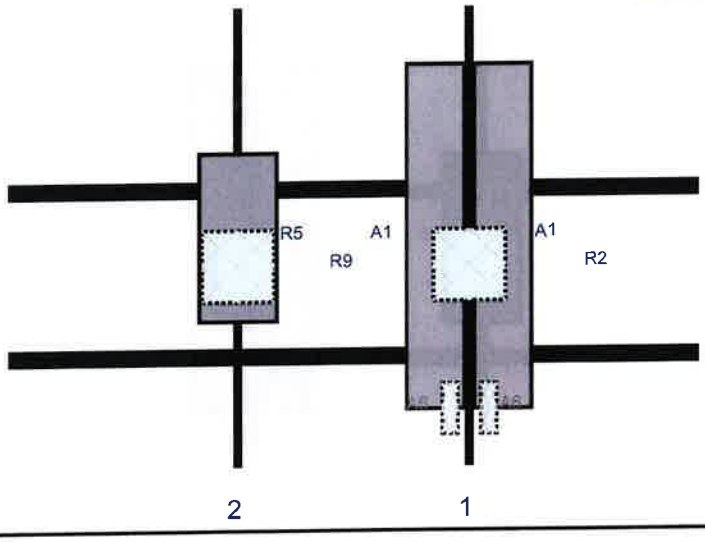
Page: 1

Colliers Engineering & Design

Plan View

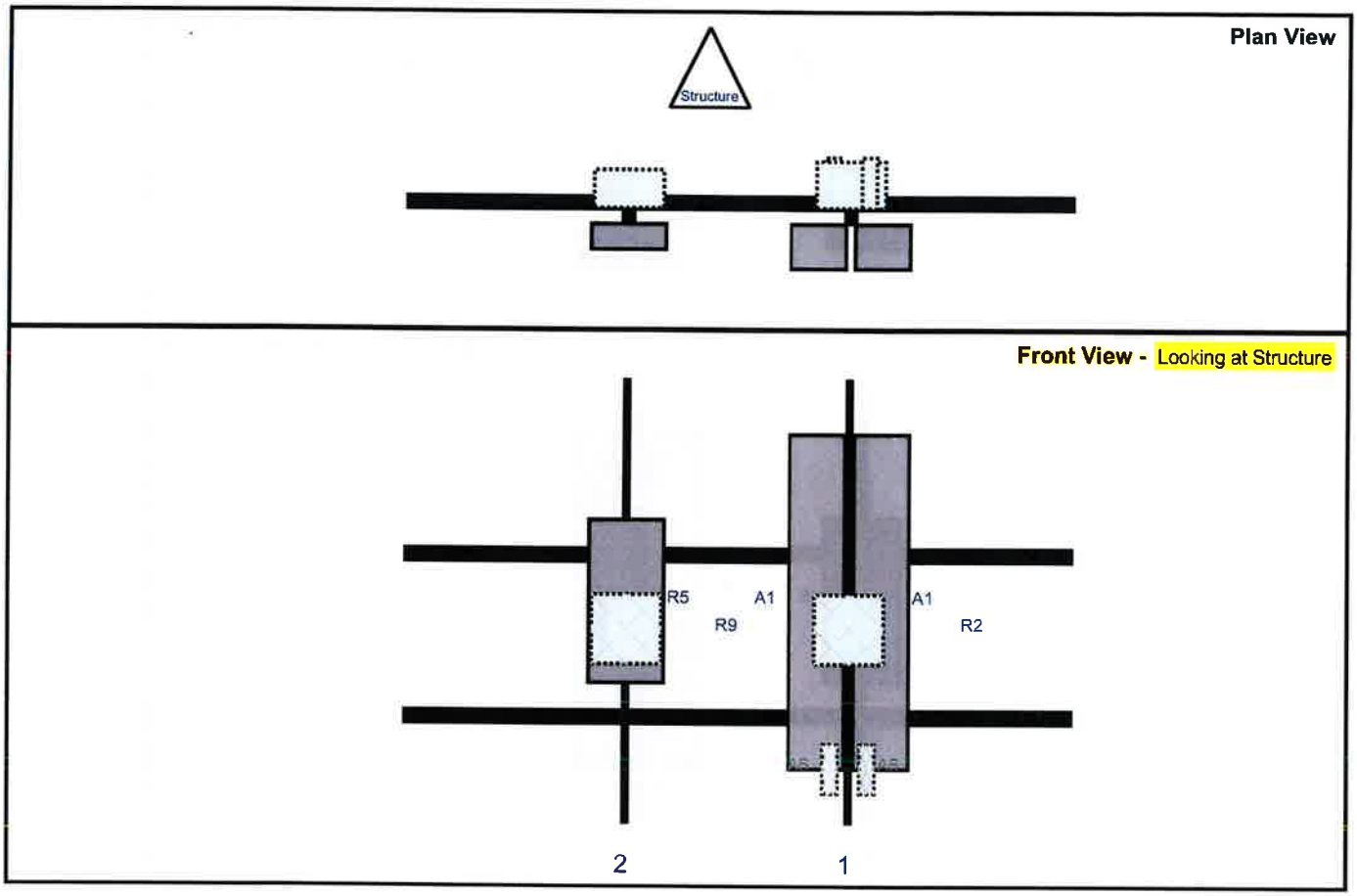


Front View - Looking at Structure



Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A1	QS6656-5	72	12	96	1	a	Front	48	7	Retained	
A1	QS6656-5	72	12	96	1	b	Front	48	-7	Retained	
R2	B2/B66A RRH-BR049	15	15	96	1	a	Behind	54	0	Retained	
A6	BSF0020F3V1-1	10.6	3.2	96	1	a	Behind	84	4	Added	
A6	BSF0020F3V1-1	10.6	3.2	96	1	b	Behind	84	-4	Added	
R5	MT6407-77A	35.1	16.1	48	2	a	Front	48	0	Added	
R9	B5/B13 RRH-BR04C	15	15	48	2	a	Behind	54	0	Retained	

Colliers Engineering & Design



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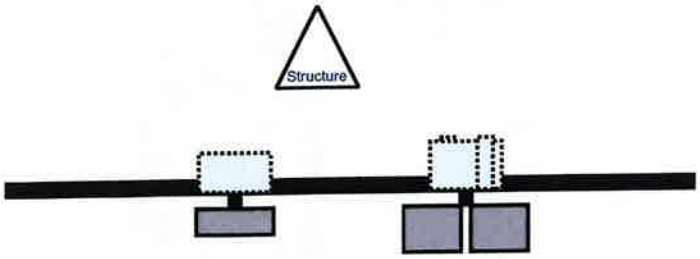
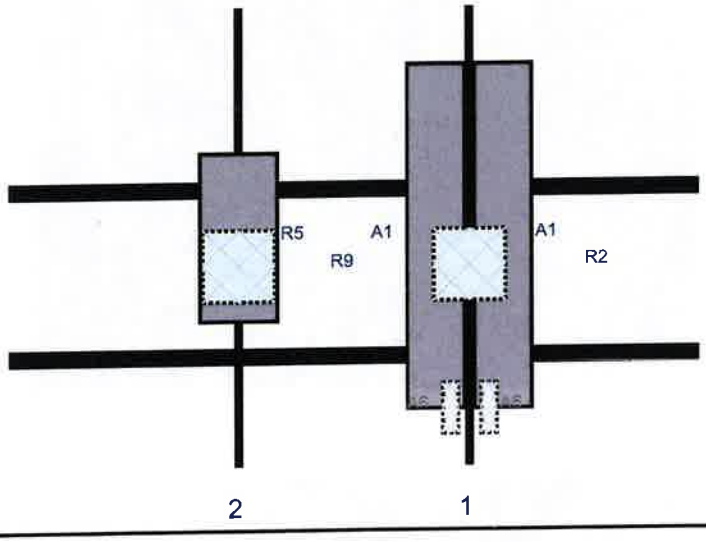
A1	QS6656-5	72	12	96	1	a	Front	48	7	Retained	
A1	QS6656-5	72	12	96	1	b	Front	48	-7	Retained	
R2	B2/B66A RRH-BR049	15	15	96	1	a	Behind	54	0	Retained	
A6	BSF0020F3V1-1	10.6	3.2	96	1	a	Behind	84	4	Added	
A6	BSF0020F3V1-1	10.6	3.2	96	1	b	Behind	84	-4	Added	
R5	MT6407-77A	35.1	16.1	48	2	a	Front	48	0	Added	
R9	B5/B13 RRH-BR04C	15	15	48	2	a	Behind	54	0	Retained	

Colliers Engineering & Design

Plan View



Front View - Looking at Structure



Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A1	QS6656-5	72	12	96	1	a	Front	48	7	Retained	
A1	QS6656-5	72	12	96	1	b	Front	48	-7	Retained	
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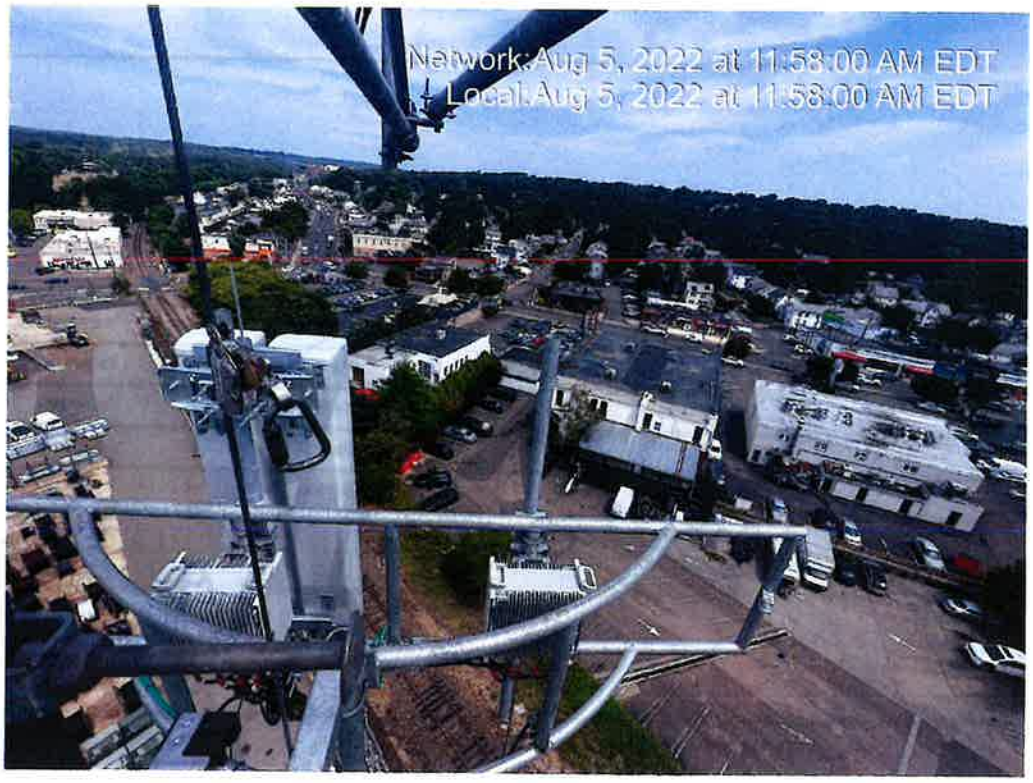
R5	MT6407-77A	35.1	16.1	48	2	a	Front	48	0	Added	
R9	B5/B13 RRH-BR04C	15	15	48	2	a	Behind	54	0	Retained	


Aug 8, 2022 at 3:42:45 PM


Network: Aug 5, 2022 at 11:58:00 AM EDT
Local: Aug 5, 2022 at 11:58:00 AM EDT

Colliers Engineering & Design

Desktop Mount Mapping Form

Site Name:	NORWALK 4 CT	Tower Type:	Monopole
Site ID:	469549	Tower Owner:	
FUZE Project ID:	16883770	Tower Height (Ft.):	
Customer:	Verizon Wireless	Mount Elevation (Ft.):	
Colliers Project No.	22777352A	Date:	10/24/2022

Document Type	Provided? (Yes/No)	Source Name	Project No.	Dated	Comments/Remarks
Previous Mount Mapping	No				
Previous Mapping Photos	No				
Previous Mount Analysis	No				
Previous Mount Modifications	No				
Previous Structural Analysis	No				
Construction Drawings	No				
Closeout Package	No				
Closeout Photos	Yes	Closeout Photos	-	8/8/2022	Closeout photos show standard Armored Tower Arch Sector frames
Handover Package	No				
New Build 445 Documentation	No				
Other	No				
Previous PMI	No				

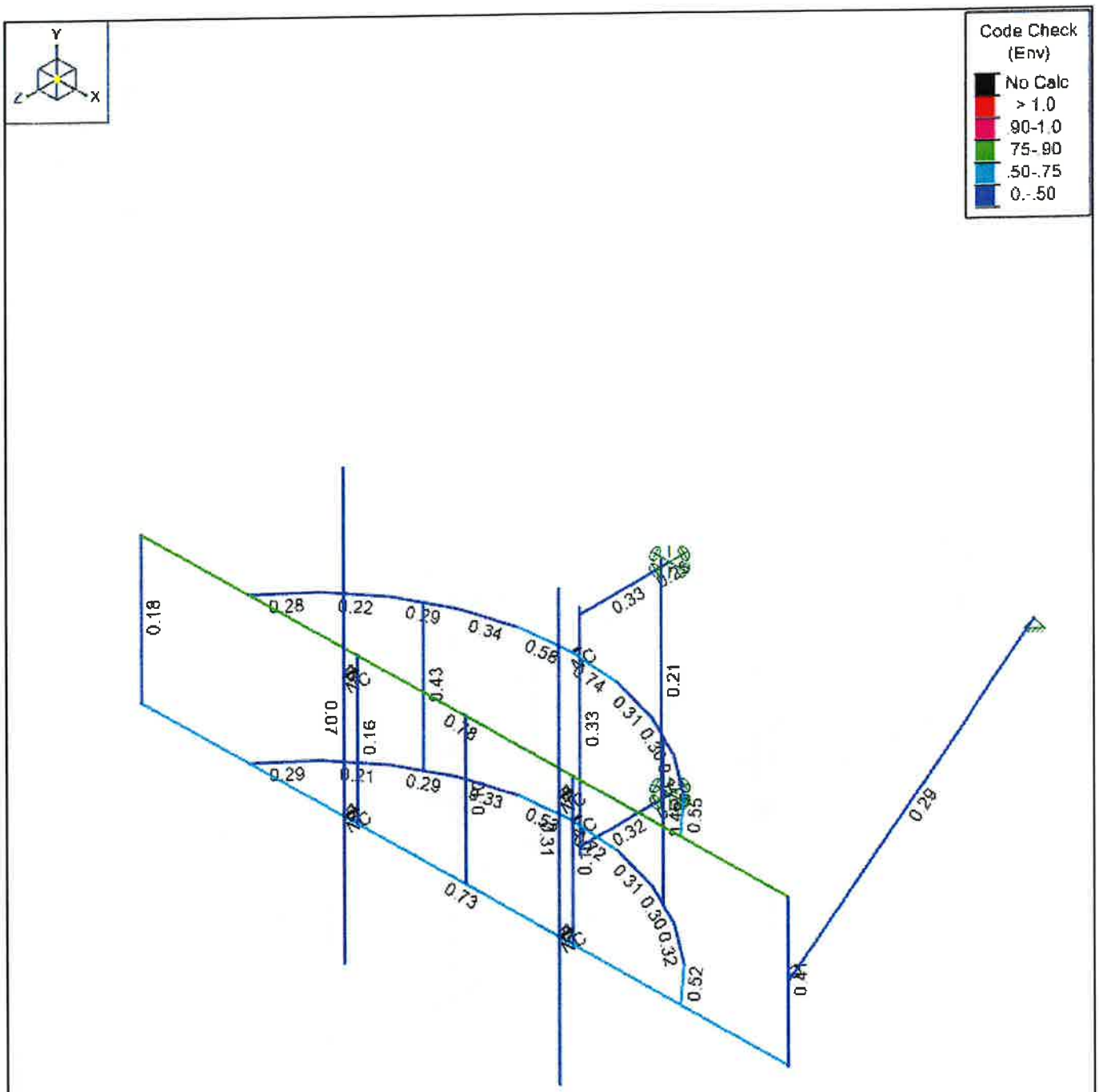
The desktop mount mapping is based on the engineering review of the available site documents in FUZE, as listed above, in place of a full mount mapping. It is assumed that the information provided in the documents listed above, provide an accurate representation of the existing mount. EOR reserves the right and will typically require additional clarification and verification as will be included in the PMI requirements. During the Post Modification Inspection (PMI) process, the GC on site will be required to confirm all questions, confirmations, and validations as posed by the EOR. The engineering review for this desktop mount mapping was performed in accordance to the ANSI/TIA-222-H requirements and Verizon's NSTD446 standard.

Photo taken from: Closeout Package

Photo taken from: Closeout Package

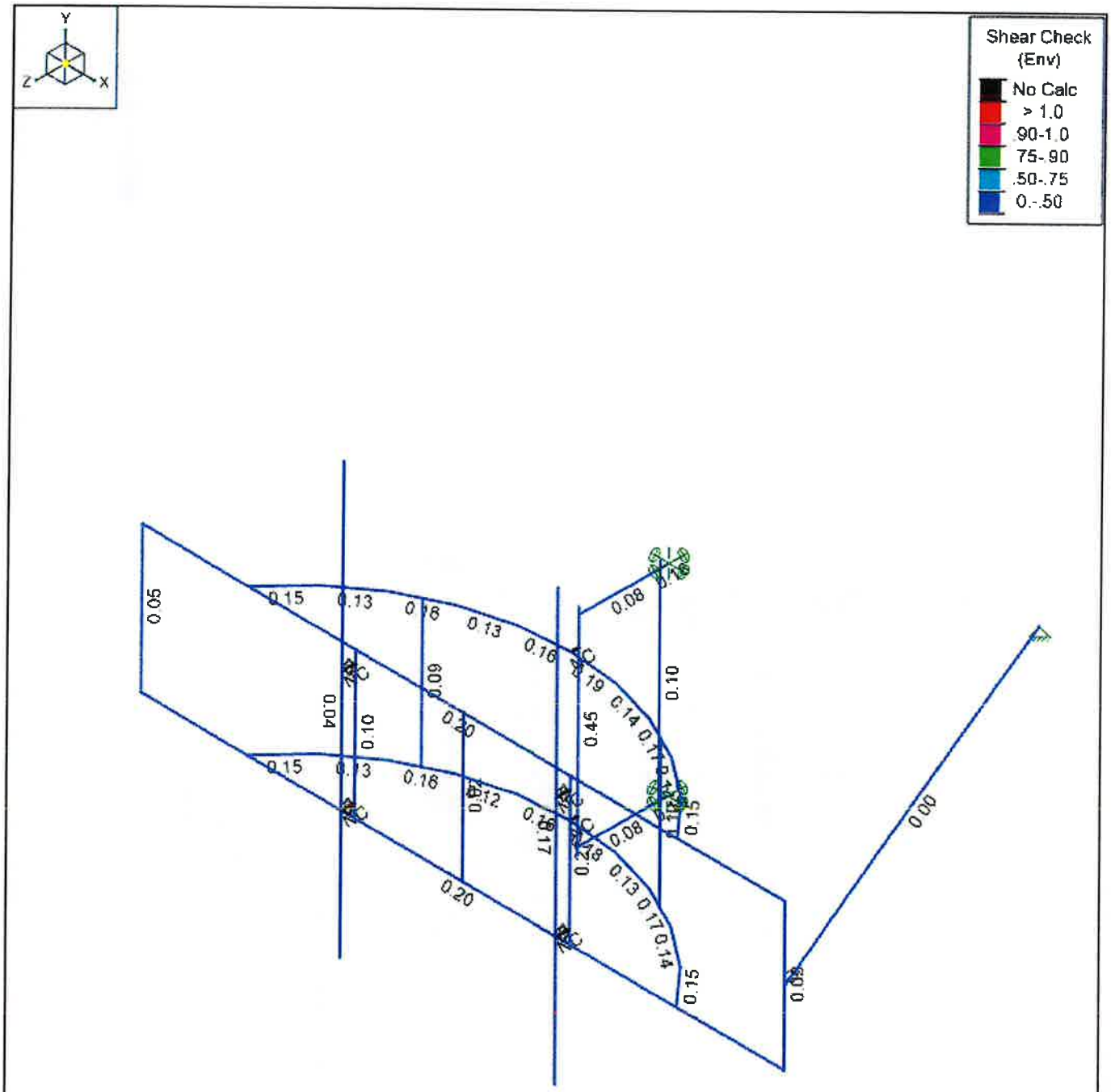
Envelope Only Solution

		SK-1
		Jan 04, 2024
		5000386718-VZW_MT_LOT_A_H....



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

		SK-2
		Jan 04, 2024
		5000386718-VZW_MT_LOT_A_H....



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

		SK-3
		Jan 04, 2024
		5000386718-VZW_MT_LOT_A_H....

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed
1	Antenna D	None				36	
2	Antenna Di	None				36	
3	Antenna Wo (0 Deg)	None				36	
4	Antenna Wo (30 Deg)	None				36	
5	Antenna Wo (60 Deg)	None				36	
6	Antenna Wo (90 Deg)	None				36	
7	Antenna Wo (120 Deg)	None				36	
8	Antenna Wo (150 Deg)	None				36	
9	Antenna Wo (180 Deg)	None				36	
10	Antenna Wo (210 Deg)	None				36	
11	Antenna Wo (240 Deg)	None				36	
12	Antenna Wo (270 Deg)	None				36	
13	Antenna Wo (300 Deg)	None				36	
14	Antenna Wo (330 Deg)	None				36	
15	Antenna Wi (0 Deg)	None				36	
16	Antenna Wi (30 Deg)	None				36	
17	Antenna Wi (60 Deg)	None				36	
18	Antenna Wi (90 Deg)	None				36	
19	Antenna Wi (120 Deg)	None				36	
20	Antenna Wi (150 Deg)	None				36	
21	Antenna Wi (180 Deg)	None				36	
22	Antenna Wi (210 Deg)	None				36	
23	Antenna Wi (240 Deg)	None				36	
24	Antenna Wi (270 Deg)	None				36	
25	Antenna Wi (300 Deg)	None				36	
26	Antenna Wi (330 Deg)	None				36	
27	Antenna Wm (0 Deg)	None				36	
28	Antenna Wm (30 Deg)	None				36	
29	Antenna Wm (60 Deg)	None				36	
30	Antenna Wm (90 Deg)	None				36	
31	Antenna Wm (120 Deg)	None				36	
32	Antenna Wm (150 Deg)	None				36	
33	Antenna Wm (180 Deg)	None				36	
34	Antenna Wm (210 Deg)	None				36	
35	Antenna Wm (240 Deg)	None				36	
36	Antenna Wm (270 Deg)	None				36	
37	Antenna Wm (300 Deg)	None				36	
38	Antenna Wm (330 Deg)	None				36	
39	Structure D	None		-1			
40	Structure Di	None					38
41	Structure Wo (0 Deg)	None					76
42	Structure Wo (30 Deg)	None					76
43	Structure Wo (60 Deg)	None					76
44	Structure Wo (90 Deg)	None					76
45	Structure Wo (120 Deg)	None					76
46	Structure Wo (150 Deg)	None					76
47	Structure Wo (180 Deg)	None					76
48	Structure Wo (210 Deg)	None					76
49	Structure Wo (240 Deg)	None					76
50	Structure Wo (270 Deg)	None					76
51	Structure Wo (300 Deg)	None					76
52	Structure Wo (330 Deg)	None					76
53	Structure Wi (0 Deg)	None					76
54	Structure Wi (30 Deg)	None					76
55	Structure Wi (60 Deg)	None					76

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed
56	Structure Wi (90 Deg)	None					76
57	Structure Wi (120 Deg)	None					76
58	Structure Wi (150 Deg)	None					76
59	Structure Wi (180 Deg)	None					76
60	Structure Wi (210 Deg)	None					76
61	Structure Wi (240 Deg)	None					76
62	Structure Wi (270 Deg)	None					76
63	Structure Wi (300 Deg)	None					76
64	Structure Wi (330 Deg)	None					76
65	Structure Wm (0 Deg)	None					76
66	Structure Wm (30 Deg)	None					76
67	Structure Wm (60 Deg)	None					76
68	Structure Wm (90 Deg)	None					76
69	Structure Wm (120 Deg)	None					76
70	Structure Wm (150 Deg)	None					76
71	Structure Wm (180 Deg)	None					76
72	Structure Wm (210 Deg)	None					76
73	Structure Wm (240 Deg)	None					76
74	Structure Wm (270 Deg)	None					76
75	Structure Wm (300 Deg)	None					76
76	Structure Wm (330 Deg)	None					76
77	Lm1	None				1	
78	Lm2	None				1	
79	Lv1	None				1	
80	Lv2	None				1	
81	Antenna Ev	None				36	
82	Antenna Eh (0 Deg)	None				24	
83	Antenna Eh (90 Deg)	None				24	
84	Structure Ev	ELY		-0.051			
85	Structure Eh (0 Deg)	ELZ			-0.128		
86	Structure Eh (90 Deg)	ELX	0.128				

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.2D+1.0Wo (0 Deg)	Yes	Y	1	1.2	39	1.2	3	1	41	1						
2	1.2D+1.0Wo (30 Deg)	Yes	Y	1	1.2	39	1.2	4	1	42	1						
3	1.2D+1.0Wo (60 Deg)	Yes	Y	1	1.2	39	1.2	5	1	43	1						
4	1.2D+1.0Wo (90 Deg)	Yes	Y	1	1.2	39	1.2	6	1	44	1						
5	1.2D+1.0Wo (120 Deg)	Yes	Y	1	1.2	39	1.2	7	1	45	1						
6	1.2D+1.0Wo (150 Deg)	Yes	Y	1	1.2	39	1.2	8	1	46	1						
7	1.2D+1.0Wo (180 Deg)	Yes	Y	1	1.2	39	1.2	9	1	47	1						
8	1.2D+1.0Wo (210 Deg)	Yes	Y	1	1.2	39	1.2	10	1	48	1						
9	1.2D+1.0Wo (240 Deg)	Yes	Y	1	1.2	39	1.2	11	1	49	1						
10	1.2D+1.0Wo (270 Deg)	Yes	Y	1	1.2	39	1.2	12	1	50	1						
11	1.2D+1.0Wo (300 Deg)	Yes	Y	1	1.2	39	1.2	13	1	51	1						
12	1.2D+1.0Wo (330 Deg)	Yes	Y	1	1.2	39	1.2	14	1	52	1						
13	1.2D + 1.0Di + 1.0Wi (0 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	15	1	53	1		
14	1.2D + 1.0Di + 1.0Wi (30 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	16	1	54	1		
15	1.2D + 1.0Di + 1.0Wi (60 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	17	1	55	1		
16	1.2D + 1.0Di + 1.0Wi (90 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	18	1	56	1		
17	1.2D + 1.0Di + 1.0Wi (120 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	19	1	57	1		
18	1.2D + 1.0Di + 1.0Wi (150 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	20	1	58	1		
19	1.2D + 1.0Di + 1.0Wi (180 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	21	1	59	1		
20	1.2D + 1.0Di + 1.0Wi (210 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	22	1	60	1		
21	1.2D + 1.0Di + 1.0Wi (240 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	23	1	61	1		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
22	1.2D + 1.0Di + 1.0Wi (270 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	24	1	62	1				
23	1.2D + 1.0Di + 1.0Wi (300 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	25	1	63	1				
24	1.2D + 1.0Di + 1.0Wi (330 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	26	1	64	1				
25	1.2D + 1.5Lm1 + 1.0Wm (0 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	27	1	65	1						
26	1.2D + 1.5Lm1 + 1.0Wm (30 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	28	1	66	1						
27	1.2D + 1.5Lm1 + 1.0Wm (60 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	29	1	67	1						
28	1.2D + 1.5Lm1 + 1.0Wm (90 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	30	1	68	1						
29	1.2D + 1.5Lm1 + 1.0Wm (120 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	31	1	69	1						
30	1.2D + 1.5Lm1 + 1.0Wm (150 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	32	1	70	1						
31	1.2D + 1.5Lm1 + 1.0Wm (180 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	33	1	71	1						
32	1.2D + 1.5Lm1 + 1.0Wm (210 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	34	1	72	1						
33	1.2D + 1.5Lm1 + 1.0Wm (240 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	35	1	73	1						
34	1.2D + 1.5Lm1 + 1.0Wm (270 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	36	1	74	1						
35	1.2D + 1.5Lm1 + 1.0Wm (300 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	37	1	75	1						
36	1.2D + 1.5Lm1 + 1.0Wm (330 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	38	1	76	1						
37	1.2D + 1.5Lm2 + 1.0Wm (0 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	27	1	65	1						
38	1.2D + 1.5Lm2 + 1.0Wm (30 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	28	1	66	1						
39	1.2D + 1.5Lm2 + 1.0Wm (60 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	29	1	67	1						
40	1.2D + 1.5Lm2 + 1.0Wm (90 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	30	1	68	1						
41	1.2D + 1.5Lm2 + 1.0Wm (120 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	31	1	69	1						
42	1.2D + 1.5Lm2 + 1.0Wm (150 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	32	1	70	1						
43	1.2D + 1.5Lm2 + 1.0Wm (180 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	33	1	71	1						
44	1.2D + 1.5Lm2 + 1.0Wm (210 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	34	1	72	1						
45	1.2D + 1.5Lm2 + 1.0Wm (240 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	35	1	73	1						
46	1.2D + 1.5Lm2 + 1.0Wm (270 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	36	1	74	1						
47	1.2D + 1.5Lm2 + 1.0Wm (300 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	37	1	75	1						
48	1.2D + 1.5Lm2 + 1.0Wm (330 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	38	1	76	1						
49	1.2D + 1.5Lv1	Yes	Y	1	1.2	39	1.2	79	1.5										
50	1.2D + 1.5Lv2	Yes	Y	1	1.2	39	1.2	80	1.5										
51	1.4D	Yes	Y	1	1.4	39	1.4												
52	1.2D + 1.0Ev + 1.0Eh (0 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	1	83		ELZ	1	ELX	
53	1.2D + 1.0Ev + 1.0Eh (30 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	0.866	83	0.5	ELZ	0.866	ELX	0.5
54	1.2D + 1.0Ev + 1.0Eh (60 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	0.5	83	0.866	ELZ	0.5	ELX	0.866
55	1.2D + 1.0Ev + 1.0Eh (90 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82		83	1	ELZ		ELX	1
56	1.2D + 1.0Ev + 1.0Eh (120 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	-0.5	83	0.866	ELZ	-0.5	ELX	0.866
57	1.2D + 1.0Ev + 1.0Eh (150 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	-0.866	83	0.5	ELZ	-0.866	ELX	0.5
58	1.2D + 1.0Ev + 1.0Eh (180 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	-1	83		ELZ	-1	ELX	
59	1.2D + 1.0Ev + 1.0Eh (210 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	-0.866	83	-0.5	ELZ	-0.866	ELX	-0.5
60	1.2D + 1.0Ev + 1.0Eh (240 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	-0.5	83	-0.866	ELZ	-0.5	ELX	-0.866
61	1.2D + 1.0Ev + 1.0Eh (270 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82		83	-1	ELZ		ELX	-1
62	1.2D + 1.0Ev + 1.0Eh (300 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	0.5	83	-0.866	ELZ	0.5	ELX	-0.866
63	1.2D + 1.0Ev + 1.0Eh (330 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	0.866	83	-0.5	ELZ	0.866	ELX	-0.5
64	0.9D - 1.0Ev + 1.0Eh (0 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	1	83		ELZ	1	ELX	
65	0.9D - 1.0Ev + 1.0Eh (30 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	0.866	83	0.5	ELZ	0.866	ELX	0.5
66	0.9D - 1.0Ev + 1.0Eh (60 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	0.5	83	0.866	ELZ	0.5	ELX	0.866
67	0.9D - 1.0Ev + 1.0Eh (90 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82		83	1	ELZ		ELX	1
68	0.9D - 1.0Ev + 1.0Eh (120 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	-0.5	83	0.866	ELZ	-0.5	ELX	0.866
69	0.9D - 1.0Ev + 1.0Eh (150 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	-0.866	83	0.5	ELZ	-0.866	ELX	0.5
70	0.9D - 1.0Ev + 1.0Eh (180 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	-1	83		ELZ	-1	ELX	
71	0.9D - 1.0Ev + 1.0Eh (210 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	-0.866	83	-0.5	ELZ	-0.866	ELX	-0.5
72	0.9D - 1.0Ev + 1.0Eh (240 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	-0.5	83	-0.866	ELZ	-0.5	ELX	-0.866
73	0.9D - 1.0Ev + 1.0Eh (270 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82		83	-1	ELZ		ELX	-1
74	0.9D - 1.0Ev + 1.0Eh (300 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	0.5	83	-0.866	ELZ	0.5	ELX	-0.866
75	0.9D - 1.0Ev + 1.0Eh (330 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	0.866	83	-0.5	ELZ	0.866	ELX	-0.5

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	N2	9.999999	-0.03125	0.000002	
2	N3	9.378213	-0.03125	-0.686144	
3	N4	8.640565	-0.03125	-1.245868	
4	N5	7.812355	-0.03125	-1.659973	
5	N6	6.921988	-0.03125	-1.914257	
6	N7	5.999999	-0.03125	-1.999998	
7	N8	5.078011	-0.03125	-1.914257	
8	N9	4.187643	-0.03125	-1.659973	
9	N10	3.359433	-0.03125	-1.245868	
10	N11	2.621786	-0.03125	-0.686144	
11	N12	1.999999	-0.03125	0.000002	
12	N24	-0.000001	-0.03125	0.000002	
13	N14	11.999999	-0.03125	0.000002	
14	N15	9.999999	2.6875	0.000002	
15	N16	9.378213	2.6875	-0.686144	
16	N17	8.640565	2.6875	-1.245868	
17	N18	7.812355	2.6875	-1.659973	
18	N19	6.921988	2.6875	-1.914257	
19	N20	5.999999	2.6875	-1.999998	
20	N21	5.078011	2.6875	-1.914257	
21	N22	4.187643	2.6875	-1.659973	
22	N23	3.359433	2.6875	-1.245868	
23	N24A	2.621786	2.6875	-0.686144	
24	N25	1.999999	2.6875	0.000002	
25	N26	-0.000001	2.6875	0.000002	
26	N27	11.999999	2.6875	0.000002	
27	N28	3.773538	-0.03125	-1.452921	
28	N29	8.22646	-0.03125	-1.452921	
29	N30	3.773538	2.6875	-1.452921	
30	N31	8.22646	2.6875	-1.452921	
31	N32	5.999999	-0.03125	-2.145832	
32	N33	5.999999	2.6875	-2.145832	
33	N34	5.999999	3.34375	-2.145832	
34	N35	5.999999	-0.65625	-2.145832	
35	N36	3.999999	-0.03125	0	
36	N37	3.999999	2.6875	0.000002	
37	N38	5.999999	-0.03125	0.000002	
38	N39	5.999999	2.6875	0.000002	
39	N40	7.999999	-0.03125	0.000002	
40	N41	7.999999	2.6875	0.000002	
41	N48	3.999999	2.46875	0.000002	
42	N49	3.999999	0.21875	0.000002	
43	N50	3.999999	2.46875	0.250002	
44	N51	3.999999	0.21875	0.250002	
45	N52	3.999999	5.84375	0.250002	
46	N53	3.999999	-2.15625	0.250002	
47	N54	7.999999	2.46875	0.000002	
48	N55	7.999999	0.21875	0.000002	
49	N56	7.999999	2.46875	0.250002	
50	N57	7.999999	0.21875	0.250002	
51	N58	7.999999	5.84375	0.250002	
52	N59	7.999999	-2.15625	0.250002	
53	N67	5.999999	3.34375	-3.646165	
54	N68	5.999999	-0.65625	-3.646165	
55	N248	5.999999	3.21875	-2.145832	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
56	N249	5.999999	3.21875	-3.646165	
57	N254A	5.999999	-0.53125	-2.145832	
58	N255A	5.999999	-0.53125	-3.646165	
59	N261	5.999999	3.21875	-3.812832	
60	N261A	5.999999	-0.53125	-3.812832	
61	N77	11.999999	1.328125	0.000002	
62	N68A	8.499999	1.328125	-8.142959	

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	Antenna Pipe	PIPE 2.0	Beam	Pipe	A53 Gr. B	Typical	1.02	0.627	0.627	1.25
2	Horizontal Face	PIPE 2.0	Beam	Pipe	A53 Gr. B	Typical	1.02	0.627	0.627	1.25
3	Cicular Standoff	PIPE 2.0	Beam	Pipe	A53 Gr. B	Typical	1.02	0.627	0.627	1.25
4	Standoff Vertical	PIPE 2.0	Beam	Pipe	A53 Gr. B	Typical	1.02	0.627	0.627	1.25
5	Vertical Pipe	PIPE 2.0	Beam	Pipe	A53 Gr. B	Typical	1.02	0.627	0.627	1.25
6	Mast Pipe	PIPE 2.5X	Beam	Pipe	A53 Gr. B	Typical	2.1	1.83	1.83	3.66
7	HSS Standoff	HSS3X3X3	Beam	Tube	A500 Gr. B 46	Typical	1.89	2.46	2.46	4.03
8	Plate	PL1/2X7 HRA	Beam	RECT	A36 Gr.36	Typical	3.5	0.073	14.292	0.279
9	HSS Standoff Support	PIPE 1.5	Beam	Pipe	A53 Gr. B	Typical	0.749	0.293	0.293	0.586
10	Cross Brace	SR 0.75	Beam	BAR	A36 Gr.36	Typical	0.442	0.016	0.016	0.031
11	Tieback	PIPE 1.5	Beam	BAR	A36 Gr.36	Typical	0.749	0.293	0.293	0.586

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{-5}°F^{-1}]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
2	A53 Gr. B	29000	11154	0.3	0.65	0.49	35	1.5	60	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
5	A500 Gr. B 42	29000	11154	0.3	0.65	0.49	42	1.4	58	1.3
6	A500 Gr. B 46	29000	11154	0.3	0.65	0.49	46	1.4	58	1.3

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N12	N11		Cicular Standoff	Beam	Pipe	A53 Gr. B	Typical
2	M2	N11	N10		Cicular Standoff	Beam	Pipe	A53 Gr. B	Typical
3	M3	N10	N9		Cicular Standoff	Beam	Pipe	A53 Gr. B	Typical
4	M4	N9	N8		Cicular Standoff	Beam	Pipe	A53 Gr. B	Typical
5	M5	N8	N7		Cicular Standoff	Beam	Pipe	A53 Gr. B	Typical
6	M6	N7	N6		Cicular Standoff	Beam	Pipe	A53 Gr. B	Typical
7	M7	N6	N5		Cicular Standoff	Beam	Pipe	A53 Gr. B	Typical
8	M8	N5	N4		Cicular Standoff	Beam	Pipe	A53 Gr. B	Typical
9	M9	N4	N3		Cicular Standoff	Beam	Pipe	A53 Gr. B	Typical
10	M10	N3	N2		Cicular Standoff	Beam	Pipe	A53 Gr. B	Typical
11	M11	N24	N14		Horizontal Face	Beam	Pipe	A53 Gr. B	Typical
12	M12	N25	N24A		Cicular Standoff	Beam	Pipe	A53 Gr. B	Typical
13	M13	N24A	N23		Cicular Standoff	Beam	Pipe	A53 Gr. B	Typical
14	M14	N23	N22		Cicular Standoff	Beam	Pipe	A53 Gr. B	Typical
15	M15	N22	N21		Cicular Standoff	Beam	Pipe	A53 Gr. B	Typical
16	M16	N21	N20		Cicular Standoff	Beam	Pipe	A53 Gr. B	Typical
17	M17	N20	N19		Cicular Standoff	Beam	Pipe	A53 Gr. B	Typical
18	M18	N19	N18		Cicular Standoff	Beam	Pipe	A53 Gr. B	Typical
19	M19	N18	N17		Cicular Standoff	Beam	Pipe	A53 Gr. B	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
20	M20	N17	N16		Cicular Standoff	Beam	Pipe	A53 Gr. B	Typical
21	M21	N16	N15		Cicular Standoff	Beam	Pipe	A53 Gr. B	Typical
22	M22	N26	N27		Horizontal Face	Beam	Pipe	A53 Gr. B	Typical
23	M23	N29	N31		Standoff Vertical	Beam	Pipe	A53 Gr. B	Typical
24	M24	N28	N30		Standoff Vertical	Beam	Pipe	A53 Gr. B	Typical
25	M25	N20	N33		RIGID	None	None	RIGID	Typical
26	M26	N7	N32		RIGID	None	None	RIGID	Typical
27	M27	N24	N26		Vertical Pipe	Beam	Pipe	A53 Gr. B	Typical
28	M28	N14	N27		Vertical Pipe	Beam	Pipe	A53 Gr. B	Typical
29	P2A	N36	N37		Vertical Pipe	Beam	Pipe	A53 Gr. B	Typical
30	M30	N38	N39		Vertical Pipe	Beam	Pipe	A53 Gr. B	Typical
31	P1A	N40	N41		Vertical Pipe	Beam	Pipe	A53 Gr. B	Typical
32	M35	N50	N48		RIGID	None	None	RIGID	Typical
33	M36	N51	N49		RIGID	None	None	RIGID	Typical
34	MP2A	N52	N53		Antenna Pipe	Beam	Pipe	A53 Gr. B	Typical
35	M38	N56	N54		RIGID	None	None	RIGID	Typical
36	M39	N57	N55		RIGID	None	None	RIGID	Typical
37	MP1A	N58	N59		Antenna Pipe	Beam	Pipe	A53 Gr. B	Typical
38	M44	N35	N34		Mast Pipe	Beam	Pipe	A53 Gr. B	Typical
39	M50	N68	N67		HSS Standoff Support	Beam	Pipe	A53 Gr. B	Typical
40	M166A	N248	N249		HSS Standoff	Beam	Tube	A500 Gr. B 46	Typical
41	M167A	N254A	N255A		HSS Standoff	Beam	Tube	A500 Gr. B 46	Typical
42	M172	N249	N261	90	Plate	Beam	RECT	A36 Gr.36	Typical
43	M172A	N255A	N261A	90	Plate	Beam	RECT	A36 Gr.36	Typical
44	M57	N77	N68A		Tleback	Beam	BAR	A36 Gr.36	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
1	M1	Cicular Standoff	0.926	Lbyy	N/A	N/A	Lateral
2	M2	Cicular Standoff	0.926	Lbyy	N/A	N/A	Lateral
3	M3	Cicular Standoff	0.926	Lbyy	N/A	N/A	Lateral
4	M4	Cicular Standoff	0.926	Lbyy	N/A	N/A	Lateral
5	M5	Cicular Standoff	0.926	Lbyy	N/A	N/A	Lateral
6	M6	Cicular Standoff	0.926	Lbyy	N/A	N/A	Lateral
7	M7	Cicular Standoff	0.926	Lbyy	N/A	N/A	Lateral
8	M8	Cicular Standoff	0.926	Lbyy	N/A	N/A	Lateral
9	M9	Cicular Standoff	0.926	Lbyy	N/A	N/A	Lateral
10	M10	Cicular Standoff	0.926	Lbyy	N/A	N/A	Lateral
11	M11	Horizontal Face	12	Lbyy	N/A	N/A	Lateral
12	M12	Cicular Standoff	0.926	Lbyy	N/A	N/A	Lateral
13	M13	Cicular Standoff	0.926	Lbyy	N/A	N/A	Lateral
14	M14	Cicular Standoff	0.926	Lbyy	N/A	N/A	Lateral
15	M15	Cicular Standoff	0.926	Lbyy	N/A	N/A	Lateral
16	M16	Cicular Standoff	0.926	Lbyy	N/A	N/A	Lateral
17	M17	Cicular Standoff	0.926	Lbyy	N/A	N/A	Lateral
18	M18	Cicular Standoff	0.926	Lbyy	N/A	N/A	Lateral
19	M19	Cicular Standoff	0.926	Lbyy	N/A	N/A	Lateral
20	M20	Cicular Standoff	0.926	Lbyy	N/A	N/A	Lateral
21	M21	Cicular Standoff	0.926	Lbyy	N/A	N/A	Lateral
22	M22	Horizontal Face	12	Lbyy	N/A	N/A	Lateral
23	M23	Standoff Vertical	2.719	Lbyy	N/A	N/A	Lateral
24	M24	Standoff Vertical	2.719	Lbyy	N/A	N/A	Lateral
25	M27	Vertical Pipe	2.719	Lbyy	N/A	N/A	Lateral
26	M28	Vertical Pipe	2.719	Lbyy	N/A	N/A	Lateral
27	P2A	Vertical Pipe	2.719	Lbyy	N/A	N/A	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
28	M30	Vertical Pipe	2.719	Lbyy	N/A	N/A	Lateral
29	P1A	Vertical Pipe	2.719	Lbyy	N/A	N/A	Lateral
30	MP2A	Antenna Pipe	8	Lbyy	N/A	N/A	Lateral
31	MP1A	Antenna Pipe	8	Lbyy	N/A	N/A	Lateral
32	M44	Mast Pipe	4	Lbyy	N/A	N/A	Lateral
33	M50	HSS Standoff Support	4	Lbyy	N/A	N/A	Lateral
34	M166A	HSS Standoff	1.5	Lbyy	N/A	N/A	Lateral
35	M167A	HSS Standoff	1.5	Lbyy	N/A	N/A	Lateral
36	M172	Plate	0.167	Lbyy	N/A	N/A	Lateral
37	M172A	Plate	0.167	Lbyy	N/A	N/A	Lateral
38	M57	Tieback	8.863	Lbyy	N/A	N/A	Lateral

Member Point Loads (BLC 1 : Antenna D)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	Y	-32.5	2
2	MP1A	My	-0.027	2
3	MP1A	Mz	0.019	2
4	MP1A	Y	-32.5	6
5	MP1A	My	-0.027	6
6	MP1A	Mz	0.019	6
7	MP1A	Y	-32.5	2
8	MP1A	My	-0.027	2
9	MP1A	Mz	-0.019	2
10	MP1A	Y	-32.5	6
11	MP1A	My	-0.027	6
12	MP1A	Mz	-0.019	6
13	MP2A	Y	-43.55	3
14	MP2A	My	-0.036	3
15	MP2A	Mz	0	3
16	MP2A	Y	-43.55	5
17	MP2A	My	-0.036	5
18	MP2A	Mz	0	5
19	MP1A	Y	-8.8	6.5
20	MP1A	My	0.009	6.5
21	MP1A	Mz	0.003	6.5
22	MP1A	Y	-8.8	7.5
23	MP1A	My	0.009	7.5
24	MP1A	Mz	0.003	7.5
25	MP1A	Y	-8.8	6.5
26	MP1A	My	0.009	6.5
27	MP1A	Mz	-0.003	6.5
28	MP1A	Y	-8.8	7.5
29	MP1A	My	0.009	7.5
30	MP1A	Mz	-0.003	7.5
31	P1A	Y	-84.4	1
32	P1A	My	0.042	1
33	P1A	Mz	0	1
34	P2A	Y	-70.3	1
35	P2A	My	0.035	1
36	P2A	Mz	0	1

Member Point Loads (BLC 2 : Antenna Di)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	Y	-67.185	2
2	MP1A	My	-0.056	2
3	MP1A	Mz	0.039	2
4	MP1A	Y	-67.185	6
5	MP1A	My	-0.056	6
6	MP1A	Mz	0.039	6
7	MP1A	Y	-67.185	2
8	MP1A	My	-0.056	2
9	MP1A	Mz	-0.039	2
10	MP1A	Y	-67.185	6
11	MP1A	My	-0.056	6
12	MP1A	Mz	-0.039	6
13	MP2A	Y	-34.702	3
14	MP2A	My	-0.029	3
15	MP2A	Mz	0	3
16	MP2A	Y	-34.702	5
17	MP2A	My	-0.029	5
18	MP2A	Mz	0	5
19	MP1A	Y	-8.431	6.5
20	MP1A	My	0.008	6.5
21	MP1A	Mz	0.003	6.5
22	MP1A	Y	-8.431	7.5
23	MP1A	My	0.008	7.5
24	MP1A	Mz	0.003	7.5
25	MP1A	Y	-8.431	6.5
26	MP1A	My	0.008	6.5
27	MP1A	Mz	-0.003	6.5
28	MP1A	Y	-8.431	7.5
29	MP1A	My	0.008	7.5
30	MP1A	Mz	-0.003	7.5
31	P1A	Y	-43.735	1
32	P1A	My	0.022	1
33	P1A	Mz	0	1
34	P2A	Y	-39.324	1
35	P2A	My	0.02	1
36	P2A	Mz	0	1

Member Point Loads (BLC 3 : Antenna Wo (0 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	0	2
2	MP1A	Z	-164.941	2
3	MP1A	Mx	-0.096	2
4	MP1A	X	0	6
5	MP1A	Z	-164.941	6
6	MP1A	Mx	-0.096	6
7	MP1A	X	0	2
8	MP1A	Z	-164.941	2
9	MP1A	Mx	0.096	2
10	MP1A	X	0	6
11	MP1A	Z	-164.941	6
12	MP1A	Mx	0.096	6
13	MP2A	X	0	3
14	MP2A	Z	-79.529	3
15	MP2A	Mx	0	3

Member Point Loads (BLC 3 : Antenna Wo (0 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
16	MP2A	X	0	5
17	MP2A	Z	-79.529	5
18	MP2A	Mx	0	5
19	MP1A	X	0	6.5
20	MP1A	Z	-5.884	6.5
21	MP1A	Mx	-0.002	6.5
22	MP1A	X	0	7.5
23	MP1A	Z	-5.884	7.5
24	MP1A	Mx	-0.002	7.5
25	MP1A	X	0	6.5
26	MP1A	Z	-5.884	6.5
27	MP1A	Mx	0.002	6.5
28	MP1A	X	0	7.5
29	MP1A	Z	-5.884	7.5
30	MP1A	Mx	0.002	7.5
31	P1A	X	0	1
32	P1A	Z	-62.893	1
33	P1A	Mx	0	1
34	P2A	X	0	1
35	P2A	Z	-62.893	1
36	P2A	Mx	0	1

Member Point Loads (BLC 4 : Antenna Wo (30 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	79.098	2
2	MP1A	Z	-137.001	2
3	MP1A	Mx	-0.146	2
4	MP1A	X	79.098	6
5	MP1A	Z	-137.001	6
6	MP1A	Mx	-0.146	6
7	MP1A	X	79.098	2
8	MP1A	Z	-137.001	2
9	MP1A	Mx	0.014	2
10	MP1A	X	79.098	6
11	MP1A	Z	-137.001	6
12	MP1A	Mx	0.014	6
13	MP2A	X	33.247	3
14	MP2A	Z	-57.585	3
15	MP2A	Mx	-0.028	3
16	MP2A	X	33.247	5
17	MP2A	Z	-57.585	5
18	MP2A	Mx	-0.028	5
19	MP1A	X	4.648	6.5
20	MP1A	Z	-8.051	6.5
21	MP1A	Mx	0.002	6.5
22	MP1A	X	4.648	7.5
23	MP1A	Z	-8.051	7.5
24	MP1A	Mx	0.002	7.5
25	MP1A	X	4.648	6.5
26	MP1A	Z	-8.051	6.5
27	MP1A	Mx	0.007	6.5
28	MP1A	X	4.648	7.5
29	MP1A	Z	-8.051	7.5
30	MP1A	Mx	0.007	7.5
31	P1A	X	28.86	1

Member Point Loads (BLC 4 : Antenna Wo (30 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
32	P1A	Z	-49.986	1
33	P1A	Mx	0.014	1
34	P2A	X	27.896	1
35	P2A	Z	-48.317	1
36	P2A	Mx	0.014	1

Member Point Loads (BLC 5 : Antenna Wo (60 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	125.317	2
2	MP1A	Z	-72.352	2
3	MP1A	Mx	-0.147	2
4	MP1A	X	125.317	6
5	MP1A	Z	-72.352	6
6	MP1A	Mx	-0.147	6
7	MP1A	X	125.317	2
8	MP1A	Z	-72.352	2
9	MP1A	Mx	-0.062	2
10	MP1A	X	125.317	6
11	MP1A	Z	-72.352	6
12	MP1A	Mx	-0.062	6
13	MP2A	X	35.008	3
14	MP2A	Z	-20.212	3
15	MP2A	Mx	-0.029	3
16	MP2A	X	35.008	5
17	MP2A	Z	-20.212	5
18	MP2A	Mx	-0.029	5
19	MP1A	X	13.961	6.5
20	MP1A	Z	-8.061	6.5
21	MP1A	Mx	0.011	6.5
22	MP1A	X	13.961	7.5
23	MP1A	Z	-8.061	7.5
24	MP1A	Mx	0.011	7.5
25	MP1A	X	13.961	6.5
26	MP1A	Z	-8.061	6.5
27	MP1A	Mx	0.017	6.5
28	MP1A	X	13.961	7.5
29	MP1A	Z	-8.061	7.5
30	MP1A	Mx	0.017	7.5
31	P1A	X	41.026	1
32	P1A	Z	-23.686	1
33	P1A	Mx	0.021	1
34	P2A	X	36.018	1
35	P2A	Z	-20.795	1
36	P2A	Mx	0.018	1

Member Point Loads (BLC 6 : Antenna Wo (90 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	137.958	2
2	MP1A	Z	0	2
3	MP1A	Mx	-0.115	2
4	MP1A	X	137.958	6
5	MP1A	Z	0	6
6	MP1A	Mx	-0.115	6

Member Point Loads (BLC 6 : Antenna Wo (90 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
7	MP1A	X	137.958	2
8	MP1A	Z	0	2
9	MP1A	Mx	-0.115	2
10	MP1A	X	137.958	6
11	MP1A	Z	0	6
12	MP1A	Mx	-0.115	6
13	MP2A	X	27.389	3
14	MP2A	Z	0	3
15	MP2A	Mx	-0.023	3
16	MP2A	X	27.389	5
17	MP2A	Z	0	5
18	MP2A	Mx	-0.023	5
19	MP1A	X	19.534	6.5
20	MP1A	Z	0	6.5
21	MP1A	Mx	0.02	6.5
22	MP1A	X	19.534	7.5
23	MP1A	Z	0	7.5
24	MP1A	Mx	0.02	7.5
25	MP1A	X	19.534	6.5
26	MP1A	Z	0	6.5
27	MP1A	Mx	0.02	6.5
28	MP1A	X	19.534	7.5
29	MP1A	Z	0	7.5
30	MP1A	Mx	0.02	7.5
31	P1A	X	42.199	1
32	P1A	Z	0	1
33	P1A	Mx	0.021	1
34	P2A	X	34.49	1
35	P2A	Z	0	1
36	P2A	Mx	0.017	1

Member Point Loads (BLC 7 : Antenna Wo (120 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	125.317	2
2	MP1A	Z	72.352	2
3	MP1A	Mx	-0.062	2
4	MP1A	X	125.317	6
5	MP1A	Z	72.352	6
6	MP1A	Mx	-0.062	6
7	MP1A	X	125.317	2
8	MP1A	Z	72.352	2
9	MP1A	Mx	-0.147	2
10	MP1A	X	125.317	6
11	MP1A	Z	72.352	6
12	MP1A	Mx	-0.147	6
13	MP2A	X	35.008	3
14	MP2A	Z	20.212	3
15	MP2A	Mx	-0.029	3
16	MP2A	X	35.008	5
17	MP2A	Z	20.212	5
18	MP2A	Mx	-0.029	5
19	MP1A	X	13.961	6.5
20	MP1A	Z	8.061	6.5
21	MP1A	Mx	0.017	6.5
22	MP1A	X	13.961	7.5

Member Point Loads (BLC 7 : Antenna Wo (120 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
23	MP1A	Z	8.061	7.5
24	MP1A	Mx	0.017	7.5
25	MP1A	X	13.961	6.5
26	MP1A	Z	8.061	6.5
27	MP1A	Mx	0.011	6.5
28	MP1A	X	13.961	7.5
29	MP1A	Z	8.061	7.5
30	MP1A	Mx	0.011	7.5
31	P1A	X	41.026	1
32	P1A	Z	23.686	1
33	P1A	Mx	0.021	1
34	P2A	X	36.018	1
35	P2A	Z	20.795	1
36	P2A	Mx	0.018	1

Member Point Loads (BLC 8 : Antenna Wo (150 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	79.098	2
2	MP1A	Z	137.001	2
3	MP1A	Mx	0.014	2
4	MP1A	X	79.098	6
5	MP1A	Z	137.001	6
6	MP1A	Mx	0.014	6
7	MP1A	X	79.098	2
8	MP1A	Z	137.001	2
9	MP1A	Mx	-0.146	2
10	MP1A	X	79.098	6
11	MP1A	Z	137.001	6
12	MP1A	Mx	-0.146	6
13	MP2A	X	33.247	3
14	MP2A	Z	57.585	3
15	MP2A	Mx	-0.028	3
16	MP2A	X	33.247	5
17	MP2A	Z	57.585	5
18	MP2A	Mx	-0.028	5
19	MP1A	X	4.648	6.5
20	MP1A	Z	8.051	6.5
21	MP1A	Mx	0.007	6.5
22	MP1A	X	4.648	7.5
23	MP1A	Z	8.051	7.5
24	MP1A	Mx	0.007	7.5
25	MP1A	X	4.648	6.5
26	MP1A	Z	8.051	6.5
27	MP1A	Mx	0.002	6.5
28	MP1A	X	4.648	7.5
29	MP1A	Z	8.051	7.5
30	MP1A	Mx	0.002	7.5
31	P1A	X	28.86	1
32	P1A	Z	49.986	1
33	P1A	Mx	0.014	1
34	P2A	X	27.896	1
35	P2A	Z	48.317	1
36	P2A	Mx	0.014	1

Member Point Loads (BLC 9 : Antenna Wo (180 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	0	2
2	MP1A	Z	164.941	2
3	MP1A	Mx	0.096	2
4	MP1A	X	0	6
5	MP1A	Z	164.941	6
6	MP1A	Mx	0.096	6
7	MP1A	X	0	2
8	MP1A	Z	164.941	2
9	MP1A	Mx	-0.096	2
10	MP1A	X	0	6
11	MP1A	Z	164.941	6
12	MP1A	Mx	-0.096	6
13	MP2A	X	0	3
14	MP2A	Z	79.529	3
15	MP2A	Mx	0	3
16	MP2A	X	0	5
17	MP2A	Z	79.529	5
18	MP2A	Mx	0	5
19	MP1A	X	0	6.5
20	MP1A	Z	5.884	6.5
21	MP1A	Mx	0.002	6.5
22	MP1A	X	0	7.5
23	MP1A	Z	5.884	7.5
24	MP1A	Mx	0.002	7.5
25	MP1A	X	0	6.5
26	MP1A	Z	5.884	6.5
27	MP1A	Mx	-0.002	6.5
28	MP1A	X	0	7.5
29	MP1A	Z	5.884	7.5
30	MP1A	Mx	-0.002	7.5
31	P1A	X	0	1
32	P1A	Z	62.893	1
33	P1A	Mx	0	1
34	P2A	X	0	1
35	P2A	Z	62.893	1
36	P2A	Mx	0	1

Member Point Loads (BLC 10 : Antenna Wo (210 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	-79.098	2
2	MP1A	Z	137.001	2
3	MP1A	Mx	0.146	2
4	MP1A	X	-79.098	6
5	MP1A	Z	137.001	6
6	MP1A	Mx	0.146	6
7	MP1A	X	-79.098	2
8	MP1A	Z	137.001	2
9	MP1A	Mx	-0.014	2
10	MP1A	X	-79.098	6
11	MP1A	Z	137.001	6
12	MP1A	Mx	-0.014	6
13	MP2A	X	-33.247	3
14	MP2A	Z	57.585	3
15	MP2A	Mx	0.028	3

Member Point Loads (BLC 10 : Antenna Wo (210 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
16	MP2A	X	-33.247	5
17	MP2A	Z	57.585	5
18	MP2A	Mx	0.028	5
19	MP1A	X	-4.648	6.5
20	MP1A	Z	8.051	6.5
21	MP1A	Mx	-0.002	6.5
22	MP1A	X	-4.648	7.5
23	MP1A	Z	8.051	7.5
24	MP1A	Mx	-0.002	7.5
25	MP1A	X	-4.648	6.5
26	MP1A	Z	8.051	6.5
27	MP1A	Mx	-0.007	6.5
28	MP1A	X	-4.648	7.5
29	MP1A	Z	8.051	7.5
30	MP1A	Mx	-0.007	7.5
31	P1A	X	-28.86	1
32	P1A	Z	49.986	1
33	P1A	Mx	-0.014	1
34	P2A	X	-27.896	1
35	P2A	Z	48.317	1
36	P2A	Mx	-0.014	1

Member Point Loads (BLC 11 : Antenna Wo (240 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	-125.317	2
2	MP1A	Z	72.352	2
3	MP1A	Mx	0.147	2
4	MP1A	X	-125.317	6
5	MP1A	Z	72.352	6
6	MP1A	Mx	0.147	6
7	MP1A	X	-125.317	2
8	MP1A	Z	72.352	2
9	MP1A	Mx	0.062	2
10	MP1A	X	-125.317	6
11	MP1A	Z	72.352	6
12	MP1A	Mx	0.062	6
13	MP2A	X	-35.008	3
14	MP2A	Z	20.212	3
15	MP2A	Mx	0.029	3
16	MP2A	X	-35.008	5
17	MP2A	Z	20.212	5
18	MP2A	Mx	0.029	5
19	MP1A	X	-13.961	6.5
20	MP1A	Z	8.061	6.5
21	MP1A	Mx	-0.011	6.5
22	MP1A	X	-13.961	7.5
23	MP1A	Z	8.061	7.5
24	MP1A	Mx	-0.011	7.5
25	MP1A	X	-13.961	6.5
26	MP1A	Z	8.061	6.5
27	MP1A	Mx	-0.017	6.5
28	MP1A	X	-13.961	7.5
29	MP1A	Z	8.061	7.5
30	MP1A	Mx	-0.017	7.5
31	P1A	X	-41.026	1

Member Point Loads (BLC 11 : Antenna Wo (240 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
32	P1A	Z	23.686	1
33	P1A	Mx	-0.021	1
34	P2A	X	-36.018	1
35	P2A	Z	20.795	1
36	P2A	Mx	-0.018	1

Member Point Loads (BLC 12 : Antenna Wo (270 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	-137.958	2
2	MP1A	Z	0	2
3	MP1A	Mx	0.115	2
4	MP1A	X	-137.958	6
5	MP1A	Z	0	6
6	MP1A	Mx	0.115	6
7	MP1A	X	-137.958	2
8	MP1A	Z	0	2
9	MP1A	Mx	0.115	2
10	MP1A	X	-137.958	6
11	MP1A	Z	0	6
12	MP1A	Mx	0.115	6
13	MP2A	X	-27.389	3
14	MP2A	Z	0	3
15	MP2A	Mx	0.023	3
16	MP2A	X	-27.389	5
17	MP2A	Z	0	5
18	MP2A	Mx	0.023	5
19	MP1A	X	-19.534	6.5
20	MP1A	Z	0	6.5
21	MP1A	Mx	-0.02	6.5
22	MP1A	X	-19.534	7.5
23	MP1A	Z	0	7.5
24	MP1A	Mx	-0.02	7.5
25	MP1A	X	-19.534	6.5
26	MP1A	Z	0	6.5
27	MP1A	Mx	-0.02	6.5
28	MP1A	X	-19.534	7.5
29	MP1A	Z	0	7.5
30	MP1A	Mx	-0.02	7.5
31	P1A	X	-42.199	1
32	P1A	Z	0	1
33	P1A	Mx	-0.021	1
34	P2A	X	-34.49	1
35	P2A	Z	0	1
36	P2A	Mx	-0.017	1

Member Point Loads (BLC 13 : Antenna Wo (300 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	-125.317	2
2	MP1A	Z	-72.352	2
3	MP1A	Mx	0.062	2
4	MP1A	X	-125.317	6
5	MP1A	Z	-72.352	6
6	MP1A	Mx	0.062	6

Member Point Loads (BLC 13 : Antenna Wo (300 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
7	MP1A	X	-125.317	2
8	MP1A	Z	-72.352	2
9	MP1A	Mx	0.147	2
10	MP1A	X	-125.317	6
11	MP1A	Z	-72.352	6
12	MP1A	Mx	0.147	6
13	MP2A	X	-35.008	3
14	MP2A	Z	-20.212	3
15	MP2A	Mx	0.029	3
16	MP2A	X	-35.008	5
17	MP2A	Z	-20.212	5
18	MP2A	Mx	0.029	5
19	MP1A	X	-13.961	6.5
20	MP1A	Z	-8.061	6.5
21	MP1A	Mx	-0.017	6.5
22	MP1A	X	-13.961	7.5
23	MP1A	Z	-8.061	7.5
24	MP1A	Mx	-0.017	7.5
25	MP1A	X	-13.961	6.5
26	MP1A	Z	-8.061	6.5
27	MP1A	Mx	-0.011	6.5
28	MP1A	X	-13.961	7.5
29	MP1A	Z	-8.061	7.5
30	MP1A	Mx	-0.011	7.5
31	P1A	X	-41.026	1
32	P1A	Z	-23.686	1
33	P1A	Mx	-0.021	1
34	P2A	X	-36.018	1
35	P2A	Z	-20.795	1
36	P2A	Mx	-0.018	1

Member Point Loads (BLC 14 : Antenna Wo (330 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	-79.098	2
2	MP1A	Z	-137.001	2
3	MP1A	Mx	-0.014	2
4	MP1A	X	-79.098	6
5	MP1A	Z	-137.001	6
6	MP1A	Mx	-0.014	6
7	MP1A	X	-79.098	2
8	MP1A	Z	-137.001	2
9	MP1A	Mx	0.146	2
10	MP1A	X	-79.098	6
11	MP1A	Z	-137.001	6
12	MP1A	Mx	0.146	6
13	MP2A	X	-33.247	3
14	MP2A	Z	-57.585	3
15	MP2A	Mx	0.028	3
16	MP2A	X	-33.247	5
17	MP2A	Z	-57.585	5
18	MP2A	Mx	0.028	5
19	MP1A	X	-4.648	6.5
20	MP1A	Z	-8.051	6.5
21	MP1A	Mx	-0.007	6.5
22	MP1A	X	-4.648	7.5

Member Point Loads (BLC 14 : Antenna Wo (330 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
23	MP1A	Z	-8.051	7.5
24	MP1A	Mx	-0.007	7.5
25	MP1A	X	-4.648	6.5
26	MP1A	Z	-8.051	6.5
27	MP1A	Mx	-0.002	6.5
28	MP1A	X	-4.648	7.5
29	MP1A	Z	-8.051	7.5
30	MP1A	Mx	-0.002	7.5
31	P1A	X	-28.86	1
32	P1A	Z	-49.986	1
33	P1A	Mx	-0.014	1
34	P2A	X	-27.896	1
35	P2A	Z	-48.317	1
36	P2A	Mx	-0.014	1

Member Point Loads (BLC 15 : Antenna Wi (0 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	0	2
2	MP1A	Z	-31.521	2
3	MP1A	Mx	-0.018	2
4	MP1A	X	0	6
5	MP1A	Z	-31.521	6
6	MP1A	Mx	-0.018	6
7	MP1A	X	0	2
8	MP1A	Z	-31.521	2
9	MP1A	Mx	0.018	2
10	MP1A	X	0	6
11	MP1A	Z	-31.521	6
12	MP1A	Mx	0.018	6
13	MP2A	X	0	3
14	MP2A	Z	-18.651	3
15	MP2A	Mx	0	3
16	MP2A	X	0	5
17	MP2A	Z	-18.651	5
18	MP2A	Mx	0	5
19	MP1A	X	0	6.5
20	MP1A	Z	-1.615	6.5
21	MP1A	Mx	-0.000538	6.5
22	MP1A	X	0	7.5
23	MP1A	Z	-1.615	7.5
24	MP1A	Mx	-0.000538	7.5
25	MP1A	X	0	6.5
26	MP1A	Z	-1.615	6.5
27	MP1A	Mx	0.000538	6.5
28	MP1A	X	0	7.5
29	MP1A	Z	-1.615	7.5
30	MP1A	Mx	0.000538	7.5
31	P1A	X	0	1
32	P1A	Z	-15.699	1
33	P1A	Mx	0	1
34	P2A	X	0	1
35	P2A	Z	-15.699	1
36	P2A	Mx	0	1

Member Point Loads (BLC 16 : Antenna Wi (30 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	15.163	2
2	MP1A	Z	-26.263	2
3	MP1A	Mx	-0.028	2
4	MP1A	X	15.163	6
5	MP1A	Z	-26.263	6
6	MP1A	Mx	-0.028	6
7	MP1A	X	15.163	2
8	MP1A	Z	-26.263	2
9	MP1A	Mx	0.003	2
10	MP1A	X	15.163	6
11	MP1A	Z	-26.263	6
12	MP1A	Mx	0.003	6
13	MP2A	X	7.985	3
14	MP2A	Z	-13.831	3
15	MP2A	Mx	-0.007	3
16	MP2A	X	7.985	5
17	MP2A	Z	-13.831	5
18	MP2A	Mx	-0.007	5
19	MP1A	X	1.144	6.5
20	MP1A	Z	-1.982	6.5
21	MP1A	Mx	0.000483	6.5
22	MP1A	X	1.144	7.5
23	MP1A	Z	-1.982	7.5
24	MP1A	Mx	0.000483	7.5
25	MP1A	X	1.144	6.5
26	MP1A	Z	-1.982	6.5
27	MP1A	Mx	0.002	6.5
28	MP1A	X	1.144	7.5
29	MP1A	Z	-1.982	7.5
30	MP1A	Mx	0.002	7.5
31	P1A	X	7.251	1
32	P1A	Z	-12.559	1
33	P1A	Mx	0.004	1
34	P2A	X	7.023	1
35	P2A	Z	-12.165	1
36	P2A	Mx	0.004	1

Member Point Loads (BLC 17 : Antenna Wi (60 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	24.193	2
2	MP1A	Z	-13.968	2
3	MP1A	Mx	-0.028	2
4	MP1A	X	24.193	6
5	MP1A	Z	-13.968	6
6	MP1A	Mx	-0.028	6
7	MP1A	X	24.193	2
8	MP1A	Z	-13.968	2
9	MP1A	Mx	-0.012	2
10	MP1A	X	24.193	6
11	MP1A	Z	-13.968	6
12	MP1A	Mx	-0.012	6
13	MP2A	X	9.188	3
14	MP2A	Z	-5.305	3
15	MP2A	Mx	-0.008	3

Member Point Loads (BLC 17 : Antenna Wi (60 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
16	MP2A	X	9.188	5
17	MP2A	Z	-5.305	5
18	MP2A	Mx	-0.008	5
19	MP1A	X	3.148	6.5
20	MP1A	Z	-1.818	6.5
21	MP1A	Mx	0.003	6.5
22	MP1A	X	3.148	7.5
23	MP1A	Z	-1.818	7.5
24	MP1A	Mx	0.003	7.5
25	MP1A	X	3.148	6.5
26	MP1A	Z	-1.818	6.5
27	MP1A	Mx	0.004	6.5
28	MP1A	X	3.148	7.5
29	MP1A	Z	-1.818	7.5
30	MP1A	Mx	0.004	7.5
31	P1A	X	10.485	1
32	P1A	Z	-6.054	1
33	P1A	Mx	0.005	1
34	P2A	X	9.303	1
35	P2A	Z	-5.371	1
36	P2A	Mx	0.005	1

Member Point Loads (BLC 18 : Antenna Wi (90 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	26.74	2
2	MP1A	Z	0	2
3	MP1A	Mx	-0.022	2
4	MP1A	X	26.74	6
5	MP1A	Z	0	6
6	MP1A	Mx	-0.022	6
7	MP1A	X	26.74	2
8	MP1A	Z	0	2
9	MP1A	Mx	-0.022	2
10	MP1A	X	26.74	6
11	MP1A	Z	0	6
12	MP1A	Mx	-0.022	6
13	MP2A	X	7.929	3
14	MP2A	Z	0	3
15	MP2A	Mx	-0.007	3
16	MP2A	X	7.929	5
17	MP2A	Z	0	5
18	MP2A	Mx	-0.007	5
19	MP1A	X	4.308	6.5
20	MP1A	Z	0	6.5
21	MP1A	Mx	0.004	6.5
22	MP1A	X	4.308	7.5
23	MP1A	Z	0	7.5
24	MP1A	Mx	0.004	7.5
25	MP1A	X	4.308	6.5
26	MP1A	Z	0	6.5
27	MP1A	Mx	0.004	6.5
28	MP1A	X	4.308	7.5
29	MP1A	Z	0	7.5
30	MP1A	Mx	0.004	7.5
31	P1A	X	10.91	1

Member Point Loads (BLC 18 : Antenna Wi (90 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
32	P1A	Z	0	1
33	P1A	Mx	0.005	1
34	P2A	X	9.09	1
35	P2A	Z	0	1
36	P2A	Mx	0.005	1

Member Point Loads (BLC 19 : Antenna Wi (120 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	24.193	2
2	MP1A	Z	13.968	2
3	MP1A	Mx	-0.012	2
4	MP1A	X	24.193	6
5	MP1A	Z	13.968	6
6	MP1A	Mx	-0.012	6
7	MP1A	X	24.193	2
8	MP1A	Z	13.968	2
9	MP1A	Mx	-0.028	2
10	MP1A	X	24.193	6
11	MP1A	Z	13.968	6
12	MP1A	Mx	-0.028	6
13	MP2A	X	9.188	3
14	MP2A	Z	5.305	3
15	MP2A	Mx	-0.008	3
16	MP2A	X	9.188	5
17	MP2A	Z	5.305	5
18	MP2A	Mx	-0.008	5
19	MP1A	X	3.148	6.5
20	MP1A	Z	1.818	6.5
21	MP1A	Mx	0.004	6.5
22	MP1A	X	3.148	7.5
23	MP1A	Z	1.818	7.5
24	MP1A	Mx	0.004	7.5
25	MP1A	X	3.148	6.5
26	MP1A	Z	1.818	6.5
27	MP1A	Mx	0.003	6.5
28	MP1A	X	3.148	7.5
29	MP1A	Z	1.818	7.5
30	MP1A	Mx	0.003	7.5
31	P1A	X	10.485	1
32	P1A	Z	6.054	1
33	P1A	Mx	0.005	1
34	P2A	X	9.303	1
35	P2A	Z	5.371	1
36	P2A	Mx	0.005	1

Member Point Loads (BLC 20 : Antenna Wi (150 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	15.163	2
2	MP1A	Z	26.263	2
3	MP1A	Mx	0.003	2
4	MP1A	X	15.163	6
5	MP1A	Z	26.263	6
6	MP1A	Mx	0.003	6

Member Point Loads (BLC 20 : Antenna Wi (150 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
7	MP1A	X	15.163	2
8	MP1A	Z	26.263	2
9	MP1A	Mx	-0.028	2
10	MP1A	X	15.163	6
11	MP1A	Z	26.263	6
12	MP1A	Mx	-0.028	6
13	MP2A	X	7.985	3
14	MP2A	Z	13.831	3
15	MP2A	Mx	-0.007	3
16	MP2A	X	7.985	5
17	MP2A	Z	13.831	5
18	MP2A	Mx	-0.007	5
19	MP1A	X	1.144	6.5
20	MP1A	Z	1.982	6.5
21	MP1A	Mx	0.002	6.5
22	MP1A	X	1.144	7.5
23	MP1A	Z	1.982	7.5
24	MP1A	Mx	0.002	7.5
25	MP1A	X	1.144	6.5
26	MP1A	Z	1.982	6.5
27	MP1A	Mx	0.000483	6.5
28	MP1A	X	1.144	7.5
29	MP1A	Z	1.982	7.5
30	MP1A	Mx	0.000483	7.5
31	P1A	X	7.251	1
32	P1A	Z	12.559	1
33	P1A	Mx	0.004	1
34	P2A	X	7.023	1
35	P2A	Z	12.165	1
36	P2A	Mx	0.004	1

Member Point Loads (BLC 21 : Antenna Wi (180 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	0	2
2	MP1A	Z	31.521	2
3	MP1A	Mx	0.018	2
4	MP1A	X	0	6
5	MP1A	Z	31.521	6
6	MP1A	Mx	0.018	6
7	MP1A	X	0	2
8	MP1A	Z	31.521	2
9	MP1A	Mx	-0.018	2
10	MP1A	X	0	6
11	MP1A	Z	31.521	6
12	MP1A	Mx	-0.018	6
13	MP2A	X	0	3
14	MP2A	Z	18.651	3
15	MP2A	Mx	0	3
16	MP2A	X	0	5
17	MP2A	Z	18.651	5
18	MP2A	Mx	0	5
19	MP1A	X	0	6.5
20	MP1A	Z	1.615	6.5
21	MP1A	Mx	0.000538	6.5
22	MP1A	X	0	7.5

Member Point Loads (BLC 21 : Antenna Wi (180 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
23	MP1A	Z	1.615	7.5
24	MP1A	Mx	0.000538	7.5
25	MP1A	X	0	6.5
26	MP1A	Z	1.615	6.5
27	MP1A	Mx	-0.000538	6.5
28	MP1A	X	0	7.5
29	MP1A	Z	1.615	7.5
30	MP1A	Mx	-0.000538	7.5
31	P1A	X	0	1
32	P1A	Z	15.699	1
33	P1A	Mx	0	1
34	P2A	X	0	1
35	P2A	Z	15.699	1
36	P2A	Mx	0	1

Member Point Loads (BLC 22 : Antenna Wi (210 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	-15.163	2
2	MP1A	Z	26.263	2
3	MP1A	Mx	0.028	2
4	MP1A	X	-15.163	6
5	MP1A	Z	26.263	6
6	MP1A	Mx	0.028	6
7	MP1A	X	-15.163	2
8	MP1A	Z	26.263	2
9	MP1A	Mx	-0.003	2
10	MP1A	X	-15.163	6
11	MP1A	Z	26.263	6
12	MP1A	Mx	-0.003	6
13	MP2A	X	-7.985	3
14	MP2A	Z	13.831	3
15	MP2A	Mx	0.007	3
16	MP2A	X	-7.985	5
17	MP2A	Z	13.831	5
18	MP2A	Mx	0.007	5
19	MP1A	X	-1.144	6.5
20	MP1A	Z	1.982	6.5
21	MP1A	Mx	-0.000483	6.5
22	MP1A	X	-1.144	7.5
23	MP1A	Z	1.982	7.5
24	MP1A	Mx	-0.000483	7.5
25	MP1A	X	-1.144	6.5
26	MP1A	Z	1.982	6.5
27	MP1A	Mx	-0.002	6.5
28	MP1A	X	-1.144	7.5
29	MP1A	Z	1.982	7.5
30	MP1A	Mx	-0.002	7.5
31	P1A	X	-7.251	1
32	P1A	Z	12.559	1
33	P1A	Mx	-0.004	1
34	P2A	X	-7.023	1
35	P2A	Z	12.165	1
36	P2A	Mx	-0.004	1

Member Point Loads (BLC 23 : Antenna Wi (240 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	-24.193	2
2	MP1A	Z	13.968	2
3	MP1A	Mx	0.028	2
4	MP1A	X	-24.193	6
5	MP1A	Z	13.968	6
6	MP1A	Mx	0.028	6
7	MP1A	X	-24.193	2
8	MP1A	Z	13.968	2
9	MP1A	Mx	0.012	2
10	MP1A	X	-24.193	6
11	MP1A	Z	13.968	6
12	MP1A	Mx	0.012	6
13	MP2A	X	-9.188	3
14	MP2A	Z	5.305	3
15	MP2A	Mx	0.008	3
16	MP2A	X	-9.188	5
17	MP2A	Z	5.305	5
18	MP2A	Mx	0.008	5
19	MP1A	X	-3.148	6.5
20	MP1A	Z	1.818	6.5
21	MP1A	Mx	-0.003	6.5
22	MP1A	X	-3.148	7.5
23	MP1A	Z	1.818	7.5
24	MP1A	Mx	-0.003	7.5
25	MP1A	X	-3.148	6.5
26	MP1A	Z	1.818	6.5
27	MP1A	Mx	-0.004	6.5
28	MP1A	X	-3.148	7.5
29	MP1A	Z	1.818	7.5
30	MP1A	Mx	-0.004	7.5
31	P1A	X	-10.485	1
32	P1A	Z	6.054	1
33	P1A	Mx	-0.005	1
34	P2A	X	-9.303	1
35	P2A	Z	5.371	1
36	P2A	Mx	-0.005	1

Member Point Loads (BLC 24 : Antenna Wi (270 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	-26.74	2
2	MP1A	Z	0	2
3	MP1A	Mx	0.022	2
4	MP1A	X	-26.74	6
5	MP1A	Z	0	6
6	MP1A	Mx	0.022	6
7	MP1A	X	-26.74	2
8	MP1A	Z	0	2
9	MP1A	Mx	0.022	2
10	MP1A	X	-26.74	6
11	MP1A	Z	0	6
12	MP1A	Mx	0.022	6
13	MP2A	X	-7.929	3
14	MP2A	Z	0	3
15	MP2A	Mx	0.007	3

Member Point Loads (BLC 24 : Antenna Wi (270 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
16	MP2A	X	-7.929	5
17	MP2A	Z	0	5
18	MP2A	Mx	0.007	5
19	MP1A	X	-4.308	6.5
20	MP1A	Z	0	6.5
21	MP1A	Mx	-0.004	6.5
22	MP1A	X	-4.308	7.5
23	MP1A	Z	0	7.5
24	MP1A	Mx	-0.004	7.5
25	MP1A	X	-4.308	6.5
26	MP1A	Z	0	6.5
27	MP1A	Mx	-0.004	6.5
28	MP1A	X	-4.308	7.5
29	MP1A	Z	0	7.5
30	MP1A	Mx	-0.004	7.5
31	P1A	X	-10.91	1
32	P1A	Z	0	1
33	P1A	Mx	-0.005	1
34	P2A	X	-9.09	1
35	P2A	Z	0	1
36	P2A	Mx	-0.005	1

Member Point Loads (BLC 25 : Antenna Wi (300 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	-24.193	2
2	MP1A	Z	-13.968	2
3	MP1A	Mx	0.012	2
4	MP1A	X	-24.193	6
5	MP1A	Z	-13.968	6
6	MP1A	Mx	0.012	6
7	MP1A	X	-24.193	2
8	MP1A	Z	-13.968	2
9	MP1A	Mx	0.028	2
10	MP1A	X	-24.193	6
11	MP1A	Z	-13.968	6
12	MP1A	Mx	0.028	6
13	MP2A	X	-9.188	3
14	MP2A	Z	-5.305	3
15	MP2A	Mx	0.008	3
16	MP2A	X	-9.188	5
17	MP2A	Z	-5.305	5
18	MP2A	Mx	0.008	5
19	MP1A	X	-3.148	6.5
20	MP1A	Z	-1.818	6.5
21	MP1A	Mx	-0.004	6.5
22	MP1A	X	-3.148	7.5
23	MP1A	Z	-1.818	7.5
24	MP1A	Mx	-0.004	7.5
25	MP1A	X	-3.148	6.5
26	MP1A	Z	-1.818	6.5
27	MP1A	Mx	-0.003	6.5
28	MP1A	X	-3.148	7.5
29	MP1A	Z	-1.818	7.5
30	MP1A	Mx	-0.003	7.5
31	P1A	X	-10.485	1

Member Point Loads (BLC 25 : Antenna Wi (300 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
32	P1A	Z	-6.054	1
33	P1A	Mx	-0.005	1
34	P2A	X	-9.303	1
35	P2A	Z	-5.371	1
36	P2A	Mx	-0.005	1

Member Point Loads (BLC 26 : Antenna Wi (330 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	-15.163	2
2	MP1A	Z	-26.263	2
3	MP1A	Mx	-0.003	2
4	MP1A	X	-15.163	6
5	MP1A	Z	-26.263	6
6	MP1A	Mx	-0.003	6
7	MP1A	X	-15.163	2
8	MP1A	Z	-26.263	2
9	MP1A	Mx	0.028	2
10	MP1A	X	-15.163	6
11	MP1A	Z	-26.263	6
12	MP1A	Mx	0.028	6
13	MP2A	X	-7.985	3
14	MP2A	Z	-13.831	3
15	MP2A	Mx	0.007	3
16	MP2A	X	-7.985	5
17	MP2A	Z	-13.831	5
18	MP2A	Mx	0.007	5
19	MP1A	X	-1.144	6.5
20	MP1A	Z	-1.982	6.5
21	MP1A	Mx	-0.002	6.5
22	MP1A	X	-1.144	7.5
23	MP1A	Z	-1.982	7.5
24	MP1A	Mx	-0.002	7.5
25	MP1A	X	-1.144	6.5
26	MP1A	Z	-1.982	6.5
27	MP1A	Mx	-0.000483	6.5
28	MP1A	X	-1.144	7.5
29	MP1A	Z	-1.982	7.5
30	MP1A	Mx	-0.000483	7.5
31	P1A	X	-7.251	1
32	P1A	Z	-12.559	1
33	P1A	Mx	-0.004	1
34	P2A	X	-7.023	1
35	P2A	Z	-12.165	1
36	P2A	Mx	-0.004	1

Member Point Loads (BLC 27 : Antenna Wm (0 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	0	2
2	MP1A	Z	-10.309	2
3	MP1A	Mx	-0.006	2
4	MP1A	X	0	6
5	MP1A	Z	-10.309	6
6	MP1A	Mx	-0.006	6

Member Point Loads (BLC 27 : Antenna Wm (0 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
7	MP1A	X	0	2
8	MP1A	Z	-10.309	2
9	MP1A	Mx	0.006	2
10	MP1A	X	0	6
11	MP1A	Z	-10.309	6
12	MP1A	Mx	0.006	6
13	MP2A	X	0	3
14	MP2A	Z	-4.971	3
15	MP2A	Mx	0	3
16	MP2A	X	0	5
17	MP2A	Z	-4.971	5
18	MP2A	Mx	0	5
19	MP1A	X	0	6.5
20	MP1A	Z	-0.368	6.5
21	MP1A	Mx	-0.000123	6.5
22	MP1A	X	0	7.5
23	MP1A	Z	-0.368	7.5
24	MP1A	Mx	-0.000123	7.5
25	MP1A	X	0	6.5
26	MP1A	Z	-0.368	6.5
27	MP1A	Mx	0.000123	6.5
28	MP1A	X	0	7.5
29	MP1A	Z	-0.368	7.5
30	MP1A	Mx	0.000123	7.5
31	P1A	X	0	1
32	P1A	Z	-3.931	1
33	P1A	Mx	0	1
34	P2A	X	0	1
35	P2A	Z	-3.931	1
36	P2A	Mx	0	1

Member Point Loads (BLC 28 : Antenna Wm (30 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	4.944	2
2	MP1A	Z	-8.563	2
3	MP1A	Mx	-0.009	2
4	MP1A	X	4.944	6
5	MP1A	Z	-8.563	6
6	MP1A	Mx	-0.009	6
7	MP1A	X	4.944	2
8	MP1A	Z	-8.563	2
9	MP1A	Mx	0.000875	2
10	MP1A	X	4.944	6
11	MP1A	Z	-8.563	6
12	MP1A	Mx	0.000875	6
13	MP2A	X	2.078	3
14	MP2A	Z	-3.599	3
15	MP2A	Mx	-0.002	3
16	MP2A	X	2.078	5
17	MP2A	Z	-3.599	5
18	MP2A	Mx	-0.002	5
19	MP1A	X	0.291	6.5
20	MP1A	Z	-0.503	6.5
21	MP1A	Mx	0.000123	6.5
22	MP1A	X	0.291	7.5

Member Point Loads (BLC 28 : Antenna Wm (30 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
23	MP1A	Z	-0.503	7.5
24	MP1A	Mx	0.000123	7.5
25	MP1A	X	0.291	6.5
26	MP1A	Z	-0.503	6.5
27	MP1A	Mx	0.000459	6.5
28	MP1A	X	0.291	7.5
29	MP1A	Z	-0.503	7.5
30	MP1A	Mx	0.000459	7.5
31	P1A	X	1.804	1
32	P1A	Z	-3.124	1
33	P1A	Mx	0.000902	1
34	P2A	X	1.743	1
35	P2A	Z	-3.02	1
36	P2A	Mx	0.000872	1

Member Point Loads (BLC 29 : Antenna Wm (60 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	7.832	2
2	MP1A	Z	-4.522	2
3	MP1A	Mx	-0.009	2
4	MP1A	X	7.832	6
5	MP1A	Z	-4.522	6
6	MP1A	Mx	-0.009	6
7	MP1A	X	7.832	2
8	MP1A	Z	-4.522	2
9	MP1A	Mx	-0.004	2
10	MP1A	X	7.832	6
11	MP1A	Z	-4.522	6
12	MP1A	Mx	-0.004	6
13	MP2A	X	2.188	3
14	MP2A	Z	-1.263	3
15	MP2A	Mx	-0.002	3
16	MP2A	X	2.188	5
17	MP2A	Z	-1.263	5
18	MP2A	Mx	-0.002	5
19	MP1A	X	0.873	6.5
20	MP1A	Z	-0.504	6.5
21	MP1A	Mx	0.000705	6.5
22	MP1A	X	0.873	7.5
23	MP1A	Z	-0.504	7.5
24	MP1A	Mx	0.000705	7.5
25	MP1A	X	0.873	6.5
26	MP1A	Z	-0.504	6.5
27	MP1A	Mx	0.001	6.5
28	MP1A	X	0.873	7.5
29	MP1A	Z	-0.504	7.5
30	MP1A	Mx	0.001	7.5
31	P1A	X	2.564	1
32	P1A	Z	-1.48	1
33	P1A	Mx	0.001	1
34	P2A	X	2.251	1
35	P2A	Z	-1.3	1
36	P2A	Mx	0.001	1

Member Point Loads (BLC 30 : Antenna Wm (90 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	8.622	2
2	MP1A	Z	0	2
3	MP1A	Mx	-0.007	2
4	MP1A	X	8.622	6
5	MP1A	Z	0	6
6	MP1A	Mx	-0.007	6
7	MP1A	X	8.622	2
8	MP1A	Z	0	2
9	MP1A	Mx	-0.007	2
10	MP1A	X	8.622	6
11	MP1A	Z	0	6
12	MP1A	Mx	-0.007	6
13	MP2A	X	1.712	3
14	MP2A	Z	0	3
15	MP2A	Mx	-0.001	3
16	MP2A	X	1.712	5
17	MP2A	Z	0	5
18	MP2A	Mx	-0.001	5
19	MP1A	X	1.221	6.5
20	MP1A	Z	0	6.5
21	MP1A	Mx	0.001	6.5
22	MP1A	X	1.221	7.5
23	MP1A	Z	0	7.5
24	MP1A	Mx	0.001	7.5
25	MP1A	X	1.221	6.5
26	MP1A	Z	0	6.5
27	MP1A	Mx	0.001	6.5
28	MP1A	X	1.221	7.5
29	MP1A	Z	0	7.5
30	MP1A	Mx	0.001	7.5
31	P1A	X	2.637	1
32	P1A	Z	0	1
33	P1A	Mx	0.001	1
34	P2A	X	2.156	1
35	P2A	Z	0	1
36	P2A	Mx	0.001	1

Member Point Loads (BLC 31 : Antenna Wm (120 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	7.832	2
2	MP1A	Z	4.522	2
3	MP1A	Mx	-0.004	2
4	MP1A	X	7.832	6
5	MP1A	Z	4.522	6
6	MP1A	Mx	-0.004	6
7	MP1A	X	7.832	2
8	MP1A	Z	4.522	2
9	MP1A	Mx	-0.009	2
10	MP1A	X	7.832	6
11	MP1A	Z	4.522	6
12	MP1A	Mx	-0.009	6
13	MP2A	X	2.188	3
14	MP2A	Z	1.263	3
15	MP2A	Mx	-0.002	3

Member Point Loads (BLC 31 : Antenna Wm (120 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
16	MP2A	X	2.188	5
17	MP2A	Z	1.263	5
18	MP2A	Mx	-0.002	5
19	MP1A	X	0.873	6.5
20	MP1A	Z	0.504	6.5
21	MP1A	Mx	0.001	6.5
22	MP1A	X	0.873	7.5
23	MP1A	Z	0.504	7.5
24	MP1A	Mx	0.001	7.5
25	MP1A	X	0.873	6.5
26	MP1A	Z	0.504	6.5
27	MP1A	Mx	0.000705	6.5
28	MP1A	X	0.873	7.5
29	MP1A	Z	0.504	7.5
30	MP1A	Mx	0.000705	7.5
31	P1A	X	2.564	1
32	P1A	Z	1.48	1
33	P1A	Mx	0.001	1
34	P2A	X	2.251	1
35	P2A	Z	1.3	1
36	P2A	Mx	0.001	1

Member Point Loads (BLC 32 : Antenna Wm (150 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	4.944	2
2	MP1A	Z	8.563	2
3	MP1A	Mx	0.000875	2
4	MP1A	X	4.944	6
5	MP1A	Z	8.563	6
6	MP1A	Mx	0.000875	6
7	MP1A	X	4.944	2
8	MP1A	Z	8.563	2
9	MP1A	Mx	-0.009	2
10	MP1A	X	4.944	6
11	MP1A	Z	8.563	6
12	MP1A	Mx	-0.009	6
13	MP2A	X	2.078	3
14	MP2A	Z	3.599	3
15	MP2A	Mx	-0.002	3
16	MP2A	X	2.078	5
17	MP2A	Z	3.599	5
18	MP2A	Mx	-0.002	5
19	MP1A	X	0.291	6.5
20	MP1A	Z	0.503	6.5
21	MP1A	Mx	0.000459	6.5
22	MP1A	X	0.291	7.5
23	MP1A	Z	0.503	7.5
24	MP1A	Mx	0.000459	7.5
25	MP1A	X	0.291	6.5
26	MP1A	Z	0.503	6.5
27	MP1A	Mx	0.000123	6.5
28	MP1A	X	0.291	7.5
29	MP1A	Z	0.503	7.5
30	MP1A	Mx	0.000123	7.5
31	P1A	X	1.804	1

Member Point Loads (BLC 32 : Antenna Wm (150 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
32	P1A	Z	3.124	1
33	P1A	Mx	0.000902	1
34	P2A	X	1.743	1
35	P2A	Z	3.02	1
36	P2A	Mx	0.000872	1

Member Point Loads (BLC 33 : Antenna Wm (180 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	0	2
2	MP1A	Z	10.309	2
3	MP1A	Mx	0.006	2
4	MP1A	X	0	6
5	MP1A	Z	10.309	6
6	MP1A	Mx	0.006	6
7	MP1A	X	0	2
8	MP1A	Z	10.309	2
9	MP1A	Mx	-0.006	2
10	MP1A	X	0	6
11	MP1A	Z	10.309	6
12	MP1A	Mx	-0.006	6
13	MP2A	X	0	3
14	MP2A	Z	4.971	3
15	MP2A	Mx	0	3
16	MP2A	X	0	5
17	MP2A	Z	4.971	5
18	MP2A	Mx	0	5
19	MP1A	X	0	6.5
20	MP1A	Z	0.368	6.5
21	MP1A	Mx	0.000123	6.5
22	MP1A	X	0	7.5
23	MP1A	Z	0.368	7.5
24	MP1A	Mx	0.000123	7.5
25	MP1A	X	0	6.5
26	MP1A	Z	0.368	6.5
27	MP1A	Mx	-0.000123	6.5
28	MP1A	X	0	7.5
29	MP1A	Z	0.368	7.5
30	MP1A	Mx	-0.000123	7.5
31	P1A	X	0	1
32	P1A	Z	3.931	1
33	P1A	Mx	0	1
34	P2A	X	0	1
35	P2A	Z	3.931	1
36	P2A	Mx	0	1

Member Point Loads (BLC 34 : Antenna Wm (210 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	-4.944	2
2	MP1A	Z	8.563	2
3	MP1A	Mx	0.009	2
4	MP1A	X	-4.944	6
5	MP1A	Z	8.563	6
6	MP1A	Mx	0.009	6

Member Point Loads (BLC 34 : Antenna Wm (210 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
7	MP1A	X	-4.944	2
8	MP1A	Z	8.563	2
9	MP1A	Mx	-0.000875	2
10	MP1A	X	-4.944	6
11	MP1A	Z	8.563	6
12	MP1A	Mx	-0.000875	6
13	MP2A	X	-2.078	3
14	MP2A	Z	3.599	3
15	MP2A	Mx	0.002	3
16	MP2A	X	-2.078	5
17	MP2A	Z	3.599	5
18	MP2A	Mx	0.002	5
19	MP1A	X	-0.291	6.5
20	MP1A	Z	0.503	6.5
21	MP1A	Mx	-0.000123	6.5
22	MP1A	X	-0.291	7.5
23	MP1A	Z	0.503	7.5
24	MP1A	Mx	-0.000123	7.5
25	MP1A	X	-0.291	6.5
26	MP1A	Z	0.503	6.5
27	MP1A	Mx	-0.000459	6.5
28	MP1A	X	-0.291	7.5
29	MP1A	Z	0.503	7.5
30	MP1A	Mx	-0.000459	7.5
31	P1A	X	-1.804	1
32	P1A	Z	3.124	1
33	P1A	Mx	-0.000902	1
34	P2A	X	-1.743	1
35	P2A	Z	3.02	1
36	P2A	Mx	-0.000872	1

Member Point Loads (BLC 35 : Antenna Wm (240 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	-7.832	2
2	MP1A	Z	4.522	2
3	MP1A	Mx	0.009	2
4	MP1A	X	-7.832	6
5	MP1A	Z	4.522	6
6	MP1A	Mx	0.009	6
7	MP1A	X	-7.832	2
8	MP1A	Z	4.522	2
9	MP1A	Mx	0.004	2
10	MP1A	X	-7.832	6
11	MP1A	Z	4.522	6
12	MP1A	Mx	0.004	6
13	MP2A	X	-2.188	3
14	MP2A	Z	1.263	3
15	MP2A	Mx	0.002	3
16	MP2A	X	-2.188	5
17	MP2A	Z	1.263	5
18	MP2A	Mx	0.002	5
19	MP1A	X	-0.873	6.5
20	MP1A	Z	0.504	6.5
21	MP1A	Mx	-0.000705	6.5
22	MP1A	X	-0.873	7.5

Member Point Loads (BLC 35 : Antenna Wm (240 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
23	MP1A	Z	0.504	7.5
24	MP1A	Mx	-0.000705	7.5
25	MP1A	X	-0.873	6.5
26	MP1A	Z	0.504	6.5
27	MP1A	Mx	-0.001	6.5
28	MP1A	X	-0.873	7.5
29	MP1A	Z	0.504	7.5
30	MP1A	Mx	-0.001	7.5
31	P1A	X	-2.564	1
32	P1A	Z	1.48	1
33	P1A	Mx	-0.001	1
34	P2A	X	-2.251	1
35	P2A	Z	1.3	1
36	P2A	Mx	-0.001	1

Member Point Loads (BLC 36 : Antenna Wm (270 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	-8.622	2
2	MP1A	Z	0	2
3	MP1A	Mx	0.007	2
4	MP1A	X	-8.622	6
5	MP1A	Z	0	6
6	MP1A	Mx	0.007	6
7	MP1A	X	-8.622	2
8	MP1A	Z	0	2
9	MP1A	Mx	0.007	2
10	MP1A	X	-8.622	6
11	MP1A	Z	0	6
12	MP1A	Mx	0.007	6
13	MP2A	X	-1.712	3
14	MP2A	Z	0	3
15	MP2A	Mx	0.001	3
16	MP2A	X	-1.712	5
17	MP2A	Z	0	5
18	MP2A	Mx	0.001	5
19	MP1A	X	-1.221	6.5
20	MP1A	Z	0	6.5
21	MP1A	Mx	-0.001	6.5
22	MP1A	X	-1.221	7.5
23	MP1A	Z	0	7.5
24	MP1A	Mx	-0.001	7.5
25	MP1A	X	-1.221	6.5
26	MP1A	Z	0	6.5
27	MP1A	Mx	-0.001	6.5
28	MP1A	X	-1.221	7.5
29	MP1A	Z	0	7.5
30	MP1A	Mx	-0.001	7.5
31	P1A	X	-2.637	1
32	P1A	Z	0	1
33	P1A	Mx	-0.001	1
34	P2A	X	-2.156	1
35	P2A	Z	0	1
36	P2A	Mx	-0.001	1

Member Point Loads (BLC 37 : Antenna Wm (300 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	-7.832	2
2	MP1A	Z	-4.522	2
3	MP1A	Mx	0.004	2
4	MP1A	X	-7.832	6
5	MP1A	Z	-4.522	6
6	MP1A	Mx	0.004	6
7	MP1A	X	-7.832	2
8	MP1A	Z	-4.522	2
9	MP1A	Mx	0.009	2
10	MP1A	X	-7.832	6
11	MP1A	Z	-4.522	6
12	MP1A	Mx	0.009	6
13	MP2A	X	-2.188	3
14	MP2A	Z	-1.263	3
15	MP2A	Mx	0.002	3
16	MP2A	X	-2.188	5
17	MP2A	Z	-1.263	5
18	MP2A	Mx	0.002	5
19	MP1A	X	-0.873	6.5
20	MP1A	Z	-0.504	6.5
21	MP1A	Mx	-0.001	6.5
22	MP1A	X	-0.873	7.5
23	MP1A	Z	-0.504	7.5
24	MP1A	Mx	-0.001	7.5
25	MP1A	X	-0.873	6.5
26	MP1A	Z	-0.504	6.5
27	MP1A	Mx	-0.000705	6.5
28	MP1A	X	-0.873	7.5
29	MP1A	Z	-0.504	7.5
30	MP1A	Mx	-0.000705	7.5
31	P1A	X	-2.564	1
32	P1A	Z	-1.48	1
33	P1A	Mx	-0.001	1
34	P2A	X	-2.251	1
35	P2A	Z	-1.3	1
36	P2A	Mx	-0.001	1

Member Point Loads (BLC 38 : Antenna Wm (330 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	-4.944	2
2	MP1A	Z	-8.563	2
3	MP1A	Mx	-0.000875	2
4	MP1A	X	-4.944	6
5	MP1A	Z	-8.563	6
6	MP1A	Mx	-0.000875	6
7	MP1A	X	-4.944	2
8	MP1A	Z	-8.563	2
9	MP1A	Mx	0.009	2
10	MP1A	X	-4.944	6
11	MP1A	Z	-8.563	6
12	MP1A	Mx	0.009	6
13	MP2A	X	-2.078	3
14	MP2A	Z	-3.599	3
15	MP2A	Mx	0.002	3

Member Point Loads (BLC 38 : Antenna Wm (330 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
16	MP2A	X	-2.078	5
17	MP2A	Z	-3.599	5
18	MP2A	Mx	0.002	5
19	MP1A	X	-0.291	6.5
20	MP1A	Z	-0.503	6.5
21	MP1A	Mx	-0.000459	6.5
22	MP1A	X	-0.291	7.5
23	MP1A	Z	-0.503	7.5
24	MP1A	Mx	-0.000459	7.5
25	MP1A	X	-0.291	6.5
26	MP1A	Z	-0.503	6.5
27	MP1A	Mx	-0.000123	6.5
28	MP1A	X	-0.291	7.5
29	MP1A	Z	-0.503	7.5
30	MP1A	Mx	-0.000123	7.5
31	P1A	X	-1.804	1
32	P1A	Z	-3.124	1
33	P1A	Mx	-0.000902	1
34	P2A	X	-1.743	1
35	P2A	Z	-3.02	1
36	P2A	Mx	-0.000872	1

Member Point Loads (BLC 77 : Lm1)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	M11	Y	-500	%67

Member Point Loads (BLC 78 : Lm2)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	M11	Y	-500	%33

Member Point Loads (BLC 79 : Lv1)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	M11	Y	-250	0

Member Point Loads (BLC 80 : Lv2)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	M11	Y	-250	%50

Member Point Loads (BLC 81 : Antenna Ev)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	Y	-1.664	2
2	MP1A	My	-0.001	2
3	MP1A	Mz	0.000971	2
4	MP1A	Y	-1.664	6
5	MP1A	My	-0.001	6
6	MP1A	Mz	0.000971	6
7	MP1A	Y	-1.664	2
8	MP1A	My	-0.001	2
9	MP1A	Mz	-0.000971	2

Member Point Loads (BLC 81 : Antenna Ev) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
10	MP1A	Y	-1.664	6
11	MP1A	My	-0.001	6
12	MP1A	Mz	-0.000971	6
13	MP2A	Y	-2.23	3
14	MP2A	My	-0.002	3
15	MP2A	Mz	0	3
16	MP2A	Y	-2.23	5
17	MP2A	My	-0.002	5
18	MP2A	Mz	0	5
19	MP1A	Y	-0.451	6.5
20	MP1A	My	0.000451	6.5
21	MP1A	Mz	0.00015	6.5
22	MP1A	Y	-0.451	7.5
23	MP1A	My	0.000451	7.5
24	MP1A	Mz	0.00015	7.5
25	MP1A	Y	-0.451	6.5
26	MP1A	My	0.000451	6.5
27	MP1A	Mz	-0.00015	6.5
28	MP1A	Y	-0.451	7.5
29	MP1A	My	0.000451	7.5
30	MP1A	Mz	-0.00015	7.5
31	P1A	Y	-4.321	1
32	P1A	My	0.002	1
33	P1A	Mz	0	1
34	P2A	Y	-3.599	1
35	P2A	My	0.002	1
36	P2A	Mz	0	1

Member Point Loads (BLC 82 : Antenna Eh (0 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	Z	-4.16	2
2	MP1A	Mx	-0.002	2
3	MP1A	Z	-4.16	6
4	MP1A	Mx	-0.002	6
5	MP1A	Z	-4.16	2
6	MP1A	Mx	0.002	2
7	MP1A	Z	-4.16	6
8	MP1A	Mx	0.002	6
9	MP2A	Z	-5.574	3
10	MP2A	Mx	0	3
11	MP2A	Z	-5.574	5
12	MP2A	Mx	0	5
13	MP1A	Z	-1.126	6.5
14	MP1A	Mx	-0.000375	6.5
15	MP1A	Z	-1.126	7.5
16	MP1A	Mx	-0.000375	7.5
17	MP1A	Z	-1.126	6.5
18	MP1A	Mx	0.000375	6.5
19	MP1A	Z	-1.126	7.5
20	MP1A	Mx	0.000375	7.5
21	P1A	Z	-10.803	1
22	P1A	Mx	0	1
23	P2A	Z	-8.998	1
24	P2A	Mx	0	1

Member Point Loads (BLC 83 : Antenna Eh (90 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP1A	X	4.16	2
2	MP1A	Mx	-0.003	2
3	MP1A	X	4.16	6
4	MP1A	Mx	-0.003	6
5	MP1A	X	4.16	2
6	MP1A	Mx	-0.003	2
7	MP1A	X	4.16	6
8	MP1A	Mx	-0.003	6
9	MP2A	X	5.574	3
10	MP2A	Mx	-0.005	3
11	MP2A	X	5.574	5
12	MP2A	Mx	-0.005	5
13	MP1A	X	1.126	6.5
14	MP1A	Mx	0.001	6.5
15	MP1A	X	1.126	7.5
16	MP1A	Mx	0.001	7.5
17	MP1A	X	1.126	6.5
18	MP1A	Mx	0.001	6.5
19	MP1A	X	1.126	7.5
20	MP1A	Mx	0.001	7.5
21	P1A	X	10.803	1
22	P1A	Mx	0.005	1
23	P2A	X	8.998	1
24	P2A	Mx	0.004	1

Member Area Loads

No Data to Print...

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N261	max	815.343	9	935.092	18	210.039	12	-0.099	74	0	75	0.151	34
2		min	-959.072	3	314.435	75	-1902.643	18	-0.288	18	0	1	-0.158	49
3	N261A	max	883.06	10	921.753	24	1878.883	24	-0.098	69	0	75	0.155	27
4		min	-751.666	4	311.84	69	-64.221	6	-0.287	24	0	1	-0.162	49
5	N68A	max	517.065	3	33.504	21	1260.516	3	0	75	0	75	0	75
6		min	-500.265	9	9.459	67	-1276.461	9	0	1	0	1	0	1
7	Totals:	max	1243.251	10	1844.104	19	1664.444	1						
8		min	-1243.25	4	645.768	64	-1664.445	7						

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M1	PIPE 2.0	0.287	0	44	0.147	0.926		45	31801.387	32130	1.872	1.872	1	H1-1b
2	M2	PIPE 2.0	0.208	0.926	12	0.131	0.926		45	31801.387	32130	1.872	1.872	1	H1-1b
3	M3	PIPE 2.0	0.289	0.463	49	0.161	0.463		39	31801.387	32130	1.872	1.872	1	H1-1b
4	M4	PIPE 2.0	0.326	0.926	3	0.119	0.926		13	31801.387	32130	1.872	1.872	1	H1-1b
5	M5	PIPE 2.0	0.526	0.926	2	0.155	0.926		37	31801.387	32130	1.872	1.872	1	H1-1b
6	M6	PIPE 2.0	0.721	0	11	0.18	0		23	31801.387	32130	1.872	1.872	1	H1-1b
7	M7	PIPE 2.0	0.313	0	11	0.132	0		23	31801.387	32130	1.872	1.872	1	H1-1b
8	M8	PIPE 2.0	0.302	0.463	25	0.168	0.463		27	31801.387	32130	1.872	1.872	1	H1-1b
9	M9	PIPE 2.0	0.318	0.926	2	0.136	0		28	31801.387	32130	1.872	1.872	1	H1-1b
10	M10	PIPE 2.0	0.521	0.926	9	0.152	0		33	31801.387	32130	1.872	1.872	1	H1-1b
11	M11	PIPE 2.0	0.734	10	9	0.195	12		9	6830.971	32130	1.872	1.872	1	H1-1b

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
12	M12	PIPE 2.0	0.284	0	2	0.146	0.926		40	31801.387	32130	1.872	1.872	1	H1-1b
13	M13	PIPE 2.0	0.216	0.926	6	0.131	0.926		40	31801.387	32130	1.872	1.872	1	H1-1b
14	M14	PIPE 2.0	0.289	0.463	49	0.161	0.463		44	31801.387	32130	1.872	1.872	1	H1-1b
15	M15	PIPE 2.0	0.341	0.926	9	0.125	0.926		19	31801.387	32130	1.872	1.872	1	H1-1b
16	M16	PIPE 2.0	0.582	0.926	8	0.159	0.926		19	31801.387	32130	1.872	1.872	1	H1-1b
17	M17	PIPE 2.0	0.74	0	5	0.186	0		18	31801.387	32130	1.872	1.872	1	H1-1b
18	M18	PIPE 2.0	0.308	0	5	0.137	0		18	31801.387	32130	1.872	1.872	1	H1-1b
19	M19	PIPE 2.0	0.3	0.463	31	0.169	0.463		32	31801.387	32130	1.872	1.872	1	H1-1b
20	M20	PIPE 2.0	0.349	0.926	8	0.136	0		33	31801.387	32130	1.872	1.872	1	H1-1b
21	M21	PIPE 2.0	0.548	0.926	2	0.151	0		29	31801.387	32130	1.872	1.872	1	H1-1b
22	M22	PIPE 2.0	0.778	10	3	0.196	12		3	6830.971	32130	1.872	1.872	1	H1-1b
23	M23	PIPE 2.0	0.46	0	34	0.101	2.719		19	29405.041	32130	1.872	1.872	1	H1-1b
24	M24	PIPE 2.0	0.428	2.719	45	0.089	2.719		43	29405.041	32130	1.872	1.872	1	H1-1b
25	M27	PIPE 2.0	0.184	2.719	49	0.047	2.719		49	29405.041	32130	1.872	1.872	1	H1-1b
26	M28	PIPE 2.0	0.405	1.359	9	0.089	1.359		3	29405.041	32130	1.872	1.872	1	H1-1b
27	P2A	PIPE 2.0	0.162	0	33	0.099	2.719		6	29405.041	32130	1.872	1.872	1	H1-1b
28	M30	PIPE 2.0	0.101	0	33	0.024	0		25	29405.041	32130	1.872	1.872	1	H1-1b
29	P1A	PIPE 2.0	0.165	2.719	10	0.267	2.719		10	29405.041	32130	1.872	1.872	1	H3-6
30	MP2A	PIPE 2.0	0.069	3.417	7	0.039	5.083		20	14916.096	32130	1.872	1.872	1	H1-1b
31	MP1A	PIPE 2.0	0.308	3.417	7	0.17	3.333		4	14916.096	32130	1.872	1.872	1	H1-1b
32	M44	PIPE 2.5X	0.332	3.875	5	0.448	3.875		4	57777.695	66150	4.646	4.646	1	H3-6
33	M50	PIPE 1.5	0.206	0.125	13	0.103	3.875		49	17453.177	23593.5	1.105	1.105	1	H1-1b
34	M166A	HSS3X3X3	0.325	0	4	0.076	1.5	y	32	76946.124	78246	6.797	6.797	2.02	H1-1b
35	M167A	HSS3X3X3	0.325	0	10	0.076	1.5	y	26	76946.124	78246	6.797	6.797	2.025	H1-1b
36	M172	PL1/2X7_HRA	0.252	0.167	18	0.185	0.167	y	49	112259.562	113400	1.181	16.538	1.667	H1-1b
37	M172A	PL1/2X7_HRA	0.252	0.167	24	0.189	0.167	y	49	112259.562	113400	1.181	16.538	1.667	H1-1b
38	M57	PIPE 1.5	0.295	4.432	3	0.005	8.863		9	5851.344	24267.6	1.137	1.137	1	H1-1a

VzW SMART Tool© Vendor

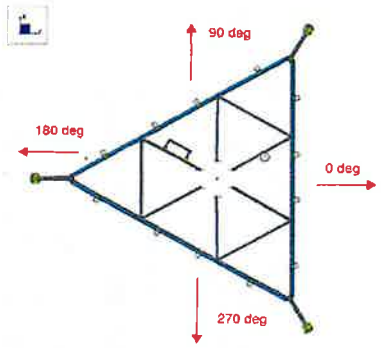
Client:	Verizon Wireless	Date:	1/4/2024
Site Name:	NORWALK 4 CT - NU Tindall Ave		
MDG #:	5000386718		
Fuze ID #:	16883770	Page:	1

Version 2.00

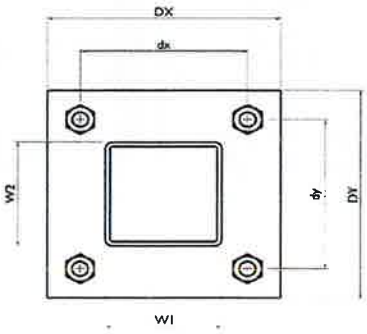
I. Mount-to-Tower Connection Check

Custom Orientation Required	Yes

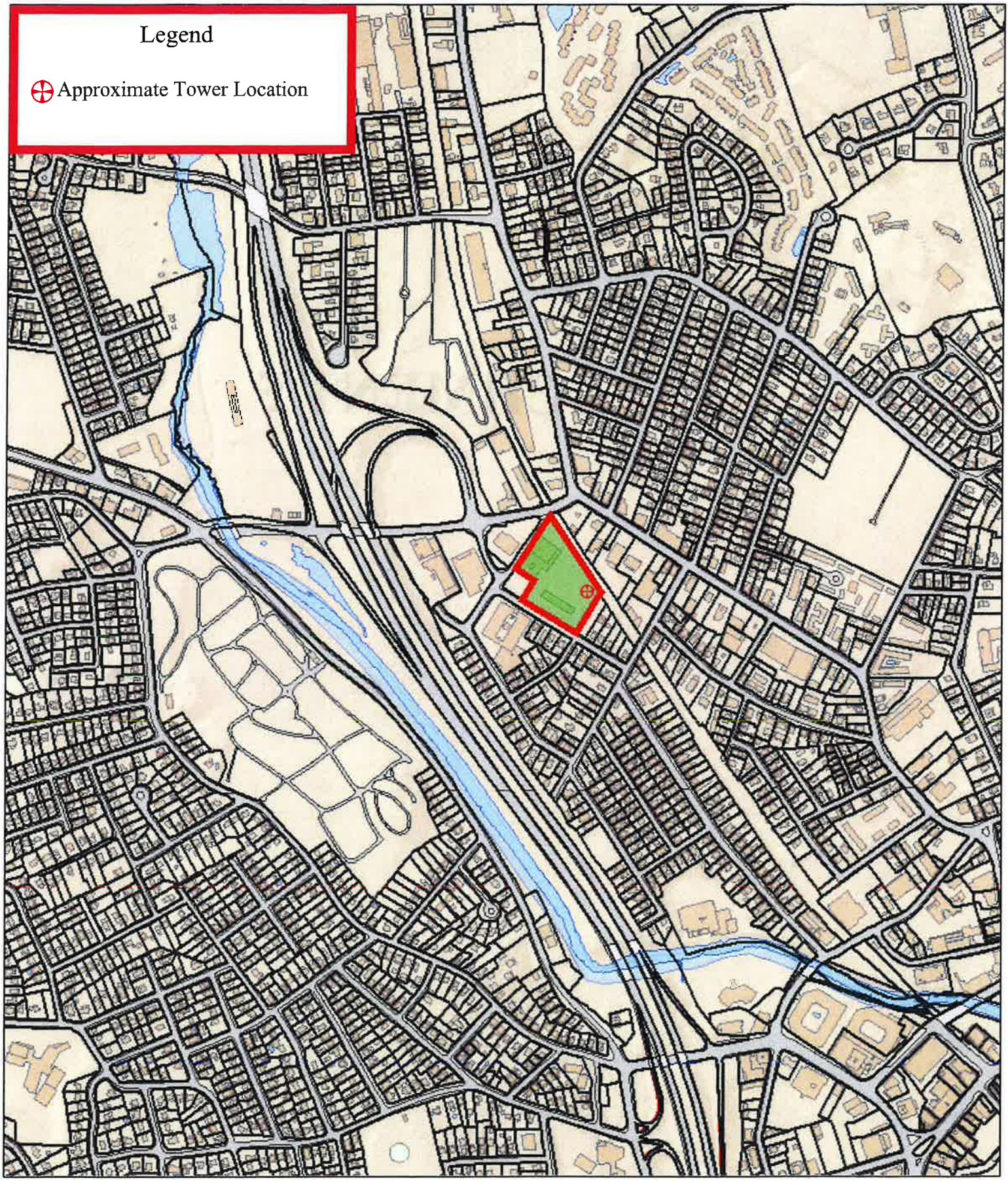
Nodes (labeled per Risa)	Orientation (per graphic of typical platform)
N261	0
N261A	0



Tower Connection Bolt Checks	Yes
Bolt Orientation	Parallel
Bolt Quantity per Reaction:	4
d_x (in) *(Delta X of typ. bolt config. sketch)* :	3.5
d_y (in) *(Delta Y of typ. bolt config. sketch)* :	2
Bolt Type:	A36
Bolt Diameter (in):	0.5
Required Tensile Strength / bolt (kips):	1.3
Required Shear Strength / bolt (kips):	0.3
Tensile Capacity / bolt (kips):	6.4
Shear Capacity / bolt (kips):	3.8
Bolt Overall Utilization:	**20.9%**
Tower Connection Baseplate Checks	No
Tower Connection Weld Checks	No



ATTACHMENT 5



2 Tindall Ave Parcel Map

N
W
E
S

Feet
0 650 1,300 2,600
1 inch = 952 feet

SEAL OF THE CITY OF NORWALK
E PLURIBUS UNUM
INCORPORATED 1913

2 TINDALL AVE

Location	2 TINDALL AVE	**Mblu**	1/ 92/ 13/ 0/
Acct#	3712	**Owner**	CONN LIGHT & POWER CO
Assessment	$5,009,670	**Appraisal**	$7,156,670
PID	3712	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$4,043,250	$3,113,420	$7,156,670
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$2,830,280	$2,179,390	$5,009,670

Owner of Record

Owner	CONN LIGHT & POWER CO
Co-Owner	ATTN TAX DIVISION
Address	107 SELDEN ST BERLIN, CT 06037-0000

Sale Price	$0
Certificate	
Book & Page	1189/110
Sale Date	12/26/1978

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
CONN LIGHT & POWER CO	$0		1189/110	12/26/1978

Building Information

Building 1 : Section 1

Year Built:	1929
Living Area:	37,776
Replacement Cost:	$4,340,633
Building Percent Good:	72
Replacement Cost Less Depreciation:	$3,125,260

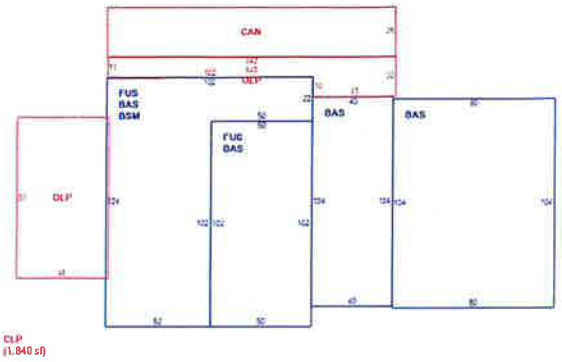
Building Attributes	
Field	**Description**

Building Photo

Building Photo
(http://images.vgsi.com/photos/NorwalkCTPhotos//24)

STYLE	Office/Warehs
MODEL	Industrial
Grade	B
Stories:	2.00
Occupancy	1.00
Exterior Wall 1	Brick/Masonry
Exterior Wall 2	Concrete
Roof Structure	Flat
Roof Cover	Tar and Gravel
Interior Wall 1	Plastered
Interior Wall 2	
Interior Floor 1	Carpet
Interior Floor 2	Concrete
Heating Fuel	Gas
Heating Type	Forced Air
AC Percent	48
Heat Percent	100
Bldg Use	Utility
Total Rooms	0
Bedrooms	0
Full Baths	0
Half Baths	9
Extra Fixtures	0
FBM Area	
Heat/AC	Heat/AC Pkg
Frame	Masonry
Plumbing	Average
Foundation	Poured Conc
Partitions	Average
Wall Height	12.00
% Sprinkler	0.00

Building Layout



(ParcelSketch.ashx?pid=3712&bid=3712)

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	25,128	25,128
FUS	Finished Upper Story	12,648	12,648
BSM	Basement	7,548	0
CAN	Canopy	3,575	0
CLP	Covered Loading Platform	1,840	0
OLP	Loading Platform	5,491	0
		56,230	37,776

Extra Features

Extra Features				Legend
Code	**Description**	**Size**	**Value**	**Bldg #**
A/C	Air Conditioning	37776.00 S.F.	$75,550	1

Land

Land Use

Use Code 401

Land Line Valuation

Size (Acres) 4

Description	Utility	**Frontage**	
Zone	B2	**Depth**	
Neighborhood	C120	**Assessed Value**	$2,179,390
		Appraised Value	$3,113,420

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV1	Paving Asph.	FR		125000.00 S.F.	$243,750	1
PAV1	Paving Asph.			10000.00 S.F.	$19,500	1
SHD1	Shed	FR	Frame	96.00 S.F.	$890	1
FN6	Fence 6'			5000.00 L.F.	$68,180	1
GAR8	Industrial	BR	Masonry	8080.00 S.F.	$466,620	1
CNP	Canopy		Loading Dock	3480.00 S.F.	$43,500	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$4,043,250	$3,113,420	$7,156,670
2017	$2,291,190	$2,506,970	$4,798,160
2016	$2,291,190	$2,506,970	$4,798,160

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$2,830,280	$2,179,390	$5,009,670
2017	$1,603,840	$1,754,880	$3,358,720
2016	$1,603,840	$1,754,880	$3,358,720

ATTACHMENT 6

Verizon/Norwalk 4

UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103		3	quadient CORRECTION IMI $003.34 06/11/2024 ZIP 06101 043M32208619 US POSTAGE
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Harry Rilling, Mayor City of Norwalk 125 East Avenue Norwalk, CT 06856				
2.	Steven Kleppin, Director Planning and Zoning City of Norwalk 125 East Avenue Norwalk, CT 06856				
3.	Eversource Attn: Christopher Gelinas, Senior Real Estate Specialist 107 Selden Street Berlin, CT 06037				
4.					
5.					
6.					

USPS JUN 11 2024 06133

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See Reverse for Instructions