Transcend Wireless

10 Industrial Ave,
Suite 3
Mahwah NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

July 26, 2023

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

RE: Notice of Exempt Modification
75 Wells Road, Wethersfield, CT 06109
Latitude: 41.7058800000
Longitude: -72.66333000000
T-Mobile Site#: CTHA506A – Anchor

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 95-foot level of the existing 101-foot monopole at 75 Wells Road, Wethersfield, CT. The 101-foot monopole is owned and operated by Everest Infrastructure Partners. The property is owned by Southern New England Telephone Company c/o Frontier Communications. T-Mobile now intends to remove three (3) of its existing antennas and add three (3) new 2500 MHz antennas. The new antennas will be installed at the same 95-foot level of the tower and will support 5G services. Structural modifications to the tower are necessary as detailed in the enclosed structural analysis and structural design drawings.

Planned Modifications:
Tower:

Remove
N/A

Remove and Replace:
(3) AIR 21 for (3) AIR 6419 2500 MHz Antennas
(2) 1-5/8" Hybrid Cables for (2) new 1-5/8" Hybrid Cables

Install New:
(3) 4460 RRUs

Existing to Remain:
(3) AIR 32 1900/2100 MHz Antennas
(3) APXVAARR24_43-U-NA20 600/700/1900 MHz Antennas
(3) 4449 RRUs
(3) 1-5/8" Hybrid Cables

Ground:
Install New: 6160 Cabinet and B160 Battery Cabinet

This facility has been approved by the Council in Petition No. 1012 dated December 1, 2011. This modification complies with this approval. Please see the enclosed. Everest Infrastructure Partners was approved for a tower replacement at this location via Petition No. 1521 on September 30, 2022. Everest Infrastructure Partners will no longer be proceeding with this tower replacement project.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to Mayor- Michael Rell, Elected Official, and Denise Bradley, Town Planner for the Town of Wethersfield, as well as the tower owner and property owner.

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 structure.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

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

6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

Kyle Richers
Transcend Wireless
Cell: 908-447-4716
Email: krichers@transcendwireless.com

Attachments
cc: Michael Rell – Mayor – Town of Wethersfield
Denise Bradley– Town Planner – Town of Wethersfield
Everest Infrastructure Partners – Tower Owner
Frontier Communications- Property Owner

Kyle Richers

From: UPS <pkginfo@ups.com>
Sent: Thursday, July 27, 2023 10:50 AM
To: KRICHERS@TRANSCENDWIRELESS.COM
Subject: UPS Delivery Notification, Tracking Number 1ZV257424291282516

Hello, your package has been delivered.

Delivery Date: Thursday, 07/27/2023
Delivery Time: 10:48 AM
Left At: OFFICE
Signed by: CARLUCCI

TRANSCEND WIRELESS

Tracking Number:	1ZV257424291282516
Ship To:	FRONTIER COMMUNICATIONS 401 MERRITT 7 NORWALK, CT 06851 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTHA506A CSC PO

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Kyle Richers

From: UPS <pkginfo@ups.com>
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To: KRICHERS@TRANSCENDWIRELESS.COM
Subject: UPS Delivery Notification, Tracking Number 1ZV257424290676503

Hello, your package has been delivered.

Delivery Date: Thursday, 07/27/2023
Delivery Time: 11:45 AM
Left At: FRONT DESK
Signed by: SCHROEDER

TRANSCEND WIRELESS

Tracking Number:	1ZV257424290676503
Ship To:	TOWN OF WETHERSFIELD 505 SILAS DEANE HIGHWAY WETHERSFIELD, CT 06109 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTHA506A CSC ZO

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Kyle Richers

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To: KRICHERS@TRANSCENDWIRELESS.COM
Subject: UPS Delivery Notification, Tracking Number 1ZV257424297020136

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Delivery Time: 11:45 AM
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Signed by: SCHROEDER

TRANSCEND WIRELESS

Tracking Number:	1ZV257424297020136
Ship To:	TOWN OF WETHERSFIELD 505 SILAS DEANE HIGHWAY WETHERSFIELD, CT 06109 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTHA506A CSC EO

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Kyle Richers

From: UPS <pkginfo@ups.com>
Sent: Friday, July 28, 2023 10:44 AM
To: KRICHERS@TRANSCENDWIRELESS.COM
Subject: UPS Delivery Notification, Tracking Number 1ZV257424294292527

Hello, your package has been delivered.

Delivery Date: Friday, 07/28/2023
Delivery Time: 10:42 AM
Left At: FRONT DESK
Signed by: FLETCHER

TRANSCEND WIRELESS

Tracking Number:	1ZV257424294292527
Ship To:	EVEREST INFRASTRUCTURE PARTNERS TWO ALLEGHENY CENTER NOVA TOWER 2 SUITE 1002 PITTSBURGH, PA 15212 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTHA506A CSC TOWER

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Unique ID: 205069 **Wethersfield** **Card No:** 1of 1

Location:	75 WELLS RD	Map/Lot:	205 069	Zone:	SRD/A	Date Printed:	08-05-21
911 Address:		Exempt		Nbhd:	C30	Last Update:	08-05-21

Owner Of Record	Volume/Page	Date	Sales Type	Valid	Sale Price
SOUTHERN N E TELEPHONE CO C/O FRONTI	0121 /0472	11-30-46		NO	0
PO BOX 2629 ADDISON , TX 75001					

Additional Owners:

Prior Owner History					
	/				
	/				
	/				
	/				
	/				

Permit Number	Date	Cost	New Hous	Status	% Comp	Est Completion	Building Permit
B-20-0245	05-27-20	20,000	No	Closed	100	10-01-20	Upgrade and replacement of equipment at existing telecommunications fac
B-19-0561	08-29-19	15,000	No	Closed	100	10-01-19	Upgrade and replacement of equipment at existing telecommunications fac
P-19-0121	06-19-19	82,500	No	Closed	100	08-21-19	REMOVE EXITING UNDERGROUND OIL STORAGE TANK & INSTALL 1 NEW ABOVE GROUN
B-19-0278	06-11-19	25,000	No	Closed	100	10-01-19	Swap 3 antennas for new models and add 3 new remote radio units to tie
B-17-502	10-11-18	5,000	No	Closed	100	06-20-18	CELL TOWER WORK (AT&T)
B-16-545	11-08-16	25,000	No	Permit Issue	100		REMOVE 3 ANTENNA AND REPL WITH 3 NEWER MODELS. ADD 2 NEW RRUS PER SECT

Census/Tract	4922
Dev Map	Dev Lot 3A
Date	05/25/2018 01/25/2019
Inspector	EQ
Action	Measure Hearing-No Chng

State Item Codes

Code	Quantity	Value	Code	Quantity	Value
22-Comm Bldg	1.00	148,650			
25-Comm Outbldg	3.00	480,320			
41-PubUtil Land	0.90	415,790			

Appraised Value

Total Land Value	594,000
Total Building Value	212,351
Total Outbuilding Value	686,169
Total Market Value	1,492,520

Acres

Land Type	Acres	490	Rate	Adj	Influence	Total Value
Pub Util Land	0.90	0.00	216,000	1.00	175	594,000
Total	0.90					594,000

Influence Factors

Land Type	Influence	Reason	Comment
Pub Util Land	175	Intensive Use	

Assessment History (Prior Years as of Oct 1)

	Current	2020	2019	2018	2017
Land	415,790	415,790	259,870	259,870	92,100
Building	148,650	148,650	304,570	304,570	286,300
Outbuilding	480,320	480,320	480,320	480,320	233,500
Total	1,044,760	1,044,760	1,044,760	1,044,760	611,900

490 Appraised Totals

Type	Acres	Value	Type	Acres	Value
			Totals		

Comments

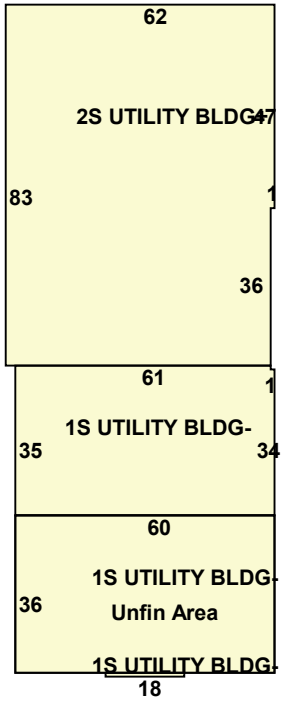
CELL POLE 4500 A MONTH, 8 CAP RATE
60 X 36 SLATE ROOF; NO OFFICE FIT UP; NO ACCESS TO UQS - STAIRS REMOVED; CONTROL SWITCH BUILDING
ZONING CHANGE PER PLANNING

Unique ID: 205069 **Wethersfield**

Location:	75 WELLS RD	Unit	

FRONTIER

Use	Class	Quality	Stry	WH	Area	BG	Units
Utility Bldg	Masonry	B	2	10	14,497	NO	



Commercial Building Description

Building Use	Utility Buildin
Class	Masonry
Overall Condition	Very Good
Construction Quality	B
Stories	2.00
Year Built	1939
Remodel	
Percent Complete	100
GLA	**14,497**

Basement

Basement Area	5110
Basement Unfinished Area	

HVAC

Heating Type	Hot Water	
Fuel Type	Oil	
Cooling Type	Central	100 %

Interior

Floors	Vinyl Tile
Walls	Plaster
Wall Height	10

Exterior

Exterior Walls	Brick
Roof Cover	Tar and Gravel

Special Features

Total Building Value

Building 1 **Value** **487,219**

Valuation Method I

Description	Area/Qty	Value
Base Value	14,497	453,031
Central Air	453,031	6,795
Unfinished Basement Area	5,110	102,200
Value Before Depr.	0	562,027
Depr/Adjust Amount	0	123,646
Final Value (After Depr)	0	438,381

Grade Factor	0	**Physical Depreciation %**	22
Functional Depreciation %	0	**Economical Depreciation %**	0

Attached Component Computations

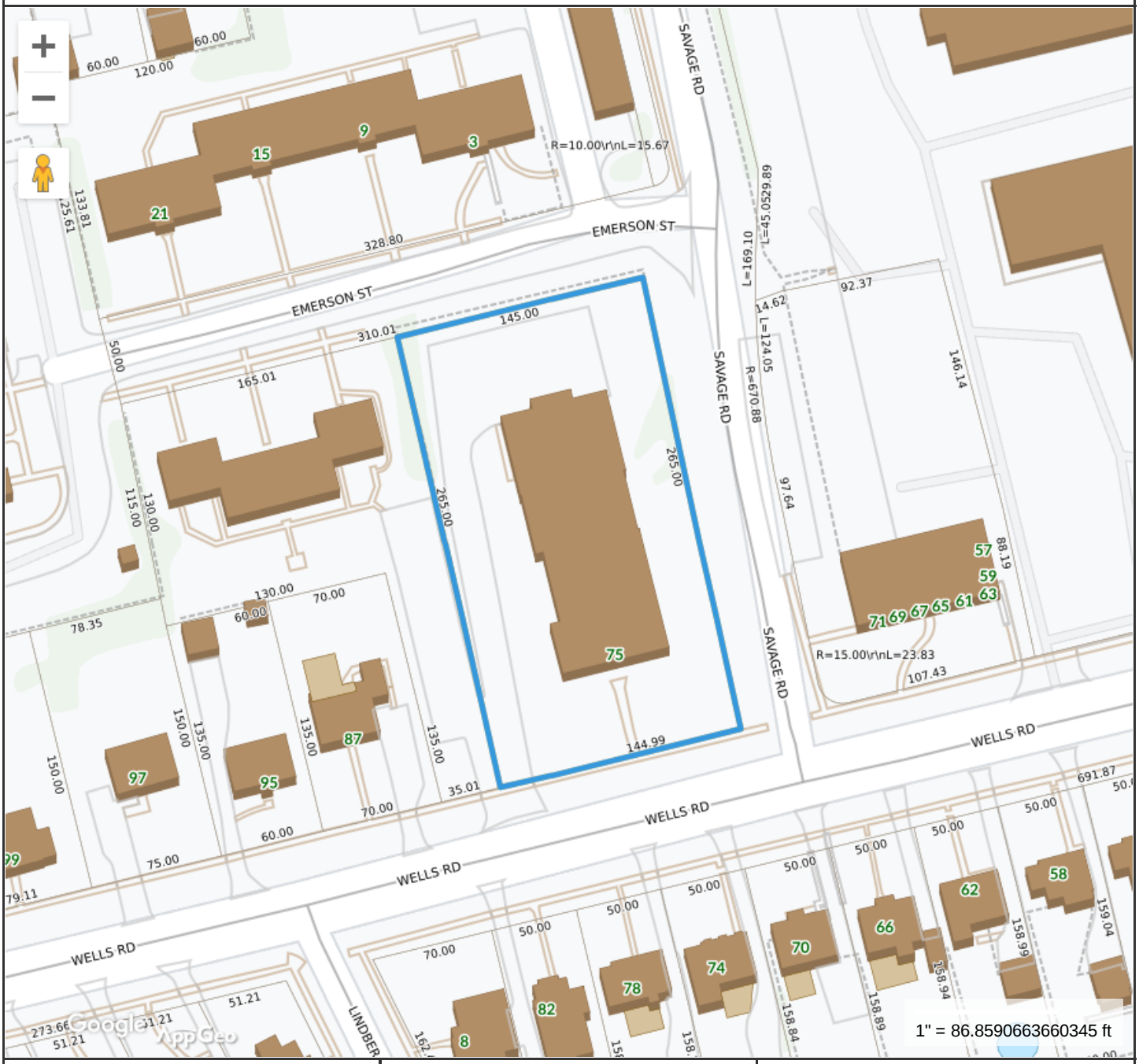
Type	Yr Blt	Condition	Area/Qty	Value
Unfinished Area	1939	Good	2,160	48,838

Detached Component Computations

Type	Year	Condition	Area/Qty	Value
PreCastConCel	2003	Good	200	7,905
Paving	1999	Good	2,400	3,264
Cell Tower	2000	Average	1	675,000

Type	Year	Condition	Area/Qty	Value

CTHA506A GIS



Property Information

Property ID	205069
Location	75 WELLS RD
Owner	SOUTHERN N E TELEPHONE CO

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Town of Wethersfield, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 11/14/17
Data updated daily

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

Petition No. 1012
MetroPCS
75 Wells Road, Wethersfield, Connecticut
Staff Report
December 1, 2011

On October 26, 2011, the Connecticut Siting Council (Council) received a petition (Petition) from MetroPCS for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed modifications to an existing telecommunications facility at 75 Wells Road in Wethersfield. Specifically, MetroPCS seeks to co-locate on an existing 104-foot tall monopole owned by New Cingular Wireless PCS LLC (AT&T). The existing tower, located adjacent to the east side of an existing building, currently supports AT&T. T-Mobile and Verizon have existing leases for tower space but have not located on the tower to date.

MetroPCS seeks to install six panel antennas on t-arms at the 75-foot level of the tower. The tower and foundation would require modifications to support the new equipment.

MetroPCS would install three equipment cabinets adjacent to the existing fenced compound area. The ground equipment would require MetroPCS to expand the existing compound and lease area to the south. The new fenced area would extend 17 feet to the south, then angle 12 feet to the west, terminating at the existing building. The new fence would match the existing. Three new plantings would be installed along the east side of the new fenced area to screen views from Wells Road and Savage Road. Staff recommends one additional evergreen planting along the south side of the compound extension to provide further screening.

There are no wetlands at the site. One evergreen shrub would be removed. The addition of new plantings along the fence line of the compound expansion area would mitigate views of the compound from the south and east. Evergreens along the east side and north side of the existing compound would remain. The maximum worst-case power density including AT&T's existing and T-Mobile's and Verizon's proposed equipment, would be 53 percent of the applicable limit.

AT&T WETHERSFIELD MONOPOLE
CTHA506A
75 WELLS ROAD
WETHERSFIELD, CT 06109

T-MOBILE RAN TEMPLATE (PROVIDED BY RFDS)

67D5A997DB OUTDOOR

T-MOBILE A+L TEMPLATE (PROVIDED BY RFDS)

67D5997DB_2xAIR+10P (U21 MARKET)

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2022 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "H" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2022 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
3. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
4. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTON, PLUMBING, ELECTRICAL, AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
8. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
9. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
10. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
11. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
12. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED' ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE T-MOBILE CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
14. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
15. THE 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.
16. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUITS AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
17. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
18. THE CONTRACTOR SHALL CONTACT 'CALL BEFORE YOU DIG' AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
19. CONTRACTOR SHALL COMPLY WITH THE OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

SITE DIRECTIONS

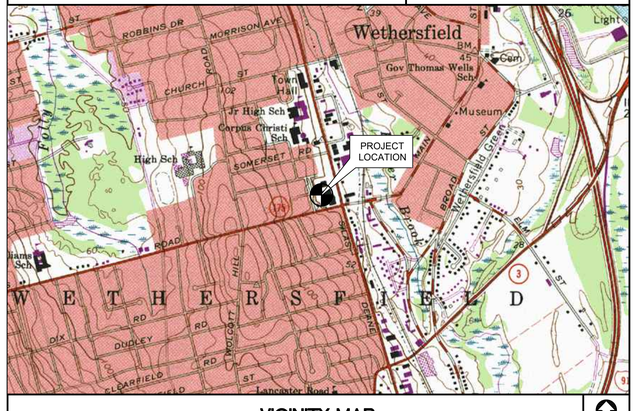
FROM: 35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

TO: 75 WELLS ROAD
WETHERSFIELD, CT 06109

1.	HEAD NORTH ON GRIFFIN ROAD S. TOWARD HARTMAN RD.	0.30 MI.
2.	TAKE THE 2ND RIGHT ONTO DAY HILL RD.	0.14 MI.
3.	TAKE THE 1ST RIGHT ONTO BLUE HILLS AVENUE EXT/CT-187	1.89 MI.
4.	TURN LEFT ONTO CT-305/OLD WINDSOR RD.	2.33 MI.
5.	MERGE ONTO I-91 S TOWARD HARTFORD	8.33 MI.
6.	MERGE ONT US-5 S/CT-15 S via EXIT 28 TOWARD WETHERSFIELD/NEWINGTON/BERLIN TPKE	0.97 MI.
7.	MERGE ON SILAS DEANE HWY/CT-99 S via EXIT 85 TOWARD ROCKY HILL/WETHERSFIELD	1.71 MI.
8.	TURN RIGHT ONTO WELLS RD/CT-175	0.11 MI.
9.	75 WELLS RD, WETHERSFIELD, CT 06109-3050, 75 WELLS RD IS ON THE RIGHT	

SITE COORDINATES: LATITUDE: 41°-42'-21.07" N
LONGITUDE: 72°-39'-48.26" W
GROUND ELEVATION: ±74' AMSL

COORDINATES AND GROUND ELEVATION ARE REFERENCED FROM GOOGLE EARTH



VICINITY MAP

PROJECT SUMMARY

THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:

1. REMOVE ALL COAXIAL LINES
2. REMOVE ALL TMAs
3. REMOVE (2) 9x18 HYBRID CABLES
4. REMOVE (1) AIR21 ANTENNA PER SECTOR. TOTAL OF (3)
5. RELOCATE EXISTING BBU CABINET
6. RETAIN (3) EXISTING 6x12 HYBRID CABLE
7. INSTALL (1) POWER ENCLOSURE 6160
8. INSTALL (1) BATTERY CABINET B160
9. INSTALL (1) iXRe ROUTER TO ENCLOSURE 6160
10. INSTALL (1) BB6648 FOR L2500/N2500 TO NEW ENCLOSURE 6160
11. INSTALL (1) PSU 4813 POWER BOOSTER
12. INSTALL (2) 6x24 HYBRID CABLES
13. INSTALL (1) AIR6419 B41 ANTENNA PER SECTOR. TOTAL OF (3)
14. INSTALL (1) RADIO 4460 B25+B66 PER SECTOR. TOTAL OF (3).
15. INSTALL NEW PIPE MASTS AND CROSSOVER PLATES AS NEEDED.

PROJECT INFORMATION

SITE NAME:	AT&T WETHERSFIELD MONOPOLE
SITE ID:	CTHA506A
SITE ADDRESS:	75 WELLS ROAD WETHERSFIELD, CT 06109
APPLICANT:	T-MOBILE NORTHEAST, LLC 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002
CONTACT PERSON:	DAN REID (PROJECT MANAGER) TRANSCEND WIRELESS, LLC (203) 592-8291
ENGINEER OF RECORD:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405 CARLO F. CENTORE, PE (203) 488-0580 EXT. 122
PROJECT COORDINATES:	LATITUDE: 41°-42'-21.07" N LONGITUDE: 72°-39'-48.26" W GROUND ELEVATION: ±74' AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

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C-4	ANTENNA PLANS	3
C-5	TYPICAL DETAILS	3
E-1	TYPICAL ELECTRICAL DETAILS	3

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
3	07/26/23	BSP	DMD	CONSTRUCTION DRAWINGS - REVISED STRUCTURAL ANALYSIS REFERENCE
2	06/28/23	BSP	DMD	CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS
1	06/15/23	BSP	TJR	CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS
0	01/26/23	BSP	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

Transcend Wireless

CENTEK engineering
Centered on Solutions
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

T-MOBILE NORTHEAST LLC
AT&T WETHERSFIELD MONOPOLE
SITE ID: CTHA506A
75 WELLS ROAD
WETHERSFIELD, CT 06109

DATE: 07/06/20
SCALE: AS NOTED
JOB NO. 20074.56

TITLE SHEET

T-1

Sheet No. 1 of 8

NOTES AND SPECIFICATIONS:

DESIGN BASIS:

GOVERNING CODE: 2021 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2022 CONNECTICUT STATE BUILDING CODE.

1. DESIGN CRITERIA:

- RISK CATEGORY II (BASED ON IBC TABLE 1604.5)
- NOMINAL/ULTIMATE DESIGN SPEED: 97 MPH (Vasd)
  (EXPOSURE C/ IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-16).

SITE NOTES

1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
2. ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
4. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
5. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2022 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "H" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2022 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE, WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
5. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS AND ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
6. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS, AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
7. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
8. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
9. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL, AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
10. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
11. LOCATION OF EQUIPMENT AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS, SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
12. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
13. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
14. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
15. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
16. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
17. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED' ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE T-MOBILE CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
18. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
19. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
20. THE 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.
21. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUITS AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND CONFIRMED WITH THE PROJECT MANAGER AND OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK
22. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
23. THE CONTRACTOR SHALL CONTACT 'CALL BEFORE YOU DIG' AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
24. CONTRACTOR SHALL COMPLY WITH THE OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
25. THE COUNTY/CITY/TOWN MAY MAKE PERIODIC FIELD INSPECTIONS TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, AND CONTRACT DOCUMENTS.
26. THE COUNTY/CITY/TOWN MUST BE NOTIFIED (2) WORKING DAYS PRIOR TO CONCEALMENT/BURIAL OF ANY SYSTEM OR MATERIAL THAT WILL PREVENT THE DIRECT INSPECTION OF MATERIALS, METHODS OR WORKMANSHIP. EXAMPLES OF THESE PROCESSES ARE BACKFILLING A GROUND RING OR TOWER FOUNDATION, POURING TOWER FOUNDATIONS, BURYING GROUND RODS, PLATES OR GRIDS, ETC. THE CONTRACTOR MAY PROCEED WITH THE SCHEDULED PROCESS (2) WORKING DAYS AFTER PROVIDING NOTICE UNLESS NOTIFIED OTHERWISE BY THE COUNTY/CITY/TOWN.
27. PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTOR SHALL VISIT THE SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF ENGINEER ON RECORD, PRIOR TO THE COMMENCEMENT OF ANY WORK.

ANTENNA SCHEDULE

SECTOR	EXISTING/PROPOSED	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	(E/P) RRU (QTY)	(E/P) TMA (QTY)	(QTY) PROPOSED COAX (LENGTH)
A1	PROPOSED	ERICSSON (AIR6419 B41)	36.3 x 20.9 x 9.0	95'	20°			(2) 6x24 HYBRID CABLE (131')
A2	EXISTING	ERICCSON (AIR32 KRD901146-1_B66A_B2A)	56.6 x 12.9 x 8.7	95'	20°			
A3	EXISTING	RFS (APXVAARR24_43-U_NA20)	95.9 x 24 x 8.7	95'	20°	(E) RADIO 4449 B71+B85 (1), (P) RADIO 4460 B25+B66 (1)		
B1	PROPOSED	ERICSSON (AIR6419 B41)	36.3 x 20.9 x 9.0	95'	150°			
B2	EXISTING	ERICCSON (AIR32 KRD901146-1_B66A_B2A)	56.6 x 12.9 x 8.7	95'	150°			
B3	EXISTING	RFS (APXVAARR24_43-U_NA20)	95.9 x 24 x 8.7	95'	150°	(E) RADIO 4449 B71+B85 (1), (P) RADIO 4460 B25+B66 (1)		
C1	PROPOSED	ERICSSON (AIR6419 B41)	36.3 x 20.9 x 9.0	95'	255°			
C2	EXISTING	ERICCSON (AIR32 KRD901146-1_B66A_B2A)	56.6 x 12.9 x 8.7	95'	255°			
C3	EXISTING	RFS (APXVAARR24_43-U_NA20)	95.9 x 24 x 8.7	95'	255°	(E) RADIO 4449 B71+B85 (1), (P) RADIO 4460 B25+B66 (1)		

NOTE:
ALL COAX LENGTHS TO BE MEASURED AND VERIFIED IN FIELD BEFORE ORDERING

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
3	07/26/23	BSP	DMD	CONSTRUCTION DRAWINGS - REVISED STRUCTURAL ANALYSIS REFERENCE
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0	01/26/23	BSP	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

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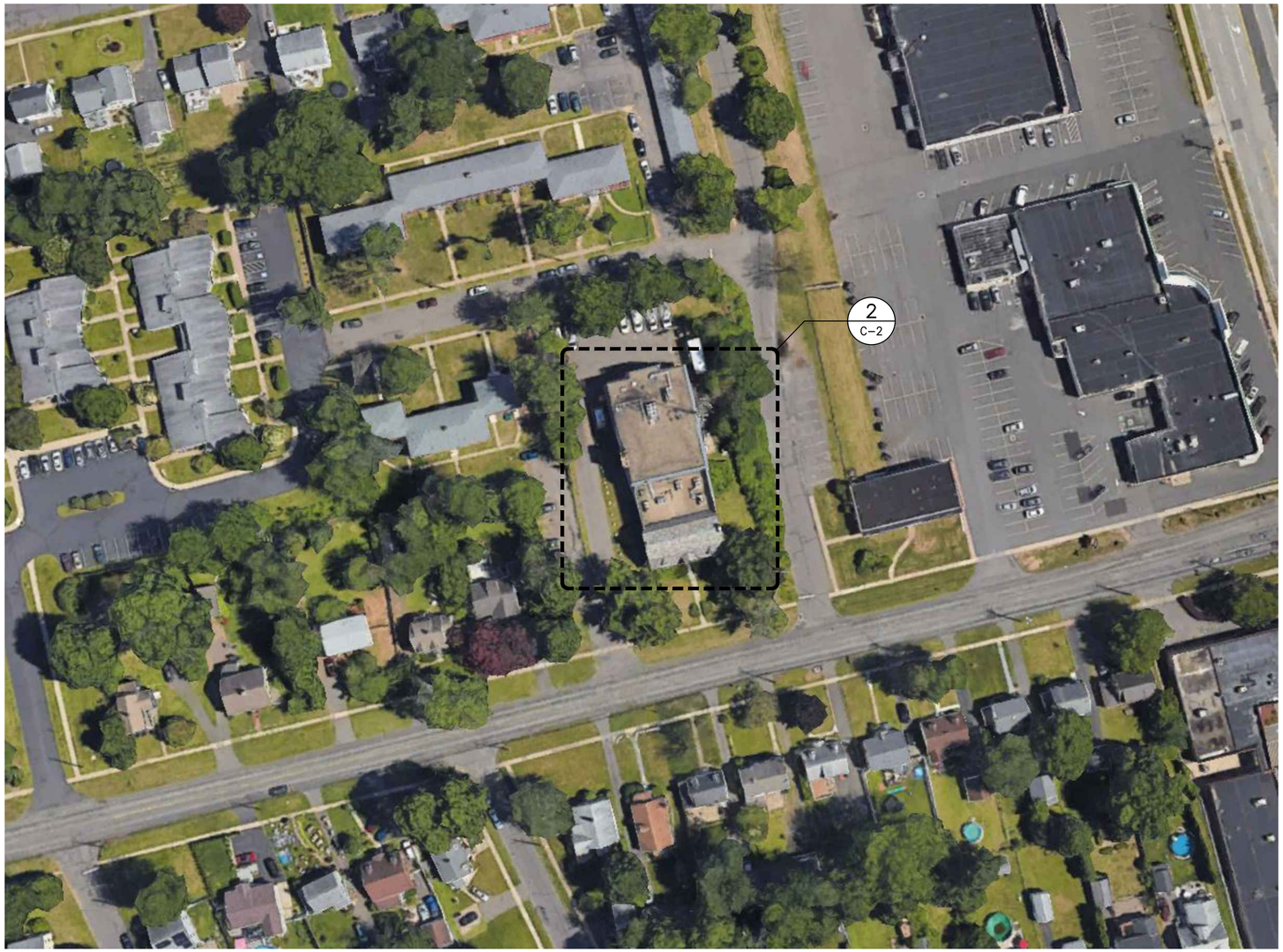
DATE: 07/06/20
SCALE: AS NOTED
JOB NO. 20074.56

GENERAL NOTES AND SPECIFICATIONS

N-1



1 C-1 **SITE LOCATION PLAN**
SCALE: NOT TO SCALE

TRUE NORTH

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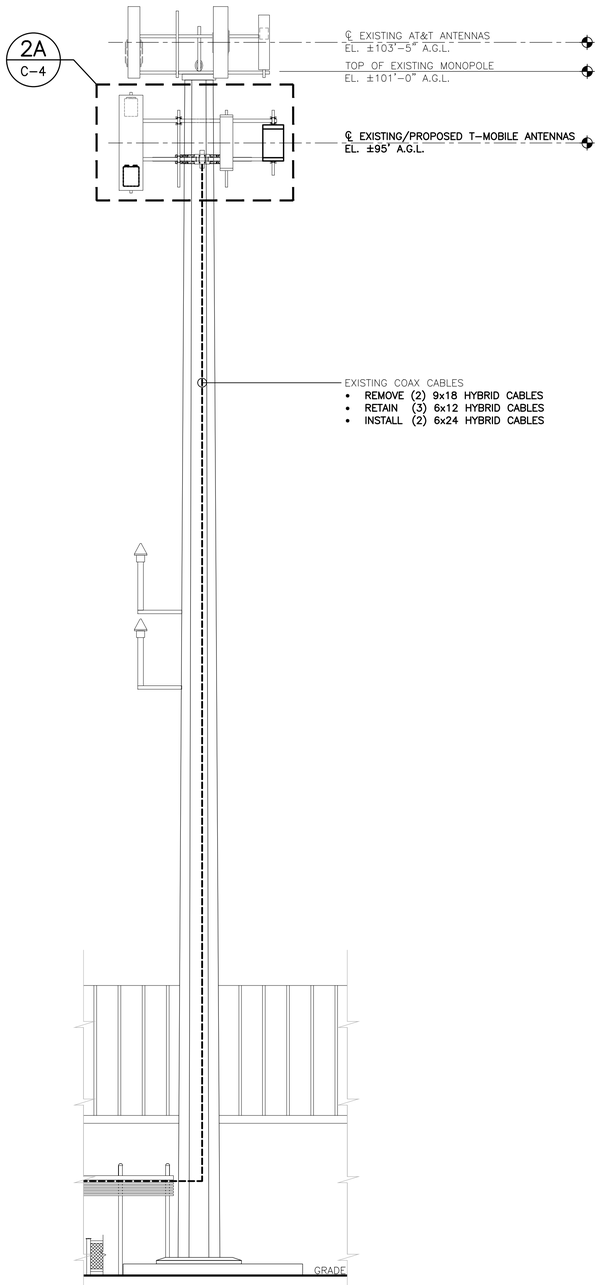
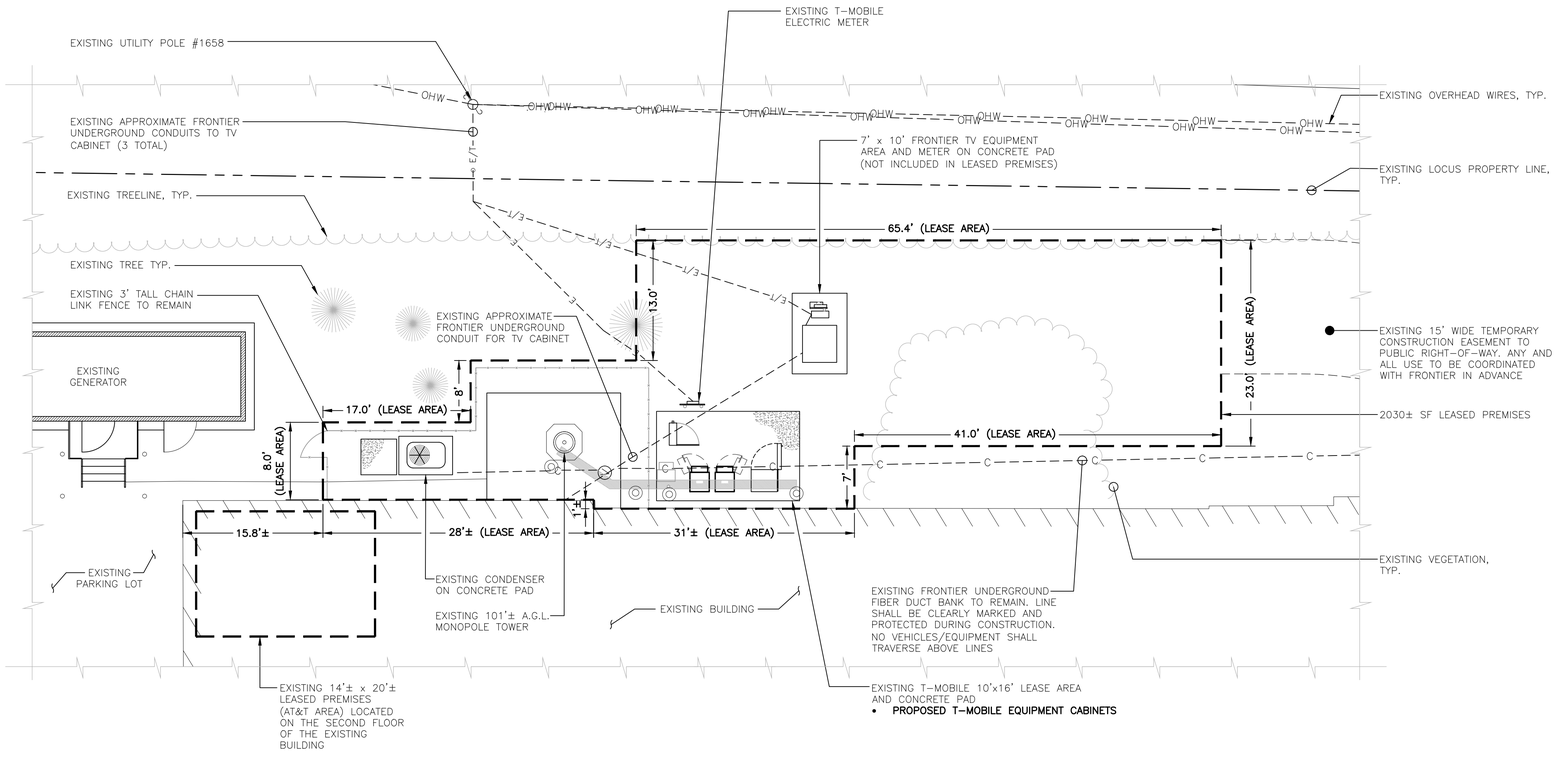
SITE LOCATION PLAN

C-1

Sheet No. 3 of 8



1 C-2 **TOWER ELEVATION - PROPOSED**
SCALE: 1" = 6'-0"



2 C-2 **PARTIAL COMPOUND PLAN - EXISTING/PROPOSED**
SCALE: 1" = 8'

APPROXIMATE NORTH

STRUCTURAL COMPLIANCE

ANTENNA MOUNTS

A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNTS WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING..

REFER TO THE ANTENNA MOUNT ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 20074.56) DATED 06/23/23 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

TOWER AND TOWER FOUNDATION

A STRUCTURAL ANALYSIS OF THE TOWER AND TOWER FOUNDATION WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING.

REFER TO THE STRUCTURAL ANALYSIS REPORT PREPARED BY TOWER ENGINEERING PROFESSIONALS (PROJECT # 25669.864523) DATED 07/07/23 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

TOWER DESIGN DRAWINGS AND CALCULATIONS

FOR ADDITIONAL INFORMATION
REFER TO TOWER DESIGN DRAWINGS AND CALCULATIONS PREPARED BY EHRESMANN ENGINEERING (PROJECT # 112891-22) DATED 01/23/23 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

NOTE: NO EQUIPMENT SHALL BE INSTALLED ON THE HOSTING STRUCTURE WITHOUT A PASSING STRUCTURAL ANALYSIS REPORT AND CONTRACTOR PRIOR CONFIRMATION THAT ANY AND ALL REQUISITE MODIFICATIONS HAVE BEEN COMPLETED.

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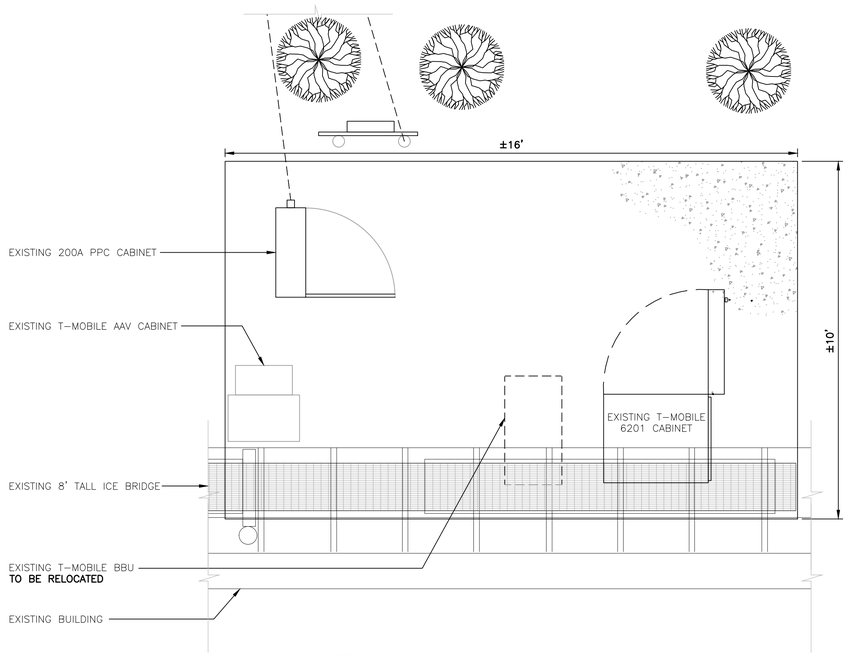
COMPOUND PLAN AND ELEVATION

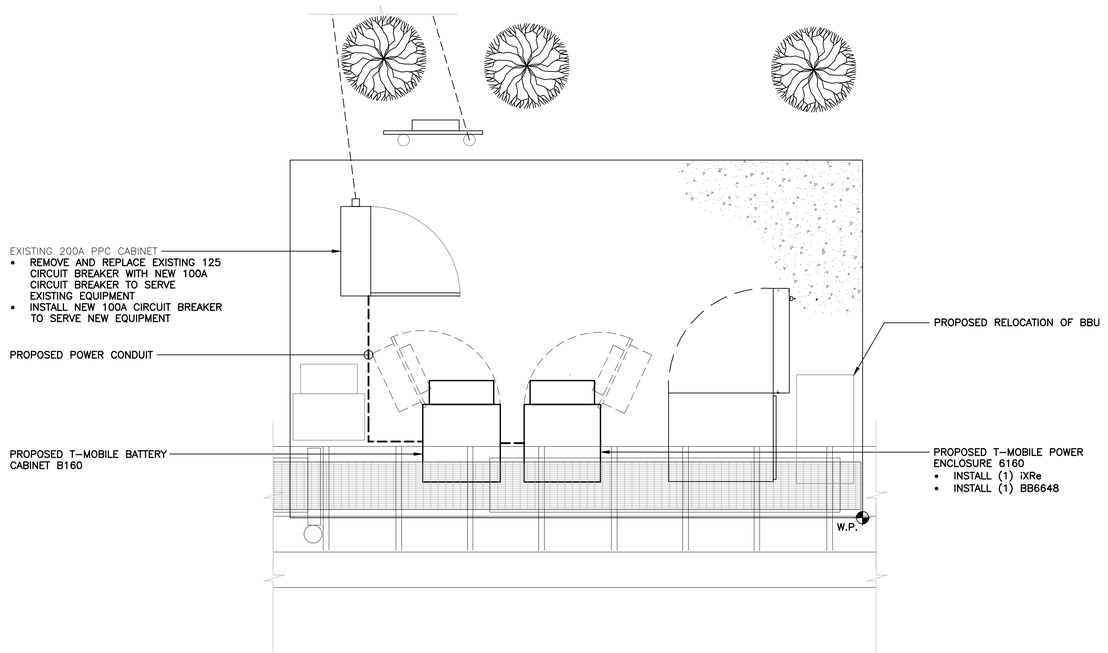
C-2

Sheet No. 4 of 8



1 / C-3 **EXISTING EQUIPMENT PLAN**
SCALE: 1/2" = 1'

APPROXIMATE NORTH



2 / C-3 **PROPOSED EQUIPMENT PLAN**
SCALE: 1/2" = 1'

APPROXIMATE NORTH

LEGEND

W.P. DENOTES WORKING POINT.

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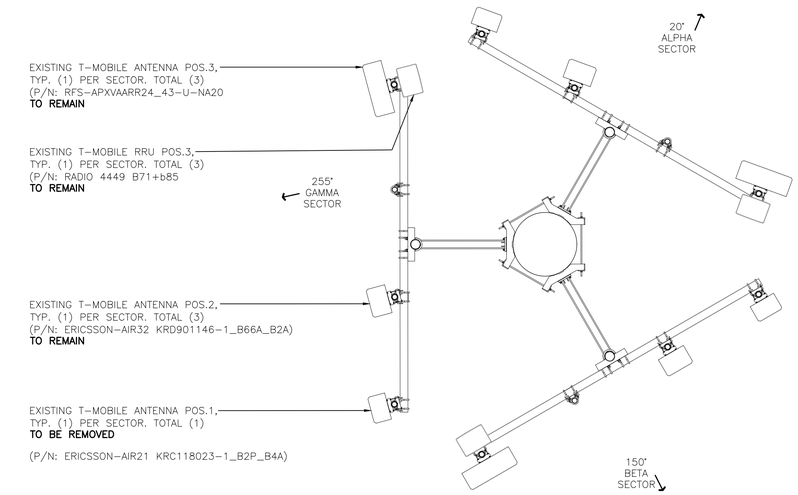
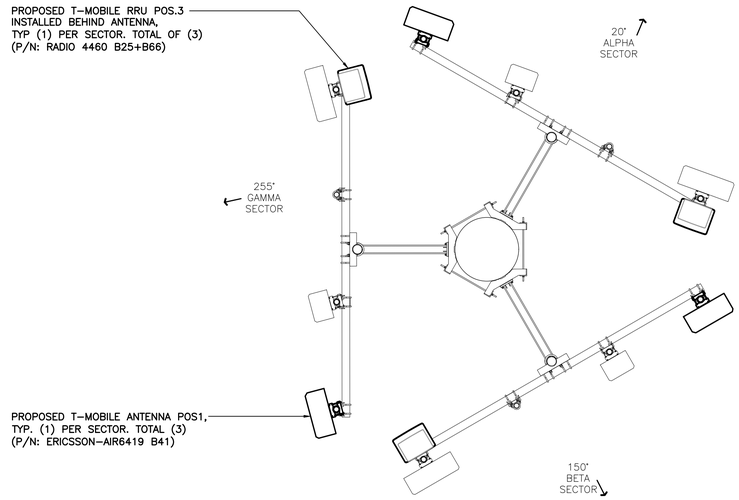
EQUIPMENT PLANS

C-3

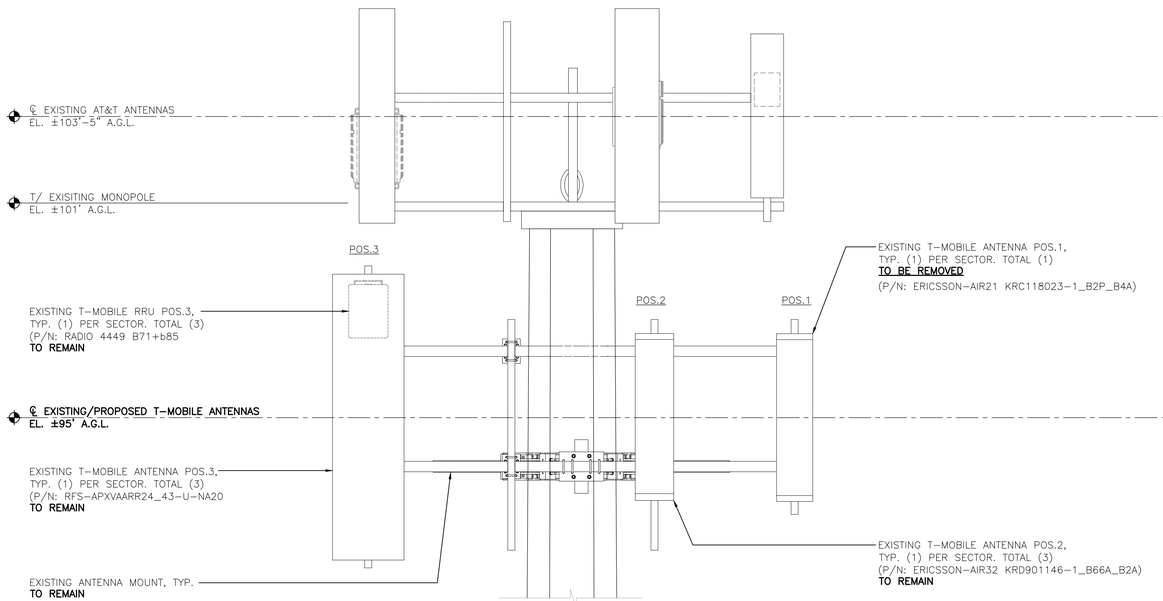
Sheet No. 5 of 8



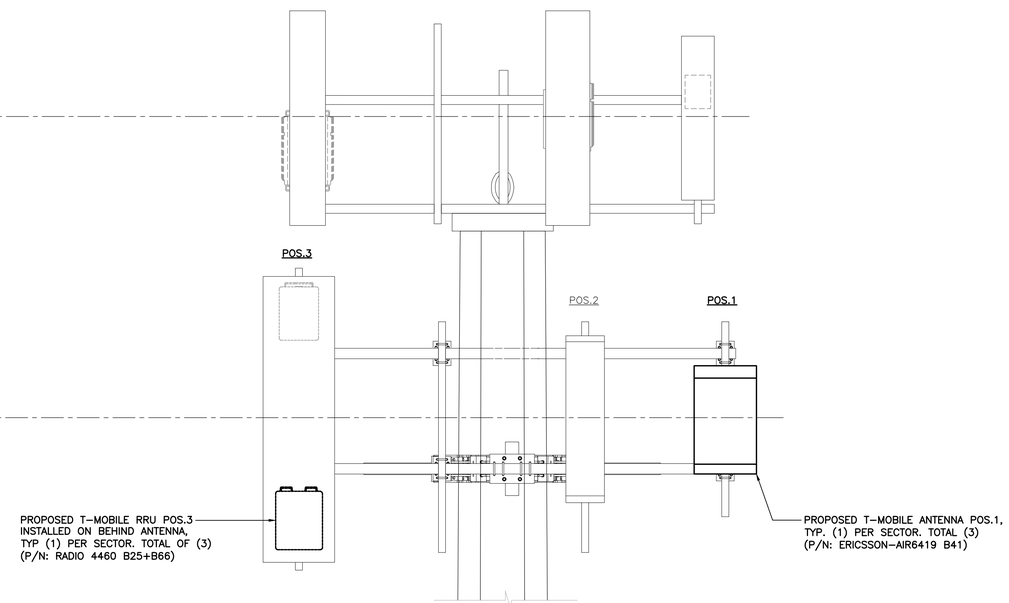
1 C-4 **ANTENNA PLAN - EXISTING**
SCALE: 3/8" = 1'-0"
APPROXIMATE NORTH



2 C-4 **ANTENNA PLAN - PROPOSED**
SCALE: 3/8" = 1'-0"
APPROXIMATE NORTH



1A C-4 **ANTENNA ELEVATION - EXISTING**
SCALE: 1/2" = 1'



2A C-4 **ANTENNA ELEVATION - PROPOSED**
SCALE: 1/2" = 1'

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ANTENNA PLANS

C-4

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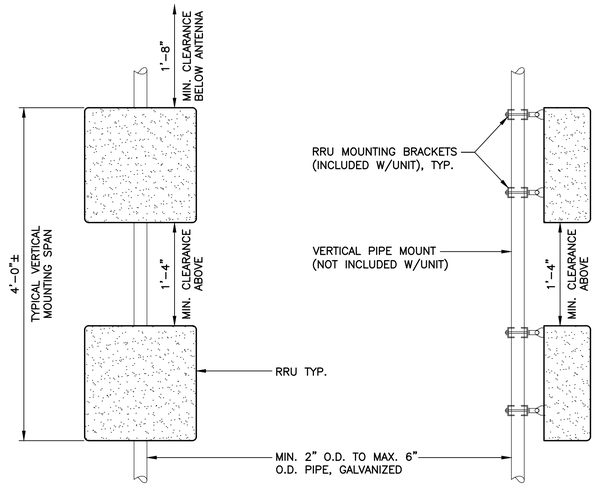


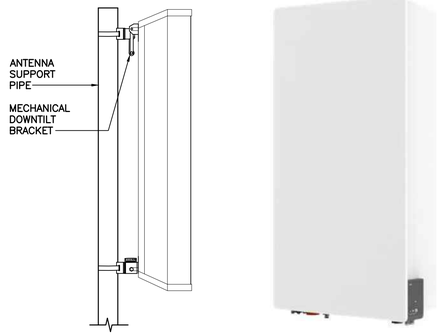
FRONT ELEVATION SIDE ELEVATION

NOTES:

1. T–MOBILE SHALL SUPPLY RRU, AND RRU POLE–MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE–MOUNTING BRACKET. CONTRACTOR SHALL INSTALLS RRU AND MAKES CABLE TERMINATIONS.
2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

1 C-5 TYPICAL RRUS MOUNTING DETAILS

SCALE: NOT TO SCALE



SIDE FRONT

ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ERICSSON MODEL: AIR6419 B41	36.3"L x 20.9"W x 9.0"D	±83 LBS.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T–MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.		

2 C-5 PROPOSED ANTENNA DETAIL

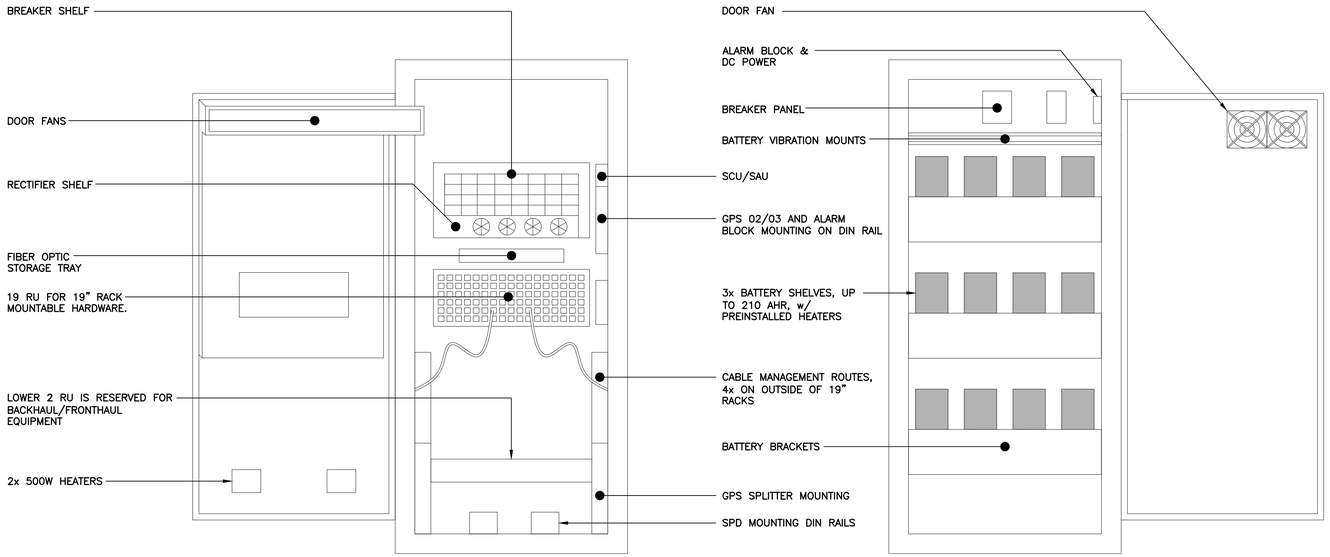
SCALE: NOT TO SCALE

FRONT VIEW

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RADIO 4460 B25+B66	19.6"L x 15.7"W x 12.1"D	±109 LBS.	BEHIND ANT.: 8" MIN. BELOW ANT.: 20" MIN. BELOW RRU: 16" MIN.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T–MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.			

3 C-5 PROPOSED RRU DETAIL

SCALE: NOT TO SCALE



EQUIPMENT CABINET		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ERICSSON MODEL: ENCLOSURE 6160 CABINET	62.0"H x 26.0"W x 26.0"D	±1200 LBS

4 C-5 ENCLOSURE 6160 CABINET DETAIL

SCALE: NOT TO SCALE

EQUIPMENT CABINET		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ERICSSON MODEL: BATTERY B160 CABINET	62.0"H x 26.0"W x 26.0"D	±1883 LBS

5 C-5 BATTERY B160 CABINET DETAIL

SCALE: NOT TO SCALE

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TYPICAL DETAILS

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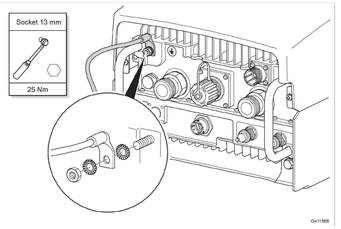
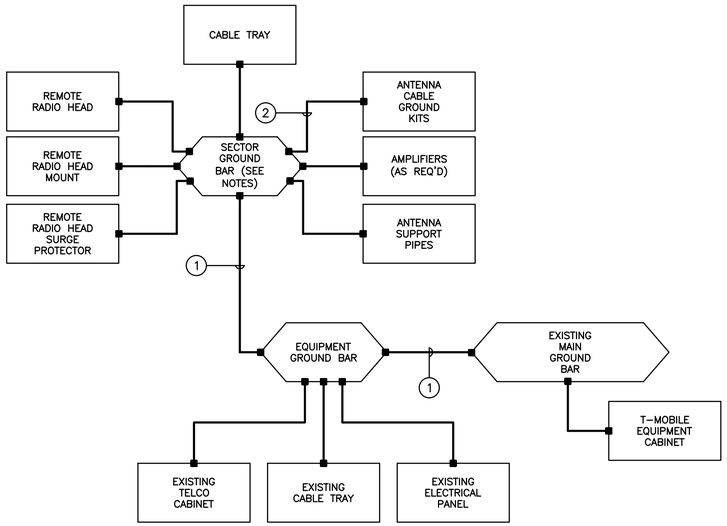


1 E-1 **TYPICAL RRU GROUNDING DETAILS**
SCALE: NOT TO SCALE



GROUNDING SCHEMATIC NOTES

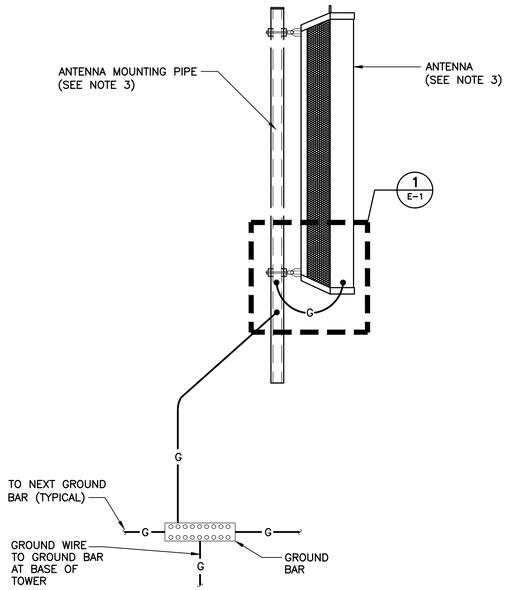
(1) #2 AWG

(2) #6 AWG

GENERAL NOTES:

1. ALL SURGE SUPPRESSION EQUIPMENT SHALL BE BONDED TO GROUND PER MANUFACTURER'S SPECIFICATIONS
2. UNLESS OTHERWISE NOTED OR REQUIRED BY CODE, GROUND CONDUCTORS SHOWN SHALL BE #2 AWG (SOLID TINNED BCW – EXTERIOR; STRANDED GREEN INSULATED – INTERIOR).
3. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
4. BOND ALL EQUIPMENT CABINETS AND BATTERY CABINETS TO GROUND PER MANUFACTURER'S SPECIFICATIONS.
5. ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.

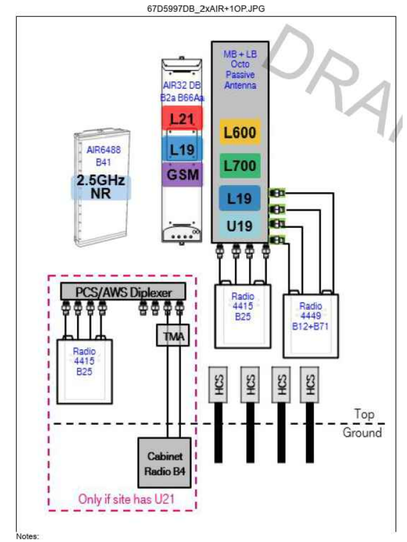
4 E-1 **TYPICAL GROUNDING SCHEMATIC DETAIL**
SCALE: NOT TO SCALE



NOTES:

1. BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
2. BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
3. DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

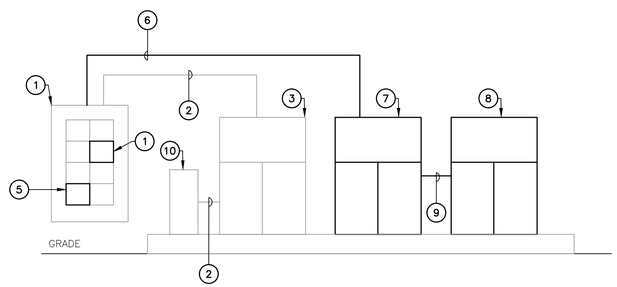
2 E-1 **TYPICAL ANTENNA GROUNDING DETAIL**
SCALE: NOT TO SCALE



3 E-1 **PROPOSED PLUMBING DIAGRAM**
SCALE: NOT TO SCALE

RISER DIAGRAM NOTES

(1) EXISTING 200A, 120/240V, SINGLE PHASE PANEL TO REMAIN.
(2) EXISTING CONDUITS AND CONDUCTORS TO REMAIN.
(3) EXISTING EQUIPMENT CABINET TO REMAIN.
(4) EXISTING 125A/2P CIRCUIT BREAKER SERVING EXISTING EQUIPMENT CABINET TO BE REMOVED AND REPLACED WITH NEW 100A/2P CIRCUIT BREAKER. COORDINATE CABINET DOWNGRADE WITH CONSTRUCTION MANAGER.
(5) NEW 100A/2P CIRCUIT BREAKER TO SERVE NEW EQUIPMENT CABINET.
(6) (3) #1 AWG, (1) #8 AWG GROUND, 1-1/4" CONDUIT.
(7) NEW RADIO EQUIPMENT CABINET.
(8) NEW BATTERY CABINET.
(9) DC CONDUIT AND CONDUCTORS FOR BATTERY CABINET CONNECTION PER MANUFACTURERS SPECIFICATIONS.
(10) EXISTING BBU TO REMAIN



5 E-1 **ELECTRICAL POWER RISER DIAGRAM**
SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
3	07/26/23	BSP	DMD	CONSTRUCTION DRAWINGS – REVISED STRUCTURAL ANALYSIS REFERENCE
2	06/28/23	BSP	DMD	CONSTRUCTION DRAWINGS – REVISED PER CLIENT COMMENTS
1	06/15/23	BSP	TJR	CONSTRUCTION DRAWINGS – REVISED PER CLIENT COMMENTS
0	01/26/23	BSP	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

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AT&T WETHERSFIELD MONOPOLE
SITE ID: CTHA506A
75 WELLS ROAD
WETHERSFIELD, CT 06109

DATE: 07/06/20
SCALE: AS NOTED
JOB NO. 20074.56

TYPICAL ELECTRICAL DETAILS

E-1

Sheet No. 8 of 8

July 7, 2023

Thomas L. Rigg
Everest Infrastructure Partners
1435 Bedford Avenue
Pittsburgh, PA 15219
(603) 498-7462

Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351
MRF@tepgroup.net

Subject: **Structural Analysis Report**

Client Designation:	**Site Number:**	638512
	Site Name:	Wethersfield CO
Engineering Firm Designation:	**TEP Project Number:**	25669.864526
Site Data:	**75 Wells Road, Wethersfield, Hartford County, CT 06109** **Latitude *41° 42' 20.97"*, Longitude *-72° 39' 48.30"*** **101± Foot - Monopole**	

Dear Thomas L. Rigg,

Tower Engineering Professionals is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

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

LC2: Existing + Proposed + Reserved Loading with Proposed Modifications **Sufficient Capacity**
Note: See Table 1 for the existing, proposed, and reserved loading

Structure Capacity	Foundation Capacity
98.6%	87.5%

The analysis has been performed in accordance with the ANSI/TIA-222-H Structural Standard for Antenna Supporting Structures, Antennas, and Small Wind Turbine Support Structures and the 2022 Connecticut State Building Code.

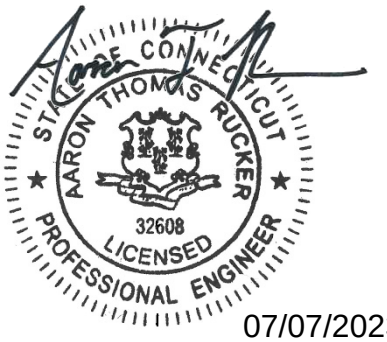
All modifications and equipment proposed in this report shall be installed in accordance with the appurtenances listed in Table 1 for the determined available structural capacity to be effective.

We at *Tower Engineering Professionals* appreciate the opportunity of providing our continuing professional services to you and *Everest Infrastructure Partners.* If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: Travis L. Infante, P.E. / RKE

Respectfully submitted by:

Aaron T. Rucker, P.E.



07/07/2023

TABLE OF CONTENTS

1) INTRODUCTION

The tower is a 101± Foot Monopole mapped by B+T in July of 2014. The original design standard and wind speed were unavailable for review. The tower has been modified multiple times in the past to accommodate additional loading. The proposed modifications designed by Tower Engineering Professionals in July of 2023 were considered in this analysis. The foundation modifications designed by SNET in July of 1998 were determined to be ineffective and not considered structurally in this analysis. All information provided to TEP was assumed to be accurate and complete.

2) ANALYSIS CRITERIA

TIA-222 Revision:	ANSI/TIA-222-H
Type of Analysis:	Rigorous
Risk Category:	II
Wind Speed:	120 mph (Ultimate)
Exposure Category:	B
Topographic Category:	1 (Kzt = 1.0)
Ice Thickness:	1.50 in
Wind Speed with Ice:	50 mph
Seismic Design Category:	B
Seismic Ss:	0.196
Seismic S1:	0.055
Service Wind Speed:	60 mph

Table 1 - Existing, Proposed, and Reserved Antenna and Cable Information

Existing/ Proposed/ Reserved	Mount Level (ft)	Ant CL (ft)	Qty	Antenna Model	Mount Type	Qty Coax	Coax Size	Coax Location	Owner/ Tenant
Existing	102.5	103.0	3	CCI Antennas HPA-65R-BUU-H6	10.5' Platform w/ Handrail w/ Kickers Site Pro 1 RRUDSM	12 1 4 2	1-5/8 3/8 1 5/8	Internal	AT&T
			3	Quintel Technologies QS66512-2					
			3	Powerwave Technologies 7770.00					
			3	Ericsson RRUS-11 B12					
			6	Powerwave Technologies LGP21401					
			6	Powerwave TPX-070821					
			3	Ericsson RRUS 32 B30					
			3	Ericsson RRUS 32 B2					
			3	Ericsson RRUS 32 B66A					
			2	Raycap DC6-48-60-18-8F					

Existing/ Proposed/ Reserved	Mount Level (ft)	Ant CL (ft)	Qty	Antenna Model	Mount Type	Qty Coax	Coax Size	Coax Location	Owner/ Tenant
To Be Removed	*95.0*	*95.0*	*3*	*Ericsson Air 21 KRC118023 B4A/B2P*	*-*	-	-	-	*T-Mob*
Existing	95.0	95.0	3	Ericsson Air 32	Site Pro 1 RMV12 w/ Site Pro 1 HRK12-U	5	1-5/8	Internal	T-Mob
			3	RFS Celwave APXVAARR24_43-U-NA20					
			3	Ericsson Radio 4449 B71					
Proposed	***95.0***	***95.0***	***3***	***Ericsson Air 6419***		***6***	***7/8***	***Internal***	***T-Mob***
			3	***Ericsson 4460 B25 B66***					
Reserved	***85.0***	***85.0***	***3***	***JMA Wireless MX08FR0665-21***	***Commscope MC-PK-DSH***	***1***	***1.411" Hybrid 1.18mm Power 6.9mm Ethernet***	***Internal***	***Dish***
			3	***Fujitsu TA08025-B605***					
			3	***Fujitsu TA08025-B604***		***2***			
			1	***Raycap RDIDC-9181-PF-48***		***1***			
			1	***Commscope VHLP2-18/D***					
			1	***Ceragon Fibeair IP-50C***					
Existing	46.5	46.5	1	GPS GPS_A	2' Side Arm Mount	1	3/8	External	AT&T
Existing	37.0	37.0	1	GPS GPS_A	2' Side Arm Mount	1	3/8	External	AT&T

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Source
Foundation Mapping Report	WEI, dated, December 1, 2008, WEI Project No.: 2008-679	Everest Infrastructure Partners
Supplemental Geotechnical Report	Tower Engineering Professionals, dated July 2023	25669
Tower Mapping Report	B+T, dated, July 17, 2014, BTE Job Number: 21366	Everest Infrastructure Partners
Previous Structural Analysis	Paul J. Ford, dated, September 23, 2020, PJF Project: A13320-0006.002.7805	Everest Infrastructure Partners
Previous Modification Design	SNET, dated, July 20,1998 Job Number: 98-140	Everest Infrastructure Partners
Previous Modification Design	GPD, dated, June 11, 2009 Job Number: 2009264.50	Everest Infrastructure Partners
Previous Modification Design	Tower Engineering Professionals, dated, July 7, 2023 Job Number: 25669.855826 - Rev. 1	Everest Infrastructure Partners
Correspondence	Correspondence in reference to the existing, proposed, and reserved loading.	Everest Infrastructure Partners

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.

For analysis of monopole shaft reinforcements, the plates are modeled as linear appurtenances along the exterior of the pole. The loads calculated from tnxTower are then exported to a proprietary calculation sheet created by Tower Engineering Professionals, Inc. that analyzes each reinforcing element along each critical axis and presents percent capacities for each element and the pole shaft along each critical axis. The actual percent capacity of the tower structure including the reinforcing elements is reported in Table 3 - Section Capacity (Summary).

3.2) Analysis Assumptions

1) The tower and foundation were built and maintained in accordance with the manufacturer's specification.
2) The configuration of existing antennas, transmission cables, mounts and other appurtenances are as specified in the tower mapping report by TEP.
3) Unless specified by the client or tower mapping, the location of the existing and proposed coax is assumed by TEP and listed in Table 1.
4) All tower components are in sufficient condition to carry their full design capacity.
5) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance.
6) All antenna mounts and mounting hardware are structurally sufficient to carry the full design capacity requirements of appurtenance wind area and weight as provided by the original manufacturer specifications. It is the carrier's responsibility to ensure compliance to the structural limitations of the existing and/or proposed antenna mounts. TEP did not perform a site visit to verify the size, condition or capacity of the antenna mounts and did not analyze antennas supporting mounts as part of this structural analysis report.
7) The following material grades were assumed:
   a) Tower shaft: A572-65
8) The foundation modifications designed by SNET in July of 1998 were determined to be ineffective and not considered structurally in this analysis.

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

4) ANALYSIS RESULTS

Table 3 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	ϕP_{allow} (K)	% Capacity	Pass / Fail
L1	101.00-88.00	Pole	TP16.36×14.64×0.1875	1	Note 1	Note 1	44.3	Pass
L2	90.00-46.25	Pole	TP21.88×15.72×0.2500	2	Note 1	Note 1	91.3	Pass
L3	48.92-0.00	Pole	TP28.00×21.00×0.3125	3	Note 1	Note 1	72.4	Pass
M1	35.50-0.00	Mod (Ex)	(Aero) MP304	1	Note 1	Note 1	98.6	Pass
M2b	45.50-30.00	Mod (Ex)	(Aero) MP304	2	Note 1	Note 1	94.1	Pass
M3	62.00-47.00	Mod (Ex)	(Aero) MP303	3	Note 1	Note 1	63.6	Pass
M4	4.75-0.00	Mod (Pr)	(TS) 1.25×4.50 (65ksi)	4	Note 1	Note 1	93.9	Pass
M5	20.50-0.50	Mod (Pr)	TEP-SFP-050125	5	Note 1	Note 1	97.3	Pass
M6b	25.50-0.50	Mod (Pr)	TEP-SFP-050125	6	Note 1	Note 1	97.3	Pass
M7	40.58-15.58	Mod (Pr)	TEP-SFP-050125	7	Note 1	Note 1	91.6	Pass
M8	40.58-20.58	Mod (Pr)	TEP-SFP-050125	8	Note 1	Note 1	84.4	Pass
M9b	70.66-40.66	Mod (Pr)	TEP-SFP-050125	9	Note 1	Note 1	88.9	Pass
							Summary	
						Pole (L2)	91.3	Pass
						Mod (M1)	98.6	Pass
						RATING =	**98.6**	**Pass**

Table 4 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Base Foundation - Micropiles	-	87.5	Pass

Structure Rating (max from all components) =	98.6%

Notes:
1) See additional documentation in "Appendix B - Additional Calculations" for calculations supporting the % capacity listed.

Table 5 - Dish Twist/Sway Results for 60 mph Service Wind Speed

Elevation (ft)	Dish Model	Beam Deflection		
		Deflection (in)	Tilt (deg)	Twist (deg)
85.0	***Commscope VHLP2-18/D***	***14.567***	***1.7182***	***0.0011***

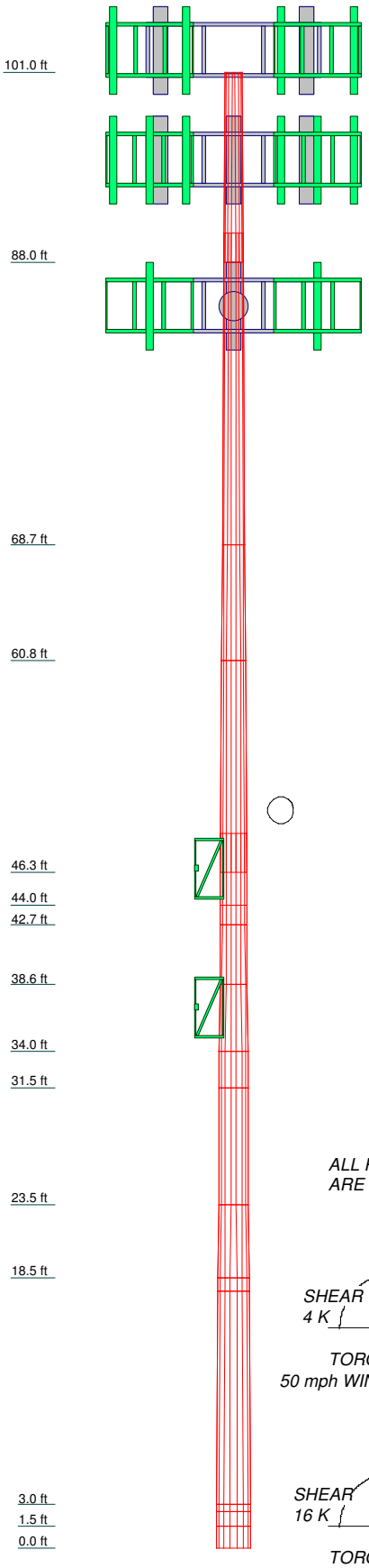
4.1) Recommendations

1) If the load differs from that described in Table 1 of this report or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
2) The tower and its foundation have sufficient capacity to carry the proposed load configuration. No further modifications are required once the proposed modifications are installed.

APPENDIX A

TNX TOWER OUTPUT

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Length (ft)	13.00	21.34	7.91	14.50	4.92	1.34	4.08	4.58	2.50	8.00	5.00	0.92	14.58	1.50	0.00	0.00
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.1875	0.2500	0.6402	0.7759	0.3647	0.1	0.3	0.3	0.2	0.6	0.4	0.1	1.3	0.0	0.0	0.0
Socket Length (ft)	2.00			2.67												
Top Dia (in)	14.6400	15.7200	18.7247	19.8384	21.0000	21.1724	21.8952	22.4796	23.1349	23.4926	24.6374	25.3528	25.4845	27.2500	27.2500	28.0000
Bot Dia (in)	16.3600	18.7247	19.8384	21.8800	22.7040	21.8952	22.4796	23.1349	23.4926	24.6374	25.3528	25.4845	27.5707	28.0000	28.0000	28.0000
Grade	MPRF-Fy=65ksi, Density=100%			MPRF-Fy=65ksi, Density=50%		MPRF-Fy=65ksi, Density=100%			MPRF-Fy=65ksi, Density=50%			MPRF-Fy=65ksi, Density=100%				
Weight (K)	0.4	1.0	0.4	0.8	0.3	0.1	0.3	0.3	0.2	0.6	0.4	0.1	1.3	0.0	0.0	0.0



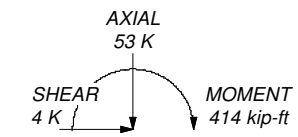
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
MPRF-Fy=65ksi Density=100%	65 ksi	80 ksi	MPRF-Fy=65ksi Density=50%	65 ksi	80 ksi

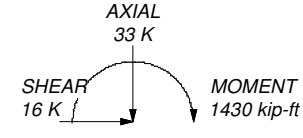
TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft

ALL REACTIONS ARE FACTORED



TORQUE 0 kip-ft
50 mph WIND - 1.5000 in ICE



TORQUE 0 kip-ft
REACTIONS - 120 mph WIND

Tower Engineering Professional

Tower Engineering Professionals, Inc.
326 Tryon Road
Raleigh, NC 27603-5263
Phone: (919) 661-6351
FAX: (919) 661-6350

Job: ***Wethersfield CO (638512)***			
Project: ***TEP No. 25669.864526***			
Client: Everest	Drawn by: TLI	App'd:	
Code: TIA-222-H	Date: 07/03/23	Scale: NTS	
Path: C:\Users\tlinfante\Desktop\25669.864526 Wethersfield CO\tnx\Wethersfield CO (638512).er		Dwg No. E-1	

Tower Input Data

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

Tower is located in Hartford County, Connecticut.
Tower base elevation above sea level: 71.00 ft.
Basic wind speed of 120 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.5000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Maximum demand-capacity ratio is: 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	101.00-88.00	13.00	2.00	18	14.6400	16.3600	0.1875	0.7500	MPRF-Fy=65ksi, Density=100% (65 ksi)
L2	88.00-68.66	21.34	0.00	18	15.7200	18.7247	0.2500	1.0000	MPRF-Fy=65ksi, Density=100% (65 ksi)
L3	68.66-60.75	7.91	0.00	18	18.7247	19.8384	0.6402	2.5609	MPRF-Fy=65ksi, Density=50% (65 ksi)
L4	60.75-46.25	14.50	2.67	18	19.8384	21.8800	0.7759	3.1037	MPRF-Fy=65ksi, Density=50% (65 ksi)
L5	46.25-44.00	4.92	0.00	18	21.0000	21.7040	0.6647	2.6587	MPRF-Fy=65ksi, Density=50% (65 ksi)
L6	44.00-42.66	1.34	0.00	18	21.7040	21.8957	0.8990	3.5961	MPRF-Fy=65ksi, Density=50% (65 ksi)
L7	42.66-38.58	4.08	0.00	18	21.8957	22.4796	0.6350	2.5401	MPRF-Fy=65ksi, Density=50% (65 ksi)
L8	38.58-34.00	4.58	0.00	18	22.4796	23.1349	0.6227	2.4910	MPRF-Fy=65ksi, Density=100% (65 ksi)
L9	34.00-31.50	2.50	0.00	18	23.1349	23.4926	0.8979	3.5917	MPRF-Fy=65ksi, Density=50% (65 ksi)
L10	31.50-23.50	8.00	0.00	18	23.4926	24.6374	0.6359	2.5437	MPRF-Fy=65ksi, Density=50% (65 ksi)
L11	23.50-18.50	5.00	0.00	18	24.6374	25.3528	0.7522	3.0088	MPRF-Fy=65ksi, Density=50% (65 ksi)
L12	18.50-17.58	0.92	0.00	18	25.3528	25.4845	0.7492	2.9968	MPRF-Fy=65ksi, Density=50% (65 ksi)
L13	17.58-3.00	14.58	0.00	18	25.4845	27.5707	0.5530	2.2119	MPRF-Fy=65ksi, Density=100% (65 ksi)
L14	3.00-2.50	0.50	0.00	18	27.5707	27.6423	0.8548	3.4193	MPRF-Fy=65ksi, Density=50% (65 ksi)
L15	2.50-1.50	1.00	0.00	18	27.6423	27.7854	0.6931	2.7726	MPRF-Fy=65ksi, Density=50% (65 ksi)
L16	1.50-0.00	1.50		18	27.7854	28.0000	0.5822	2.3286	MPRF-Fy=65ksi, Density=100% (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	14.8369	8.6010	226.9732	5.1306	7.4371	30.5190	454.2451	4.3013	2.2466	11.982
	16.5835	9.6247	318.0366	5.7412	8.3109	38.2675	636.4917	4.8132	2.5494	13.597
L2	16.2099	12.2754	371.1550	5.4919	7.9858	46.4771	742.7984	6.1389	2.3267	9.307
	18.9750	14.6597	632.1419	6.5585	9.5121	66.4564	1265.1156	7.3312	2.8555	11.422
L3	18.9148	36.7483	1518.3994	6.4200	9.5121	159.6276	3038.7968	18.3777	2.1688	3.388
	20.0457	39.0115	1816.5616	6.8154	10.0779	180.2519	3635.5134	19.5094	2.3648	3.694
L4	20.0247	46.9465	2155.2593	6.7672	10.0779	213.8598	4313.3545	23.4777	2.1259	2.74
	22.0978	51.9745	2924.5604	7.4919	11.1150	263.1174	5852.9690	25.9922	2.4853	3.203
L5	21.6094	42.9012	2241.3487	7.2190	10.6680	210.1002	4485.6466	21.4547	2.5262	3.801
	21.9363	44.3865	2482.2866	7.4690	11.0256	225.1377	4967.8395	22.1975	2.6501	3.987
L6	21.9001	59.3674	3246.5333	7.3858	11.0256	294.4532	6497.3384	29.6893	2.2376	2.489
	22.0948	59.9145	3337.1243	7.4538	11.1230	300.0191	6678.6397	29.9630	2.2714	2.526
L7	22.1356	42.8532	2447.2411	7.5476	11.1230	220.0155	4897.7023	21.4307	2.7360	4.308
	22.7284	44.0300	2654.4282	7.7548	11.4196	232.4446	5312.3491	22.0192	2.8387	4.47
L8	22.7303	43.2020	2607.4449	7.7592	11.4196	228.3304	5218.3206	21.6051	2.8604	4.593
	23.3957	44.4974	2849.0931	7.9918	11.7525	242.4237	5701.9351	22.2529	2.9757	4.778
L9	23.3533	63.3756	3959.2373	7.8941	11.7525	336.8836	7923.6842	31.6938	2.4914	2.775
	23.7165	64.3951	4153.4046	8.0211	11.9343	348.0236	8312.2745	32.2037	2.5544	2.845
L10	23.7569	46.1353	3045.0752	8.1141	11.9343	255.1541	6094.1573	23.0720	3.0155	4.742
	24.9193	48.4459	3525.8884	8.5205	12.5158	281.7154	7056.4163	24.2275	3.2169	5.059
L11	24.9014	57.0254	4110.1961	8.4792	12.5158	328.4011	8225.8006	28.5181	3.0123	4.005
	25.6279	58.7336	4490.7193	8.7332	12.8792	348.6791	8987.3477	29.3724	3.1382	4.172
L12	25.6284	58.5058	4474.3967	8.7343	12.8792	347.4117	8954.6809	29.2584	3.1435	4.196
	25.7620	58.8188	4546.6031	8.7810	12.9461	351.1946	9099.1888	29.4150	3.1667	4.227
L13	25.7923	43.7586	3436.3447	8.8507	12.9461	265.4346	6877.2110	21.8834	3.5120	6.351
	27.9107	47.4203	4373.2043	9.5913	14.0059	312.2395	8752.1629	23.7146	3.8792	7.015
L14	27.8642	72.4850	6536.2048	9.4841	14.0059	466.6741	13081.0101	36.2494	3.3480	3.917
	27.9368	72.6791	6588.8572	9.5095	14.0423	469.2158	13186.3843	36.3465	3.3606	3.931
L15	27.9618	59.2896	5440.0756	9.5669	14.0423	387.4070	10887.3093	29.6504	3.6451	5.259
	28.1071	59.6044	5527.1915	9.6177	14.1150	391.5838	11061.6559	29.8078	3.6703	5.295
L16	28.1242	50.2647	4699.3882	9.6571	14.1150	332.9366	9404.9600	25.1371	3.8656	6.64
	28.3421	50.6613	4811.5041	9.7333	14.2240	338.2666	9629.3393	25.3355	3.9034	6.705

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1				1	1	1			
101.00-88.00									
L2 88.00-68.66				1	1	1			
L3 68.66-60.75				1	1	0.796862			
L4 60.75-46.25				1	1	0.660746			
L5 46.25-44.00				1	1	0.956044			
L6 44.00-42.66				1	1	0.714614			
L7 42.66-38.58				1	1	0.998727			
L8 38.58-34.00				1	1	0.508726			
L9 34.00-31.50				1	1	0.714085			
L10				1	1	0.996049			
31.50-23.50									
L11				1	1	0.845747			
23.50-18.50									
L12				1	1	0.848962			
18.50-17.58									
L13 17.58-3.00				1	1	0.570152			
L14 3.00-2.50				1	1	0.745956			
L15 2.50-1.50				1	1	0.914351			
L16 1.50-0.00				1	1	0.542081			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	B	No	Surface Ar (CaAa)	101.00 - 0.00	1	1	0.000 0.000	0.3750		0.22
MLCH HYBRID 6X12(1-3/8")	A	No	Surface Ar (CaAa)	85.00 - 73.00	1	1	0.167 0.167	1.4300		1.72
Gore 1.8mm Fiber	A	No	Surface Ar (CaAa)	85.00 - 73.00	2	2	0.167 0.167	0.0700		0.00
CAT 5e(5/16")	A	No	Surface Ar (CaAa)	85.00 - 73.00	1	1	0.167 0.167	0.0700		0.05
LDF2-50A(3/8)	C	No	Surface Ar (CaAa)	46.50 - 37.00	1	1	0.333 0.333	0.4400		0.08
LDF2-50A(3/8)	C	No	Surface Ar (CaAa)	37.00 - 0.00	2	2	0.333 0.333	0.4400		0.08
Mods										
(Aero) MP304	B	No	Surface Af (CaAa)	35.50 - 0.00	1	1	-0.167 -0.167	4.7800	12.7800	26.19
(Aero) MP304	A	No	Surface Af (CaAa)	35.50 - 0.00	1	1	0.167 0.167	4.7800	12.7800	26.19
(Aero) MP304	C	No	Surface Af (CaAa)	35.50 - 0.00	1	1	0.000 0.000	4.7800	12.7800	26.19
***										
(Aero) MP304	A	No	Surface Af (CaAa)	45.50 - 30.00	1	1	-0.333 -0.333	4.7800	12.7800	26.19
(Aero) MP304	C	No	Surface Af (CaAa)	45.50 - 30.00	1	1	-0.333 -0.333	4.7800	12.7800	26.19
***										
(Aero) MP304	B	No	Surface Af (CaAa)	45.50 - 30.00	1	1	-0.333 -0.333	4.7800	12.7800	26.19
***										
(Aero) MP303	B	No	Surface Af (CaAa)	62.00 - 47.00	1	1	0.000 0.000	4.0583	11.2541	21.66
(Aero) MP303	A	No	Surface Af (CaAa)	62.00 - 47.00	1	1	0.000 0.000	4.0583	11.2541	21.66
(Aero) MP303	C	No	Surface Af (CaAa)	62.00 - 47.00	1	1	0.000 0.000	4.0583	11.2541	21.66
***										
TEP-65FP-050125 (H)	C	No	Surface Af (CaAa)	20.50 - 0.00	1	1	0.333 0.333	5.0000	12.5000	21.27
***										
TEP-65FP-050125 (H)	A	No	Surface Af (CaAa)	25.50 - 0.00	1	1	0.500 0.500	5.0000	12.5000	21.27
TEP-65FP-050125 (H)	C	No	Surface Af (CaAa)	25.50 - 0.00	1	1	-0.333 -0.333	5.0000	12.5000	21.27
***										
TEP-65FP-050125 (H)	B	No	Surface Af (CaAa)	40.58 - 15.58	1	1	0.333 0.333	5.0000	12.5000	21.27
***										
TEP-65FP-050125 (H)	C	No	Surface Af (CaAa)	40.58 - 20.50	1	1	0.333 0.333	5.0000	12.5000	21.27
***										
TEP-65FP-050125 (H)	A	No	Surface Af (CaAa)	70.66 - 40.66	1	1	0.333 0.333	5.0000	12.5000	21.27
***										
TEP-65FP-050125 (H)	C	No	Surface Af	70.66 -	1	1	0.333	5.0000	12.5000	21.27

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
TEP-65FP-050125 (H)	B	No	(CaAa) Surface Af (CaAa)	40.58 70.66 - 40.58	1	1	0.333 0.333 0.333	5.0000	12.5000	21.27
***										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
***									
LDF7-50A(1-5/8)	C	No	No	Inside Pole	101.00 - 0.00	12	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
LDF4.5-50(5/8)	C	No	No	Inside Pole	101.00 - 0.00	2	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
1" DC Power Cable	C	No	No	Inside Pole	101.00 - 0.00	4	No Ice	0.00	0.76
							1/2" Ice	0.00	0.76
							1" Ice	0.00	0.76
							2" Ice	0.00	0.76
3/8" RET Cable	C	No	No	Inside Pole	101.00 - 0.00	1	No Ice	0.00	0.18
							1/2" Ice	0.00	0.18
							1" Ice	0.00	0.18
							2" Ice	0.00	0.18
LDF7-50A(1-5/8)	C	No	No	Inside Pole	95.00 - 0.00	5	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
LDF5-50A(7/8")	C	No	No	Inside Pole	95.00 - 0.00	6	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
							2" Ice	0.00	0.33
MLCH HYBRID 6X12(1-3/8")	A	No	No	Inside Pole	73.00 - 0.00	1	No Ice	0.00	1.72
							1/2" Ice	0.00	1.72
							1" Ice	0.00	1.72
							2" Ice	0.00	1.72
Gore 1.8mm Fiber	A	No	No	Inside Pole	73.00 - 0.00	2	No Ice	0.00	0.00
							1/2" Ice	0.00	0.00
							1" Ice	0.00	0.00
							2" Ice	0.00	0.00
CAT 5e(5/16")	A	No	No	Inside Pole	73.00 - 0.00	1	No Ice	0.00	0.05
							1/2" Ice	0.00	0.05
							1" Ice	0.00	0.05
							2" Ice	0.00	0.05
***									

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	101.00-88.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.488	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.22
L2	88.00-68.66	A	0.000	0.000	3.635	0.000	0.07
		B	0.000	0.000	2.392	0.000	0.05
		C	0.000	0.000	1.667	0.000	0.42
L3	68.66-60.75	A	0.000	0.000	7.437	0.000	0.21
		B	0.000	0.000	7.734	0.000	0.20
		C	0.000	0.000	7.437	0.000	0.35
L4	60.75-46.25	A	0.000	0.000	21.384	0.000	0.63
		B	0.000	0.000	21.927	0.000	0.61
		C	0.000	0.000	21.395	0.000	0.89
L5	46.25-44.00	A	0.000	0.000	3.070	0.000	0.09
		B	0.000	0.000	3.154	0.000	0.09
		C	0.000	0.000	3.169	0.000	0.13
L6	44.00-42.66	A	0.000	0.000	2.184	0.000	0.07
		B	0.000	0.000	2.234	0.000	0.06
		C	0.000	0.000	2.243	0.000	0.09
L7	42.66-38.58	A	0.000	0.000	4.917	0.000	0.16
		B	0.000	0.000	6.803	0.000	0.19
		C	0.000	0.000	6.830	0.000	0.27
L8	38.58-34.00	A	0.000	0.000	4.844	0.000	0.17
		B	0.000	0.000	8.832	0.000	0.26
		C	0.000	0.000	8.994	0.000	0.35
L9	34.00-31.50	A	0.000	0.000	3.983	0.000	0.14
		B	0.000	0.000	6.160	0.000	0.18
		C	0.000	0.000	6.287	0.000	0.23
L10	31.50-23.50	A	0.000	0.000	9.235	0.000	0.31
		B	0.000	0.000	14.535	0.000	0.42
		C	0.000	0.000	16.606	0.000	0.62
L11	23.50-18.50	A	0.000	0.000	8.150	0.000	0.25
		B	0.000	0.000	8.338	0.000	0.24
		C	0.000	0.000	12.757	0.000	0.44
L12	18.50-17.58	A	0.000	0.000	1.500	0.000	0.05
		B	0.000	0.000	1.534	0.000	0.04
		C	0.000	0.000	2.347	0.000	0.08
L13	17.58-3.00	A	0.000	0.000	23.765	0.000	0.72
		B	0.000	0.000	13.829	0.000	0.43
		C	0.000	0.000	37.198	0.000	1.29
L14	3.00-2.50	A	0.000	0.000	0.815	0.000	0.02
		B	0.000	0.000	0.417	0.000	0.01
		C	0.000	0.000	1.276	0.000	0.04
L15	2.50-1.50	A	0.000	0.000	1.630	0.000	0.05
		B	0.000	0.000	0.834	0.000	0.03
		C	0.000	0.000	2.551	0.000	0.09
L16	1.50-0.00	A	0.000	0.000	2.445	0.000	0.07
		B	0.000	0.000	1.251	0.000	0.04
		C	0.000	0.000	3.827	0.000	0.13

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	101.00-88.00	A	1.416	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	4.170	0.000	0.04
		C		0.000	0.000	0.000	0.000	0.22

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
L2	88.00-68.66	A	1.390	0.000	0.000	15.290	0.000	0.21
		B		0.000	0.000	8.437	0.000	0.13
		C		0.000	0.000	2.233	0.000	0.44
L3	68.66-60.75	A	1.364	0.000	0.000	9.935	0.000	0.29
		B		0.000	0.000	12.390	0.000	0.30
		C		0.000	0.000	9.935	0.000	0.43
L4	60.75-46.25	A	1.338	0.000	0.000	28.942	0.000	0.88
		B		0.000	0.000	33.366	0.000	0.90
		C		0.000	0.000	29.020	0.000	1.14
L5	46.25-44.00	A	1.316	0.000	0.000	4.070	0.000	0.13
		B		0.000	0.000	4.757	0.000	0.13
		C		0.000	0.000	4.771	0.000	0.17
L6	44.00-42.66	A	1.310	0.000	0.000	2.884	0.000	0.09
		B		0.000	0.000	3.285	0.000	0.09
		C		0.000	0.000	3.294	0.000	0.12
L7	42.66-38.58	A	1.302	0.000	0.000	6.493	0.000	0.21
		B		0.000	0.000	9.983	0.000	0.28
		C		0.000	0.000	10.010	0.000	0.36
L8	38.58-34.00	A	1.287	0.000	0.000	6.404	0.000	0.22
		B		0.000	0.000	12.750	0.000	0.36
		C		0.000	0.000	13.171	0.000	0.45
L9	34.00-31.50	A	1.274	0.000	0.000	5.255	0.000	0.18
		B		0.000	0.000	8.707	0.000	0.26
		C		0.000	0.000	9.047	0.000	0.31
L10	31.50-23.50	A	1.252	0.000	0.000	12.114	0.000	0.40
		B		0.000	0.000	20.919	0.000	0.59
		C		0.000	0.000	24.167	0.000	0.81
L11	23.50-18.50	A	1.219	0.000	0.000	10.587	0.000	0.33
		B		0.000	0.000	11.993	0.000	0.33
		C		0.000	0.000	18.046	0.000	0.58
L12	18.50-17.58	A	1.200	0.000	0.000	1.941	0.000	0.06
		B		0.000	0.000	2.197	0.000	0.06
		C		0.000	0.000	3.306	0.000	0.11
L13	17.58-3.00	A	1.134	0.000	0.000	30.377	0.000	0.94
		B		0.000	0.000	20.894	0.000	0.58
		C		0.000	0.000	51.569	0.000	1.65
L14	3.00-2.50	A	0.994	0.000	0.000	1.014	0.000	0.03
		B		0.000	0.000	0.616	0.000	0.02
		C		0.000	0.000	1.709	0.000	0.05
L15	2.50-1.50	A	0.963	0.000	0.000	2.015	0.000	0.06
		B		0.000	0.000	1.219	0.000	0.03
		C		0.000	0.000	3.392	0.000	0.11
L16	1.50-0.00	A	0.873	0.000	0.000	2.969	0.000	0.09
		B		0.000	0.000	1.775	0.000	0.05
		C		0.000	0.000	4.973	0.000	0.16

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	101.00-88.00	0.2595	-0.1498	1.0137	-0.5853
L2	88.00-68.66	-0.2161	-0.6054	-0.3914	-1.6774
L3	68.66-60.75	0.0664	-0.0383	0.4191	-0.2420
L4	60.75-46.25	0.0514	-0.0292	0.3176	-0.1806
L5	46.25-44.00	0.0071	0.0259	0.0817	0.1119
L6	44.00-42.66	0.0063	0.0230	0.0717	0.0984

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L7	42.66-38.58	-0.1763	0.8717	-0.1043	0.9458
L8	38.58-34.00	-0.3668	1.2343	-0.3242	1.3035
L9	34.00-31.50	-0.3154	0.3462	-0.2941	0.4361
L10	31.50-23.50	0.3501	0.2022	0.3439	0.3206
L11	23.50-18.50	2.3406	-0.4351	2.2615	-0.3015
L12	18.50-17.58	2.3702	-0.4409	2.2929	-0.3071
L13	17.58-3.00	1.7850	-1.7610	1.4986	-1.3422
L14	3.00-2.50	1.6632	-2.0363	1.3923	-1.5743
L15	2.50-1.50	1.6676	-2.0417	1.3958	-1.5815
L16	1.50-0.00	1.6754	-2.0511	1.4018	-1.5981

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	Safety Line 3/8	88.00 - 101.00	1.0000	1.0000
L2	1	Safety Line 3/8	68.66 - 88.00	1.0000	1.0000
L2	12	MLCH HYBRID 6X12(1-3/8")	73.00 - 85.00	1.0000	1.0000
L2	15	Gore 1.8mm Fiber	73.00 - 85.00	1.0000	1.0000
L2	18	CAT 5e(5/16")	73.00 - 85.00	1.0000	1.0000
L2	45	TEP-65FP-050125 (H)	68.66 - 70.66	1.0000	1.0000
L2	47	TEP-65FP-050125 (H)	68.66 - 70.66	1.0000	1.0000
L2	48	TEP-65FP-050125 (H)	68.66 - 70.66	1.0000	1.0000
L3	1	Safety Line 3/8	60.75 - 68.66	1.0000	1.0000
L3	32	(Aero) MP303	60.75 - 62.00	1.0000	1.0000
L3	33	(Aero) MP303	60.75 - 62.00	1.0000	1.0000
L3	34	(Aero) MP303	60.75 - 62.00	1.0000	1.0000
L3	45	TEP-65FP-050125 (H)	60.75 - 68.66	1.0000	1.0000
L3	47	TEP-65FP-050125 (H)	60.75 - 68.66	1.0000	1.0000
L3	48	TEP-65FP-050125 (H)	60.75 - 68.66	1.0000	1.0000
L4	1	Safety Line 3/8	46.25 - 60.75	1.0000	1.0000
L4	20	LDF2-50A(3/8)	46.25 - 46.50	1.0000	1.0000
L4	32	(Aero) MP303	47.00 - 60.75	1.0000	1.0000
L4	33	(Aero) MP303	47.00 - 60.75	1.0000	1.0000
L4	34	(Aero) MP303	47.00 - 60.75	1.0000	1.0000
L4	45	TEP-65FP-050125 (H)	46.25 - 60.75	1.0000	1.0000
L4	47	TEP-65FP-050125 (H)	46.25 - 60.75	1.0000	1.0000
L4	48	TEP-65FP-050125 (H)	46.25 - 60.75	1.0000	1.0000
L5	1	Safety Line 3/8	44.00 - 46.25	1.0000	1.0000
L5	20	LDF2-50A(3/8)	44.00 - 46.25	1.0000	1.0000
L5	27	(Aero) MP304	44.00 - 45.50	1.0000	1.0000
L5	28	(Aero) MP304	44.00 - 45.50	1.0000	1.0000
L5	30	(Aero) MP304	44.00 - 45.50	1.0000	1.0000
L5	45	TEP-65FP-050125 (H)	44.00 - 46.25	1.0000	1.0000
L5	47	TEP-65FP-050125 (H)	44.00 - 46.25	1.0000	1.0000
L5	48	TEP-65FP-050125 (H)	44.00 - 46.25	1.0000	1.0000
L6	1	Safety Line 3/8	42.66 - 44.00	1.0000	1.0000
L6	20	LDF2-50A(3/8)	42.66 - 44.00	1.0000	1.0000
L6	27	(Aero) MP304	42.66 - 44.00	1.0000	1.0000
L6	28	(Aero) MP304	42.66 - 44.00	1.0000	1.0000
L6	30	(Aero) MP304	42.66 - 44.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L6	45	TEP-65FP-050125 (H)	42.66 - 44.00	1.0000	1.0000
L6	47	TEP-65FP-050125 (H)	42.66 - 44.00	1.0000	1.0000
L6	48	TEP-65FP-050125 (H)	42.66 - 44.00	1.0000	1.0000
L7	1	Safety Line 3/8	38.58 - 42.66	1.0000	1.0000
L7	20	LDF2-50A(3/8)	38.58 - 42.66	1.0000	1.0000
L7	27	(Aero) MP304	38.58 - 42.66	1.0000	1.0000
L7	28	(Aero) MP304	38.58 - 42.66	1.0000	1.0000
L7	30	(Aero) MP304	38.58 - 42.66	1.0000	1.0000
L7	41	TEP-65FP-050125 (H)	38.58 - 40.58	1.0000	1.0000
L7	43	TEP-65FP-050125 (H)	38.58 - 40.58	1.0000	1.0000
L7	45	TEP-65FP-050125 (H)	40.66 - 42.66	1.0000	1.0000
L7	47	TEP-65FP-050125 (H)	40.58 - 42.66	1.0000	1.0000
L7	48	TEP-65FP-050125 (H)	40.58 - 42.66	1.0000	1.0000
L8	1	Safety Line 3/8	34.00 - 38.58	1.0000	1.0000
L8	20	LDF2-50A(3/8)	37.00 - 38.58	1.0000	1.0000
L8	21	LDF2-50A(3/8)	34.00 - 37.00	1.0000	1.0000
L8	23	(Aero) MP304	34.00 - 35.50	1.0000	1.0000
L8	24	(Aero) MP304	34.00 - 35.50	1.0000	1.0000
L8	25	(Aero) MP304	34.00 - 35.50	1.0000	1.0000
L8	27	(Aero) MP304	34.00 - 38.58	1.0000	1.0000
L8	28	(Aero) MP304	34.00 - 38.58	1.0000	1.0000
L8	30	(Aero) MP304	34.00 - 38.58	1.0000	1.0000
L8	41	TEP-65FP-050125 (H)	34.00 - 38.58	1.0000	1.0000
L8	43	TEP-65FP-050125 (H)	34.00 - 38.58	1.0000	1.0000
L9	1	Safety Line 3/8	31.50 - 34.00	1.0000	1.0000
L9	21	LDF2-50A(3/8)	31.50 - 34.00	1.0000	1.0000
L9	23	(Aero) MP304	31.50 - 34.00	1.0000	1.0000
L9	24	(Aero) MP304	31.50 - 34.00	1.0000	1.0000
L9	25	(Aero) MP304	31.50 - 34.00	1.0000	1.0000
L9	27	(Aero) MP304	31.50 - 34.00	1.0000	1.0000
L9	28	(Aero) MP304	31.50 - 34.00	1.0000	1.0000
L9	30	(Aero) MP304	31.50 - 34.00	1.0000	1.0000
L9	41	TEP-65FP-050125 (H)	31.50 - 34.00	1.0000	1.0000
L9	43	TEP-65FP-050125 (H)	31.50 - 34.00	1.0000	1.0000
L10	1	Safety Line 3/8	23.50 - 31.50	1.0000	1.0000
L10	21	LDF2-50A(3/8)	23.50 - 31.50	1.0000	1.0000
L10	23	(Aero) MP304	23.50 - 31.50	1.0000	1.0000
L10	24	(Aero) MP304	23.50 - 31.50	1.0000	1.0000
L10	25	(Aero) MP304	23.50 - 31.50	1.0000	1.0000
L10	27	(Aero) MP304	30.00 - 31.50	1.0000	1.0000
L10	28	(Aero) MP304	30.00 - 31.50	1.0000	1.0000
L10	30	(Aero) MP304	30.00 - 31.50	1.0000	1.0000
L10	38	TEP-65FP-050125 (H)	23.50 - 25.50	1.0000	1.0000
L10	39	TEP-65FP-050125 (H)	23.50 - 25.50	1.0000	1.0000
L10	41	TEP-65FP-050125 (H)	23.50 - 31.50	1.0000	1.0000
L10	43	TEP-65FP-050125 (H)	23.50 - 31.50	1.0000	1.0000
L11	1	Safety Line 3/8	18.50 - 23.50	1.0000	1.0000
L11	21	LDF2-50A(3/8)	18.50 - 23.50	1.0000	1.0000
L11	23	(Aero) MP304	18.50 - 23.50	1.0000	1.0000
L11	24	(Aero) MP304	18.50 - 23.50	1.0000	1.0000
L11	25	(Aero) MP304	18.50 - 23.50	1.0000	1.0000
L11	36	TEP-65FP-050125 (H)	18.50 - 20.50	1.0000	1.0000
L11	38	TEP-65FP-050125 (H)	18.50 - 23.50	1.0000	1.0000
L11	39	TEP-65FP-050125 (H)	18.50 - 23.50	1.0000	1.0000
L11	41	TEP-65FP-050125 (H)	18.50 - 23.50	1.0000	1.0000
L11	43	TEP-65FP-050125 (H)	20.50 - 23.50	1.0000	1.0000
L12	1	Safety Line 3/8	17.58 - 18.50	1.0000	1.0000
L12	21	LDF2-50A(3/8)	17.58 - 18.50	1.0000	1.0000
L12	23	(Aero) MP304	17.58 - 18.50	1.0000	1.0000
L12	24	(Aero) MP304	17.58 - 18.50	1.0000	1.0000
L12	25	(Aero) MP304	17.58 - 18.50	1.0000	1.0000
L12	36	TEP-65FP-050125 (H)	17.58 - 18.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L12	38	TEP-65FP-050125 (H)	17.58 - 18.50	1.0000	1.0000
L12	39	TEP-65FP-050125 (H)	17.58 - 18.50	1.0000	1.0000
L12	41	TEP-65FP-050125 (H)	17.58 - 18.50	1.0000	1.0000
L13	1	Safety Line 3/8	3.00 - 17.58	1.0000	1.0000
L13	21	LDF2-50A(3/8)	3.00 - 17.58	1.0000	1.0000
L13	23	(Aero) MP304	3.00 - 17.58	1.0000	1.0000
L13	24	(Aero) MP304	3.00 - 17.58	1.0000	1.0000
L13	25	(Aero) MP304	3.00 - 17.58	1.0000	1.0000
L13	36	TEP-65FP-050125 (H)	3.00 - 17.58	1.0000	1.0000
L13	38	TEP-65FP-050125 (H)	3.00 - 17.58	1.0000	1.0000
L13	39	TEP-65FP-050125 (H)	3.00 - 17.58	1.0000	1.0000
L13	41	TEP-65FP-050125 (H)	15.58 - 17.58	1.0000	1.0000
L14	1	Safety Line 3/8	2.50 - 3.00	1.0000	1.0000
L14	21	LDF2-50A(3/8)	2.50 - 3.00	1.0000	1.0000
L14	23	(Aero) MP304	2.50 - 3.00	1.0000	1.0000
L14	24	(Aero) MP304	2.50 - 3.00	1.0000	1.0000
L14	25	(Aero) MP304	2.50 - 3.00	1.0000	1.0000
L14	36	TEP-65FP-050125 (H)	2.50 - 3.00	1.0000	1.0000
L14	38	TEP-65FP-050125 (H)	2.50 - 3.00	1.0000	1.0000
L14	39	TEP-65FP-050125 (H)	2.50 - 3.00	1.0000	1.0000
L15	1	Safety Line 3/8	1.50 - 2.50	1.0000	1.0000
L15	21	LDF2-50A(3/8)	1.50 - 2.50	1.0000	1.0000
L15	23	(Aero) MP304	1.50 - 2.50	1.0000	1.0000
L15	24	(Aero) MP304	1.50 - 2.50	1.0000	1.0000
L15	25	(Aero) MP304	1.50 - 2.50	1.0000	1.0000
L15	36	TEP-65FP-050125 (H)	1.50 - 2.50	1.0000	1.0000
L15	38	TEP-65FP-050125 (H)	1.50 - 2.50	1.0000	1.0000
L15	39	TEP-65FP-050125 (H)	1.50 - 2.50	1.0000	1.0000
L16	1	Safety Line 3/8	0.00 - 1.50	1.0000	1.0000
L16	21	LDF2-50A(3/8)	0.00 - 1.50	1.0000	1.0000
L16	23	(Aero) MP304	0.00 - 1.50	1.0000	1.0000
L16	24	(Aero) MP304	0.00 - 1.50	1.0000	1.0000
L16	25	(Aero) MP304	0.00 - 1.50	1.0000	1.0000
L16	36	TEP-65FP-050125 (H)	0.00 - 1.50	1.0000	1.0000
L16	38	TEP-65FP-050125 (H)	0.00 - 1.50	1.0000	1.0000
L16	39	TEP-65FP-050125 (H)	0.00 - 1.50	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L2	45	TEP-65FP-050125 (H)	68.66 - 70.66	Auto	0.4338
L2	47	TEP-65FP-050125 (H)	68.66 - 70.66	Auto	0.4338
L2	48	TEP-65FP-050125 (H)	68.66 - 70.66	Auto	0.4338
L3	32	(Aero) MP303	60.75 - 62.00	Auto	0.4211
L3	33	(Aero) MP303	60.75 - 62.00	Auto	0.4211
L3	34	(Aero) MP303	60.75 - 62.00	Auto	0.4211
L3	45	TEP-65FP-050125 (H)	60.75 - 68.66	Auto	0.5466
L3	47	TEP-65FP-050125 (H)	60.75 - 68.66	Auto	0.5466
L3	48	TEP-65FP-050125 (H)	60.75 - 68.66	Auto	0.5466
L4	32	(Aero) MP303	47.00 - 60.75	Auto	0.4342
L4	33	(Aero) MP303	47.00 - 60.75	Auto	0.4342
L4	34	(Aero) MP303	47.00 - 60.75	Auto	0.4342

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L4	45	TEP-65FP-050125 (H)	46.25 - 60.75	Auto	0.5389
L4	47	TEP-65FP-050125 (H)	46.25 - 60.75	Auto	0.5389
L4	48	TEP-65FP-050125 (H)	46.25 - 60.75	Auto	0.5389
L5	27	(Aero) MP304	44.00 - 45.50	Auto	0.4495
L5	28	(Aero) MP304	44.00 - 45.50	Auto	0.4495
L5	30	(Aero) MP304	44.00 - 45.50	Auto	0.4495
L5	45	TEP-65FP-050125 (H)	44.00 - 46.25	Auto	0.4757
L5	47	TEP-65FP-050125 (H)	44.00 - 46.25	Auto	0.4757
L5	48	TEP-65FP-050125 (H)	44.00 - 46.25	Auto	0.4757
L6	27	(Aero) MP304	42.66 - 44.00	Auto	0.5284
L6	28	(Aero) MP304	42.66 - 44.00	Auto	0.5284
L6	30	(Aero) MP304	42.66 - 44.00	Auto	0.5284
L6	45	TEP-65FP-050125 (H)	42.66 - 44.00	Auto	0.5491
L6	47	TEP-65FP-050125 (H)	42.66 - 44.00	Auto	0.5491
L6	48	TEP-65FP-050125 (H)	42.66 - 44.00	Auto	0.5491
L7	27	(Aero) MP304	38.58 - 42.66	Auto	0.4169
L7	28	(Aero) MP304	38.58 - 42.66	Auto	0.4169
L7	30	(Aero) MP304	38.58 - 42.66	Auto	0.4169
L7	41	TEP-65FP-050125 (H)	38.58 - 40.58	Auto	0.4373
L7	43	TEP-65FP-050125 (H)	38.58 - 40.58	Auto	0.4373
L7	45	TEP-65FP-050125 (H)	40.66 - 42.66	Auto	0.4478
L7	47	TEP-65FP-050125 (H)	40.58 - 42.66	Auto	0.4476
L7	48	TEP-65FP-050125 (H)	40.58 - 42.66	Auto	0.4476
L8	23	(Aero) MP304	34.00 - 35.50	Auto	0.3814
L8	24	(Aero) MP304	34.00 - 35.50	Auto	0.3814
L8	25	(Aero) MP304	34.00 - 35.50	Auto	0.3814
L8	27	(Aero) MP304	34.00 - 38.58	Auto	0.3895
L8	28	(Aero) MP304	34.00 - 38.58	Auto	0.3895
L8	30	(Aero) MP304	34.00 - 38.58	Auto	0.3895
L8	41	TEP-65FP-050125 (H)	34.00 - 38.58	Auto	0.4164
L8	43	TEP-65FP-050125 (H)	34.00 - 38.58	Auto	0.4164
L9	23	(Aero) MP304	31.50 - 34.00	Auto	0.4722
L9	24	(Aero) MP304	31.50 - 34.00	Auto	0.4722
L9	25	(Aero) MP304	31.50 - 34.00	Auto	0.4722
L9	27	(Aero) MP304	31.50 - 34.00	Auto	0.4722
L9	28	(Aero) MP304	31.50 - 34.00	Auto	0.4722
L9	30	(Aero) MP304	31.50 - 34.00	Auto	0.4722
L9	41	TEP-65FP-050125 (H)	31.50 - 34.00	Auto	0.4954
L9	43	TEP-65FP-050125 (H)	31.50 - 34.00	Auto	0.4954
L10	23	(Aero) MP304	23.50 - 31.50	Auto	0.3481
L10	24	(Aero) MP304	23.50 - 31.50	Auto	0.3481
L10	25	(Aero) MP304	23.50 - 31.50	Auto	0.3481
L10	27	(Aero) MP304	30.00 - 31.50	Auto	0.3652
L10	28	(Aero) MP304	30.00 - 31.50	Auto	0.3652
L10	30	(Aero) MP304	30.00 - 31.50	Auto	0.3652
L10	38	TEP-65FP-050125 (H)	23.50 - 25.50	Auto	0.3617
L10	39	TEP-65FP-050125 (H)	23.50 - 25.50	Auto	0.3617
L10	41	TEP-65FP-050125 (H)	23.50 - 31.50	Auto	0.3768
L10	43	TEP-65FP-050125 (H)	23.50 - 31.50	Auto	0.3768
L11	23	(Aero) MP304	18.50 - 23.50	Auto	0.3566
L11	24	(Aero) MP304	18.50 - 23.50	Auto	0.3566
L11	25	(Aero) MP304	18.50 - 23.50	Auto	0.3566
L11	36	TEP-65FP-050125 (H)	18.50 - 20.50	Auto	0.3774
L11	38	TEP-65FP-050125 (H)	18.50 - 23.50	Auto	0.3849
L11	39	TEP-65FP-050125 (H)	18.50 - 23.50	Auto	0.3849
L11	41	TEP-65FP-050125 (H)	18.50 - 23.50	Auto	0.3849
L11	43	TEP-65FP-050125 (H)	20.50 - 23.50	Auto	0.3900
L12	23	(Aero) MP304	17.58 - 18.50	Auto	0.3399
L12	24	(Aero) MP304	17.58 - 18.50	Auto	0.3399
L12	25	(Aero) MP304	17.58 - 18.50	Auto	0.3399
L12	36	TEP-65FP-050125 (H)	17.58 - 18.50	Auto	0.3690

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L12	38	TEP-65FP-050125 (H)	17.58 - 18.50	Auto	0.3690
L12	39	TEP-65FP-050125 (H)	17.58 - 18.50	Auto	0.3690
L12	41	TEP-65FP-050125 (H)	17.58 - 18.50	Auto	0.3690
L13	23	(Aero) MP304	3.00 - 17.58	Auto	0.2269
L13	24	(Aero) MP304	3.00 - 17.58	Auto	0.2269
L13	25	(Aero) MP304	3.00 - 17.58	Auto	0.2269
L13	36	TEP-65FP-050125 (H)	3.00 - 17.58	Auto	0.2609
L13	38	TEP-65FP-050125 (H)	3.00 - 17.58	Auto	0.2609
L13	39	TEP-65FP-050125 (H)	3.00 - 17.58	Auto	0.2609
L13	41	TEP-65FP-050125 (H)	15.58 - 17.58	Auto	0.2926
L14	23	(Aero) MP304	2.50 - 3.00	Auto	0.2983
L14	24	(Aero) MP304	2.50 - 3.00	Auto	0.2983
L14	25	(Aero) MP304	2.50 - 3.00	Auto	0.2983
L14	36	TEP-65FP-050125 (H)	2.50 - 3.00	Auto	0.3291
L14	38	TEP-65FP-050125 (H)	2.50 - 3.00	Auto	0.3291
L14	39	TEP-65FP-050125 (H)	2.50 - 3.00	Auto	0.3291
L15	23	(Aero) MP304	1.50 - 2.50	Auto	0.2348
L15	24	(Aero) MP304	1.50 - 2.50	Auto	0.2348
L15	25	(Aero) MP304	1.50 - 2.50	Auto	0.2348
L15	36	TEP-65FP-050125 (H)	1.50 - 2.50	Auto	0.2685
L15	38	TEP-65FP-050125 (H)	1.50 - 2.50	Auto	0.2685
L15	39	TEP-65FP-050125 (H)	1.50 - 2.50	Auto	0.2685
L16	23	(Aero) MP304	0.00 - 1.50	Auto	0.1873
L16	24	(Aero) MP304	0.00 - 1.50	Auto	0.1873
L16	25	(Aero) MP304	0.00 - 1.50	Auto	0.1873
L16	36	TEP-65FP-050125 (H)	0.00 - 1.50	Auto	0.2231
L16	38	TEP-65FP-050125 (H)	0.00 - 1.50	Auto	0.2231
L16	39	TEP-65FP-050125 (H)	0.00 - 1.50	Auto	0.2231

Discrete Tower Loads

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
1" x 10' Lightning Rod	C	None		0.0000	103.50	No Ice	1.00	1.00	0.02
						1/2" Ice	2.02	2.02	0.03
						1" Ice	3.05	3.05	0.04
						2" Ice	5.15	5.15	0.10
***									
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice	9.90	8.11	0.08
						1/2" Ice	10.47	9.30	0.16
						1" Ice	11.01	10.21	0.25
						2" Ice	12.11	12.01	0.46
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice	9.90	8.11	0.08
						1/2" Ice	10.47	9.30	0.16
						1" Ice	11.01	10.21	0.25
						2" Ice	12.11	12.01	0.46
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice	9.90	8.11	0.08
						1/2" Ice	10.47	9.30	0.16
						1" Ice	11.01	10.21	0.25

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	12.11	12.01	0.46
QS66512-2 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	8.37 8.93 9.46 10.53	8.46 9.66 10.55 12.35	0.14 0.21 0.30 0.49
QS66512-2 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	8.37 8.93 9.46 10.53	8.46 9.66 10.55 12.35	0.14 0.21 0.30 0.49
QS66512-2 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	8.37 8.93 9.46 10.53	8.46 9.66 10.55 12.35	0.14 0.21 0.30 0.49
7770.00 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
7770.00 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
7770.00 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
RRUS 11 B12	A	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	2.79 3.00 3.21 3.67	1.19 1.34 1.50 1.84	0.05 0.07 0.10 0.15
RRUS 11 B12	B	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	2.79 3.00 3.21 3.67	1.19 1.34 1.50 1.84	0.05 0.07 0.10 0.15
RRUS 11 B12	C	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	2.79 3.00 3.21 3.67	1.19 1.34 1.50 1.84	0.05 0.07 0.10 0.15
(2) LGP21401	A	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.21 0.27 0.35 0.52	0.01 0.02 0.03 0.05
(2) LGP21401	B	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.21 0.27 0.35 0.52	0.01 0.02 0.03 0.05
(2) LGP21401	C	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.21 0.27 0.35 0.52	0.01 0.02 0.03 0.05
(2) TPX-070821	A	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	0.47 0.56 0.66 0.87	0.10 0.15 0.20 0.33	0.01 0.01 0.02 0.03
(2) TPX-070821	B	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	0.47 0.56 0.66 0.87	0.10 0.15 0.20 0.33	0.01 0.01 0.02 0.03

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) TPX-070821	C	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	0.47 0.56 0.66 0.87	0.10 0.15 0.20 0.33	0.01 0.01 0.02 0.03
RRUS 32 B30	A	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 32 B30	B	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 32 B30	C	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 32 B2	A	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 32 B2	B	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 32 B2	C	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 32 B66a	A	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	2.85 3.08 3.31 3.80	1.78 1.97 2.17 2.59	0.06 0.08 0.10 0.16
RRUS 32 B66a	B	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	2.85 3.08 3.31 3.80	1.78 1.97 2.17 2.59	0.06 0.08 0.10 0.16
RRUS 32 B66a	C	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	2.85 3.08 3.31 3.80	1.78 1.97 2.17 2.59	0.06 0.08 0.10 0.16
DC6-48-60-18-8F	A	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	0.85 1.36 1.53 1.91	0.85 1.36 1.53 1.91	0.02 0.04 0.05 0.10
DC6-48-60-18-8F	B	From Centroid-Leg	4.00 0.00 0.50	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	0.85 1.36 1.53 1.91	0.85 1.36 1.53 1.91	0.02 0.04 0.05 0.10
2.4" Dia. x 6-ft	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
2.4" Dia. x 6-ft	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
2.4" Dia. x 6-ft	C	From	4.00	0.0000	102.50	No Ice	1.43	1.43	0.02

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
		Centroid-Leg	0.00 0.00			1/2" Ice 1" Ice 2" Ice	1.92 2.29 3.06	1.92 2.29 3.06	0.03 0.05 0.09
Platform Mount [LP 713-1_KCKR]	C	None		0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	44.11 49.98 56.15 69.51	44.11 49.98 56.15 69.51	1.78 2.64 3.62 5.95
(2) Side Arm Mount [SO 901-3]	C	None		0.0000	102.50	No Ice 1/2" Ice 1" Ice 2" Ice	1.14 1.49 1.91 2.93	1.14 1.49 1.91 2.93	0.32 0.34 0.37 0.46
***									
AIR 32 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.70 7.13 7.56 8.45	6.02 6.77 7.48 8.93	0.13 0.19 0.25 0.41
AIR 32 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.70 7.13 7.56 8.45	6.02 6.77 7.48 8.93	0.13 0.19 0.25 0.41
AIR 32 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.70 7.13 7.56 8.45	6.02 6.77 7.48 8.93	0.13 0.19 0.25 0.41
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice 2" Ice	20.48 21.23 21.99 23.44	11.02 12.55 14.10 16.45	0.16 0.30 0.44 0.78
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice 2" Ice	20.48 21.23 21.99 23.44	11.02 12.55 14.10 16.45	0.16 0.30 0.44 0.78
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice 2" Ice	20.48 21.23 21.99 23.44	11.02 12.55 14.10 16.45	0.16 0.30 0.44 0.78
AIR 6419 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.38 4.71 5.05 5.75	2.76 3.19 3.64 4.58	0.06 0.10 0.14 0.24
AIR 6419 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.38 4.71 5.05 5.75	2.76 3.19 3.64 4.58	0.06 0.10 0.14 0.24
AIR 6419 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.38 4.71 5.05 5.75	2.76 3.19 3.64 4.58	0.06 0.10 0.14 0.24
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
RADIO 4460 B2/B25	C	From Leg	4.00	0.0000	95.00	No Ice	2.14	1.69	0.11

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
B66_TMO			0.00			1/2" Ice	2.32	1.85	0.13
			0.00			1" Ice	2.51	2.02	0.16
						2" Ice	2.91	2.39	0.22
RADIO 4449	A	From Leg	4.00	0.0000	95.00	No Ice	1.98	1.41	0.09
			0.00			1/2" Ice	2.16	1.57	0.10
			0.00			1" Ice	2.34	1.73	0.12
						2" Ice	2.73	2.08	0.18
RADIO 4449	B	From Leg	4.00	0.0000	95.00	No Ice	1.98	1.41	0.09
			0.00			1/2" Ice	2.16	1.57	0.10
			0.00			1" Ice	2.34	1.73	0.12
						2" Ice	2.73	2.08	0.18
RADIO 4449	C	From Leg	4.00	0.0000	95.00	No Ice	1.98	1.41	0.09
			0.00			1/2" Ice	2.16	1.57	0.10
			0.00			1" Ice	2.34	1.73	0.12
						2" Ice	2.73	2.08	0.18
Miscellaneous [NA 507-1]	C	None		0.0000	95.00	No Ice	4.56	4.56	0.25
						1/2" Ice	6.39	6.39	0.31
						1" Ice	8.18	8.18	0.40
						2" Ice	11.66	11.66	0.66
Site Pro 1 RMV12	C	None		0.0000	95.00	No Ice	7.44	7.06	0.85
						1/2" Ice	9.09	8.89	0.97
						1" Ice	10.77	10.58	1.13
						2" Ice	14.04	14.38	1.34
***									
MX08FRO665-21 w/ Mount Pipe	A	From Centroid-Leg	4.00	0.0000	85.00	No Ice	12.73	7.53	0.11
			0.00			1/2" Ice	13.33	8.72	0.20
			0.00			1" Ice	13.89	9.62	0.30
						2" Ice	15.05	11.45	0.53
MX08FRO665-21 w/ Mount Pipe	B	From Centroid-Leg	4.00	0.0000	85.00	No Ice	12.73	7.53	0.11
			0.00			1/2" Ice	13.33	8.72	0.20
			0.00			1" Ice	13.89	9.62	0.30
						2" Ice	15.05	11.45	0.53
MX08FRO665-21 w/ Mount Pipe	C	From Centroid-Leg	4.00	0.0000	85.00	No Ice	12.73	7.53	0.11
			0.00			1/2" Ice	13.33	8.72	0.20
			0.00			1" Ice	13.89	9.62	0.30
						2" Ice	15.05	11.45	0.53
TA08025-B605	A	From Centroid-Leg	4.00	0.0000	85.00	No Ice	1.96	1.13	0.08
			0.00			1/2" Ice	2.14	1.27	0.09
			0.00			1" Ice	2.32	1.41	0.11
						2" Ice	2.71	1.72	0.16
TA08025-B605	B	From Centroid-Leg	4.00	0.0000	85.00	No Ice	1.96	1.13	0.08
			0.00			1/2" Ice	2.14	1.27	0.09
			0.00			1" Ice	2.32	1.41	0.11
						2" Ice	2.71	1.72	0.16
TA08025-B605	C	From Centroid-Leg	4.00	0.0000	85.00	No Ice	1.96	1.13	0.08
			0.00			1/2" Ice	2.14	1.27	0.09
			0.00			1" Ice	2.32	1.41	0.11
						2" Ice	2.71	1.72	0.16
TA08025-B604	A	From Centroid-Leg	4.00	0.0000	85.00	No Ice	1.96	0.98	0.06
			0.00			1/2" Ice	2.14	1.11	0.08
			0.00			1" Ice	2.32	1.25	0.10
						2" Ice	2.71	1.55	0.15
TA08025-B604	B	From Centroid-Leg	4.00	0.0000	85.00	No Ice	1.96	0.98	0.06
			0.00			1/2" Ice	2.14	1.11	0.08
			0.00			1" Ice	2.32	1.25	0.10
						2" Ice	2.71	1.55	0.15
TA08025-B604	C	From	4.00	0.0000	85.00	No Ice	1.96	0.98	0.06

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
		Centroid-Leg	0.00 0.00			1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.71	1.11 1.25 1.55	0.08 0.10 0.15
RDIDC-9181-PF-48	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.01 2.19 2.37 2.76	1.17 1.31 1.46 1.78	0.02 0.04 0.06 0.11
Fibeeair IP-50C	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.12 1.25 1.39 1.70	0.37 0.46 0.56 0.77	0.01 0.02 0.03 0.06
(2) 2.4" x 8' Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
(2) 2.4" x 8' Pipe	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
(2) 2.4" x 8' Pipe	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
Commscope MC-PK8-DSH	C	None		0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	34.24 62.95 91.66 149.08	34.24 62.95 91.66 149.08	1.75 2.10 2.45 3.15
***									
GPS_A	C	From Leg	2.00 0.00 0.00	0.0000	46.50	No Ice 1/2" Ice 1" Ice 2" Ice	0.13 0.21 0.28 0.44	0.13 0.21 0.28 0.44	0.00 0.00 0.01 0.02
Side Arm Mount [SO 701-1]	C	From Leg	1.00 0.00 0.00	0.0000	46.50	No Ice 1/2" Ice 1" Ice 2" Ice	0.85 1.14 1.43 2.01	1.67 2.34 3.01 4.35	0.07 0.08 0.09 0.12
***									
GPS_A	C	From Leg	2.00 0.00 0.00	0.0000	37.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.13 0.21 0.28 0.44	0.13 0.21 0.28 0.44	0.00 0.00 0.01 0.02
Side Arm Mount [SO 701-1]	C	From Leg	1.00 0.00 0.00	0.0000	37.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.85 1.14 1.43 2.01	1.67 2.34 3.01 4.35	0.07 0.08 0.09 0.12

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 ft²	Weight K
VHLP2-18/D	A	Paraboloid w/Shroud (HP)	From Centroid -Leg	4.00 0.00 0.00	-6.8200		85.00	2.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.41 3.68 4.21	0.01 0.03 0.05 0.08

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service

Comb. No.	Description
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	101 - 88	Pole	Max Tension	39	0.00	0.00	-0.00
			Max. Compression	26	-18.82	-0.29	0.17
			Max. Mx	8	-7.55	-97.64	0.05
			Max. My	2	-7.55	-0.07	97.63
			Max. Vy	8	9.97	-97.64	0.05
			Max. Vx	2	-9.98	-0.07	97.63
			Max. Torque	12			0.14
L2	88 - 68.66	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.66	0.20	0.25
			Max. Mx	20	-12.85	367.50	0.06
			Max. My	14	-12.84	0.24	-368.17
			Max. Vy	8	13.58	-367.49	0.20
			Max. Vx	14	13.63	0.24	-368.17
			Max. Torque	20			-0.28
L3	68.66 - 60.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.61	0.18	0.26
			Max. Mx	8	-14.34	-476.67	0.29
			Max. My	2	-14.33	-0.29	477.42
			Max. Vy	8	14.05	-476.67	0.29
			Max. Vx	2	-14.08	-0.29	477.42
			Max. Torque	20			-0.28
L4	60.75 - 46.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.56	0.15	0.28
			Max. Mx	8	-17.33	-647.31	0.41
			Max. My	2	-17.33	-0.45	648.32
			Max. Vy	8	14.81	-647.31	0.41
			Max. Vx	2	-14.83	-0.45	648.32
			Max. Torque	20			-0.28
L5	46.25 - 44	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.67	0.36	0.15
			Max. Mx	8	-18.90	-720.98	0.37
			Max. My	2	-18.90	-0.37	722.19
			Max. Vy	8	15.18	-720.98	0.37
			Max. Vx	2	-15.22	-0.37	722.19
			Max. Torque	20			-0.22
L6	44 - 42.66	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.18	0.36	0.15
			Max. Mx	8	-19.30	-741.36	0.37
			Max. My	2	-19.29	-0.37	742.62
			Max. Vy	8	15.26	-741.36	0.37
			Max. Vx	2	-15.30	-0.37	742.62
			Max. Torque	20			-0.22
L7	42.66 - 38.58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.67	0.31	0.07
			Max. Mx	8	-20.49	-804.02	0.31
			Max. My	2	-20.48	-0.41	805.35
			Max. Vy	8	15.46	-804.02	0.31
			Max. Vx	2	-15.51	-0.41	805.35
			Max. Torque	20			-0.22
L8	38.58 - 34	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-39.58	0.43	-0.20
			Max. Mx	8	-22.00	-875.04	0.11
			Max. My	2	-21.99	-0.34	876.75
			Max. Vy	8	15.60	-875.04	0.11
			Max. Vx	2	-15.77	-0.34	876.75
			Max. Torque	20			-0.22
L9	34 - 31.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.76	0.38	-0.23
			Max. Mx	8	-22.94	-914.20	0.06
			Max. My	2	-22.92	-0.36	916.28
			Max. Vy	8	15.74	-914.20	0.06
			Max. Vx	2	-15.91	-0.36	916.28
			Max. Torque	6			0.21
L10	31.5 - 23.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.91	0.19	-0.34
			Max. Mx	8	-25.49	-1040.56	-0.08
			Max. My	2	-25.47	-0.44	1044.63
			Max. Vy	8	15.85	-1040.56	-0.08
			Max. Vx	2	-16.22	-0.44	1044.63
			Max. Torque	6			0.21
L11	23.5 - 18.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.03	0.03	-0.36
			Max. Mx	8	-27.20	-1120.06	-0.13
			Max. My	2	-27.18	-0.52	1126.17
			Max. Vy	20	-15.97	1112.69	0.27
			Max. Vx	2	-16.43	-0.52	1126.17
			Max. Torque	6			0.21
L12	18.5 - 17.58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.42	-0.00	-0.37
			Max. Mx	8	-27.51	-1134.74	-0.14
			Max. My	2	-27.49	-0.53	1141.29
			Max. Vy	20	-15.98	1127.35	0.28
			Max. Vx	2	-16.47	-0.53	1141.29
			Max. Torque	6			0.21
L13	17.58 - 3	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.19	0.09	-0.41
			Max. Mx	8	-32.34	-1367.11	-0.28
			Max. My	2	-32.33	-0.34	1381.16
			Max. Vy	20	-16.01	1243.88	0.45
			Max. Vx	2	-16.49	-0.47	1226.99
			Max. Torque	6			0.21
L14	3 - 2.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.38	0.10	-0.41
			Max. Mx	8	-32.51	-1375.07	-0.29
			Max. My	2	-32.50	-0.34	1389.38
			Max. Vy	20	-15.98	1368.38	0.62
			Max. Vx	2	-16.44	-0.34	1389.38
			Max. Torque	6			0.21
L15	2.5 - 1.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.76	0.11	-0.41
			Max. Mx	8	-32.83	-1390.99	-0.30
			Max. My	2	-32.83	-0.32	1405.82
			Max. Vy	20	-15.99	1384.36	0.64
			Max. Vx	2	-16.46	-0.32	1405.82
			Max. Torque	6			0.21
L16	1.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.32	0.13	-0.41
			Max. Mx	8	-33.32	-1414.88	-0.31
			Max. My	2	-33.32	-0.29	1430.47
			Max. Vy	20	-16.01	1408.34	0.67
			Max. Vx	2	-16.47	-0.29	1430.47

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	6			0.21

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	33	53.32	-0.01	-4.33
	Max. H_x	20	33.33	15.97	0.02
	Max. H_z	2	33.33	0.01	16.43
	Max. M_x	2	1430.47	0.01	16.43
	Max. M_z	8	1414.88	-15.93	-0.01
	Max. Torsion	6	0.21	-13.56	7.88
	Min. Vert	7	25.00	-13.56	7.88
	Min. H_x	8	33.33	-15.93	-0.01
	Min. H_z	14	33.33	-0.01	-15.77
	Min. M_x	14	-1403.33	-0.01	-15.77
	Min. M_z	20	-1408.34	15.97	0.02
	Min. Torsion	14	-0.17	-0.01	-15.77

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	27.78	0.00	0.00	0.30	0.04	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	33.33	-0.01	-16.43	-1430.47	-0.29	-0.19
0.9 Dead+1.0 Wind 0 deg - No Ice	25.00	-0.01	-16.43	-1401.81	-0.29	-0.19
1.2 Dead+1.0 Wind 30 deg - No Ice	33.33	7.89	-13.75	-1220.37	-701.26	-0.18
0.9 Dead+1.0 Wind 30 deg - No Ice	25.00	7.89	-13.75	-1195.76	-687.07	-0.18
1.2 Dead+1.0 Wind 60 deg - No Ice	33.33	13.56	-7.88	-702.65	-1210.76	-0.21
0.9 Dead+1.0 Wind 60 deg - No Ice	25.00	13.56	-7.88	-688.48	-1186.20	-0.20
1.2 Dead+1.0 Wind 90 deg - No Ice	33.33	15.93	0.01	0.31	-1414.88	-0.16
0.9 Dead+1.0 Wind 90 deg - No Ice	25.00	15.93	0.01	0.22	-1386.28	-0.15
1.2 Dead+1.0 Wind 120 deg - No Ice	33.33	13.81	8.05	713.88	-1224.86	0.02
0.9 Dead+1.0 Wind 120 deg - No Ice	25.00	13.81	8.05	699.37	-1200.11	0.02
1.2 Dead+1.0 Wind 150 deg - No Ice	33.33	7.81	13.59	1215.11	-697.75	0.11
0.9 Dead+1.0 Wind 150 deg - No Ice	25.00	7.81	13.59	1190.35	-683.60	0.11
1.2 Dead+1.0 Wind 180 deg - No Ice	33.33	0.01	15.77	1403.33	0.09	0.17
0.9 Dead+1.0 Wind 180 deg -	25.00	0.01	15.77	1374.77	0.07	0.17

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
No Ice						
1.2 Dead+1.0 Wind 210 deg - No Ice	33.33	-7.96	13.90	1230.84	705.87	0.17
0.9 Dead+1.0 Wind 210 deg - No Ice	25.00	-7.96	13.90	1205.87	691.57	0.17
1.2 Dead+1.0 Wind 240 deg - No Ice	33.33	-14.00	8.15	716.66	1230.33	0.16
0.9 Dead+1.0 Wind 240 deg - No Ice	25.00	-14.00	8.15	702.12	1205.51	0.16
1.2 Dead+1.0 Wind 270 deg - No Ice	33.33	-15.97	-0.02	-0.67	1408.34	0.17
0.9 Dead+1.0 Wind 270 deg - No Ice	25.00	-15.97	-0.02	-0.76	1379.85	0.17
1.2 Dead+1.0 Wind 300 deg - No Ice	33.33	-13.88	-8.07	-706.92	1218.21	-0.00
0.9 Dead+1.0 Wind 300 deg - No Ice	25.00	-13.88	-8.07	-692.75	1193.58	-0.00
1.2 Dead+1.0 Wind 330 deg - No Ice	33.33	-8.19	-14.24	-1239.08	712.96	-0.12
0.9 Dead+1.0 Wind 330 deg - No Ice	25.00	-8.19	-14.24	-1214.27	698.62	-0.12
1.2 Dead+1.0 Ice+1.0 Temp	53.32	0.00	0.00	0.41	0.13	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	53.32	-0.01	-4.33	-412.77	0.28	-0.06
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	53.32	2.15	-3.74	-357.45	-205.41	-0.05
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	53.32	3.73	-2.16	-206.47	-356.55	-0.05
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	53.32	4.31	0.01	0.58	-412.02	-0.03
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	53.32	3.73	2.18	208.06	-356.57	0.02
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	53.32	2.16	3.75	358.76	-205.89	0.04
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	53.32	0.01	4.33	414.05	0.01	0.06
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	53.32	-2.15	3.75	358.95	205.91	0.05
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	53.32	-3.73	2.17	207.70	356.80	0.04
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	53.32	-4.31	-0.01	-0.01	412.34	0.03
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	53.32	-3.73	-2.17	-206.71	356.96	-0.01
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	53.32	-2.16	-3.75	-357.58	206.24	-0.04
Dead+Wind 0 deg - Service	27.78	-0.00	-3.87	-333.37	-0.03	-0.04
Dead+Wind 30 deg - Service	27.78	1.86	-3.24	-284.36	-163.50	-0.04
Dead+Wind 60 deg - Service	27.78	3.20	-1.86	-163.62	-282.30	-0.05
Dead+Wind 90 deg - Service	27.78	3.76	0.00	0.30	-329.91	-0.04
Dead+Wind 120 deg - Service	27.78	3.25	1.90	166.70	-285.61	0.00
Dead+Wind 150 deg - Service	27.78	1.84	3.20	283.57	-162.67	0.02
Dead+Wind 180 deg - Service	27.78	0.00	3.72	327.46	0.05	0.04
Dead+Wind 210 deg - Service	27.78	-1.88	3.28	287.26	164.64	0.04
Dead+Wind 240 deg - Service	27.78	-3.30	1.92	167.35	286.95	0.04
Dead+Wind 270 deg - Service	27.78	-3.76	-0.01	0.07	328.44	0.04
Dead+Wind 300 deg - Service	27.78	-3.27	-1.90	-164.63	284.11	0.00
Dead+Wind 330 deg - Service	27.78	-1.93	-3.36	-288.74	166.30	-0.02

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	-27.78	0.00	0.00	27.78	0.00	0.000%
2	-0.01	-33.33	-16.43	0.01	33.33	16.43	0.000%
3	-0.01	-25.00	-16.43	0.01	25.00	16.43	0.000%
4	7.89	-33.33	-13.75	-7.89	33.33	13.75	0.000%
5	7.89	-25.00	-13.75	-7.89	25.00	13.75	0.000%
6	13.56	-33.33	-7.88	-13.56	33.33	7.88	0.000%
7	13.56	-25.00	-7.88	-13.56	25.00	7.88	0.000%
8	15.93	-33.33	0.01	-15.93	33.33	-0.01	0.000%
9	15.93	-25.00	0.01	-15.93	25.00	-0.01	0.000%
10	13.81	-33.33	8.05	-13.81	33.33	-8.05	0.000%
11	13.81	-25.00	8.05	-13.81	25.00	-8.05	0.000%
12	7.81	-33.33	13.59	-7.81	33.33	-13.59	0.000%
13	7.81	-25.00	13.59	-7.81	25.00	-13.59	0.000%
14	0.01	-33.33	15.77	-0.01	33.33	-15.77	0.000%
15	0.01	-25.00	15.77	-0.01	25.00	-15.77	0.000%
16	-7.96	-33.33	13.90	7.96	33.33	-13.90	0.000%
17	-7.96	-25.00	13.90	7.96	25.00	-13.90	0.000%
18	-14.00	-33.33	8.15	14.00	33.33	-8.15	0.000%
19	-14.00	-25.00	8.15	14.00	25.00	-8.15	0.000%
20	-15.97	-33.33	-0.02	15.97	33.33	0.02	0.000%
21	-15.97	-25.00	-0.02	15.97	25.00	0.02	0.000%
22	-13.88	-33.33	-8.07	13.88	33.33	8.07	0.000%
23	-13.88	-25.00	-8.07	13.88	25.00	8.07	0.000%
24	-8.19	-33.33	-14.24	8.19	33.33	14.24	0.000%
25	-8.19	-25.00	-14.24	8.19	25.00	14.24	0.000%
26	0.00	-53.32	0.00	0.00	53.32	0.00	0.000%
27	-0.01	-53.32	-4.33	0.01	53.32	4.33	0.000%
28	2.15	-53.32	-3.74	-2.15	53.32	3.74	0.000%
29	3.73	-53.32	-2.16	-3.73	53.32	2.16	0.000%
30	4.31	-53.32	0.01	-4.31	53.32	-0.01	0.000%
31	3.73	-53.32	2.18	-3.73	53.32	-2.18	0.000%
32	2.16	-53.32	3.75	-2.16	53.32	-3.75	0.000%
33	0.01	-53.32	4.33	-0.01	53.32	-4.33	0.000%
34	-2.15	-53.32	3.75	2.15	53.32	-3.75	0.000%
35	-3.73	-53.32	2.17	3.73	53.32	-2.17	0.000%
36	-4.31	-53.32	-0.01	4.31	53.32	0.01	0.000%
37	-3.73	-53.32	-2.17	3.73	53.32	2.17	0.000%
38	-2.16	-53.32	-3.75	2.16	53.32	3.75	0.000%
39	-0.00	-27.78	-3.87	0.00	27.78	3.87	0.000%
40	1.86	-27.78	-3.24	-1.86	27.78	3.24	0.000%
41	3.20	-27.78	-1.86	-3.20	27.78	1.86	0.000%
42	3.76	-27.78	0.00	-3.76	27.78	-0.00	0.000%
43	3.25	-27.78	1.90	-3.25	27.78	-1.90	0.000%
44	1.84	-27.78	3.20	-1.84	27.78	-3.20	0.000%
45	0.00	-27.78	3.72	-0.00	27.78	-3.72	0.000%
46	-1.88	-27.78	3.28	1.88	27.78	-3.28	0.000%
47	-3.30	-27.78	1.92	3.30	27.78	-1.92	0.000%
48	-3.76	-27.78	-0.01	3.76	27.78	0.01	0.000%
49	-3.27	-27.78	-1.90	3.27	27.78	1.90	0.000%
50	-1.93	-27.78	-3.36	1.93	27.78	3.36	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00009210
3	Yes	5	0.00000001	0.00003885
4	Yes	7	0.00000001	0.00009711
5	Yes	6	0.00000001	0.00037588
6	Yes	7	0.00000001	0.00009805
7	Yes	6	0.00000001	0.00038010
8	Yes	5	0.00000001	0.00016414
9	Yes	5	0.00000001	0.00007709
10	Yes	7	0.00000001	0.00009843
11	Yes	6	0.00000001	0.00038064
12	Yes	7	0.00000001	0.00009734
13	Yes	6	0.00000001	0.00037712
14	Yes	5	0.00000001	0.00009647
15	Yes	5	0.00000001	0.00004107
16	Yes	7	0.00000001	0.00009877
17	Yes	6	0.00000001	0.00038208
18	Yes	7	0.00000001	0.00009841
19	Yes	6	0.00000001	0.00038020
20	Yes	5	0.00000001	0.00018104
21	Yes	5	0.00000001	0.00008566
22	Yes	7	0.00000001	0.00009773
23	Yes	6	0.00000001	0.00037837
24	Yes	7	0.00000001	0.00009848
25	Yes	6	0.00000001	0.00038043
26	Yes	4	0.00000001	0.00000001
27	Yes	6	0.00000001	0.00053956
28	Yes	6	0.00000001	0.00086420
29	Yes	6	0.00000001	0.00086919
30	Yes	6	0.00000001	0.00053810
31	Yes	6	0.00000001	0.00086619
32	Yes	6	0.00000001	0.00086630
33	Yes	6	0.00000001	0.00053973
34	Yes	6	0.00000001	0.00087004
35	Yes	6	0.00000001	0.00086725
36	Yes	6	0.00000001	0.00072824
37	Yes	6	0.00000001	0.00086964
38	Yes	6	0.00000001	0.00086782
39	Yes	4	0.00000001	0.00031176
40	Yes	5	0.00000001	0.00020464
41	Yes	5	0.00000001	0.00020984
42	Yes	4	0.00000001	0.00032547
43	Yes	5	0.00000001	0.00020917
44	Yes	5	0.00000001	0.00020668
45	Yes	4	0.00000001	0.00030730
46	Yes	5	0.00000001	0.00021231
47	Yes	5	0.00000001	0.00020949
48	Yes	4	0.00000001	0.00032664
49	Yes	5	0.00000001	0.00020890
50	Yes	5	0.00000001	0.00021037

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	101 - 88	20.880	39	1.9738	0.0016

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L2	90 - 68.66	16.446	39	1.8423	0.0013
L3	68.66 - 60.75	9.369	39	1.2325	0.0005
L4	60.75 - 46.25	7.436	39	1.0998	0.0004
L5	48.92 - 44	4.931	39	0.9207	0.0002
L6	44 - 42.66	4.009	39	0.8545	0.0002
L7	42.66 - 38.58	3.772	39	0.8350	0.0002
L8	38.58 - 34	3.094	39	0.7531	0.0002
L9	34 - 31.5	2.416	39	0.6596	0.0001
L10	31.5 - 23.5	2.080	39	0.6231	0.0001
L11	23.5 - 18.5	1.169	39	0.4650	0.0001
L12	18.5 - 17.58	0.726	39	0.3814	0.0001
L13	17.58 - 3	0.654	39	0.3663	0.0001
L14	3 - 2.5	0.018	39	0.0530	0.0000
L15	2.5 - 1.5	0.013	39	0.0461	0.0000
L16	1.5 - 0	0.005	39	0.0293	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
103.50	1" x 10' Lightning Rod	39	20.880	1.9738	0.0016	6135
102.50	HPA-65R-BUU-H6 w/ Mount Pipe	39	20.880	1.9738	0.0016	6135
95.00	AIR 32 w/ Mount Pipe	39	18.428	1.9192	0.0015	5112
85.00	VHLP2-18/D	39	14.567	1.7182	0.0011	2431
46.50	GPS_A	39	4.468	0.8880	0.0002	3754
37.00	GPS_A	39	2.850	0.7180	0.0002	2903

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	101 - 88	89.561	2	8.4766	0.0064
L2	90 - 68.66	70.579	2	7.9158	0.0054
L3	68.66 - 60.75	40.234	2	5.2974	0.0020
L4	60.75 - 46.25	31.935	2	4.7270	0.0015
L5	48.92 - 44	21.178	2	3.9571	0.0010
L6	44 - 42.66	17.221	2	3.6725	0.0009
L7	42.66 - 38.58	16.203	2	3.5889	0.0008
L8	38.58 - 34	13.288	2	3.2366	0.0007
L9	34 - 31.5	10.378	2	2.8348	0.0006
L10	31.5 - 23.5	8.935	2	2.6776	0.0005
L11	23.5 - 18.5	5.021	2	1.9976	0.0004
L12	18.5 - 17.58	3.118	2	1.6384	0.0003
L13	17.58 - 3	2.808	2	1.5731	0.0003
L14	3 - 2.5	0.076	2	0.2276	0.0000
L15	2.5 - 1.5	0.054	2	0.1977	0.0000
L16	1.5 - 0	0.020	2	0.1258	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
103.50	1" x 10' Lightning Rod	2	89.561	8.4766	0.0064	1490
102.50	HPA-65R-BUU-H6 w/ Mount Pipe	2	89.561	8.4766	0.0064	1490
95.00	AIR 32 w/ Mount Pipe	2	79.066	8.2447	0.0060	1241
85.00	VHLP2-18/D	2	62.526	7.3836	0.0046	585
46.50	GPS_A	2	19.191	3.8165	0.0010	883
37.00	GPS_A	2	12.242	3.0856	0.0007	680

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	101 - 88 (1)	TP16.36x14.64x0.1875	13.00	0.00	0.0	9.4672	-7.55	553.83	0.014
L2	88 - 68.66 (2)	TP18.7247x15.72x0.25	21.34	0.00	0.0	14.6597	-12.83	857.59	0.015
L3	68.66 - 60.75 (3)	TP19.8384x18.7247x0.6402	7.91	0.00	0.0	39.0115	-14.33	2282.17	0.006
L4	60.75 - 46.25 (4)	TP21.88x19.8384x0.7759	14.50	0.00	0.0	51.0487	-17.33	2986.35	0.006
L5	46.25 - 44 (5)	TP21.704x21x0.6647	4.92	0.00	0.0	44.3865	-18.90	2596.61	0.007
L6	44 - 42.66 (6)	TP21.8957x21.704x0.899	1.34	0.00	0.0	59.9145	-19.29	3505.00	0.006
L7	42.66 - 38.58 (7)	TP22.4796x21.8957x0.635	4.08	0.00	0.0	44.0300	-20.49	2575.75	0.008
L8	38.58 - 34 (8)	TP23.1349x22.4796x0.6227	4.58	0.00	0.0	44.4974	-22.00	2603.10	0.008
L9	34 - 31.5 (9)	TP23.4926x23.1349x0.8979	2.50	0.00	0.0	64.3951	-22.94	3767.11	0.006
L10	31.5 - 23.5 (10)	TP24.6374x23.4926x0.6359	8.00	0.00	0.0	48.4459	-25.47	2834.08	0.009
L11	23.5 - 18.5 (11)	TP25.3528x24.6374x0.7522	5.00	0.00	0.0	58.7336	-27.18	3435.91	0.008
L12	18.5 - 17.58 (12)	TP25.4845x25.3528x0.7492	0.92	0.00	0.0	58.8188	-27.49	3440.90	0.008
L13	17.58 - 3 (13)	TP27.5707x25.4845x0.553	14.58	0.00	0.0	47.4203	-32.33	2774.09	0.012
L14	3 - 2.5 (14)	TP27.6423x27.5707x0.8548	0.50	0.00	0.0	72.6791	-32.50	4251.73	0.008
L15	2.5 - 1.5 (15)	TP27.7854x27.6423x0.6931	1.00	0.00	0.0	59.6044	-32.83	3486.86	0.009
L16	1.5 - 0 (16)	TP28x27.7854x0.5822	1.50	0.00	0.0	50.6613	-33.32	2963.69	0.011

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	101 - 88 (1)	TP16.36x14.64x0.1875	97.64	229.19	0.426	0.00	229.19	0.000
L2	88 - 68.66 (2)	TP18.7247x15.72x0.25	368.49	411.45	0.896	0.00	411.45	0.000
L3	68.66 - 60.75 (3)	TP19.8384x18.7247x0.6402	478.12	1115.98	0.428	0.00	1115.98	0.000
L4	60.75 - 46.25 (4)	TP21.88x19.8384x0.7759	649.41	1570.49	0.414	0.00	1570.49	0.000
L5	46.25 - 44 (5)	TP21.704x21x0.6647	723.62	1393.88	0.519	0.00	1393.88	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L6	44 - 42.66 (6)	TP21.8957x21.704x0.899	744.08	1857.49	0.401	0.00	1857.49	0.000
L7	42.66 - 38.58 (7)	TP22.4796x21.8957x0.635	806.76	1439.13	0.561	0.00	1439.13	0.000
L8	38.58 - 34 (8)	TP23.1349x22.4796x0.6227	877.83	1500.91	0.585	0.00	1500.91	0.000
L9	34 - 31.5 (9)	TP23.4926x23.1349x0.8979	916.85	2154.70	0.426	0.00	2154.70	0.000
L10	31.5 - 23.5 (10)	TP24.6374x23.4926x0.6359	1044.63	1744.17	0.599	0.00	1744.17	0.000
L11	23.5 - 18.5 (11)	TP25.3528x24.6374x0.7522	1126.17	2158.76	0.522	0.00	2158.76	0.000
L12	18.5 - 17.58 (12)	TP25.4845x25.3528x0.7492	1141.28	2174.33	0.525	0.00	2174.33	0.000
L13	17.58 - 3 (13)	TP27.5707x25.4845x0.553	1381.17	1933.15	0.714	0.00	1933.15	0.000
L14	3 - 2.5 (14)	TP27.6423x27.5707x0.8548	1389.38	2905.03	0.478	0.00	2905.03	0.000
L15	2.5 - 1.5 (15)	TP27.7854x27.6423x0.6931	1405.82	2424.39	0.580	0.00	2424.39	0.000
L16	1.5 - 0 (16)	TP28x27.7854x0.5822	1430.47	2094.29	0.683	0.00	2094.29	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	101 - 88 (1)	TP16.36x14.64x0.1875	9.97	166.15	0.060	0.07	231.47	0.000
L2	88 - 68.66 (2)	TP18.7247x15.72x0.25	13.64	257.28	0.053	0.07	416.25	0.000
L3	68.66 - 60.75 (3)	TP19.8384x18.7247x0.6402	14.11	684.65	0.021	0.07	1151.09	0.000
L4	60.75 - 46.25 (4)	TP21.88x19.8384x0.7759	14.87	895.90	0.017	0.07	1626.31	0.000
L5	46.25 - 44 (5)	TP21.704x21x0.6647	15.24	778.98	0.020	0.12	1435.29	0.000
L6	44 - 42.66 (6)	TP21.8957x21.704x0.899	15.32	1051.50	0.015	0.12	1933.48	0.000
L7	42.66 - 38.58 (7)	TP22.4796x21.8957x0.635	15.42	772.73	0.020	0.12	1478.25	0.000
L8	38.58 - 34 (8)	TP23.1349x22.4796x0.6227	15.56	780.93	0.020	0.17	1539.60	0.000
L9	34 - 31.5 (9)	TP23.4926x23.1349x0.8979	15.69	1130.13	0.014	0.17	2236.23	0.000
L10	31.5 - 23.5 (10)	TP24.6374x23.4926x0.6359	16.22	845.16	0.019	0.20	1787.11	0.000
L11	23.5 - 18.5 (11)	TP25.3528x24.6374x0.7522	16.43	1024.78	0.016	0.19	2220.70	0.000
L12	18.5 - 17.58 (12)	TP25.4845x25.3528x0.7492	16.47	1026.78	0.016	0.19	2236.09	0.000
L13	17.58 - 3 (13)	TP27.5707x25.4845x0.553	16.46	827.63	0.020	0.19	1969.11	0.000
L14	3 - 2.5 (14)	TP27.6423x27.5707x0.8548	16.44	1272.11	0.013	0.19	2992.25	0.000
L15	2.5 - 1.5 (15)	TP27.7854x27.6423x0.6931	16.46	1040.53	0.016	0.19	2481.88	0.000
L16	1.5 - 0 (16)	TP28x27.7854x0.5822	16.47	882.15	0.019	0.19	2134.85	0.000

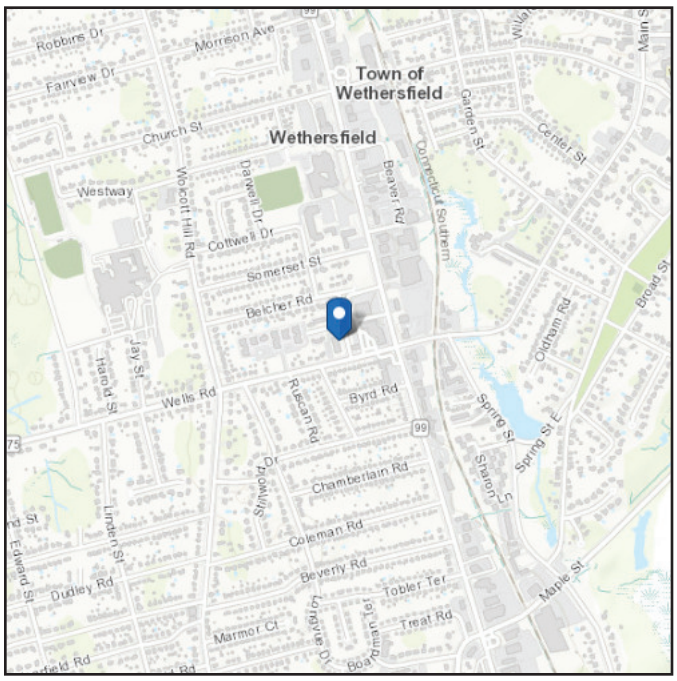
APPENDIX B

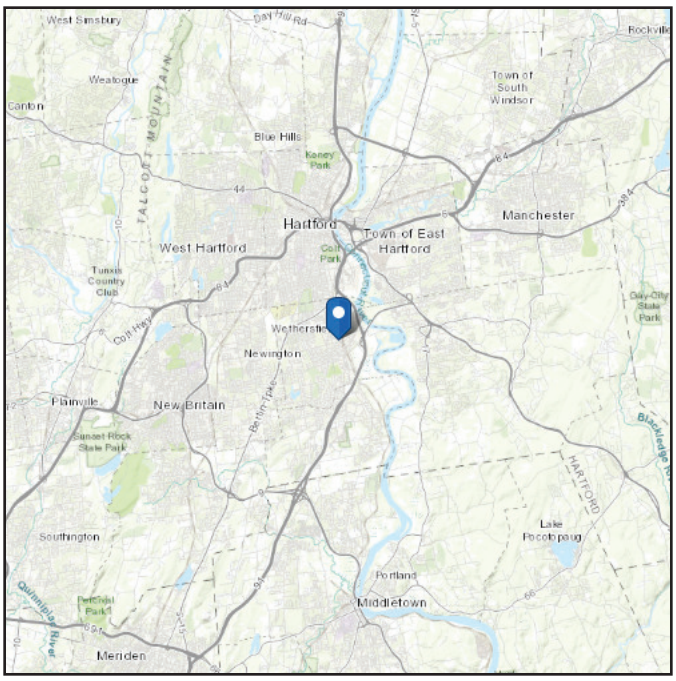
ADDITIONAL CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Latitude:**	41.705825
Risk Category:	II	**Longitude:**	-72.663417
Soil Class:	D - Default (see Section 11.4.3)	**Elevation:**	70.82003221702836 ft (NAVD 88)





Wind

Results:

Wind Speed	118 Vmph	120 Vmph required per jurisdiction
10-year MRI	75 Vmph	
25-year MRI	84 Vmph	
50-year MRI	90 Vmph	
100-year MRI	97 Vmph	

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2

Date Accessed: Tue May 16 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 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Seismic

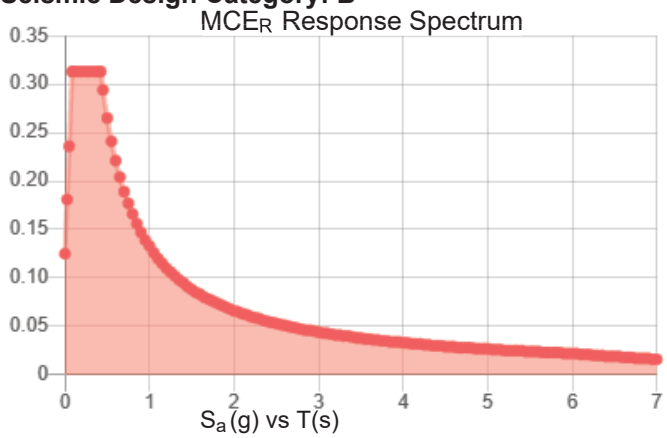
D - Default (see Section 11.4.3)

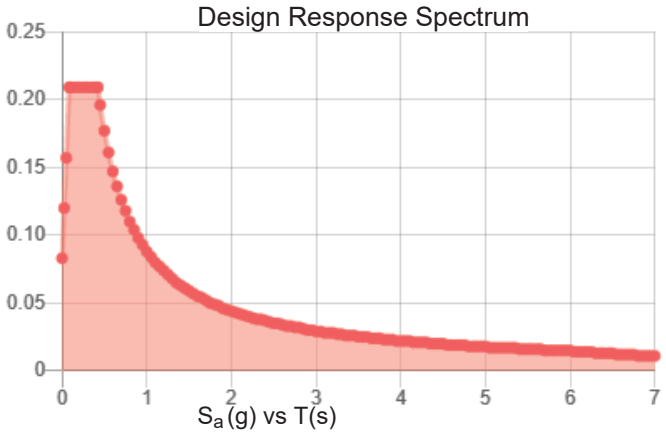
Site Soil Class:

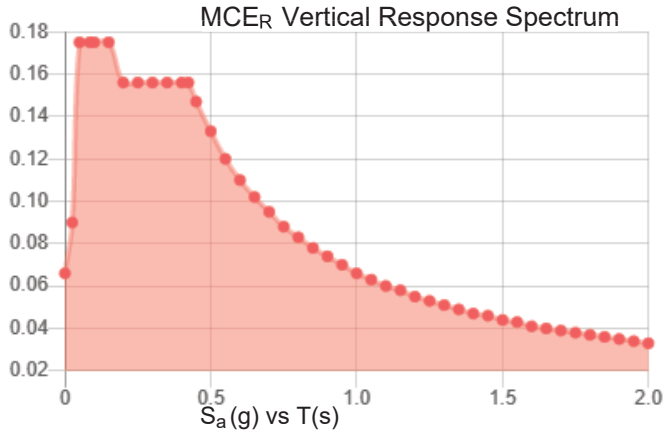
Results:

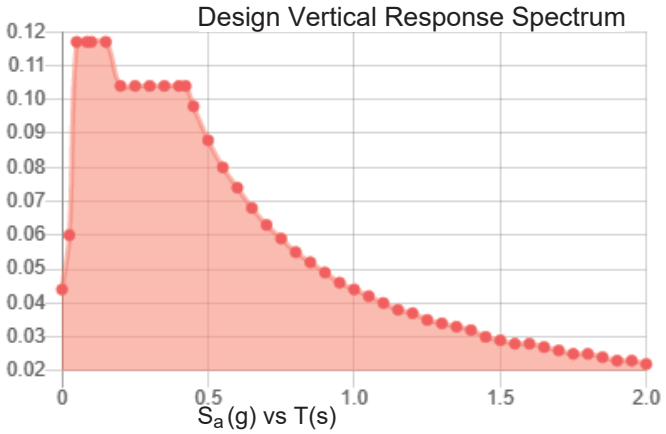
S_S :	0.196	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.107
F_v :	2.4	PGA_M :	0.169
S_{MS} :	0.313	F_{PGA} :	1.587
S_{M1} :	0.133	I_e :	1
S_{DS} :	0.209	C_v :	0.7

Seismic Design Category: B









Data Accessed: **Tue May 16 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.

Ice

Results:

Ice Thickness:	1.50 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Tue May 16 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.

Mod #	Modification Type	Termination Length (ft)	Bot. Elevation (ft)	Top Elevation (ft)	Termination Length (ft)	Modification Location (° or Flat/Point #)	Location (F/P)	Lateral Offset (in)
1	(Aero) MP304		0.00	35.50		2 6 13	Flats	0.00
2a	(Aero) MP304		30.00	45.50		9 15	Flats	0.00
2b	(Aero) MP304		30.00	45.50		3	Flats	1.00
3	(Aero) MP303		47.00	62.00		1 7 13	Flats	0.00
4	(TS) 1.25×4.50 (65ksi)	0.00	0.00	4.75		3 7 12 16	Flats	0.00
5	TEP-SFP-050125		0.50	20.50		11	Flats	0.00
6a	TEP-SFP-050125		0.50	25.50		4	Flats	0.00
6b	TEP-SFP-050125		0.50	25.50		15	Flats	0.00
7	TEP-SFP-050125		15.58	40.58		17	Flats	0.00
8	TEP-SFP-050125	-2.08	20.58	40.58		11	Flats	0.00
9a	TEP-SFP-050125		40.66	70.66		5	Flats	0.00
9b	TEP-SFP-050125	-2.08	40.66	70.66		11 17	Flats	0.00

MODIFICATION PROPERTIES

#	Modification	Default Termination (ft)	Stitch (in)	k	Drill Hole (in)	Bolt/Weld Capacity (k)	A_G (in²)	F_Y (ksi)	F_U (ksi)
1	(Aero) MP304	1.50	18.00	0.80	1.2188	36.0	4.13	65.0	80.0
3	(Aero) MP303	1.25	18.00	0.80	1.2188	36.0	2.92	65.0	80.0
4	(TS) 1.25×4.50 (65ksi)	1.75	0.75	0.80	Weld	Weld	4.69	65.0	80.0
5	TEP-SFP-050125	2.00	23.00	0.80	1.1875	36.0	6.25	65.0	80.0

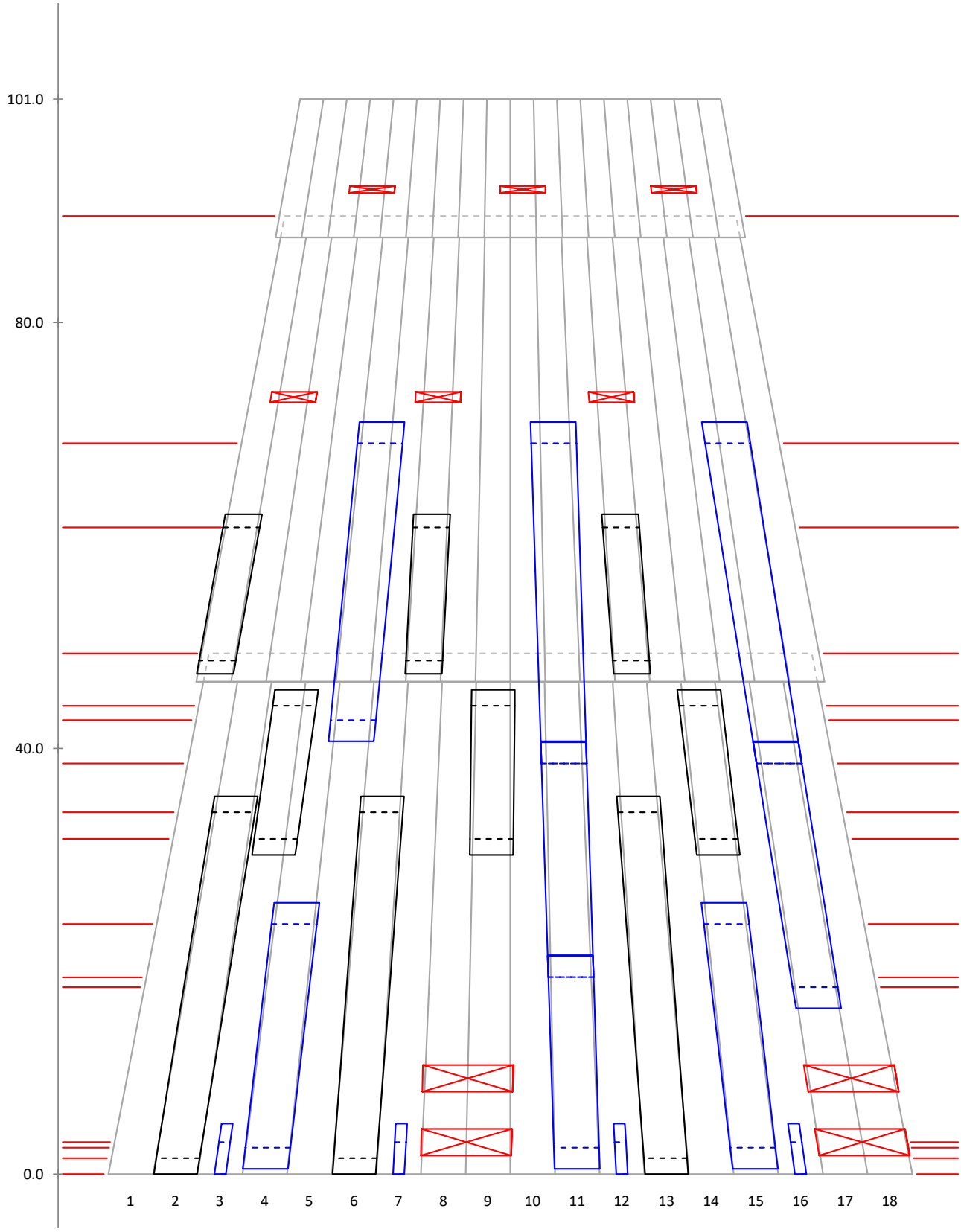
Monopole Reinforcement_v1.9.6 - TIA-222-H - Capacities

Section No.	*Elevation (ft)*	*Type*	*Size*	*Critical Element*	*Pu (k)*	*φPn (k)*	*% Capacity*	*Pass/Fail*
L1	101.00-88.00	Pole	TP16.36×14.64×0.1875	1	Note 1	Note 1	44.3	Pass
L2	90.00-46.25	Pole	TP21.88×15.72×0.2500	2	Note 1	Note 1	91.3	Pass
L3	48.92-0.00	Pole	TP28.00×21.00×0.3125	3	Note 1	Note 1	72.4	Pass
M1	35.50-0.00	Mod (Ex)	(Aero) MP304	1	Note 1	Note 1	98.6	Pass
M2b	45.50-30.00	Mod (Ex)	(Aero) MP304	2	Note 1	Note 1	94.1	Pass
M3	62.00-47.00	Mod (Ex)	(Aero) MP303	3	Note 1	Note 1	63.6	Pass
M4	4.75-0.00	Mod (Pr)	(TS) 1.25×4.50 (65ksi)	4	Note 1	Note 1	93.9	Pass
M5	20.50-0.50	Mod (Pr)	TEP-SFP-050125	5	Note 1	Note 1	97.3	Pass
M6b	25.50-0.50	Mod (Pr)	TEP-SFP-050125	6	Note 1	Note 1	97.3	Pass
M7	40.58-15.58	Mod (Pr)	TEP-SFP-050125	7	Note 1	Note 1	91.6	Pass
M8	40.58-20.58	Mod (Pr)	TEP-SFP-050125	8	Note 1	Note 1	84.4	Pass
M9b	70.66-40.66	Mod (Pr)	TEP-SFP-050125	9	Note 1	Note 1	88.9	Pass

	Summary	
Pole (L2)	91.3	Pass
Mod (M1)	98.6	Pass
RATING =	**98.6**	**Pass**

Note 1: See additional documentation in following sheets for details

Reinforcement Layout



Tower Engineering Professionals, Inc.
326 Tryon Road|Raleigh, NC 27603-3530|Office: (919) 661-6351|Fax: (919) 661-6350|www.tepgroup.net

Loads	
Axial:	33.3 k
Moment:	1,430.5 k·ft
Shear:	16.5 k
Torsion:	0.2 k·ft

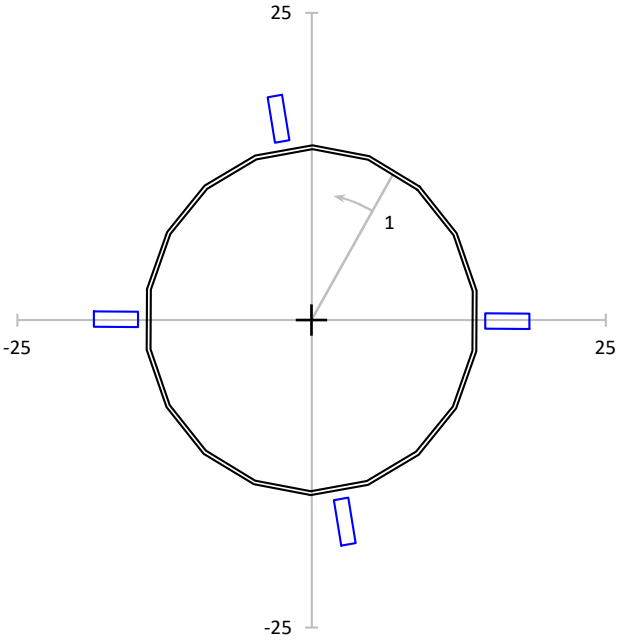
Pole Info	
OD:	28.00 in
t:	0.3125 in
Pole A_G:	27.46 in^2
Pole I_G:	2,659.8 in^4

Equivalent Loads to Pole	
Axial:	19.8 k
Moment:	790.8 k·ft
Shear:	9.8 k
Torsion:	0.2 k·ft

Controlling	
Angle:	**30.25°**
I_{CONT}:	5,188.6 in^4
A_G:	46.21 in^2

Shear Flow	
Controlling Mod:	5
q:	0.244 k/in
Bolt/Weld Cap:	1000.0 k/bolt
Max Spacing:	4102.13 in
Stitch:	0.75 in
Capacity:	**0.0%**

Minimum	
Angle:	**170.00°**
I_{MIN}:	4,811.5 in^4
t_{EFF}:	0.5822 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
170.00	14.22	4811.5	0.721	50.746	0.356	0.006	58.500	74.295	17.550	37.050	**69.6%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
4	1	**30.25**	16.38	5188.6	0.721	54.207	0.356	58.485	58.485	29.250	**93.9%**
4	2	**129.75**	16.38	5188.6	0.721	54.207	0.356	58.485	58.485	29.250	**93.9%**
4	3	**210.25**	16.38	5188.6	0.721	54.207	0.356	58.485	58.485	29.250	**93.9%**
4	4	**309.75**	16.38	5188.6	0.721	54.207	0.356	58.485	58.485	29.250	**93.9%**

Loads	
Axial:	32.9 k
Moment:	1,405.8 k·ft
Shear:	16.4 k
Torsion:	0.2 k·ft

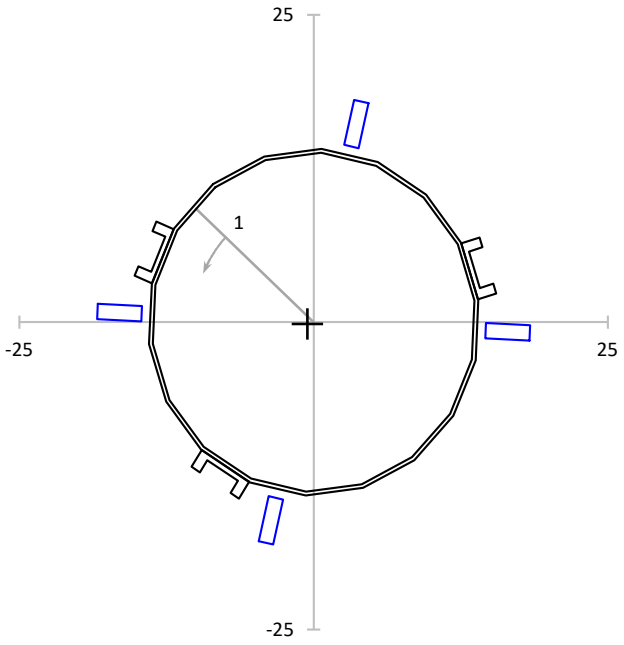
Equivalent Loads to Pole	
Axial:	15.3 k
Moment:	657.1 k·ft
Shear:	7.7 k
Torsion:	0.2 k·ft

Shear Flow	
Controlling Mod:	1
q:	0.157 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	228.96 in
Stitch:	18.00 in
Capacity:	**7.9%**

Pole Info	
OD:	27.79 in
t:	0.3125 in
Pole A_G:	27.25 in^2
Pole I_G:	2,598.4 in^4

Controlling	
Angle:	**312.70°**
I_G:	5,895.0 in^4
A_G:	58.39 in^2

Minimum	
Angle:	**158.75°**
I_{MIN}:	5,527.2 in^4
t_{EFF}:	0.6931 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY											
Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
346.70	14.25	5563.9	0.563	43.202	0.281	0.006	58.500	74.295	17.550	37.050	**59.1%**

MODIFICATION CAPACITIES											
Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
1	1	**4.35**	13.66	5884.1	0.563	39.155	0.281	53.494	49.881	29.250	**77.4%**
1	2	**118.00**	13.50	6340.3	0.563	35.930	0.281	53.494	49.881	29.250	**70.9%**
1	3	**231.60**	14.89	7270.8	0.563	34.541	0.281	53.494	49.881	29.250	**68.1%**
4	1	**22.85**	15.35	6452.4	0.563	40.128	0.281	58.485	58.485	29.250	**69.6%**
4	2	**135.15**	15.80	5832.8	0.563	45.708	0.281	58.485	58.485	29.250	**79.1%**
4	3	**204.25**	16.34	6499.0	0.563	42.416	0.281	58.485	58.485	29.250	**73.5%**
4	4	**312.70**	16.28	5895.0	0.563	46.577	0.281	58.485	58.485	29.250	**80.6%**

Loads	
Axial:	32.5 k
Moment:	1,389.4 k·ft
Shear:	16.4 k
Torsion:	0.2 k·ft

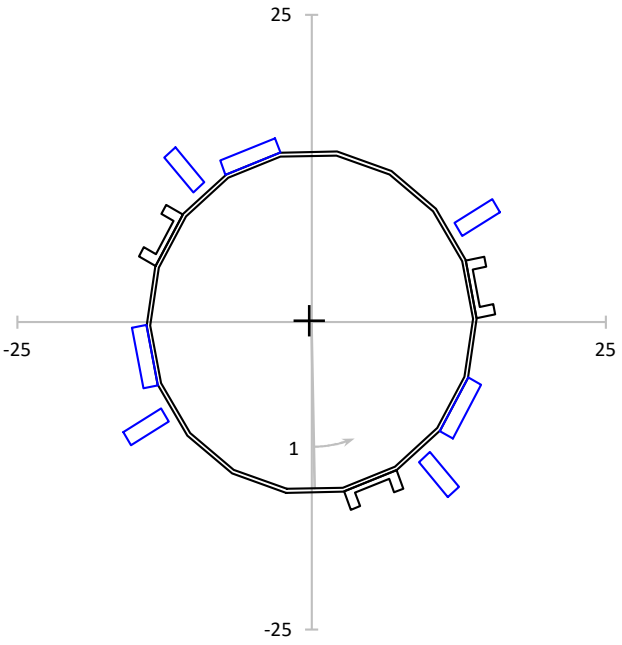
Equivalent Loads to Pole	
Axial:	11.4 k
Moment:	539.2 k·ft
Shear:	5.8 k
Torsion:	0.2 k·ft

Shear Flow	
Controlling Mod:	6
q:	0.191 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	188.62 in
Stitch:	23.00 in
Capacity:	**12.2%**

Pole Info	
OD:	27.64 in
t:	0.3125 in
Pole A_G:	27.11 in^2
Pole I_G:	2,558.0 in^4

Controlling	
Angle:	**178.85°**
I_G:	7,199.8 in^4
A_G:	77.00 in^2

Minimum	
Angle:	**154.55°**
I_{MIN}:	6,588.9 in^4
t_{EFF}:	0.8548 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
152.80	14.04	6592.2	0.422	35.499	0.214	0.006	58.500	74.295	17.550	37.050	**48.5%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
1	1	**359.60**	13.63	7235.6	0.422	31.409	0.214	53.494	49.881	29.250	**62.1%**
1	2	**122.55**	13.43	7600.1	0.422	29.452	0.214	53.494	49.881	29.250	**58.2%**
1	3	**230.10**	14.01	9968.6	0.422	23.427	0.214	53.494	49.881	29.250	**46.1%**
4	1	**16.65**	15.25	8209.5	0.422	30.978	0.214	58.485	58.485	29.250	**53.7%**
4	2	**136.45**	15.82	6936.2	0.422	38.033	0.214	58.485	58.485	29.250	**65.8%**
4	3	**196.10**	14.88	8175.1	0.422	30.353	0.214	58.485	58.485	29.250	**52.6%**
4	4	**317.20**	15.66	6908.8	0.422	37.800	0.214	58.485	58.485	29.250	**65.4%**
5	1	**178.85**	13.37	7199.8	0.422	30.963	0.214	45.690	45.000	29.250	**68.7%**
6a	1	**50.10**	14.44	9968.6	0.422	24.151	0.214	45.690	45.000	29.250	**53.8%**
6b	1	**303.45**	13.16	7549.6	0.422	29.059	0.214	45.690	45.000	29.250	**64.5%**

Loads	
Axial:	32.3 k
Moment:	1,381.2 k·ft
Shear:	16.5 k
Torsion:	0.2 k·ft

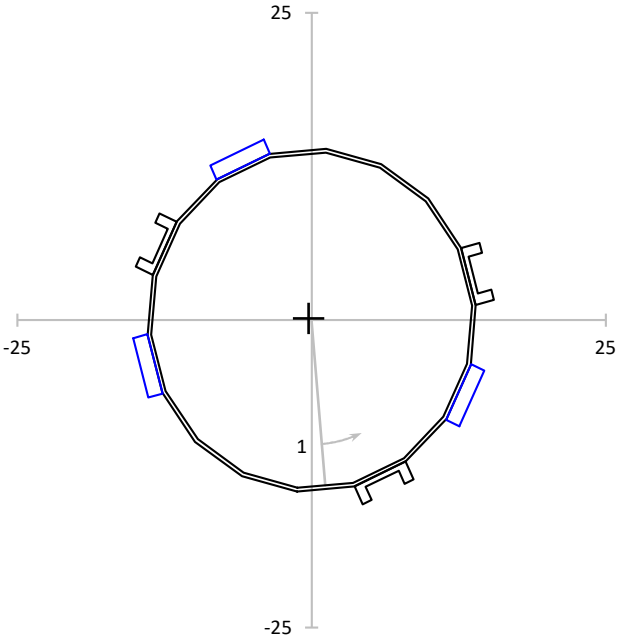
Pole Info	
OD:	27.57 in
t:	0.3125 in
Pole A_G:	27.04 in^2
Pole I_G:	2,538.0 in^4

Equivalent Loads to Pole	
Axial:	15.0 k
Moment:	801.7 k·ft
Shear:	7.6 k
Torsion:	0.2 k·ft

Controlling	
Angle:	**175.05°**
I_G:	4,887.0 in^4
A_G:	58.18 in^2

Shear Flow	
Controlling Mod:	6
q:	0.272 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	132.12 in
Stitch:	23.00 in
Capacity:	**17.4%**

Minimum	
Angle:	**150.00°**
I_{MIN}:	4,373.2 in^4
t_{EFF}:	0.5530 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
150.50	14.01	4373.4	0.556	53.086	0.283	0.006	58.500	74.295	17.550	37.050	**72.4%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
1	1	**356.05**	13.28	4925.9	0.556	44.679	0.283	53.494	49.881	29.250	**88.5%**
1	2	**123.95**	13.28	4925.9	0.556	44.679	0.283	53.494	49.881	29.250	**88.5%**
1	3	**240.00**	14.12	7239.1	0.556	32.317	0.283	53.494	49.881	29.250	**63.7%**
5	1	**175.05**	12.95	4887.0	0.556	43.909	0.283	45.690	45.000	29.250	**97.3%**
6a	1	**60.00**	14.69	7239.1	0.556	33.634	0.283	45.690	45.000	29.250	**74.8%**
6b	1	**304.95**	12.95	4887.0	0.556	43.909	0.283	45.690	45.000	29.250	**97.3%**

Loads	
Axial:	27.5 k
Moment:	1,141.3 k·ft
Shear:	16.5 k
Torsion:	0.2 k·ft

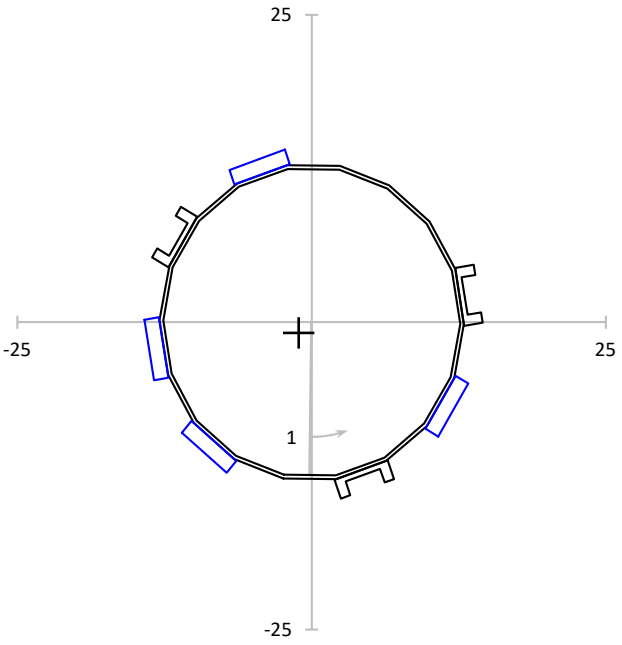
Equivalent Loads to Pole	
Axial:	11.0 k
Moment:	505.8 k·ft
Shear:	6.6 k
Torsion:	0.2 k·ft

Shear Flow	
Controlling Mod:	6
q:	0.288 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	124.96 in
Stitch:	23.00 in
Capacity:	**18.4%**

Pole Info	
OD:	25.48 in
t:	0.3125 in
Pole A_G:	24.97 in^2
Pole I_G:	1,998.7 in^4

Controlling	
Angle:	**180.70°**
I_G:	4,826.4 in^4
A_G:	62.36 in^2

Minimum	
Angle:	**155.55°**
I_{MIN}:	4,546.6 in^4
t_{EFF}:	0.7492 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY											
Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
331.10	14.25	4556.0	0.441	42.847	0.264	0.008	58.500	74.295	17.550	37.050	**58.4%**

MODIFICATION CAPACITIES											
Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
1	1	**9.85**	12.43	5038.7	0.441	33.798	0.264	53.494	49.881	29.250	**66.9%**
1	2	**119.00**	14.00	5097.2	0.441	37.617	0.264	53.494	49.881	29.250	**74.5%**
1	3	**223.90**	12.74	5886.3	0.441	29.637	0.264	53.494	49.881	29.250	**58.5%**
5	1	**180.70**	13.51	4826.4	0.441	38.331	0.264	45.690	45.000	29.250	**84.9%**
6a	1	**65.30**	13.90	6097.8	0.441	31.230	0.264	45.690	45.000	29.250	**69.3%**
6b	1	**293.05**	11.68	5255.1	0.441	30.445	0.264	45.690	45.000	29.250	**67.6%**
7	1	**326.90**	11.93	4581.8	0.441	35.651	0.264	45.690	45.000	29.250	**79.0%**

Loads	
Axial:	27.2 k
Moment:	1,126.2 k·ft
Shear:	16.4 k
Torsion:	0.2 k·ft

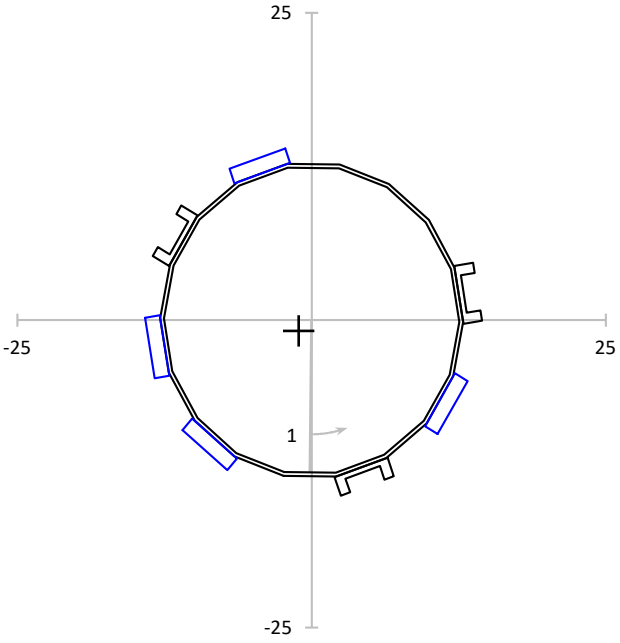
Pole Info	
OD:	25.35 in
t:	0.3125 in
Pole A_G:	24.84 in^2
Pole I_G:	1,967.5 in^4

Equivalent Loads to Pole	
Axial:	10.8 k
Moment:	497.4 k·ft
Shear:	6.6 k
Torsion:	0.2 k·ft

Controlling	
Angle:	**180.65°**
I_G:	4,766.8 in^4
A_G:	62.23 in^2

Shear Flow	
Controlling Mod:	10
q:	0.290 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	124.32 in
Stitch:	23.00 in
Capacity:	**18.5%**

Minimum	
Angle:	**155.55°**
I_{MIN}:	4,490.7 in^4
t_{EFF}:	0.7522 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY											
Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
331.10	14.18	4500.0	0.437	42.594	0.264	0.008	58.500	74.295	17.550	37.050	**58.1%**

MODIFICATION CAPACITIES											
Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
1	1	**9.85**	12.37	4978.1	0.437	33.586	0.264	53.494	49.881	29.250	**66.5%**
1	2	**119.05**	13.93	5034.5	0.437	37.394	0.264	53.494	49.881	29.250	**74.1%**
1	3	**223.85**	12.67	5816.4	0.437	29.445	0.264	53.494	49.881	29.250	**58.2%**
6a	1	**65.35**	13.84	6026.6	0.437	31.030	0.264	45.690	45.000	29.250	**68.9%**
6b	1	**293.10**	11.62	5190.8	0.437	30.249	0.264	45.690	45.000	29.250	**67.2%**
7	1	**326.90**	11.87	4525.6	0.437	35.433	0.264	45.690	45.000	29.250	**78.5%**
8	1	**180.65**	13.44	4766.8	0.437	38.104	0.264	45.690	45.000	29.250	**84.4%**

Loads	
Axial:	25.5 k
Moment:	1,044.6 k·ft
Shear:	16.2 k
Torsion:	0.2 k·ft

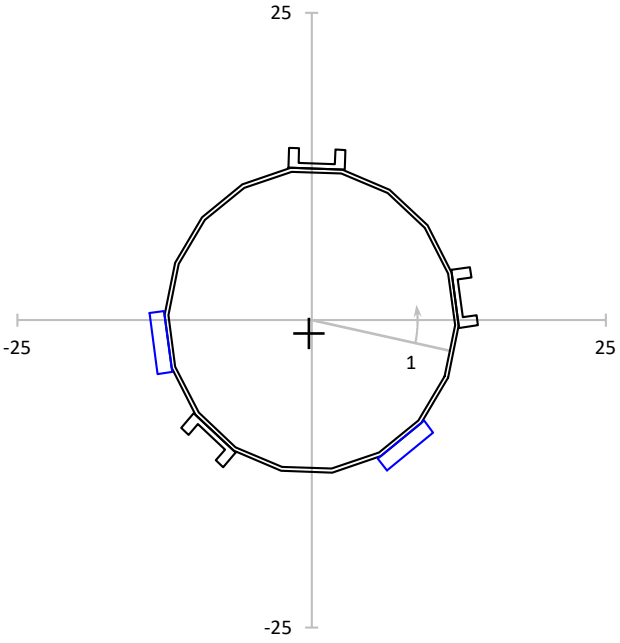
Pole Info	
OD:	24.64 in
t:	0.3125 in
Pole A_G:	24.13 in^2
Pole I_G:	1,803.6 in^4

Equivalent Loads to Pole	
Axial:	12.5 k
Moment:	534.4 k·ft
Shear:	8.0 k
Torsion:	0.2 k·ft

Controlling	
Angle:	**101.95°**
I_G:	3,535.7 in^4
A_G:	49.02 in^2

Shear Flow	
Controlling Mod:	9
q:	0.334 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	107.68 in
Stitch:	23.00 in
Capacity:	**21.4%**

Minimum	
Angle:	**108.65°**
I_{MIN}:	3,525.9 in^4
t_{EFF}:	0.6359 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY											
Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
108.45	13.58	3525.9	0.520	48.273	0.331	0.008	58.500	74.295	17.550	37.050	**65.9%**

MODIFICATION CAPACITIES											
Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
1	1	**27.55**	13.33	4233.3	0.520	39.482	0.331	53.494	49.881	29.250	**78.1%**
1	2	**101.95**	14.02	3535.7	0.520	49.709	0.331	53.494	49.881	29.250	**98.6%**
1	3	**247.90**	11.77	3834.6	0.520	38.464	0.331	53.494	49.881	29.250	**76.1%**
7	1	**315.05**	12.10	3669.3	0.520	41.336	0.331	45.690	45.000	29.250	**91.6%**
8	1	**193.40**	12.60	4244.7	0.520	37.213	0.331	45.690	45.000	29.250	**82.6%**

Loads	
Axial:	22.9 k
Moment:	916.9 k·ft
Shear:	15.7 k
Torsion:	0.2 k·ft

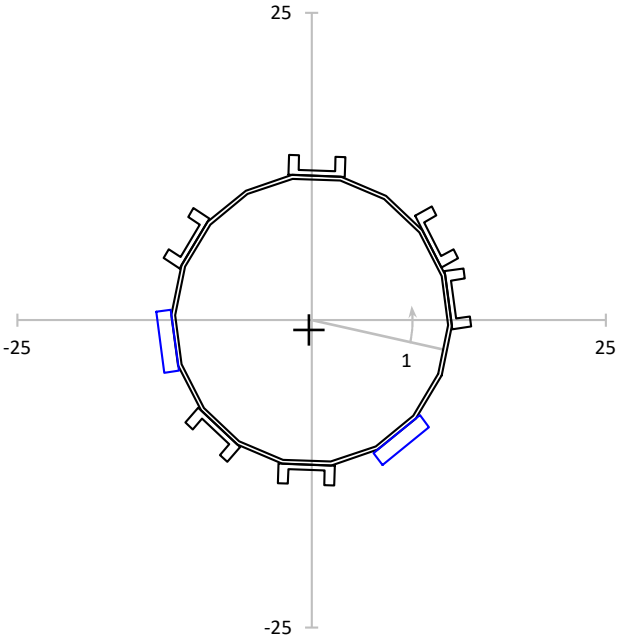
Pole Info	
OD:	23.49 in
t:	0.3125 in
Pole A_G:	22.99 in^2
Pole I_G:	1,560.8 in^4

Equivalent Loads to Pole	
Axial:	8.7 k
Moment:	344.4 k·ft
Shear:	6.0 k
Torsion:	0.2 k·ft

Controlling	
Angle:	**102.05°**
I_G:	4,172.5 in^4
A_G:	60.27 in^2

Shear Flow	
Controlling Mod:	9
q:	0.273 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	132.01 in
Stitch:	23.00 in
Capacity:	**17.4%**

Minimum	
Angle:	**292.50°**
I_{MIN}:	4,153.4 in^4
t_{EFF}:	0.8979 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY											
Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
109.40	12.69	4155.1	0.381	33.612	0.260	0.008	58.500	74.295	17.550	37.050	**45.9%**

MODIFICATION CAPACITIES											
Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
1	1	**23.70**	12.70	4732.1	0.381	29.524	0.260	53.494	49.881	29.250	**58.4%**
1	2	**102.05**	13.14	4172.5	0.381	34.654	0.260	53.494	49.881	29.250	**68.7%**
1	3	**245.55**	11.53	4462.7	0.381	28.436	0.260	53.494	49.881	29.250	**56.3%**
2a	1	**149.20**	12.52	4360.1	0.381	31.598	0.260	53.494	49.881	29.250	**62.6%**
2a	2	**283.40**	11.55	4167.9	0.381	30.478	0.260	53.494	49.881	29.250	**60.3%**
2b	1	**53.45**	12.93	4579.3	0.381	31.075	0.260	53.494	49.881	29.250	**61.5%**
7	1	**317.25**	11.83	4254.8	0.381	30.592	0.260	45.690	45.000	29.250	**67.8%**
8	1	**194.45**	12.07	4721.0	0.381	28.125	0.260	45.690	45.000	29.250	**62.4%**

Loads	
Axial:	22.0 k
Moment:	877.8 k·ft
Shear:	15.6 k
Torsion:	0.2 k·ft

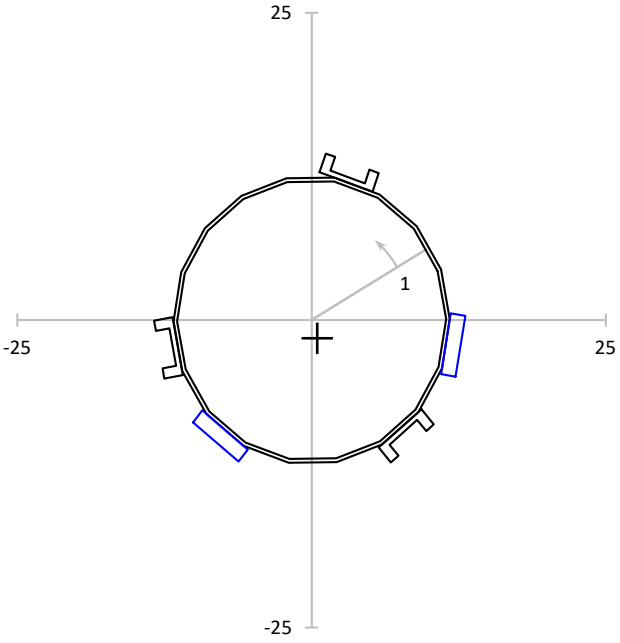
Equivalent Loads to Pole	
Axial:	10.5 k
Moment:	458.6 k·ft
Shear:	7.4 k
Torsion:	0.2 k·ft

Shear Flow	
Controlling Mod:	9
q:	0.315 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	114.11 in
Stitch:	23.00 in
Capacity:	**20.2%**

Pole Info	
OD:	23.13 in
t:	0.3125 in
Pole A_G:	22.64 in^2
Pole I_G:	1,489.6 in^4

Controlling	
Angle:	**59.50°**
I_G:	2,953.4 in^4
A_G:	47.53 in^2

Minimum	
Angle:	**79.05°**
I_{MIN}:	2,849.1 in^4
t_{EFF}:	0.6227 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
74.10	13.27	2856.0	0.463	48.939	0.327	0.008	58.500	74.295	17.550	37.050	**66.7%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
2a	1	**140.60**	12.19	3570.3	0.463	35.960	0.327	53.494	49.881	29.250	**71.2%**
2a	2	**274.05**	10.63	2911.7	0.463	38.446	0.327	53.494	49.881	29.250	**76.2%**
2b	1	**59.50**	13.29	2953.4	0.463	47.386	0.327	53.494	49.881	29.250	**94.1%**
7	1	**312.30**	11.19	3448.1	0.463	34.182	0.327	45.690	45.000	29.250	**75.8%**
8	1	**208.50**	11.04	3405.0	0.463	34.164	0.327	45.690	45.000	29.250	**75.8%**

Loads	
Axial:	20.5 k
Moment:	806.8 k·ft
Shear:	15.4 k
Torsion:	0.1 k·ft

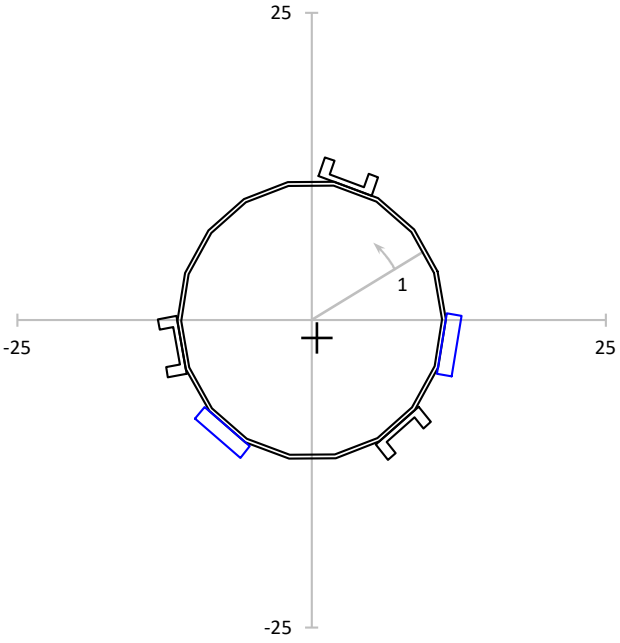
Pole Info	
OD:	22.48 in
t:	0.3125 in
Pole A_G:	21.99 in^2
Pole I_G:	1,365.0 in^4

Equivalent Loads to Pole	
Axial:	9.6 k
Moment:	414.6 k·ft
Shear:	7.2 k
Torsion:	0.1 k·ft

Controlling	
Angle:	**59.70°**
I_G:	2,750.7 in^4
A_G:	46.88 in^2

Shear Flow	
Controlling Mod:	12
q:	0.326 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	110.60 in
Stitch:	23.00 in
Capacity:	**20.8%**

Minimum	
Angle:	**79.00°**
I_{MIN}:	2,654.4 in^4
t_{EFF}:	0.6350 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY											
Angle (°)	**y_{CONT} (in)**	**I (in^4)**	**σ_A (ksi)**	**σ_B (ksi)**	**σ_V (ksi)**	**σ_T (ksi)**	**ϕF_A (ksi)**	**ϕF_B (ksi)**	**ϕF_V (ksi)**	**ϕF_T (ksi)**	**Capacity**
74.10	12.91	2660.9	0.437	46.988	0.329	0.006	58.500	74.295	17.550	37.050	**64.0%**

MODIFICATION CAPACITIES											
Mod Number	**#**	**Angle (°)**	**$\bar{y}_{CONT}$ (in)**	**I (in^4)**	**σ_A (ksi)**	**σ_B (ksi)**	**σ_V (ksi)**	**ϕF_A (ksi)**	**ϕF_B (ksi)**	**ϕF_V (ksi)**	**Capacity**
2a	1	**140.25**	11.85	3331.8	0.437	34.435	0.329	53.494	49.881	29.250	**68.2%**
2a	2	**274.00**	10.32	2713.5	0.437	36.824	0.329	53.494	49.881	29.250	**73.0%**
2b	1	**59.70**	12.95	2750.7	0.437	45.568	0.329	53.494	49.881	29.250	**90.5%**
9b	1	**208.60**	10.73	3177.7	0.437	32.681	0.329	45.690	45.000	29.250	**72.5%**
9b	2	**312.20**	10.87	3219.5	0.437	32.697	0.329	45.690	45.000	29.250	**72.5%**

Loads	
Axial:	19.3 k
Moment:	744.1 k·ft
Shear:	15.3 k
Torsion:	0.1 k·ft

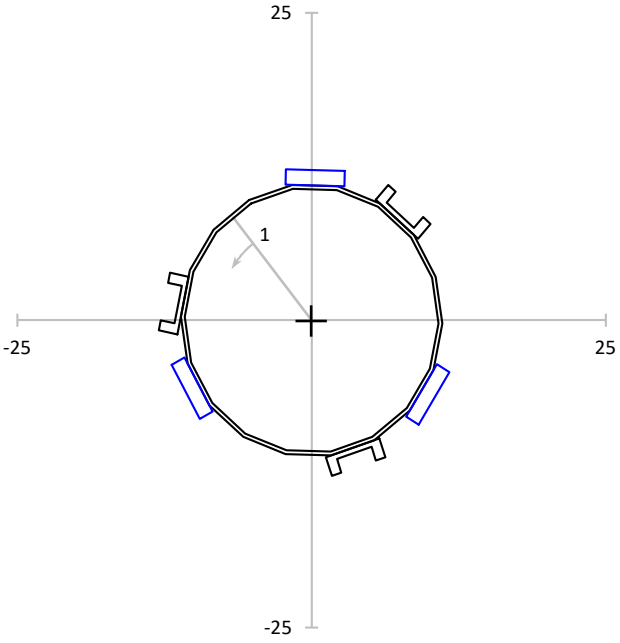
Pole Info	
OD:	21.90 in
t:	0.3125 in
Pole A_G:	21.41 in^2
Pole I_G:	1,259.9 in^4

Equivalent Loads to Pole	
Axial:	7.9 k
Moment:	280.8 k·ft
Shear:	6.2 k
Torsion:	0.1 k·ft

Controlling	
Angle:	**321.45°**
I_G:	3,368.1 in^4
A_G:	52.55 in^2

Shear Flow	
Controlling Mod:	12
q:	0.331 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	108.73 in
Stitch:	23.00 in
Capacity:	**21.2%**

Minimum	
Angle:	**176.15°**
I_{MIN}:	3,337.1 in^4
t_{EFF}:	0.8990 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
350.10	11.18	3338.2	0.367	29.912	0.292	0.007	58.500	74.295	17.550	37.050	**40.9%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
2a	1	**161.00**	11.49	3343.6	0.367	30.680	0.292	53.494	49.881	29.250	**60.8%**
2a	2	**281.00**	11.62	3426.4	0.367	30.294	0.292	53.494	49.881	29.250	**60.0%**
2b	1	**42.95**	11.59	3387.9	0.367	30.546	0.292	53.494	49.881	29.250	**60.5%**
9a	1	**79.30**	11.52	3431.3	0.367	29.983	0.292	45.690	45.000	29.250	**66.4%**
9b	1	**199.20**	11.54	3351.8	0.367	30.752	0.292	45.690	45.000	29.250	**68.1%**
9b	2	**321.45**	11.65	3368.1	0.367	30.875	0.292	45.690	45.000	29.250	**68.4%**

Loads	
Axial:	18.9 k
Moment:	723.6 k·ft
Shear:	15.2 k
Torsion:	0.1 k·ft

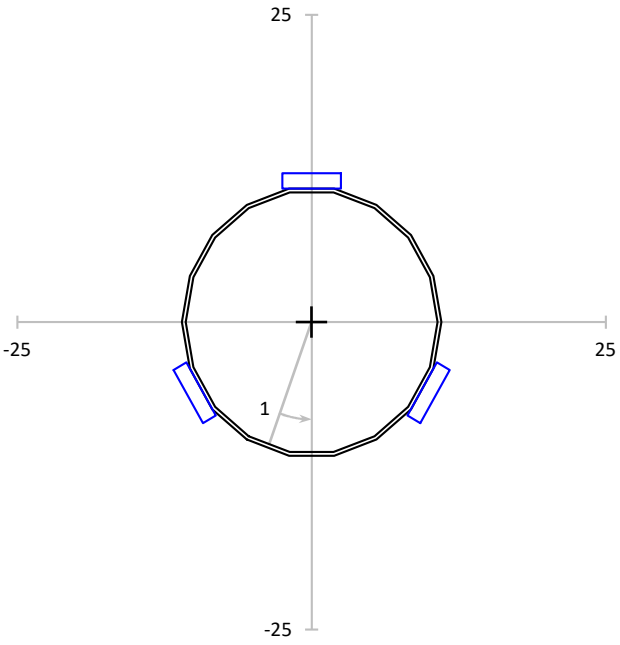
Pole Info	
OD:	21.70 in
t:	0.3125 in
Pole A_G:	21.22 in^2
Pole I_G:	1,226.6 in^4

Equivalent Loads to Pole	
Axial:	10.0 k
Moment:	357.6 k·ft
Shear:	8.1 k
Torsion:	0.1 k·ft

Controlling	
Angle:	**200.00°**
I_G:	2,482.3 in^4
A_G:	39.97 in^2

Shear Flow	
Controlling Mod:	12
q:	0.440 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	81.75 in
Stitch:	23.00 in
Capacity:	**28.1%**

Minimum	
Angle:	**10.05°**
I_{MIN}:	2,482.3 in^4
t_{EFF}:	0.6647 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
190.00	11.03	2482.3	0.473	38.569	0.381	0.007	58.500	74.295	17.550	37.050	**52.8%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
9a	1	**80.00**	11.48	2482.3	0.473	40.148	0.381	45.690	45.000	29.250	**88.9%**
9b	1	**200.00**	11.48	2482.3	0.473	40.148	0.381	45.690	45.000	29.250	**88.9%**
9b	2	**320.00**	11.48	2482.3	0.473	40.148	0.381	45.690	45.000	29.250	**88.9%**

Loads	
Axial:	17.3 k
Moment:	649.4 k·ft
Shear:	14.9 k
Torsion:	0.1 k·ft

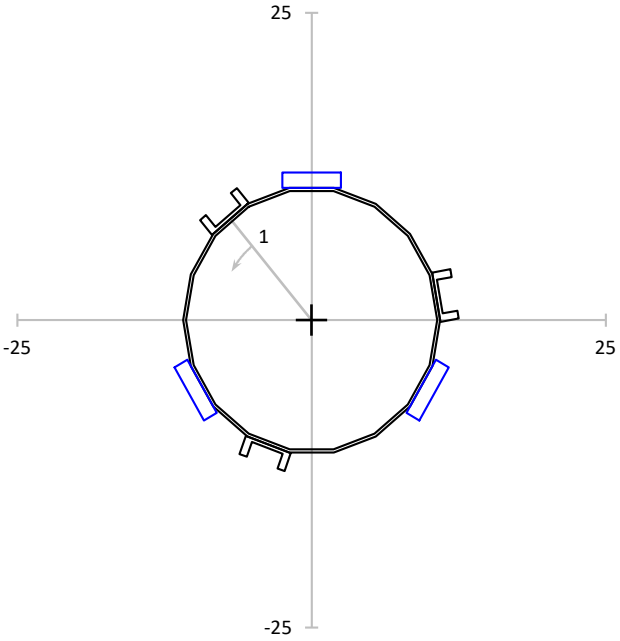
Pole Info	
OD:	21.50 in
t:	0.2500 in
Pole A_G:	16.87 in^2
Pole I_G:	962.5 in^4

Equivalent Loads to Pole	
Axial:	6.6 k
Moment:	225.6 k·ft
Shear:	5.7 k
Torsion:	0.1 k·ft

Controlling	
Angle:	**320.00°**
I_G:	2,771.0 in^4
A_G:	44.38 in^2

Shear Flow	
Controlling Mod:	12
q:	0.382 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	94.35 in
Stitch:	23.00 in
Capacity:	**24.4%**

Minimum	
Angle:	**193.20°**
I_{MIN}:	2,771.0 in^4
t_{EFF}:	0.7759 in



Pole Segment: L2, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
10.00	10.92	2771.0	0.390	30.721	0.335	0.005	58.500	74.295	17.550	37.050	**42.1%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
3	1	**360.00**	11.34	2771.0	0.390	31.897	0.335	53.615	49.540	29.250	**63.6%**
3	2	**120.00**	11.34	2771.0	0.390	31.897	0.335	53.615	49.540	29.250	**63.6%**
3	3	**240.00**	11.34	2771.0	0.390	31.897	0.335	53.615	49.540	29.250	**63.6%**
9a	1	**80.00**	11.38	2771.0	0.390	31.995	0.335	45.690	45.000	29.250	**70.9%**
9b	1	**200.00**	11.38	2771.0	0.390	31.995	0.335	45.690	45.000	29.250	**70.9%**
9b	2	**320.00**	11.38	2771.0	0.390	31.995	0.335	45.690	45.000	29.250	**70.9%**

Loads	
Axial:	14.3 k
Moment:	478.1 k·ft
Shear:	14.1 k
Torsion:	0.1 k·ft

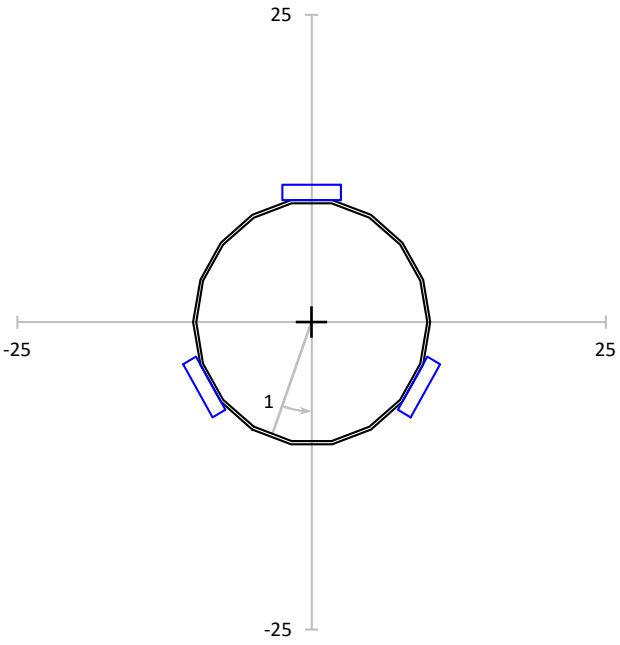
Pole Info	
OD:	19.84 in
t:	0.2500 in
Pole A_G:	15.54 in^2
Pole I_G:	753.5 in^4

Equivalent Loads to Pole	
Axial:	6.5 k
Moment:	198.3 k·ft
Shear:	6.4 k
Torsion:	0.1 k·ft

Controlling	
Angle:	**200.00°**
I_G:	1,816.6 in^4
A_G:	34.29 in^2

Shear Flow	
Controlling Mod:	12
q:	0.512 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	70.34 in
Stitch:	23.00 in
Capacity:	**32.7%**

Minimum	
Angle:	**205.80°**
I_{MIN}:	1,816.6 in^4
t_{EFF}:	0.6402 in



Pole Segment: L2, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
190.00	10.08	1816.6	0.418	31.830	0.411	0.006	58.500	74.295	17.550	37.050	**43.6%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
9a	1	**80.00**	10.54	1816.6	0.418	33.303	0.411	45.690	45.000	29.250	**73.8%**
9b	1	**200.00**	10.54	1816.6	0.418	33.303	0.411	45.690	45.000	29.250	**73.8%**
9b	2	**320.00**	10.54	1816.6	0.418	33.303	0.411	45.690	45.000	29.250	**73.8%**

Elevation: 68.66-ft

Loads	
Axial:	12.8 k
Moment:	368.5 k·ft
Shear:	13.6 k
Torsion:	0.1 k·ft

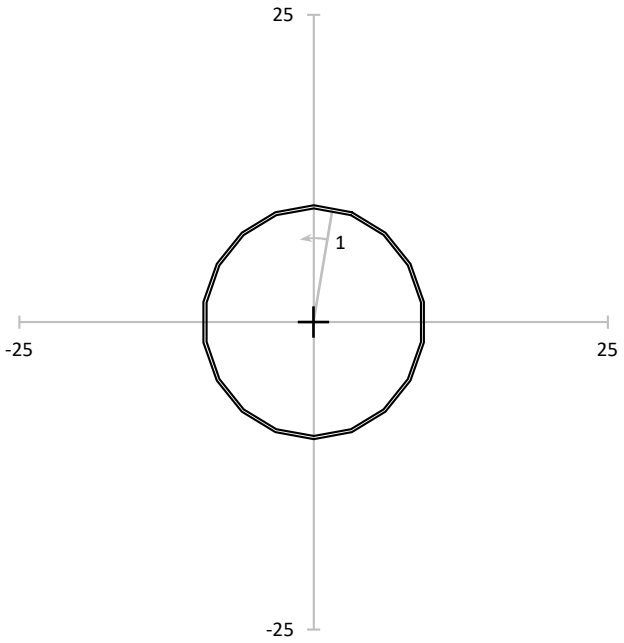
Equivalent Loads to Pole	
Axial:	12.8 k
Moment:	368.5 k·ft
Shear:	13.6 k
Torsion:	0.1 k·ft

Shear Flow N/A

Pole Info	
OD:	18.72 in
t:	0.2500 in
Pole A_G:	14.66 in^2
Pole I_G:	632.1 in^4

Controlling	
Angle:	**10.00°**
I_G:	632.1 in^4
A_G:	14.66 in^2

Minimum	
Angle:	**0.00°**
I_{MIN}:	632.1 in^4
t_{EFF}:	0.2500 in



Pole Segment: L2, F_Y = 65 ksi

POLE CAPACITY											
Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
10.00	9.51	632.1	0.876	66.538	0.930	0.006	58.500	74.295	17.550	37.050	**91.3%**

MODIFICATION CAPACITIES											
Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity

Elevation: 90.00-ft

Loads	
Axial:	7.6 k
Moment:	97.6 k·ft
Shear:	10.0 k
Torsion:	0.1 k·ft

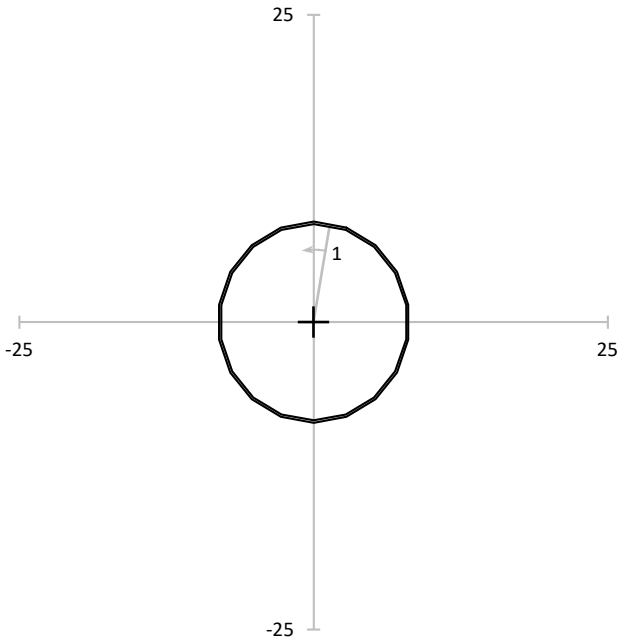
Equivalent Loads to Pole	
Axial:	7.6 k
Moment:	97.6 k·ft
Shear:	10.0 k
Torsion:	0.1 k·ft

Shear Flow N/A

Pole Info	
OD:	16.10 in
t:	0.1875 in
Pole A_G:	9.47 in^2
Pole I_G:	302.7 in^4

Controlling	
Angle:	**10.00°**
I_G:	302.7 in^4
A_G:	9.47 in^2

Minimum	
Angle:	**0.00°**
I_{MIN}:	302.7 in^4
t_{EFF}:	0.1875 in



Pole Segment: L1, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
10.00	8.18	302.7	0.798	31.650	1.054	0.011	58.500	74.295	17.550	37.050	**44.3%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity

TOWER ENGINEERING PROFESSIONALS

Capacity: 87.5% | PASS

Wethersfield CO (638512)

TEP #: 25669.864526

Analysis: TLI 7/7/2023

Check: RKE 7/7/2023

Micropile Foundation Check

Code Revision

H

Bar Selection

Bar Type:	WF All Thread Bar	
Bar Size:	R71-14	
Drill Bit Type:	Hardened Clay Bit	
Nominal Diameter:	1.75	in
Effective Area:	2.6	in^2
Yield Stress, Fy:	120	ksi
Ultimate Stress, Fu:	150	ksi
Axial Rigidity:	75400	k
Design Strength:	249.60	k
Drill Bit Diameter:	178.0	mm
Drill Bit Diameter:	7.0	in

Steel to Grout Bond Length

Ult Bond Strength:	235.0	psi
Bar Circumference:	5.498	in
Required Length:	257.59	in
Actual Length:	257.59	in
Effective Stiffness:	203	k/in

Grout to Soil Bond Length

a_{bond}:	81.7	psi
ϕ Factor:	0.75	
Shaft Circum.:	22.02	in
Required Length:	15.43	ft

Tower and Base Plate Information

Pole Dia. At Base:	28.00	in
t Pole:	0.3125	in
Fy Pole:	65	ksi
Fu Pole:	80	ksi
No. of Pole Sides:	18	
t Base Plate:	2.25	in
Fy Base Plate:	50	ksi
Fu Base Plate:	65	ksi

Reactions from TNX

Axial:	33.0	k
Moment:	1430.0	k-ft

Anchor Specifications

Quantity:	4	Asymmetrical
Bolt Circle:	7.0	ft
Ybar:	39.7	in
I (unit area):	3240.7	in^4
Tower Eccentricity:	0.0	in

Design Results

Max Axial Load:	218.5	kips
All. Axial Load:	249.6	kips
Pile Stress Capacity:	87.5%	PASS

Req. Bond Length

Steel to Grout:	21.47	ft
Grout to Soil:	15.43	ft
Bond Length:	22.00	ft
Ignored Soil Depth:	9.50	ft

Buckling Check

Unbraced Length, L:	0.25	in
r:	0.4208	in
KL/r:	0.59	
Fe:	N/A	ksi
Fcr:	N/A	ksi
ΦPn:	N/A	kips
Buckling Stress Ratio:	0.0%	N/A

STRUCTURAL DESIGN DRAWINGS

SITE NAME:

WETHERSFIELD CO

SITE NUMBER:

638512

SITE ADDRESS:

75 WELLS ROAD
WETHERSFIELD, CT 06109
(HARTFORD COUNTY)
N 41°42'20.97", W 72°39'48.30"

MODIFICATION PROVISIONS

THE MODIFICATIONS DEPICTED ON THESE DRAWINGS ARE BASED ON THE RECOMMENDATIONS OUTLINED IN THE STRUCTURAL MODIFICATION ANALYSIS REPORT COMPLETED BY TOWER ENGINEERING PROFESSIONALS (TEP), JOB#: 25669.855826 DATED JULY 7, 2023 (REV 1) PER ANSI/TIA-222-H. THIS REPORT IS BASED ON A SPECIFIC ANTENNA LOADING AND COAX CONFIGURATION. SEE THE REPORT FOR THE ANTENNA AND COAX LOADING INFORMATION. ANY OTHER ANTENNA OR COAX CONFIGURATION REQUIRES REVIEW BY TEP. SATISFACTORY COMPLETION OF THE MODIFICATIONS INDICATED ON THESE DRAWINGS WILL RESULT IN THE STRUCTURE MEETING THE REQUIREMENTS OF THE SPECIFICATIONS UNDER WHICH THE STRUCTURAL WAS COMPLETED.

CONTRACTOR SHALL FIELD VERIFY ALL: DIMENSIONS, QUANTITIES, PART NUMBERS AND COAX/ANTENNA PLACEMENTS PRIOR TO: BIDDING, ORDERING MATERIALS, AND CONSTRUCTION.

ATTENTION

QUALIFIED ENGINEERING SERVICES ARE AVAILABLE FROM TEP TO ASSIST CONTRACTORS IN CLASS IV RIGGING PLAN REVIEWS. FOR REQUESTED QUALIFIED ENGINEERING SERVICES, CONTACT TEP FOR QUOTE AT RIGGING@TEPGROUP.NET.

INDEX OF SHEETS

PROJECT TEAM

PROJECT CONTACT:

NAME	EVEREST INFRASTRUCTURE PARTNERS
ADDRESS	1435 BEDFORD AVENUE
CITY, STATE, ZIP	PITTSBURGH, PA 15219
CONTACT	THOMAS L. RIGG
PHONE	(603) 498-7462
EMAIL	TOM.RIGG@EVERESTINFRASTRUCTURE.COM

ENGINEERING FIRM PROJECT MANAGER:

NAME	TOWER ENGINEERING PROFESSIONALS, INC.
ADDRESS	326 TRYON ROAD
CITY, STATE, ZIP	RALEIGH, NC 27603
CONTACT	RILEY EATON, P.E.
PHONE	(919) 661-6351
EMAIL	MRF@TEPGROUP.NET

REVISION NOTES

1	REVISED GEOTECHNICAL REPORT

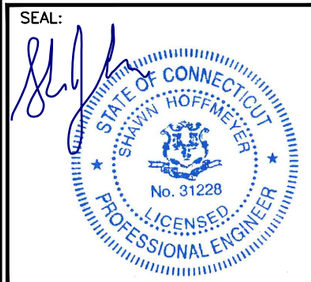
PLANS PREPARED FOR:

EVEREST
INFRASTRUCTURE PARTNERS
1435 BEDFORD AVENUE
PITTSBURGH, PA 15219
OFFICE: (603) 498-7462

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

SEAL:



July 7, 2023

REV	DATE	ISSUED FOR:
1	07-07-23	REVISED MOD. DRAWINGS
0	05-30-23	MODIFICATION DRAWINGS

DRAWN BY: TLI | CHECKED BY: RKE

SHEET TITLE:

TITLE SHEET

SHEET NUMBER: **T-1**

REVISION: 1

TEP#: 25669.855826

MI CHECKLIST

REQUIRED	REPORT ITEM	BRIEF DESCRIPTION
		PRE-CONSTRUCTION
X	MI CHECKLIST DRAWING	THIS CHECKLIST SERVES AS A GUIDELINE FOR THE REQUIRED CONSTRUCTION DOCUMENTS AND INSPECTIONS FOR THIS MODIFICATION.
NA	EOR APPROVED SHOP DRAWINGS	ONCE THE PRE-MODIFICATION MAPPING IS COMPLETE AND PRIOR TO FABRICATION, THE CONTRACTOR SHALL PROVIDE DETAILED ASSEMBLY DRAWINGS AND/OR SHOP DRAWINGS. THESE INCLUDE, BUT ARE NOT LIMITED TO, A VISUAL LAYOUT OF NEW REINFORCEMENT, EXISTING REINFORCEMENT CONFIGURATION, PORTHOLES, MOUNTS, STEP PEGS, SAFETY CLIMBS AND ANY OTHER MISCELLANEOUS ITEMS WHICH MAY AFFECT SUCCESSFUL INSTALLATION OF MODIFICATIONS ON THE TOWER. THESE DRAWINGS SHALL BE SUBMITTED TO THE EOR FOR APPROVAL. SHOP DRAWING SUBMISSION SHALL INCLUDE THE EOR RFI FORM DETAILING ANY CHANGES FROM THE ORIGINAL DESIGN.
X	FABRICATION INSPECTION	A LETTER FROM THE FABRICATOR, STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THE CONTRACT DOCUMENTS, SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATOR CERTIFIED WELD INSPECTION	A CWI SHALL INSPECT ALL WELDING PERFORMED ON STRUCTURAL MEMBERS DURING FABRICATION. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	MATERIAL TEST REPORTS (MTR)	MATERIAL TEST REPORTS SHALL BE PROVIDED FOR MATERIAL USED. MTRS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATOR NDE INSPECTION REPORT	CRITICAL SHOP WELDS THAT REQUIRE TESTING ARE NOTED ON THESE CONTRACT DRAWINGS. A CERTIFIED NDT INSPECTOR SHALL PERFORM NON-DESTRUCTIVE EXAMINATION AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	NDE OF MONOPOLE BASE PLATE	A NDE OF THE POLE TO BASE PLATE CONNECTION IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PACKING SLIPS	PACKAGING/SHIPPING LIST FOR ALL MATERIAL USED DURING CONSTRUCTION OF THE MODIFICATION.
ADDITIONAL TESTING AND INSPECTIONS:		
NA		
		CONSTRUCTION
X	FOUNDATION INSPECTIONS	A VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED BEFORE PLACING THE CONCRETE. A VISUAL OBSERVATION OF THE REBAR SHALL BE PERFORMED BEFORE PLACING THE EPOXY. A SEALED WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	CONCRETE COMP. STRENGTH AND SLUMP TESTS	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED AS PART OF THE FOUNDATION REPORT.
NA	EARTHWORK	FOUNDATION SUB-GRADES SHALL BE INSPECTED AND APPROVED BY AN APPROVED FOUNDATION INSPECTOR AND RESULTS INCLUDED AS PART OF THE FOUNDATION REPORT.
X	MICROPILE/ROCK ANCHOR	MICROPILES/ROCK ANCHORS SHALL BE INSPECTED BY THE FOUNDATION INSPECTION VENDOR AND SHALL BE INCLUDED AS PART OF THE FOUNDATION INSPECTION REPORT, ADDITIONAL TESTING AND/OR INSPECTION REQUIREMENTS ARE NOTED IN THESE CONTRACT DOCUMENTS.
NA	POST-INSTALLED ANCHOR ROD VERIFICATION	POST-INSTALLED ANCHOR ROD VERIFICATION SHALL BE PERFORMED AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	BASE PLATE GROUT VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR THAT CERTIFIES THAT THE GROUT WAS REMOVED AND/OR INSTALLED IN ACCORDANCE WITH CONTRACTOR DOCUMENTS FOR INCLUSION IN THE MI REPORT.
X	FIELD CERTIFIED WELD INSPECTION	AN AWS CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST FIELD WELDS, IN ACCORDANCE WITH AWS D1.1/D1.1M: "STRUCTURAL WELDING CODE – STEEL". A REPORT SHALL BE PROVIDED. NDE OF FIELD WELDS SHALL BE PERFORMED AS REQUIRED PER CONTRACT DOCUMENTS. THE NDE REPORT SHALL BE INCLUDED IN THE CWI REPORT.
X	ON SITE COLD GALVANIZING VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE WRITTEN AND PHOTOGRAPHIC DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED PER MANUFACTURER SPECIFICATIONS AND APPLICABLE STANDARDS.
NA	TENSION TWIST AND PLUMB	THE GENERAL CONTRACTOR SHALL PROVIDE A REPORT IN ACCORDANCE WITH APPLICABLE STANDARDS DOCUMENTING TENSION TWIST AND PLUMB.
X	GC AS-BUILT DOCUMENTS	THE GENERAL CONTRACTOR SHALL SUBMIT A LEGIBLE COPY OF THE ORIGINAL DESIGN DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD. EOR/RFI FORMS APPROVING ALL CHANGES SHALL BE SUBMITTED.
ADDITIONAL TESTING AND INSPECTIONS:		
NA		
		POST-CONSTRUCTION
X	CONSTRUCTION COMPLIANCE LETTER	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS, INCLUDING LISTING ADDITIONAL PARTIES TO THE MODIFICATION PROCESS.
NA	POST-INSTALLED ANCHOR ROD PULL TESTS	POST-INSTALLED ANCHOR RODS SHALL BE TESTED IN ACCORDANCE WITH CONTRACT DOCUMENTS AND A REPORT SHALL BE PROVIDED INDICATING TESTING RESULTS.
X	PHOTOGRAPHS	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI. PHOTOS SHALL DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
X	BOLT HOLE INSTALLATION AND VERIFICATION REPORT	THE MI INSPECTOR SHALL VERIFY THE INSTALLATION AND TIGHTNESS 10% OF ALL NON PRE-TENSIONED BOLTS INSTALLED AS PART OF THE MODIFICATION. THE MI INSPECTOR SHALL LOOSEN THE NUT AND VERIFY THE BOLT HOLE SIZE AND CONDITION. THE MI REPORT SHALL CONTAIN THE COMPLETED BOLT INSTALLATION VERIFICATION REPORT, INCLUDING THE SUPPORTING PHOTOGRAPHS.
X	PUNCHLIST DEVELOPMENT AND CORRECTION DOCUMENTATION	FINAL PUNCHLIST INDICATING ALL NONCONFORMANCE(S) IDENTIFIED AND THE FINAL RESOLUTION AND APPROVAL.
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTOR'S REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.
ADDITIONAL TESTING AND INSPECTIONS:		
NA		

THE MI CHECKLIST SHALL BE REVIEWED PRIOR TO THE START OF CONSTRUCTION. ALL PARTIES TO THE MODIFICATION SHALL UNDERSTAND INSPECTIONS/DOCUMENTATION THAT IS APPLICABLE TO THE SCOPE OF WORK THEY ARE PERFORMING. ERRORS ON THE MI CHECKLIST SHALL BE BROUGHT TO THE ATTENTION OF THE TOWER OWNER POINT OF CONTACT AND EOR AS SOON AS POSSIBLE.

NOTE: X DENOTES A DOCUMENT NEEDED FOR THE PMI REPORT
NA DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE PMI REPORT

MODIFICATION INSPECTION NOTES:

GENERAL

THE MI IS AN ON-SITE VISUAL AND HANDS-ON INSPECTION OF TOWER MODIFICATIONS INCLUDING A REVIEW OF CONSTRUCTION REPORTS AND ADDITIONAL PERTINENT DOCUMENTATION PROVIDED BY THE GENERAL CONTRACTOR (GC), AS WELL AS ANY INSPECTION DOCUMENTS PROVIDED BY 3RD PARTY INSPECTORS. THE MI IS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS AS DESIGNED BY THE ENGINEER OF RECORD (EOR).

NO DOCUMENT, CODE OR POLICY CAN ANTICIPATE EVERY SITUATION THAT MAY ARISE. ACCORDINGLY, THIS CHECKLIST IS INTENDED TO SERVE AS A SOURCE OF GUIDING PRINCIPLES IN ESTABLISHING GUIDELINES FOR MODIFICATION INSPECTION.

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, AND THE MI INSPECTOR DOES NOT TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES. THE MI INSPECTOR SHALL INSPECT AND NOTE CONFORMANCE/NONCONFORMANCE AND PROVIDE TO THE TOWER OWNER POINT OF CONTACT FOR EVALUATION.

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PURCHASE ORDER (PO) IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN THE GC AND/OR INSPECTOR SHALL CONTACT THE TOWER OWNER POINT OF CONTACT.

SERVICE LEVEL COMMITMENT

THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING AN MI REPORT:

- THE GC SHALL PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY MINOR DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

REQUIRED PHOTOS

BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:

- PRE-CONSTRUCTION GENERAL SITE CONDITION
- PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION / ERECTION AND INSPECTION
  - RAW MATERIALS
  - PHOTOS OF ALL CRITICAL DETAILS
  - FOUNDATION MODIFICATIONS
  - WELD PREPARATION
  - BOLT INSTALLATION
  - FINAL INSTALLED CONDITION
  - SURFACE COATING REPAIR
- POST CONSTRUCTION PHOTOGRAPHS
  - FINAL INFIELD CONDITION

PHOTOS OF ELEVATED MODIFICATIONS TAKEN ONLY FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

PLANS PREPARED FOR:

EVEREST INFRASTRUCTURE PARTNERS
1435 BEDFORD AVENUE
PITTSBURGH, PA 15219

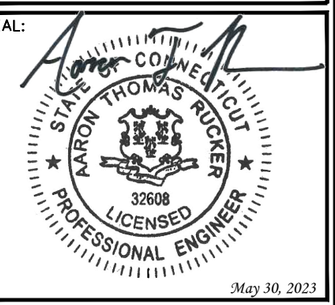
PROJECT INFORMATION:

WETHERSFIELD CO
SITE #: 638512
75 WELLS ROAD
WETHERSFIELD, CT 06109
(HARTFORD COUNTY)

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

SEAL:



May 30, 2023

REV	DATE	ISSUED FOR:
0	05-30-23	MODIFICATION DRAWINGS

DRAWN BY: TLI | CHECKED BY: JLW

SHEET TITLE:

MI CHECKLIST AND NOTES

SHEET NUMBER: **N-1**

REVISION: **0**

TEP#: 25669.855826

GENERAL NOTES:

1. ALL REFERENCES TO THE OWNER IN THESE DOCUMENTS SHALL BE CONSIDERED EVEREST INFRASTRUCTURE PARTNERS OR ITS DESIGNATED REPRESENTATIVE.
2. ALL WORK PRESENTED ON THESE DESIGN DRAWINGS MUST BE COMPLETED BY THE GENERAL CONTRACTOR (GC) UNLESS NOTED OTHERWISE. THE GC MUST HAVE CONSIDERABLE EXPERIENCE IN PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE GC IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED AND THAT HE IS PROPERLY LICENSED AND PROPERLY REGISTERED TO DO THIS WORK IN THE STATE OF CONNECTICUT.
3. WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE 2022 CONNECTICUT STATE BUILDING CODE.
4. UNLESS SHOWN OR NOTED OTHERWISE ON THE DESIGN DRAWINGS, OR IN THE SPECIFICATIONS, THE FOLLOWING NOTES SHALL APPLY TO THE MATERIALS LISTED HEREIN, AND TO THE PROCEDURES TO BE USED ON THIS PROJECT.
5. ALL HARDWARE ASSEMBLY MANUFACTURER'S INSTRUCTIONS SHALL BE FOLLOWED EXACTLY AND SHALL SUPERSEDE ANY CONFLICTING NOTES ENCLOSED HEREIN.
6. ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE DESIGN DRAWINGS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER OF RECORD (EOR) PRIOR TO INSTALLATION. THE GC SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF THE MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
7. THE GC SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE GC IS RESPONSIBLE FOR ENSURING THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK.
8. ACCESS TO THE PROPOSED WORK SITE MAY BE RESTRICTED. THE GC SHALL COORDINATE INTENDED CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIALS ACCESS, WITH THE RESIDENT LEASING AGENT FOR APPROVAL.
9. ALL PERMITS THAT MUST BE OBTAINED ARE THE RESPONSIBILITY OF THE GC. THE GC WILL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
10. IF APPLICABLE, ALL CONCRETE WORK SHALL COMPLY TO LOCAL CODES AND THE ACI 318-19, "BUILDING REQUIREMENTS FOR STRUCTURAL CONCRETE".
11. 24 HOURS PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, THE GC MUST NOTIFY THE APPLICABLE JURISDICTIONAL (STATE, COUNTY OR CITY) ENGINEER.
12. ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED FOR ONE YEAR FROM ACCEPTANCE DATE.
13. ALL DIMENSIONS SHALL BE VERIFIED WITH THE DESIGN DRAWINGS (LATEST REVISION) PRIOR TO COMMENCING CONSTRUCTION. NOTIFY THE EOR IMMEDIATELY IF ANY DISCREPANCIES ARE DISCOVERED. THE OWNER SHALL HAVE A SET OF APPROVED DESIGN DRAWINGS AVAILABLE AT THE SITE AT ALL TIMES WHILE WORK IS BEING PERFORMED. A DESIGNATED RESPONSIBLE EMPLOYEE SHALL BE AVAILABLE FOR CONTACT BY GOVERNING AGENCY INSPECTORS.
14. THE CLIMBING FACILITIES, SAFETY CLIMB AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED, OR ALTERED WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE OWNER AND EOR. ALL ALTERATIONS TO A SAFETY CLIMB'S ORIGINAL MANUFACTURER'S CONFIGURATION MUST BE DESIGNED BY THE EOR. IF THE GC FINDS THAT THE CLIMBING FACILITIES ARE IMPEDED, EITHER DURING BIDDING, DURING PRE-FABRICATION MAPPING, OR WHILE ON-SITE, THE GC SHALL CONTACT THE OWNER AND EOR TO DETERMINE A METHOD OF RESOLUTION.
15. ANY WORK PERFORMED WITHOUT A PREFABRICATION MAPPING IS DONE AT THE RISK OF THE GC AND/OR FABRICATOR.
16. IF DURING THE COURSE OF A FOUNDATION MODIFICATION, THE GC ENCOUNTERS EXISTING CONDUIT LOCATED WITHIN THE CONFINES OF THE EXISTING OR PROPOSED FOUNDATION CONCRETE, AND THIS CONDUIT IS NOT IN A LOCATION THAT IS SPECIFIED WITHIN THESE DESIGN DRAWINGS, THE GC SHALL IMMEDIATELY CONTACT THE EOR FOR GUIDANCE BEFORE PROCEEDING WITH THE INSTALLATION OF THE PROPOSED FOUNDATION MODIFICATIONS. IF CONDUIT IS TO BE INSTALLED THROUGH THE EXISTING FOUNDATION OR PROPOSED FOUNDATION MODIFICATION AND HASN'T BEEN SPECIFIED WITHIN THESE DESIGN DRAWINGS THEN THE GC SHALL IMMEDIATELY CONTACT THE EOR FOR GUIDANCE PRIOR TO PROCEEDING WITH THE INSTALLATION OF THE PROPOSED FOUNDATION MODIFICATIONS.

ATTENTION

ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GC RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION), FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH THE ANSI/TIA-322 (LATEST EDITION).

BASE PLATE GROUT REMOVAL NOTES:

1. THE GC SHALL BEGIN THIS PROCEDURE AS EARLY AS POSSIBLE DURING THE MODIFICATION PROCESS SO THAT IF ISSUES ARISE, THEY CAN BE RESOLVED WITHIN THE ANTICIPATED MODIFICATION TIMELINE.
2. IF ANY DETERIORATED GROUT EXISTS, BEGIN AT THIS LOCATION. REMOVE DETERIORATED GROUT AND THE GROUT AROUND THE NEAREST ONE OR TWO ANCHOR RODS TO FULLY EXPOSE THE LEVELING NUT. IF THE GC DISCOVERS THAT A HALF NUT OR JAM NUT WAS USED AS A LEVELING NUT, OR IF NO LEVELING NUT IS PRESENT, IMMEDIATELY CONTACT THE EOR AND TOWER OWNER POC FOR A RESOLUTION. DO NOT REMOVE ANY ADDITIONAL GROUT UNTIL DIRECTED TO BY THE EOR.
3. OTHERWISE, CHECK THE LEVELING NUT FOR TIGHTNESS. IF SEVERE CORROSION / MATERIAL LOSS IS FOUND OR CORROSION EXISTS TO THE POINT WHERE THE LEVELING NUT IS UNABLE TO BE TIGHTENED WHEN OBVIOUSLY LOOSE, IMMEDIATELY NOTIFY THE EOR AND TOWER OWNER POC. DO NOT REMOVE ANY ADDITIONAL GROUT UNTIL DIRECTED TO BY THE EOR.
4. IN THE EVENT THAT SEVERE CORROSION IS NOT ENCOUNTERED, AND BEING SURE TO CHECK EACH ANCHOR ROD FOR CORROSION, REMOVE ALL EXISTING BASEPLATE GROUT WHILE CHECKING EACH LEVELING NUT FOR TIGHTNESS.
5. HAND TOOL CLEAN AND SOLVENT CLEAN ALL EXPOSED STRUCTURAL STEEL ELEMENTS, INCLUDING ANCHOR RODS, LEVELING NUTS, AND UNDERSIDE OF BASE PLATE TO THE GREATEST EXTENT POSSIBLE. ENSURE THAT ALL OLD GROUT IS REMOVED TO ALLOW COLD GALVANIZING TO ADHERE TO THE STEEL.
6. APPLY BY BRUSH TWO COATS OF A COLD-GALVANIZING COMPOUND TO ALL EXPOSED STRUCTURAL STEEL ELEMENTS BENEATH THE BASE PLATE, AND ALLOW CURING IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.
7. THE GC SHALL PROVIDE PHOTOS OF EACH ANCHOR ROD WITH LEVELING NUT AFTER CLEANING BUT BEFORE COLD-GALVANIZATION, AND ALSO AGAIN AFTER COLD-GALVANIZATION, FOR INCLUSION IN THE MI REPORT.

PLANS PREPARED FOR:

EVEREST INFRASTRUCTURE PARTNERS
1435 BEDFORD AVENUE
PITTSBURGH, PA 15219

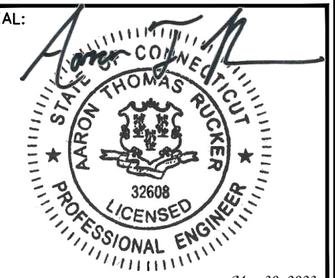
PROJECT INFORMATION:

WETHERSFIELD CO
SITE #: 638512
75 WELLS ROAD
WETHERSFIELD, CT 06109
(HARTFORD COUNTY)

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

SEAL:



May 30, 2023

REV	DATE	ISSUED FOR:
0	05-30-23	MODIFICATION DRAWINGS

DRAWN BY: TLI | CHECKED BY: JLW

SHEET TITLE:

PROJECT NOTES I

SHEET NUMBER: **N-2**

REVISION: **0**

TEP#: 25669.855826

STRUCTURAL STEEL NOTES:

1. THE FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC STEEL CONSTRUCTION MANUAL, LOAD AND RESISTANCE FACTOR DESIGN (LRFD), 15TH EDITION.

2. UNLESS OTHERWISE NOTED, ALL STRUCTURAL ELEMENTS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
   STRUCTURAL STEEL:
   - ANGLE: ASTM A36
   - PIPE/TUBE: ASTM A500-46
   - PLATE: ASTM A36 (SELF SUPPORTING AND GUYED TOWERS)
   - PLATE: ASTM A572-65 (MONOPOLE)

   A. ALL BOLTS, ASTM A325 TYPE I GALVANIZED HIGH STRENGTH BOLTS.
   B. ALL U-BOLTS, ASTM A193 GRADE B7
   C. ALL NUTS, ASTM A563 CARBON AND ALLOY STEEL NUTS.
   D. ALL WASHERS, ASTM F436 HARDENED STEEL WASHERS.

3. ALL CONNECTIONS NOT FULLY DETAILED ON THESE PLANS SHALL BE DETAILED BY THE STEEL FABRICATOR IN ACCORDANCE WITH AISC STEEL CONSTRUCTION MANUAL, LRFD, 15TH EDITION.

4. HOLES SHALL NOT BE FLAME CUT THROUGH STEEL UNLESS APPROVED BY THE ENGINEER.

5. HOT-DIP GALVANIZE ALL ITEMS UNLESS OTHERWISE NOTED, AFTER FABRICATION WHERE PRACTICABLE. GALVANIZING: ASTM A123, ASTM, A153/A153M OR ASTM A653/A653M, G90, AS APPLICABLE. ADDITIONALLY, ALL NEW STEEL SHALL BE PAINTED TO MATCH EXISTING STEEL. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.

6. REPAIR DAMAGED SURFACES WITH GALVANIZING REPAIR METHOD AND PAINT CONFORMING TO ASTM A780 OR BY APPLICATION OF STICK OR THICK PASTED MATERIAL SPECIFICALLY DESIGNED FOR REPAIR OF GALVANIZING. CLEAN AREAS TO BE REPAIRED AND REMOVE SLAG FROM WELDS. HEAT SURFACES TO WHICH STICK OR PASTE MATERIAL IS APPLIED, WITH A TORCH TO A TEMPERATURE SUFFICIENT TO MELT THE METALLICS IN STICK OR PASTED; SPREAD MOLTEN MATERIAL UNIFORMLY OVER SURFACES TO BE COATED AND WIPE OFF EXCESS MATERIAL. AFTER REPAIR, STEEL SHALL BE REPAINTED TO MATCH EXISTING FINISH (IF APPLICABLE).

7. A NUT LOCKING DEVICE SHALL BE INSTALLED ON ALL PROPOSED AND/OR REPLACED BOLTS.

8. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH TO EXCLUDE THE THREADS FROM THE SHEAR PLANE.

9. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT BE AT LEAST FLUSH WITH THE FACE OF THE NUT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.

10. GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.

WELDING NOTES:

1. ALL WELDING SHALL BE IN ACCORDANCE WITH THE AWS D1.1/D1.1M: 2015 "STRUCTURAL WELDING CODE-STEEL".

2. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS.

3. CONTRACTOR SHALL RETAIN AN AWS CERTIFIED WELD INSPECTOR TO PERFORM VISUAL INSPECTIONS ON FIELD WELDS. A LETTER AND REPORT SHALL BE ISSUED TO THE CONTRACTOR. CONTRACTOR SHALL SUBMIT LETTER AND REPORT TO TOWER ENGINEERING PROFESSIONALS.

4. GRIND THE SURFACE ADJACENT TO THE WELD FOR A DISTANCE OF 2" MINIMUM ALL AROUND. GRIND THE SURFACE OF THE ROD TO BE INSTALLED FOR A DISTANCE OF 2" MINIMUM ALL AROUND THE AREA TO BE WELDED. ENSURE BOTH AREAS ARE 100% FREE OF ALL GALVANIZING. SURFACES TO BE WELDED SHALL BE FREE FROM SCALE, SLAG, RUST, MOISTURE, GREASE OR ANY OTHER FOREIGN MATERIAL THAT WOULD PREVENT PROPER WELDING.

5. DO NOT WELD IF THE TEMPERATURE OF THE STEEL IN THE VICINITY OF THE WELD AREA IS BELOW 0 DEGREES (FAHRENHEIT). THE MINIMUM PREHEAT AND INTERPASS TEMPERATURE REQUIREMENTS SHALL COMPLY WITH SECTION 3.5.1 AND TABLE 3.2 OF THE AWS D1.1/D1.1M:2015.

6. DO NOT WELD ON WET OR FROST-COVERED SURFACES AND PROVIDE ADEQUATE PROTECTION FROM HIGH WINDS.

7. FOR ALL WELDING, USE 80 KSI LOW HYDROGEN ELECTRODES. ELECTRODES SHALL BE APPROPRIATE FOR THE WELDING POSITION REQUIRED TO MAKE THE JOINT.

8. AFTER FINAL INSPECTION, THE AREA OF THE WELDS, THE INSTALLATION AND ALL SURFACES DAMAGED BY WELDING OR GRINDING SHALL RECEIVE A COLD-GALVANIZED COATING. THIS COATING SHALL BE APPLIED BY BRUSH. THE GALVANIZING COMPOUND SHALL CONTAIN A MINIMUM OF 95% +/- PURE ZINC. THE FINISHED COATING SHALL BE A MINIMUM THICKNESS OF 3 MILS.

9. PROVIDE WELDS ALL AROUND OR ADD SEAL WELDS WHERE STRUCTURAL WELDS ARE NOT SPECIFIED.

BOLT TIGHTENING PROCEDURE:

1. UNLESS OTHERWISE NOTED, ALL BOLTED CONNECTIONS SHALL BE BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1 OF THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS, LOCATED IN THE AISC MANUAL OF STEEL CONSTRUCTION. ALL SNUG TIGHT BOLTS SHALL BE INSTALLED WITH A NUT-LOCKING DEVICE OR MECHANISM SUCH AS, BUT NOT LIMITIED TO, LOCK NUTS, LOCK WASHERS, OR PALNUTS, TO PREVENT LOOSENING.

2. WHEN SPECIFIED IN THE DRAWINGS, CONNECTION BOLTS SHALL BE INSTALLED AND TIGHTENED AS PER SECTION 8.2.1 OF THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS, LOCATED IN THE AISC MANUAL OF STEEL CONSTRUCTION. THE INSTALLATION PROCEDURE IS PARAPHRASED AS FOLLOWS:

   8.2.1 TURN-OF-THE-NUT TIGHTENING

   BOLTS SHALL BE INSTALLED IN ALL HOLES OF THE CONNECTION AND BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1, UNTIL ALL THE BOLTS ARE SIMULTANEOUSLY SNUG TIGHT AND THE CONNECTION IS FULLY COMPACTED. FOLLOWING THIS INITIAL OPERATION ALL BOLTS IN THE CONNECTION SHALL BE TIGHTENED FURTHER BY THE APPLICABLE AMOUNT OF ROTATION SPECIFIED BELOW. DURING THE TIGHTENING OPERATION THERE SHALL BE NO ROTATION OF THE PART NOT TURNED BY THE WRENCH. TIGHTENING SHALL PROGRESS SYSTEMATICALLY FROM THE MOST RIGID PART OF THE JOINT IN A MANNER THAT WILL MINIMIZE RELAXATION OF PREVIOUSLY PRETENSIONED BOLTS.

3. PRE-TENSIONED BOLTS AS SPECIFIED ON THE DRAWINGS SHALL BE TIGHTENED IN ACCORDANCE WITH AISC - "TURN OF THE NUT" METHOD, USING THE CHART BELOW.

BOLT LENGTHS UP TO AND INCLUDING FOUR DIA.

½"	BOLTS UP TO AND INCLUDING 2.0 INCH LENGTH	+⅓ TURN BEYOND SNUG TIGHT
⅝"	BOLTS UP TO AND INCLUDING 2.5 INCH LENGTH	+⅓ TURN BEYOND SNUG TIGHT
¾"	BOLTS UP TO AND INCLUDING 3.0 INCH LENGTH	+⅓ TURN BEYOND SNUG TIGHT
⅞"	BOLTS UP TO AND INCLUDING 3.5 INCH LENGTH	+⅓ TURN BEYOND SNUG TIGHT
1"	BOLTS UP TO AND INCLUDING 4.0 INCH LENGTH	+⅓ TURN BEYOND SNUG TIGHT

BOLT LENGTHS OVER FOUR DIA. BUT NOT EXCEEDING EIGHT DIA.

½"	BOLTS 2.25 TO 4.0 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT
⅝"	BOLTS 2.75 TO 5.0 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT
¾"	BOLTS 3.25 TO 6.0 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT
⅞"	BOLTS 3.75 TO 7.0 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT
1"	BOLTS 4.25 TO 8.0 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT

4. ALL ONE-SIDED BOLTS SHALL BE TIGHTENED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

FIELD NDE MINIMUM REQUIREMENTS:

1. ALL NDE SHALL BE IN ACCORDANCE WITH AWS D1.1.

2. FOR NEW BASE STIFFENERS (INCLUSIVE OF TRANSITION STIFFENERS) AND ANCHOR ROD BRACKETS, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY ULTRASONIC TESTING (UT). ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MAGNETIC PARTICLE TESTING (MT).

3. FOR NEW FLAT PLATE REINFORCEMENT AT THE BASE OF THE TOWER, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY ULTRASONIC TESTING (UT). ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MAGNETIC PARTICLE TESTING (MT), BUT MAY BE LIMITED TO A HEIGHT OF 10'-0".

4. FOR NDE OF THE EXISTING BASE PLATE CIRCUMFERENTIAL WELD, GC SHALL REFERENCE THE MI CHECKLIST FOR APPLICABILITY. NOTIFY THE EOR AND TOWER OWNER IMMEDIATELY IF ANY CRACKS ARE SUSPECTED OR HAVE BEEN IDENTIFIED. THE NDE SHALL INCLUDE ALL EXISTING MODIFICATIONS THAT HAVE BEEN WELDED TO THE BASE PLATE.

5. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

PLANS PREPARED FOR:

EVEREST INFRASTRUCTURE PARTNERS
1435 BEDFORD AVENUE
PITTSBURGH, PA 15219

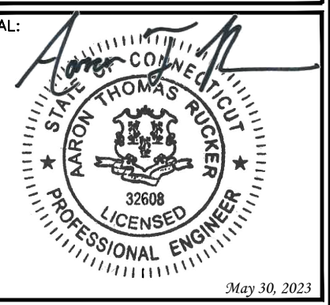
PROJECT INFORMATION:

WETHERSFIELD CO
SITE #: 638512
75 WELLS ROAD
WETHERSFIELD, CT 06109
(HARTFORD COUNTY)

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

SEAL:



May 30, 2023

REV	DATE	ISSUED FOR:
0	05-30-23	MODIFICATION DRAWINGS

DRAWN BY: TLI | CHECKED BY: JLW

SHEET TITLE:

PROJECT NOTES II

SHEET NUMBER: **N-3**

REVISION: **0**

TEP#: 25669.855826

NOTES:

1. ALL SHOP AND FIELD DRILLED HOLES SHALL BE NOMINAL 30MM DIAMETER. THE MAXIMUM HOLE DIAMETER PERMITTED IS 1 3/16".
2. THE NEXGEN2™ SHALL BE MAGNI 565 COATED PER ASTM F2833 AS APPROPRIATE.
3. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
4. SHIMS FOR MONOPOLE REINFORCEMENT MEMBER SHALL BE REQUIRED WHERE GAPS BETWEEN THE POLE SHAFT AND REINFORCING MEMBER EXIST AT FASTENER LOCATIONS. FOR INTERMEDIATE CONNECTIONS, THE MINIMUM SHIM LENGTH AND WIDTH SHALL BE THE WIDTH OF THE REINFORCING MEMBER. FOR TERMINATION CONNECTIONS, A CONTINUOUS SHIM PLATE (PREFERRED) OR EQUIVALENT INDIVIDUAL SHIM PLATES THE WIDTH OF THE REINFORCING MEMBER MAY BE USED. ADJACENT SHIM PLATE THICKNESSES MAY TAPER IN INCREMENTS OF 1/16" AND SHALL BE NO LESS THAN 1/16". STACKING OF SHIMS IS PERMITTED. SHIMS GREATER THAN 1/4" IN THICKNESS LOCATED WITHIN THE TERMINATION LENGTH OF THE SHAFT REINFORCEMENT PLATE SHALL BE WELDED TO THE SHAFT REINFORCEMENT PLATE. TIGHTENING THE BOLTS TO COLD BEND THE STEEL PLATES AROUND THE SHIMS IS STRICTLY PROHIBITED IN LIEU OF SHIMS AND WILL BE CAUSE FOR REJECTION.

INSPECTION NOTES AND PROCEDURES:

1. REVIEW STRUCTURAL DESIGN DRAWINGS.
2. VISUALLY INSPECT SHEARED BOLT ENDS TO ENSURE CORRECT TENSION WAS ACHIEVED.
3. VERIFY BOLT ENDS ARE SUFFICIENTLY COATED WITH AN APPROVED COLD GALVANIZING COMPOUND.

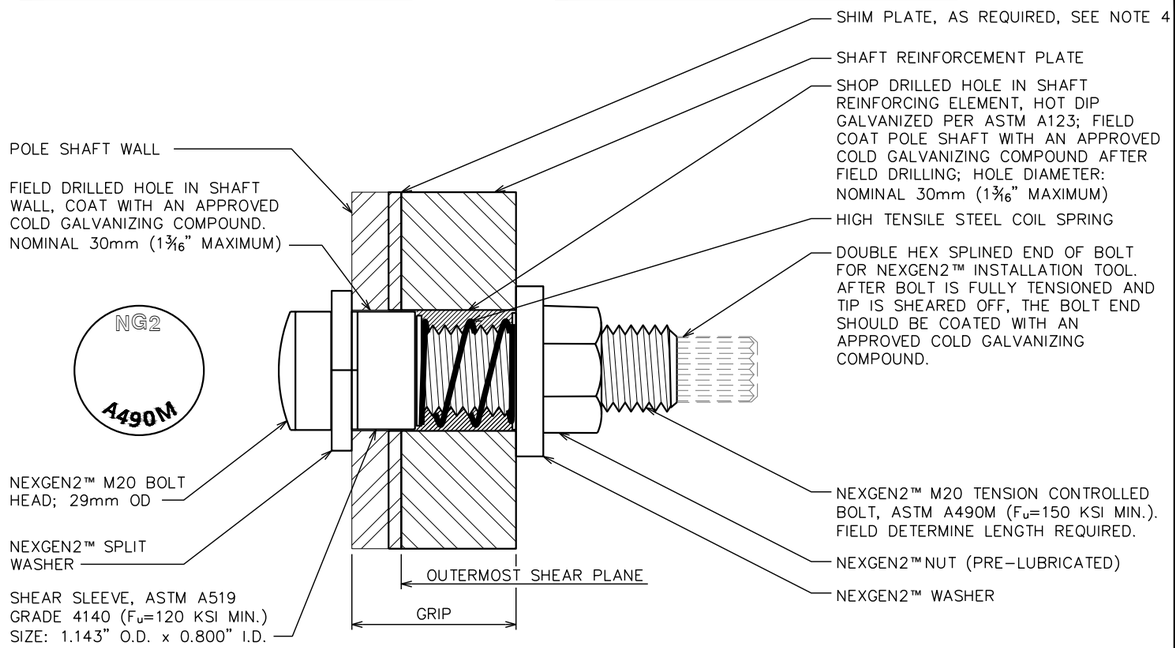
MANUFACTURER CONTACT:

ALLFASTENERS
- 959 LAKE ROAD, MEDINA, OHIO, USA 44256
- PHONE: 440-232-6060 | FAX: 440-232-6062
- WEBSITE: WWW.ALLFASTENERS.COM | WWW.AFTOWER.COM

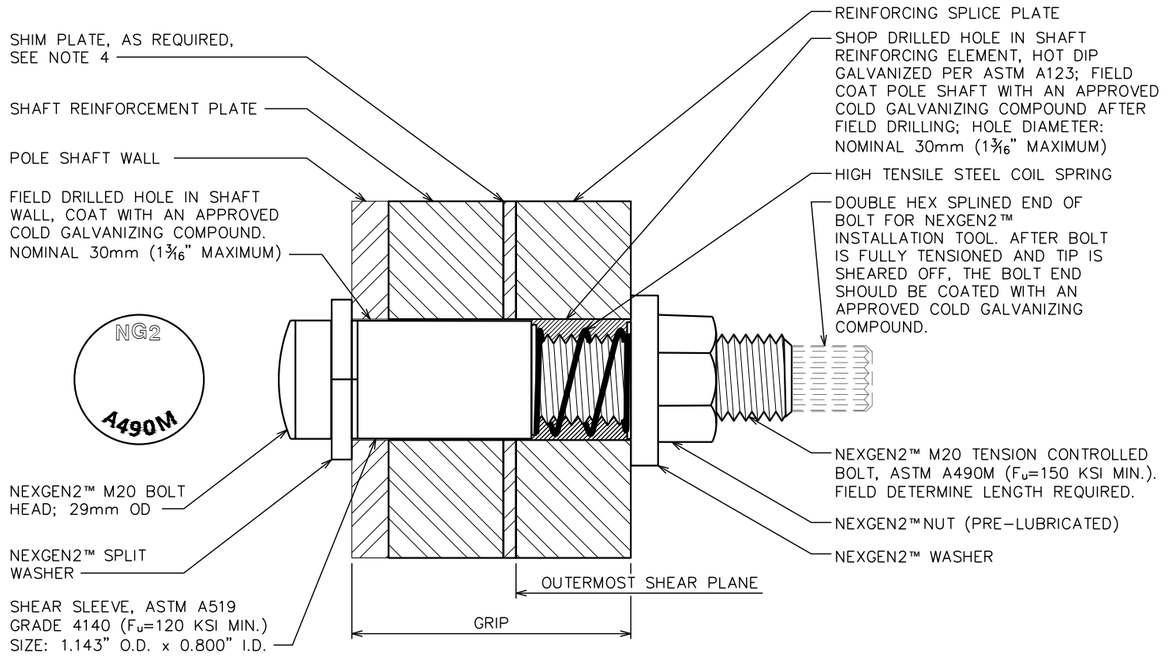
PART NUMBER	BOLT LENGTH	SLEEVE LENGTH	MIN. GRIP RANGE	MAX. GRIP RANGE
2NG2036	M20x95	1 1/16"	1 5/16"	1 7/16"
2NG2048	M20x95	1 3/16"	1 7/16"	1 7/8"
2NG2057	M20x95	1 5/8"	1 7/8"	2 1/4"
2NG2068	M20x135	2"	2 1/4"	2 11/16"
2NG2096	M20x135	2 7/16"	2 11/16"	3 3/4"
2NG2127	M20x175	3"	3 3/4"	5"
2NG2212	M20x250	4"	5"	8 5/16"

INTERIOR OF POLE SHAFT

EXTERIOR OF POLE SHAFT



NEXGEN2 BOLT DETAILS



NEXGEN2 BOLT DETAILS

PLANS PREPARED FOR:

EVEREST INFRASTRUCTURE PARTNERS
1435 BEDFORD AVENUE
PITTSBURGH, PA 15219

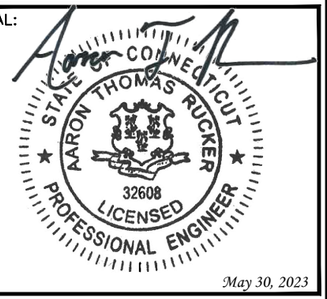
PROJECT INFORMATION:

WETHERSFIELD CO
SITE #: 638512
75 WELLS ROAD
WETHERSFIELD, CT 06109
(HARTFORD COUNTY)

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

SEAL:



May 30, 2023

REV	DATE	ISSUED FOR:
0	05-30-23	MODIFICATION DRAWINGS

DRAWN BY: TLI | CHECKED BY: JLW

SHEET TITLE:

NEXGEN2 INSTALLATION DETAILS

SHEET NUMBER: **N-4**

REVISION: **0**

TEP#: 25669.855826

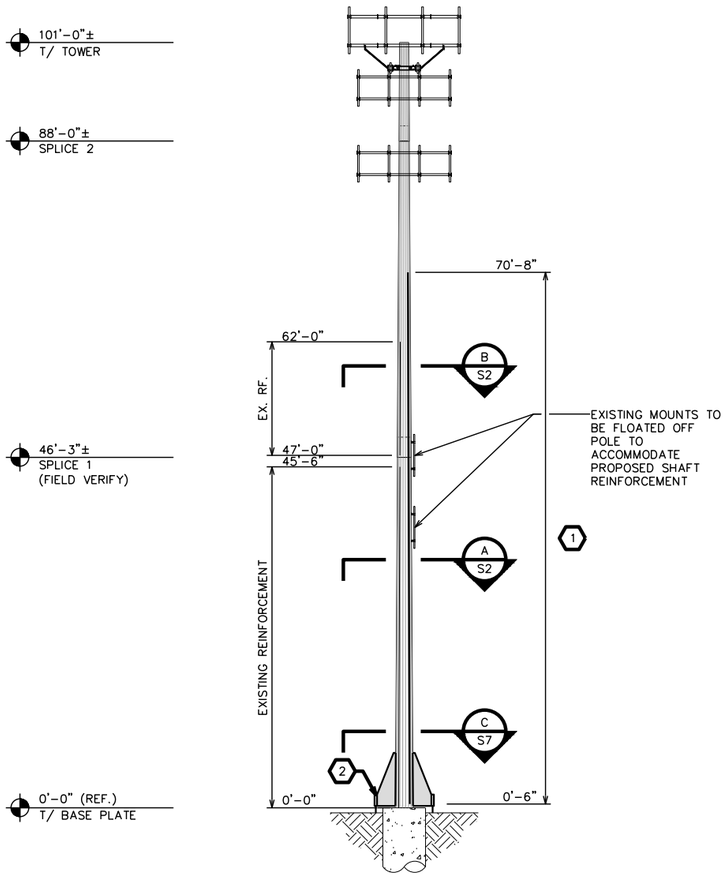
MANUFACTURER POLE SPECIFICATIONS

TAPER:	0.143091 IN/FT
BASE PLATE STEEL (Fy):	ASTM A572-50 (50 KSI)
ANCHOR RODS:	2 1/4"ø ASTM A615-75

MANUFACTURER SHAFT SECTION DATA

SHAFT SECTION	SECTION SHAPE	SECTION LENGTH (FT.)	SECTION THICKNESS (IN.)	SECTION GRADE Fy (KSI)	FLANGE PLATE GRADE Fy (KSI)	LAP SPLICE (IN.)	DIAMETER ACROSS FLATS OR OF ROUND SECTION (IN.)	
							TOP	BOTTOM
1	18-SIDED	13.00	0.1875	65	-	24.0	14.640	16.360
2	18-SIDED	43.75	0.2500	65	-	32.0	15.720	21.880
3	18-SIDED	48.92	0.3125	65	-	-	21.000	28.000

NOTE: DIMENSIONS SHOWN DO NOT INCLUDE GALVANIZING TOLERANCES



TOWER ELEVATION

SCALE: 1" = 20'-0"

0 20 40

SCALE IN FEET

MODIFICATION SCHEDULE

NO.	MODIFICATION DESCRIPTION	ELEVATION (FT.)	SHEET
1	INSTALL PROPOSED MONOPOLE SHAFT REINFORCEMENT.	0.50 - 70.66	S-2 THROUGH S-5 AND S-7
2	INSTALL PROPOSED FOUNDATION REINFORCEMENT.	0.00	S-6 THROUGH S-11
3	REMOVE EXISTING BASE PLATE GROUT. SEE BASE PLATE GROUT REMOVAL NOTES FOR DETAILS.	-	N-2
4	REMOVE AND REPLACE STEP PEGS AS NECESSARY TO ACCOMMODATE PROPOSED REINFORCEMENT.	-	-
5	INSTALL ADDITIONAL SIGNAGE TO INDICATE POTENTIALLY OBSTRUCTED CLIMBING FACILITIES. CONTRACTOR TO ENSURE THAT THE FINAL CONFIGURATION IS IN ACCORDANCE WITH TIA-222-H, SECTION 12.	-	-
6	MODIFICATION INSPECTION BY TEP. CONTACT TEP FOR FEE: PMI@TEPGROUP.NET	-	-

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY SPLICE ELEVATION PRIOR TO INSTALLATION. CONTACT TOWER OWNER AND ENGINEER OF RECORD IF SPLICE ELEVATIONS DIFFER FROM WHAT IS SHOWN. SHAFT REINFORCEMENT ELEVATIONS ARE DEPENDENT ON SPLICE ELEVATIONS AND MAY NEED TO BE ADJUSTED TO ACCOMMODATE ACTUAL SPLICE ELEVATION.
2. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO PROVIDE THE MODIFICATION INSPECTOR/ ENGINEER OF RECORD WITH A SEALED CERTIFIED WELD INSPECTION REPORT. THIS REPORT SHALL DOCUMENT THE ENTIRE WELDING PROCESS (PRE/DURING/POST) WITH PROPER PHOTOS. WELDING SHALL CONFORM TO AWS D1.1/D1.1M: 2015 "STRUCTURAL WELDING CODE-STEEL", FOR ADDITIONAL NOTES, SEE WELDING NOTES.
3. ANTENNAS AND OTHER APPURTENANCES MAY NEED TO BE TEMPORARILY REMOVED OR MOVED DURING THE INSTALLATION OF THE MODIFICATIONS SHOWN ABOVE.
4. DUE TO THE MODIFICATIONS REQUIRED, CONTINUOUS INSPECTIONS AND MATERIAL TESTING WILL NEED TO BE PERFORMED.
5. CONTRACTOR SHALL ORDER AND INSTALL A NEW TOWER TAG IF THE EXISTING TOWER TAG IS MOVED OR DAMAGED DUE TO THE INSTALLATION OF THE MODIFICATION SHOWN ABOVE.
6. PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTHS AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY AND SHALL NOT BE USED FOR FABRICATION.
7. NO DETAILED INFORMATION REGARDING INTERFERENCES WAS PROVIDED. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS. REPORT ANY AND ALL DISCREPANCIES TO TOWER ENGINEERING PROFESSIONALS, INC. AND EVEREST INFRASTRUCTURE PARTNERS CONSTRUCTION MANAGER IMMEDIATELY.

65KSI FLAT PLATE REINFORCEMENT SCHEDULE

QTY.	PART NO.	FLAT/ ANGLE	ELEV (FT.)		PLATE LENGTH (FT.)	TERMINATION BOLTS		MAX. INTERMEDIATE BOLT SPACING (IN.)	TOTAL BOLT QTY.	TOTAL STEEL WEIGHT (LB.)	TERMINATION DETAIL	
			BOT.	TOP		BOT.	TOP				BOT.	TOP
1	TEP-SFP-05012520	11	0.50	20.50	20.00	8	8	23.00	24	425.3	2	4
1	TEP-SFP-05012525	4	0.50	25.50	25.00	8	8	23.00	26	531.7	2	3A
1	TEP-SFP-05012525	15	0.50	25.50	25.00	8	8	23.00	26	531.7	2	5B
1	TEP-SFP-05012525	17	15.58	40.58	25.00	8	8	23.00	26	531.7	5B	4
1	TEP-SFP-05012520	11	20.58	40.58	20.00	8	8	23.00	24	425.3	4	4
1	TEP-SFP-05012530	5	40.66	70.66	30.00	8	8	23.00	29	638.0	5A	3A
2	TEP-SFP-05012530	11, 17	40.66	70.66	30.00	8	8	23.00	58	1276.0	4	3A
								TOTALS:	213	4359.7		

65KSI REINFORCEMENT SPLICE PLATE SCHEDULE

QTY.	PART NO.	FLAT/ ANGLE	ELEV (FT.)		QTY. OF BOLT HOLES PER PLATE	TOTAL BOLT HOLE QTY.	ADDITIONAL BOLT QTY.*	TOTAL STEEL WEIGHT (LB.)	TERMINATION DETAIL
			BOT.	TOP					
1	TEP-SP-050125-8-8	11	18.25	22.83	16	16	-	97.4	4
2	TEP-SP-050125-8-8	11, 17	38.33	42.92	16	32	-	195.2	4
					TOTALS:	48	-	292.6	

*NUMBER OF ADDITIONAL BOLTS WHEN SPLICING INTO EXISTING FLAT PLATE

NOTES:

1. SEE SHEET N-4 FOR BOLT INSTALLATION DETAILS. SEE SHEET S-3 FOR FLAT PLATE DETAILS. SEE SHEETS S-4 AND S-5 FOR TERMINATION DETAILS.
2. FOR FLAT PLATES STARTING AT 6", THE BOTTOM OF THE FLAT PLATE SHALL BEGIN AT 6" +/- 1". FOR SINGLE PLATES OR MULTIPLE PLATES SPLICED TOGETHER, THE BOTTOM OF THE FLAT PLATE RUN SHALL BEGIN AT THE PROPOSED ELEVATION +/- 3". FOR MULTIPLE PLATES SPLICED TOGETHER, THE TOP OF THE FLAT PLATE IS TO BE PLACED SUCH THAT THERE IS NO MORE THAN A 3" DIFFERENCE BETWEEN THE ACTUAL OVERALL LENGTH OF THE SPAN AND THE PROPOSED OVERALL LENGTH OF THE SPAN, FROM THE BOTTOM OF THE BOTTOM PLATE TO THE TOP OF THE TOP PLATE.
3. SHIMS FOR MONOPOLE REINFORCEMENT MEMBER SHALL BE REQUIRED WHERE GAPS BETWEEN THE POLE SHAFT AND REINFORCING MEMBER EXIST AT FASTENER LOCATIONS. FOR INTERMEDIATE CONNECTIONS, THE MINIMUM SHIM LENGTH AND WIDTH SHALL BE THE WIDTH OF THE REINFORCING MEMBER. FOR TERMINATION CONNECTIONS, A CONTINUOUS SHIM PLATE (PREFERRED) OR EQUIVALENT INDIVIDUAL SHIM PLATES THE WIDTH OF THE REINFORCING MEMBER MAY BE USED. SHIM THICKNESSES SHALL BE NO LESS THAN 1/16". STACKING OF SHIMS IS PERMITTED. FINGER SHIMS AND HORSESHOE SHIMS ARE PERMITTED. STACKING OF SHIMS SHALL BE NO GREATER THAN 1/4" WITHOUT EOR APPROVAL.
4. SHIMS GREATER THAN 1/4" IN THICKNESS LOCATED WITHIN THE TERMINATION LENGTH OF THE SHAFT REINFORCEMENT PLATE SHALL BE WELDED TO THE SHAFT REINFORCEMENT PLATE. TIGHTENING THE BOLTS TO COLD BEND THE STEEL PLATES AROUND THE SHIMS IS STRICTLY PROHIBITED IN LIEU OF SHIMS AND WILL BE CAUSE FOR REJECTION.
5. FLAT PLATE REINFORCEMENTS SHALL BE INSTALLED ON THE CENTER OF THE TOWER SHAFT FLATS UNLESS OTHERWISE NOTED.
6. ADDITIONAL BOLT QUANTITY REFERS TO TOTAL NUMBER OF ADDITIONAL BOLTS WHEN SPLICING INTO EXISTING FLAT PLATE.

PLANS PREPARED FOR:

EVEREST INFRASTRUCTURE PARTNERS

1435 BEDFORD AVENUE
PITTSBURGH, PA 15219

PROJECT INFORMATION:

WETHERSFIELD CO
SITE #: 638512

75 WELLS ROAD
WETHERSFIELD, CT 06109
(HARTFORD COUNTY)

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

SEAL:

STATE OF CONNECTICUT
SHAWN HOFFMEYER
No. 31228
LICENSED PROFESSIONAL ENGINEER

July 7, 2023

REV	DATE	ISSUED FOR:
1	07-07-23	REVISED MOD. DRAWINGS
0	05-30-23	MODIFICATION DRAWINGS

DRAWN BY: TLI | CHECKED BY: RKE

SHEET TITLE:

TOWER ELEVATION AND MODIFICATION SCHEDULE

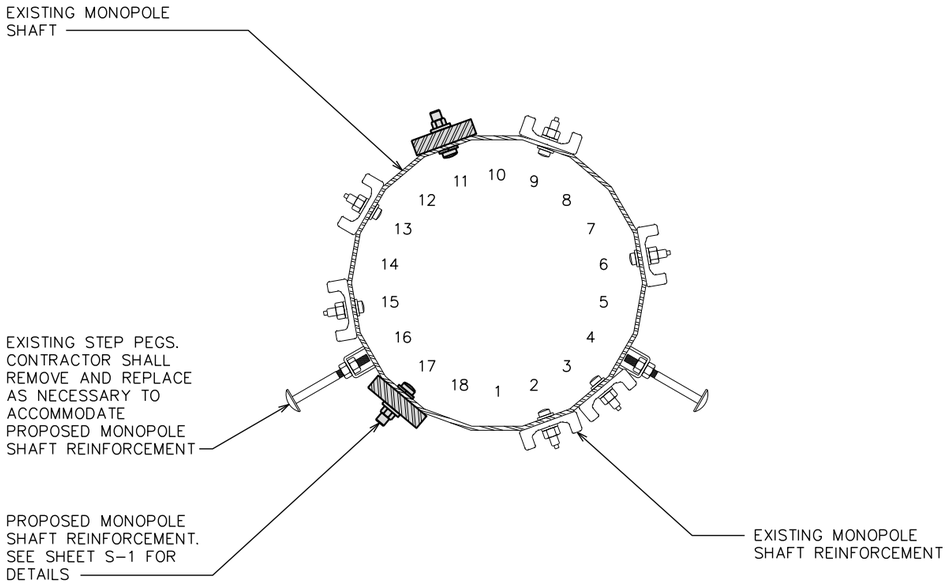
SHEET NUMBER: **S-1**

REVISION: 1

TEP#: 25669.855826

ATTENTION

THE TOWER SAFETY CLIMB WAS ASSUMED TO BE LOCATED OFF FLAT 1. FIELD VERIFY CLIMBING SYSTEM LOCATION PRIOR TO INSTALLATION. CONTACT TOWER OWNER AND ENGINEER OF RECORD SHOULD ANY DISCREPANCIES ARISE. CONTRACTOR TO REMOVE AND REPLACE CLIMBING SYSTEM AS NECESSARY TO INSTALL PROPOSED REINFORCEMENT. IF CLIMBING SYSTEM IS REQUIRED TO BE ATTACHED TO PROPOSED REINFORCEMENT, IT SHALL BE DONE PRIOR TO GALVANIZATION.

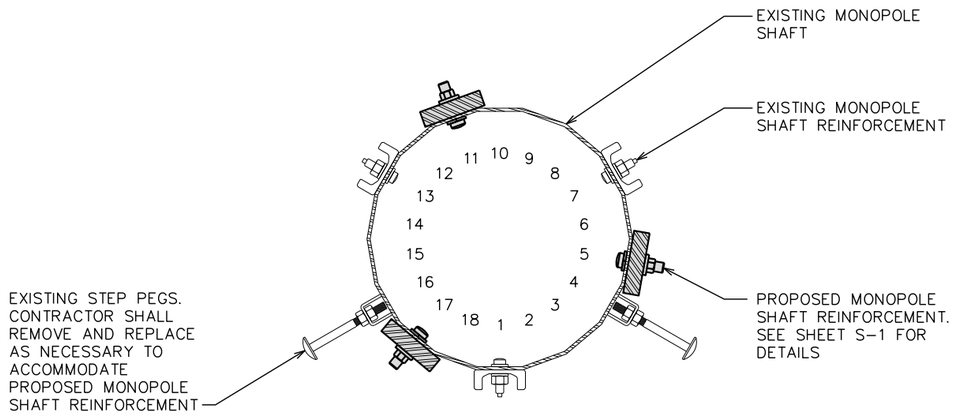


SECTION (A)
SCALE: 1" = 1'-0"

0 1 2
SCALE IN FEET

ATTENTION

THE TOWER SAFETY CLIMB WAS ASSUMED TO BE LOCATED OFF FLAT 1. FIELD VERIFY CLIMBING SYSTEM LOCATION PRIOR TO INSTALLATION. CONTACT TOWER OWNER AND ENGINEER OF RECORD SHOULD ANY DISCREPANCIES ARISE. CONTRACTOR TO REMOVE AND REPLACE CLIMBING SYSTEM AS NECESSARY TO INSTALL PROPOSED REINFORCEMENT. IF CLIMBING SYSTEM IS REQUIRED TO BE ATTACHED TO PROPOSED REINFORCEMENT, IT SHALL BE DONE PRIOR TO GALVANIZATION.



SECTION (B)
SCALE: 1" = 1'-0"

0 1 2
SCALE IN FEET

PLANS PREPARED FOR:

EVEREST INFRASTRUCTURE PARTNERS
1435 BEDFORD AVENUE
PITTSBURGH, PA 15219

PROJECT INFORMATION:

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SITE #: 638512

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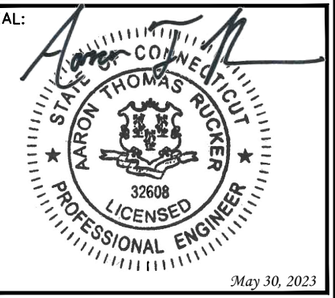
SEAL:



May 30, 2023

REV	DATE	ISSUED FOR:
0	05-30-23	MODIFICATION DRAWINGS

DRAWN BY: TLI | CHECKED BY: JLW

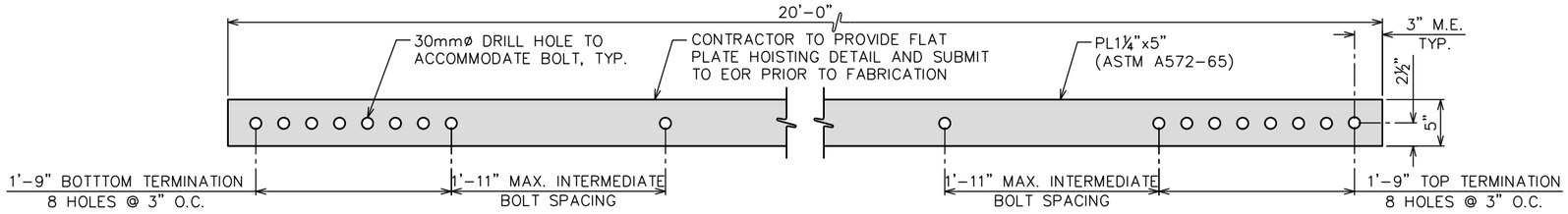
SHEET TITLE:

SECTION DETAILS

SHEET NUMBER: **S-2**

REVISION: **0**

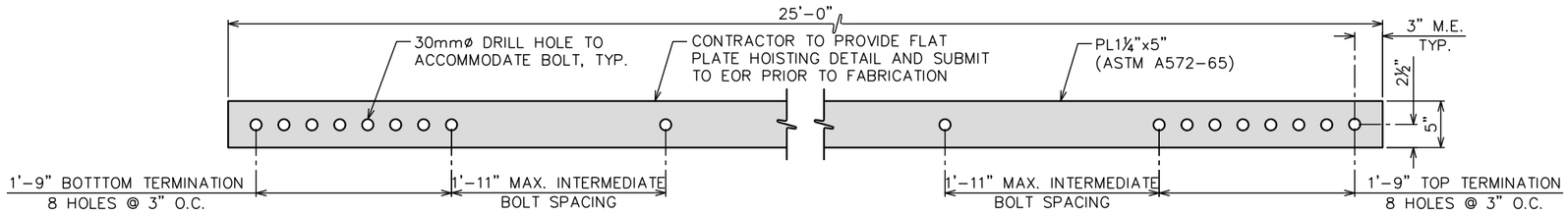
TEP#: 25669.855826



TEP-SFP-05012520

SCALE: ¾" = 1'-0"

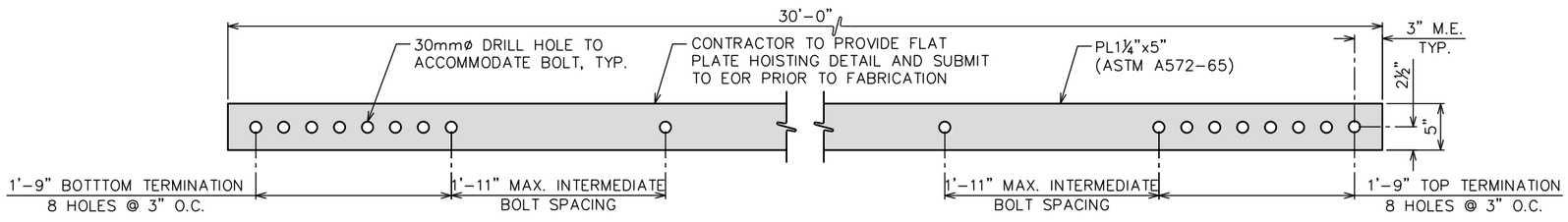
0 1 2
SCALE IN FEET



TEP-SFP-05012525

SCALE: ¾" = 1'-0"

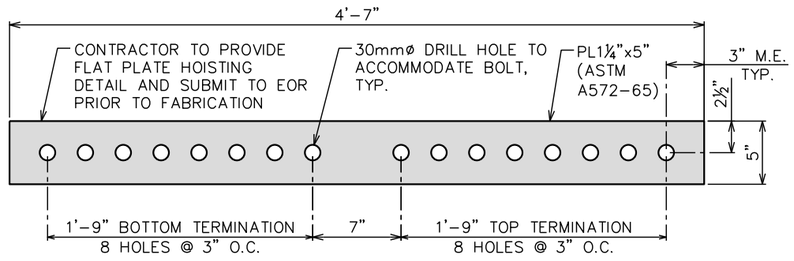
0 1 2
SCALE IN FEET



TEP-SFP-05012530

SCALE: ¾" = 1'-0"

0 1 2
SCALE IN FEET



TEP-SP-050125-8-8

SCALE: 1" = 1'-0"

0 1 2
SCALE IN FEET

PLANS PREPARED FOR:

EVEREST INFRASTRUCTURE PARTNERS

1435 BEDFORD AVENUE
PITTSBURGH, PA 15219

PROJECT INFORMATION:

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SITE #: 638512

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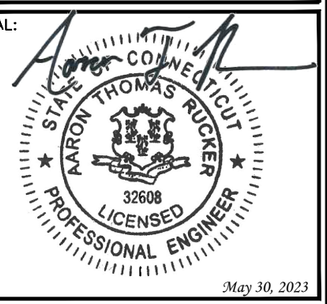
SEAL:



May 30, 2023

REV	DATE	ISSUED FOR:
0	05-30-23	MODIFICATION DRAWINGS

DRAWN BY: TLI | CHECKED BY: JLW

SHEET TITLE:

SHAFT REINFORCEMENT DETAILS

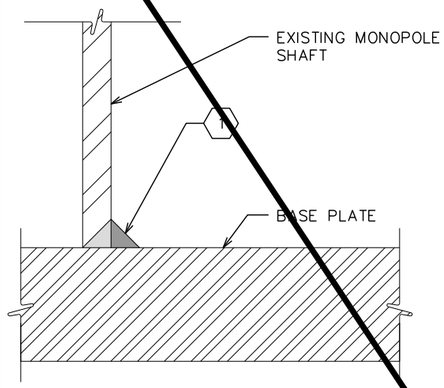
SHEET NUMBER: **S-3**

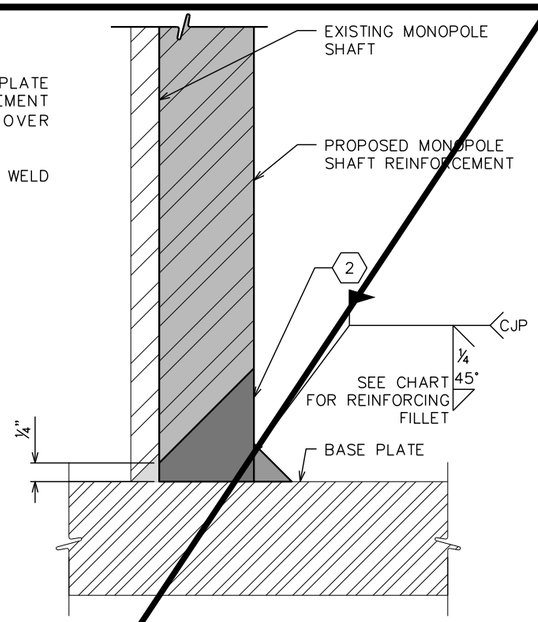
REVISION: **0**

TEP#: 25669.855826

NOTES:

1. GRIND EXISTING FILLET WELD FLUSH TO BASE PLATE AND POLE FOR THE WIDTH OF THE REINFORCEMENT PLATE PLUS ¼" ON EACH SIDE (DO NOT OVER GRIND).
2. PERFORM CJP WELD WITH REINFORCING FILLET WELD USING POLE AS BACKING BAR.

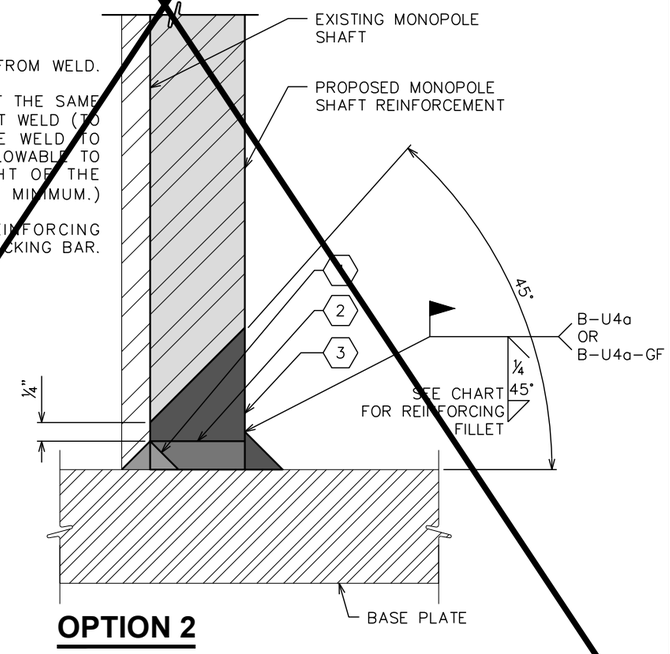




ORTION 1

NOTES:

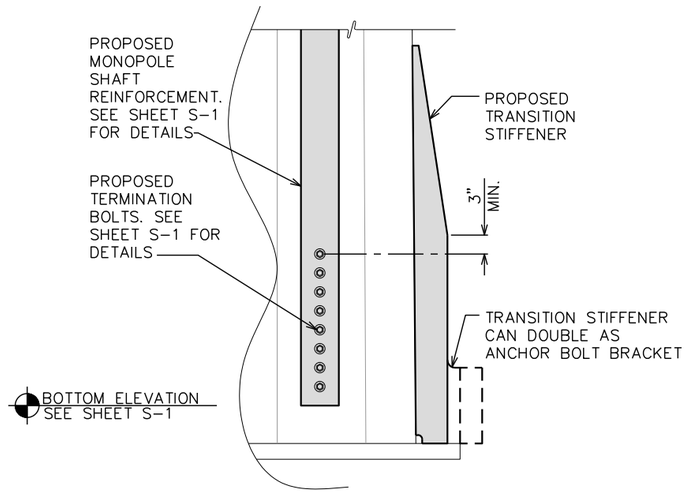
1. CLEAN EXISTING GALVANIZING FROM WELD.
2. BUILD PLATFORM WITH WELD AT THE SAME HEIGHT OF THE EXISTING FILLET WELD (TO REDUCE THE AMOUNT OF THE WELD TO BUILD THE PLATFORM, IT IS ALLOWABLE TO PARTIALLY GRIND THE HEIGHT OF THE EXISTING FILET WELD TO A ¼" MINIMUM.)
3. PERFORM CJP WELD WITH REINFORCING FILLET WELD USING POLE AS BACKING BAR.



OPTION 2

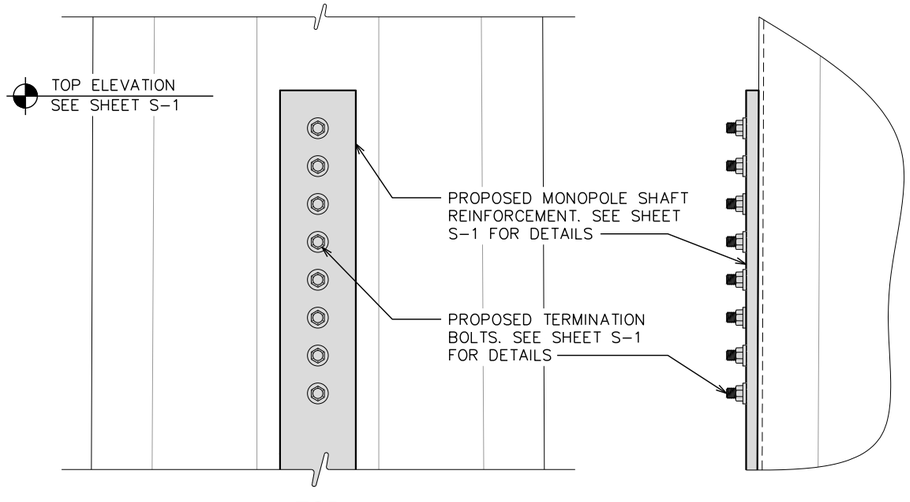
BASE WELD TERMINATION DETAILS (1)

SCALE: N.T.S.



TRANSITION STIFFENER TERMINATION DETAILS (2)

SCALE: N.T.S.



TOP

TOP TERMINATION DETAILS (3A)

SCALE: N.T.S.

PLANS PREPARED FOR:

EVEREST INFRASTRUCTURE PARTNERS

1435 BEDFORD AVENUE
PITTSBURGH, PA 15219

PROJECT INFORMATION:

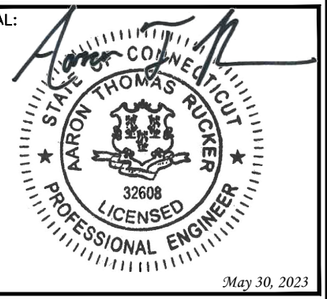
WETHERSFIELD CO
SITE #: 638512

75 WELLS ROAD
WETHERSFIELD, CT 06109
(HARTFORD COUNTY)

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

SEAL:



May 30, 2023

REV	DATE	ISSUED FOR:
0	05-30-23	MODIFICATION DRAWINGS

DRAWN BY: TLI | CHECKED BY: JLW

SHEET TITLE:

TYP. SHAFT REINFORCEMENT DETAILS I

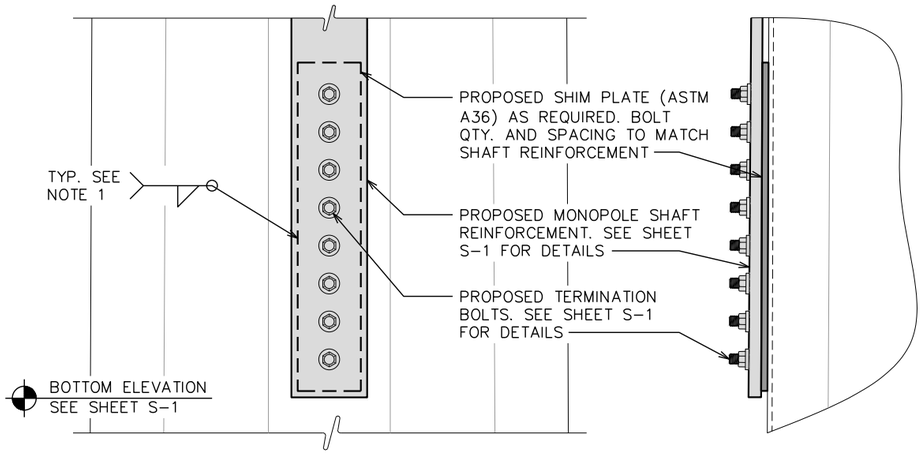
SHEET NUMBER: **S-4**

REVISION: **0**

TEP#: 25669.855826

NOTE:

1. SHIMS GREATER THAN ¼" IN THICKNESS LOCATED WITHIN THE TERMINATION LENGTH OF THE SHAFT REINFORCEMENT PLATE SHALL BE WELDED TO THE SHAFT REINFORCEMENT PLATE.



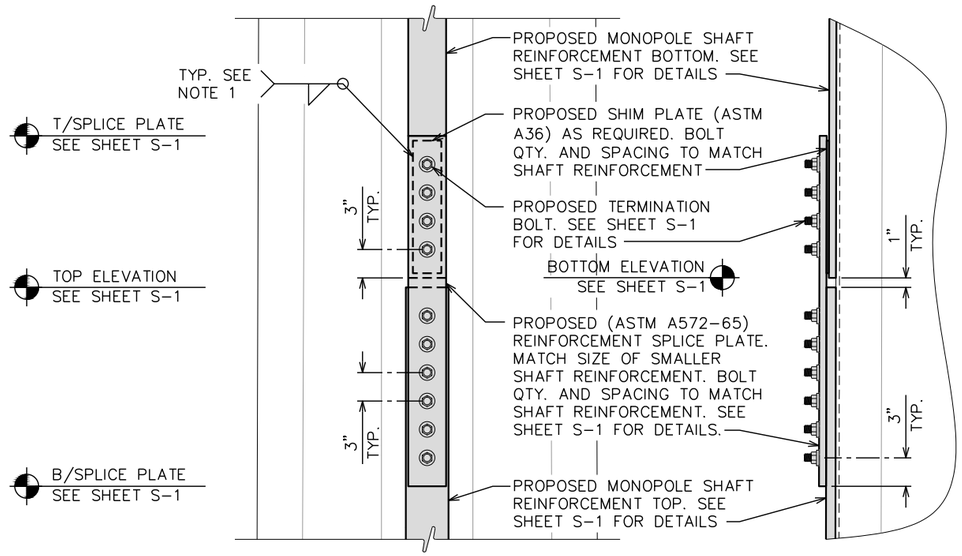
BOTTOM

BOTTOM TERMINATION DETAILS 3B

SCALE: N.T.S.

NOTE:

1. SHIMS GREATER THAN ¼" IN THICKNESS LOCATED BETWEEN THE SHAFT REINFORCEMENT PLATE AND THE REINFORCEMENT SPLICE PLATE SHALL BE WELDED TO THE SHAFT REINFORCEMENT PLATE.

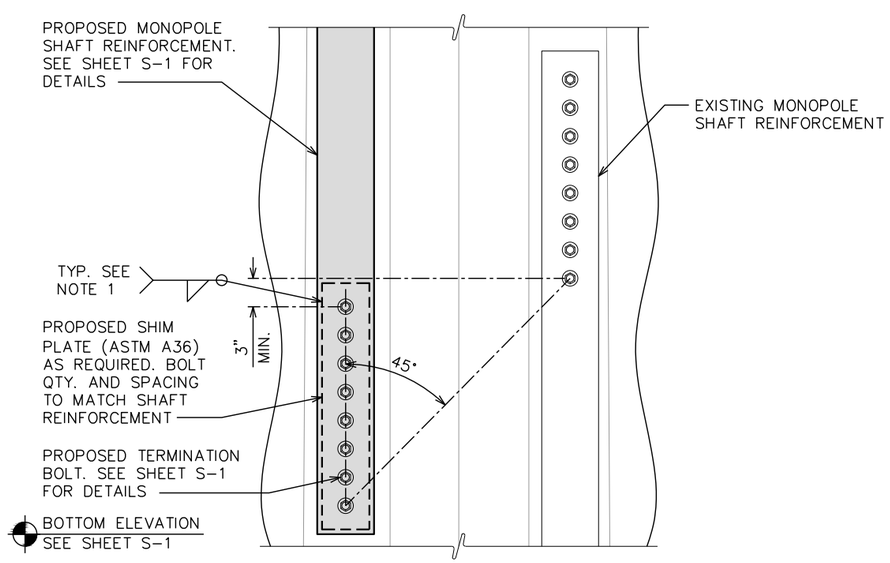


REINFORCEMENT SPLICE DETAILS 4

SCALE: N.T.S.

NOTE:

1. SHIMS GREATER THAN ¼" IN THICKNESS LOCATED WITHIN THE TERMINATION LENGTH OF THE SHAFT REINFORCEMENT PLATE SHALL BE WELDED TO THE SHAFT REINFORCEMENT PLATE.

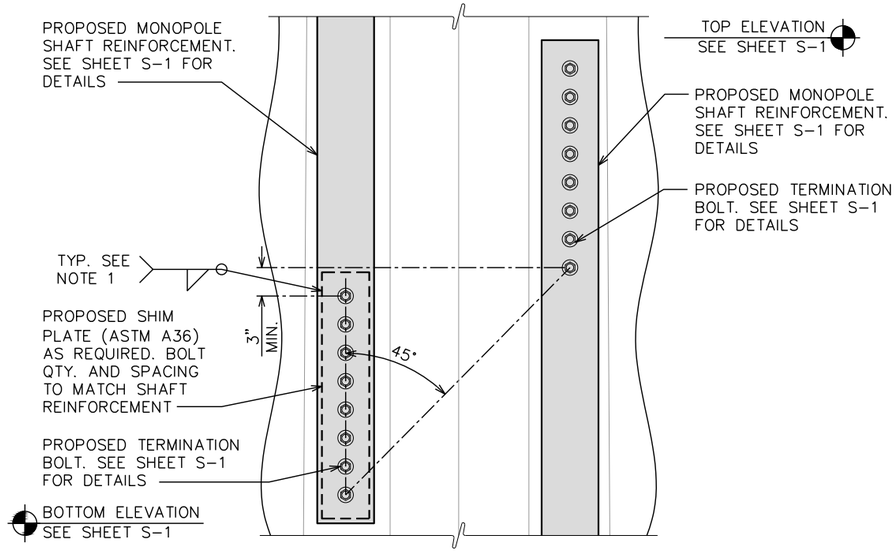


OVERLAP SPLICE DETAILS 5A

SCALE: N.T.S.

NOTE:

1. SHIMS GREATER THAN ¼" IN THICKNESS LOCATED WITHIN THE TERMINATION LENGTH OF THE SHAFT REINFORCEMENT PLATE SHALL BE WELDED TO THE SHAFT REINFORCEMENT PLATE



OVERLAP SPLICE DETAILS 5B

SCALE: N.T.S.

PLANS PREPARED FOR:

EVEREST INFRASTRUCTURE PARTNERS

1435 BEDFORD AVENUE
PITTSBURGH, PA 15219

PROJECT INFORMATION:

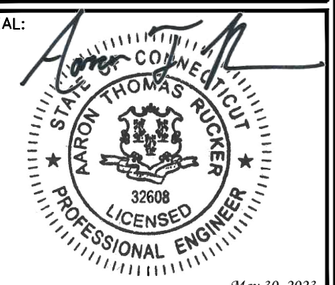
WETHERSFIELD CO
SITE #: 638512

75 WELLS ROAD
WETHERSFIELD, CT 06109
(HARTFORD COUNTY)

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

SEAL:



May 30, 2023

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0	05-30-23	MODIFICATION DRAWINGS

DRAWN BY: TLI | CHECKED BY: JLW

SHEET TITLE:

TYP. SHAFT REINFORCEMENT DETAILS II

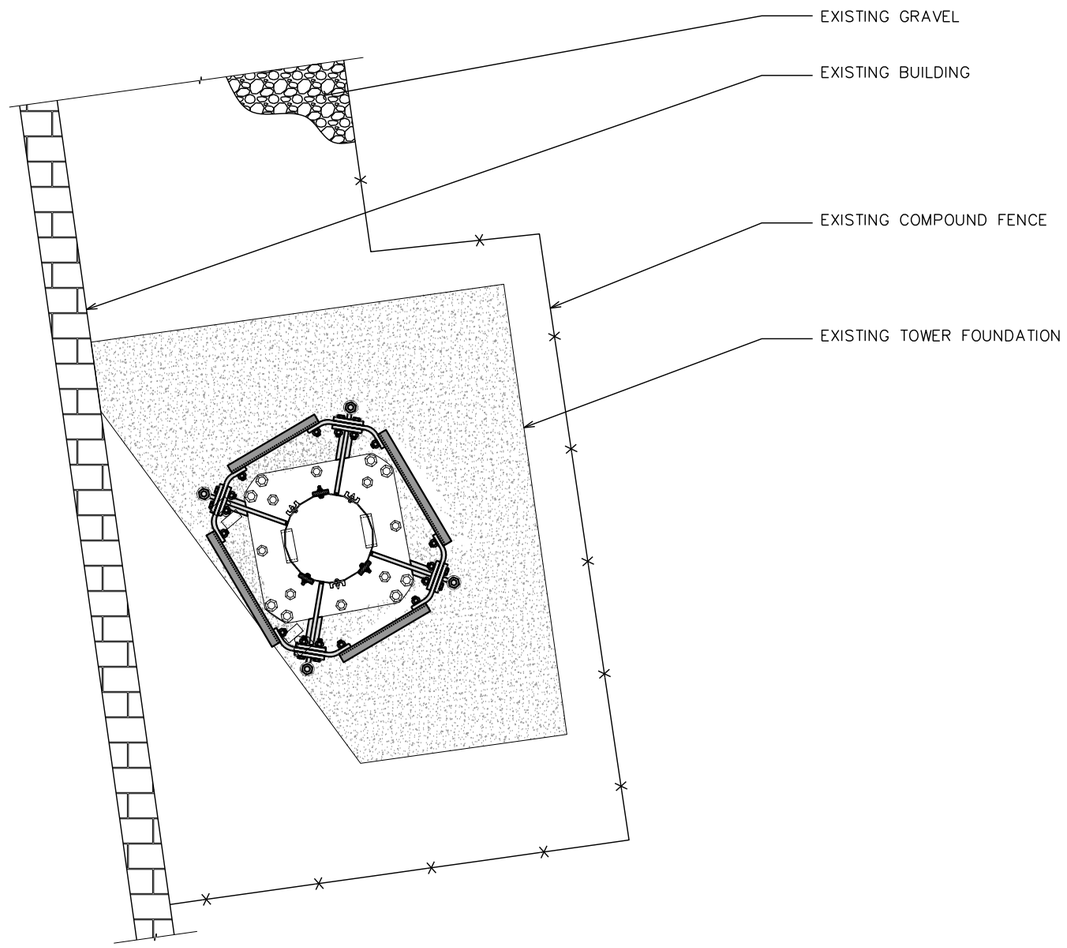
SHEET NUMBER: **S-5**

REVISION: **0**

TEP#: 25669.855826

ATTENTION

1. CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING EQUIPMENT PRIOR TO CONSTRUCTION. COORDINATE WITH TOWER OWNER ANY REQUIRED RELOCATION OF EQUIPMENT THAT MAY INTERFERE WITH THE FOUNDATION REINFORCEMENT.
2. CONTRACTOR SHALL VERIFY AS-BUILT DIMENSIONS OF EXISTING FOUNDATION PRIOR TO CONSTRUCTION.
3. COORDINATE RELOCATION OF INTERFERING FEED LINE BRIDGE SUPPORTS WITH OWNER AND CARRIER.



SITE PLAN

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

0 4 8

SCALE IN FEET

PLANS PREPARED FOR:

EVEREST INFRASTRUCTURE PARTNERS

1435 BEDFORD AVENUE
PITTSBURGH, PA 15219

PROJECT INFORMATION:

WETHERSFIELD CO
SITE #: 638512

75 WELLS ROAD
WETHERSFIELD, CT 06109
(HARTFORD COUNTY)

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

SEAL:

STATE OF CONNECTICUT
AARON THOMAS RUCKER
32608
LICENSED
PROFESSIONAL ENGINEER

May 30, 2023

REV	DATE	ISSUED FOR:
0	05-30-23	MODIFICATION DRAWINGS

DRAWN BY: TLI | CHECKED BY: JLW

SHEET TITLE:

SITE PLAN

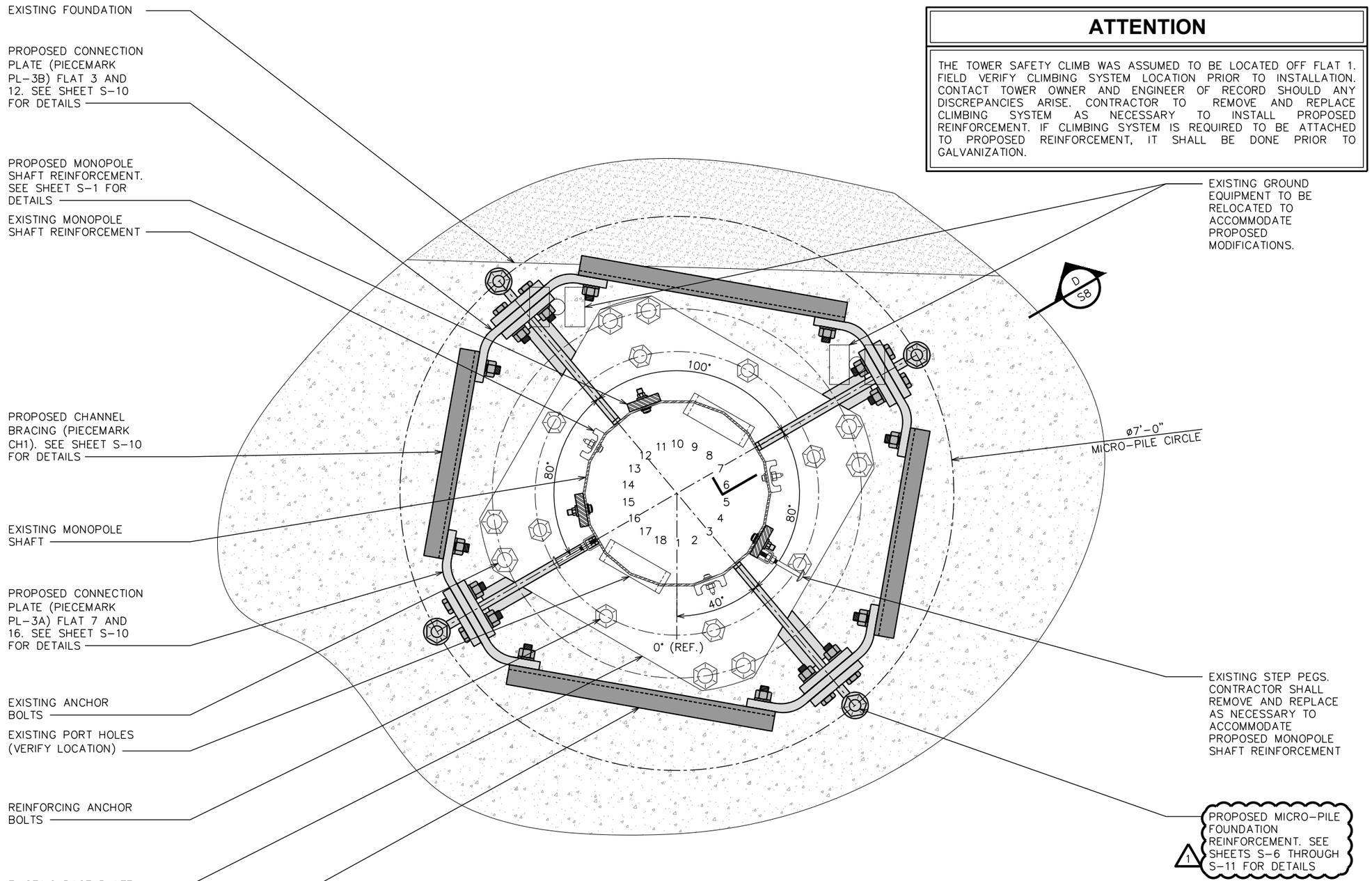
SHEET NUMBER: **S-6**

REVISION: **0**

TEP#: 25669.855826

ATTENTION

THE TOWER SAFETY CLIMB WAS ASSUMED TO BE LOCATED OFF FLAT 1. FIELD VERIFY CLIMBING SYSTEM LOCATION PRIOR TO INSTALLATION. CONTACT TOWER OWNER AND ENGINEER OF RECORD SHOULD ANY DISCREPANCIES ARISE. CONTRACTOR TO REMOVE AND REPLACE CLIMBING SYSTEM AS NECESSARY TO INSTALL PROPOSED REINFORCEMENT. IF CLIMBING SYSTEM IS REQUIRED TO BE ATTACHED TO PROPOSED REINFORCEMENT, IT SHALL BE DONE PRIOR TO GALVANIZATION.



SECTION
SCALE: ¾" = 1'-0" (C)

0 1 2
SCALE IN FEET

PLANS PREPARED FOR:

EVEREST INFRASTRUCTURE PARTNERS
1435 BEDFORD AVENUE
PITTSBURGH, PA 15219

PROJECT INFORMATION:

WETHERSFIELD CO
SITE #: 638512
75 WELLS ROAD
WETHERSFIELD, CT 06109
(HARTFORD COUNTY)

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

SEAL:

July 7, 2023

REV	DATE	ISSUED FOR:
1	07-07-23	REVISED MOD. DRAWINGS
0	05-30-23	MODIFICATION DRAWINGS

DRAWN BY: TLI | CHECKED BY: RKE

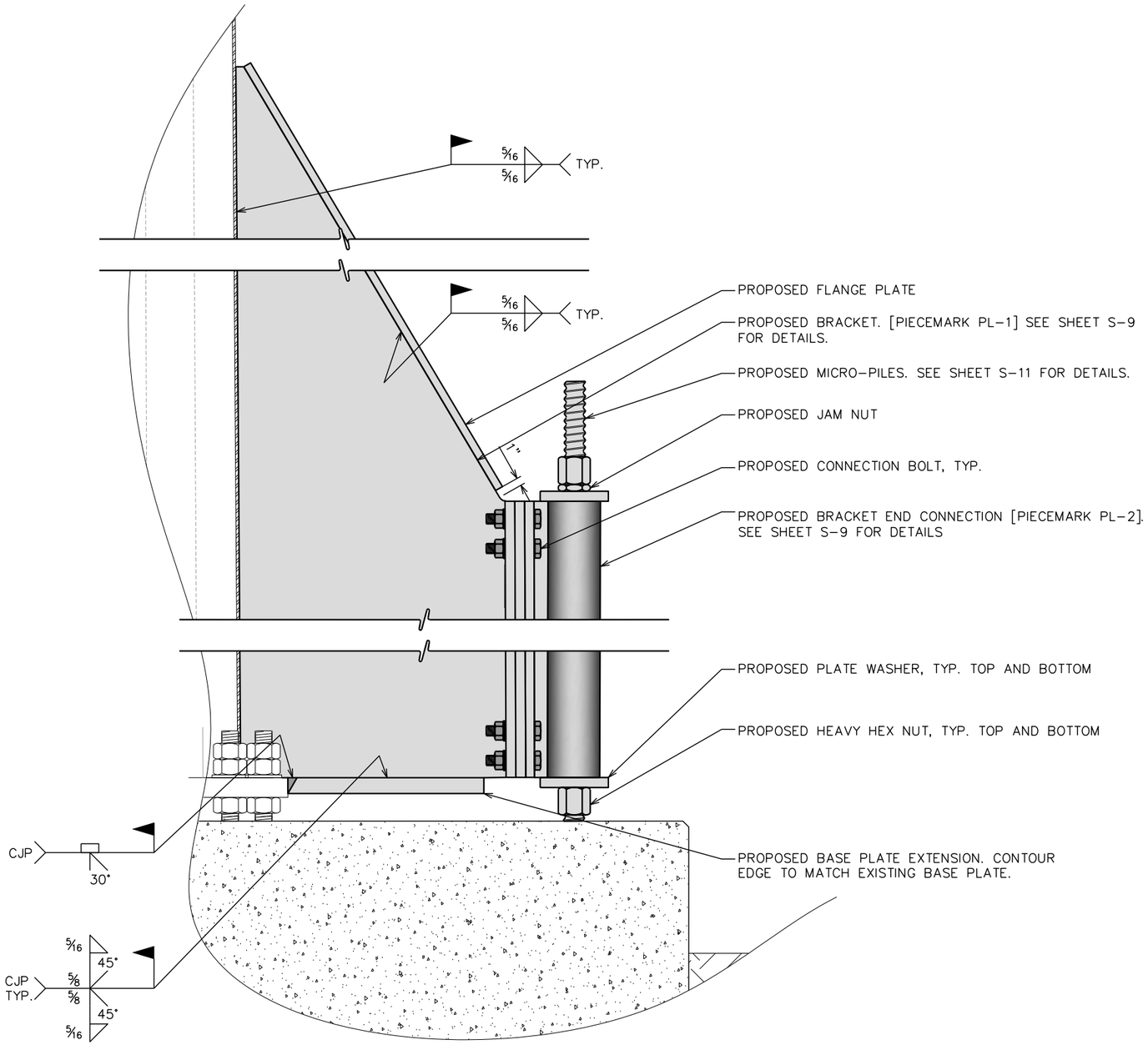
SHEET TITLE:

FOUNDATION REINFORCEMENT DETAILS I

SHEET NUMBER: **S-7**

REVISION: 1

TEP#: 25669.855826



MICRO-PILE BRACKET DETAIL (D)

SCALE: N.T.S.

CONNECTION BOLTS

DESCRIPTION	MEASUREMENT
CONNECTION BOLT DIA.	1¼"
MATERIAL	ASTM A325-X
TOTAL QUANTITY	32

ACCESSORIES

DESCRIPTION	MEASUREMENT
HEAVY HEX NUT	R73-14
MATERIAL	ASTM A29
TOTAL QUANTITY	8
DESCRIPTION	**MEASUREMENT**
JAM NUT	R73-14JN
MATERIAL	ASTM A29
TOTAL QUANTITY	4

ACCESSORIES

DESCRIPTION	MEASUREMENT
FLANGE PLATE	PL4"x1"
MATERIAL	ASTM A572-50
TOTAL QUANTITY	4
DESCRIPTION	**MEASUREMENT**
BASE PLATE EXTENSION	PL4"x8 1/16"x1½"
MATERIAL	ASTM A572-50
TOTAL QUANTITY	4
DESCRIPTION	**MEASUREMENT**
PLATE WASHER	PL4½" O.D. x 1¼" TH. (2⅛" I.D.)
MATERIAL	ASTM A572-65
TOTAL QUANTITY	8

PLANS PREPARED FOR:

EVEREST INFRASTRUCTURE PARTNERS
1435 BEDFORD AVENUE
PITTSBURGH, PA 15219

PROJECT INFORMATION:

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SITE #: 638512
75 WELLS ROAD
WETHERSFIELD, CT 06109
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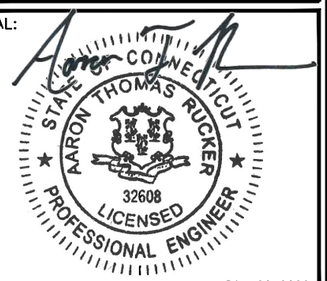
SEAL:



May 30, 2023

REV	DATE	ISSUED FOR:
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DRAWN BY: TLI | CHECKED BY: JLW

SHEET TITLE:

FOUNDATION REINFORCEMENT DETAILS II

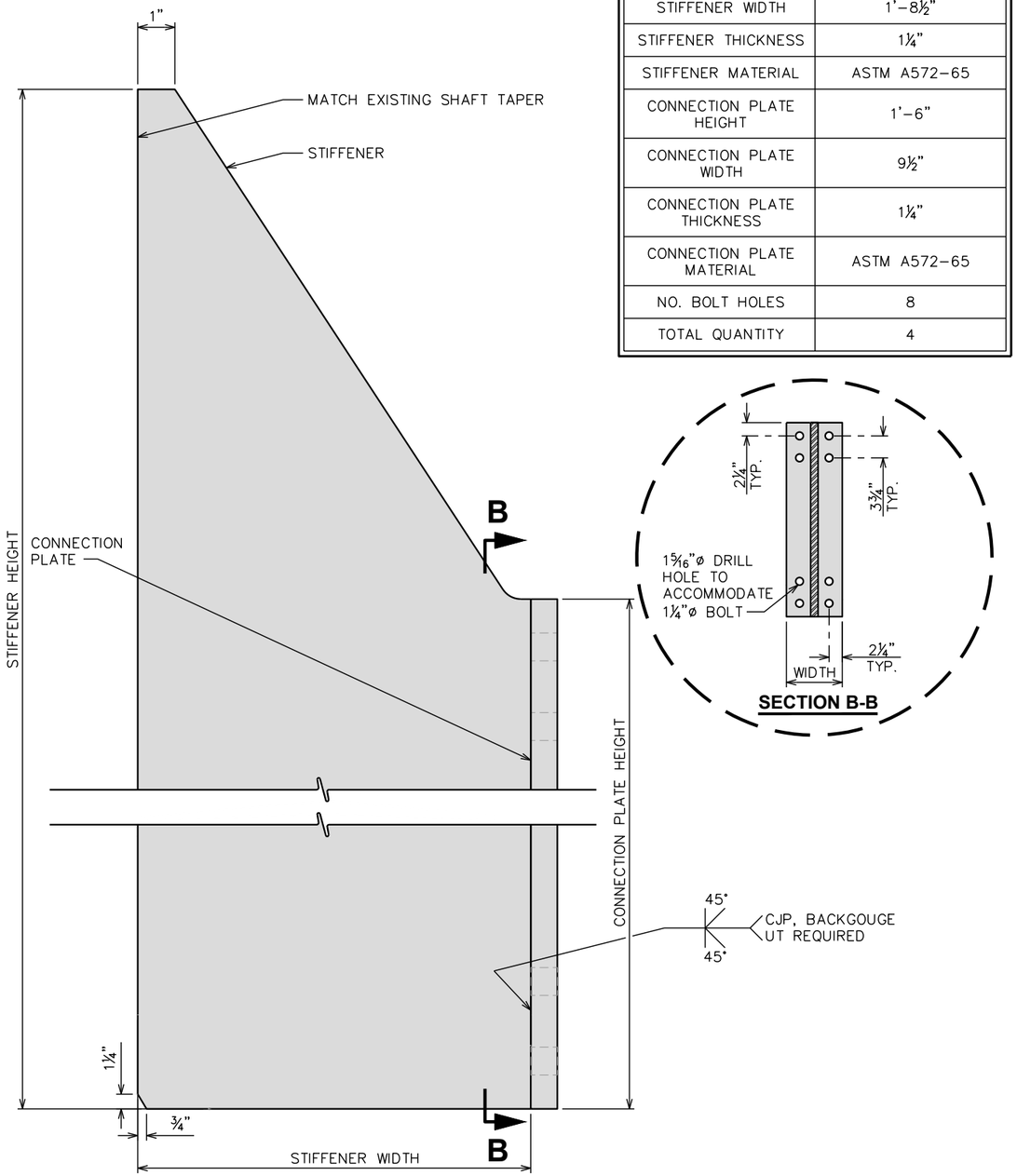
SHEET NUMBER: **S-8**

REVISION: **0**

TEP#: 25669.855826

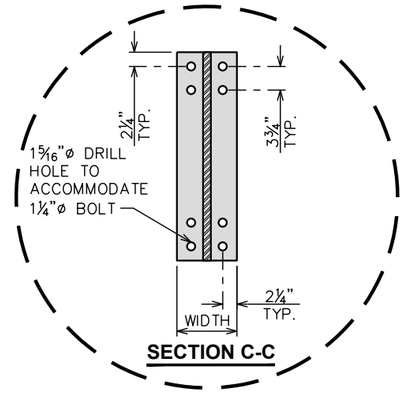
MICRO-PILE BRACKET

DESCRIPTION	MEASUREMENT
STIFFENER HEIGHT	4'-9"
STIFFENER WIDTH	1'-8½"
STIFFENER THICKNESS	1¼"
STIFFENER MATERIAL	ASTM A572-65
CONNECTION PLATE HEIGHT	1'-6"
CONNECTION PLATE WIDTH	9½"
CONNECTION PLATE THICKNESS	1¼"
CONNECTION PLATE MATERIAL	ASTM A572-65
NO. BOLT HOLES	8
TOTAL QUANTITY	4



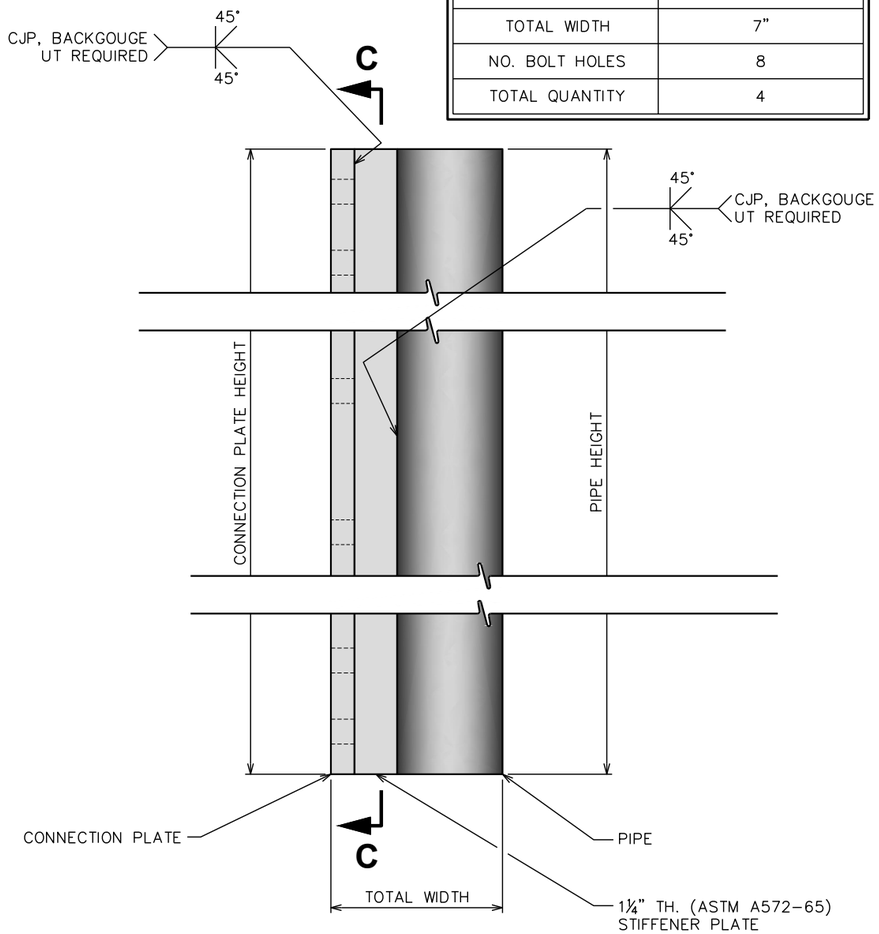
PIECEMARK: PL-1

SCALE: N.T.S.



END CONNECTION

DESCRIPTION	MEASUREMENT
PIPE SIZE	3½ XXS
PIPE HEIGHT	1'-6"
PIPE MATERIAL	ASTM A500-46
CONNECTION PLATE HEIGHT	1'-6"
CONNECTION PLATE WIDTH	9½"
CONNECTION PLATE THICKNESS	1¼"
CONNECTION PLATE MATERIAL	ASTM A572-65
TOTAL WIDTH	7"
NO. BOLT HOLES	8
TOTAL QUANTITY	4



PIECEMARK: PL-2

SCALE: N.T.S.

PLANS PREPARED FOR:

EVEREST INFRASTRUCTURE PARTNERS

1435 BEDFORD AVENUE
PITTSBURGH, PA 15219

PROJECT INFORMATION:

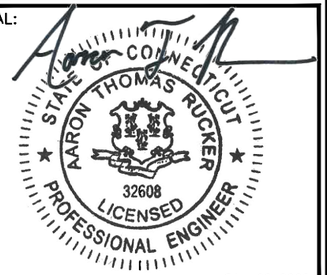
WETHERSFIELD CO
SITE #: 638512

75 WELLS ROAD
WETHERSFIELD, CT 06109
(HARTFORD COUNTY)

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

SEAL:



May 30, 2023

REV	DATE	ISSUED FOR:
0	05-30-23	MODIFICATION DRAWINGS

DRAWN BY: TLI | CHECKED BY: JLW

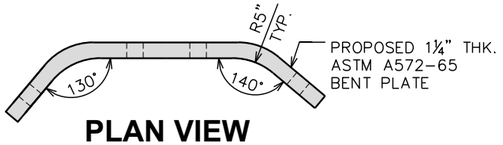
SHEET TITLE:

FOUNDATION REINFORCEMENT DETAILS III

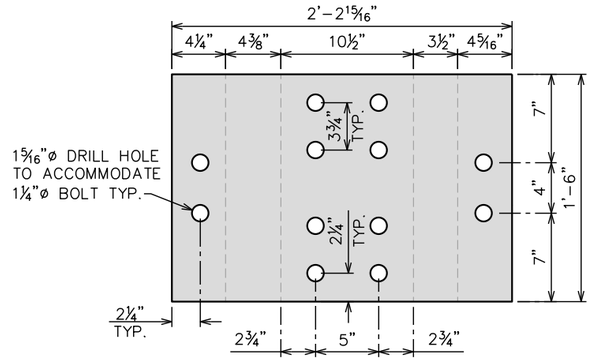
SHEET NUMBER: **S-9**

REVISION: **0**

TEP#: 25669.855826



PLAN VIEW



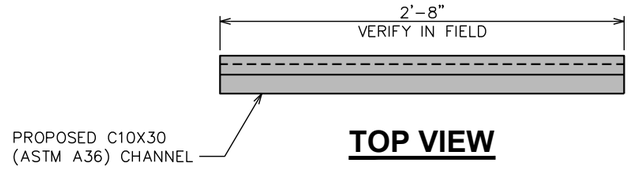
ELEVATION VIEW (FLAT)

PIECEMARK: PL-3A

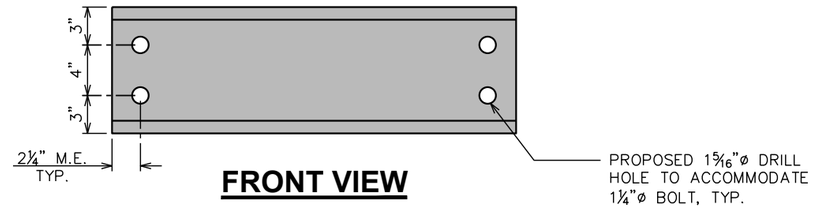
SCALE: 1" = 1'-0"

0 1 2

SCALE IN FEET



TOP VIEW



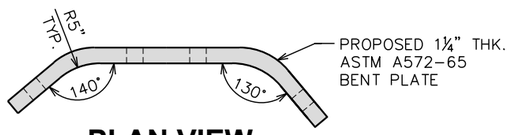
FRONT VIEW

CHANNEL BRACING DETAILS (CH1)

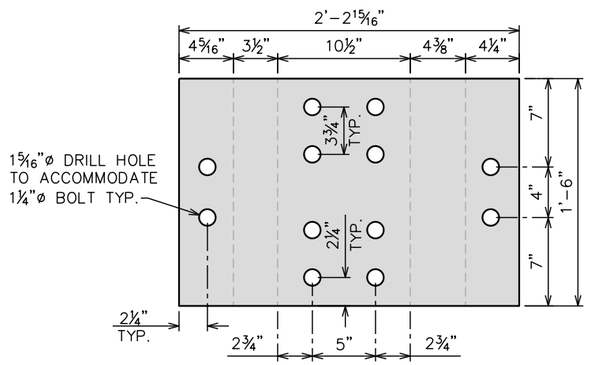
SCALE: 1" = 1'-0"

0 1 2

SCALE IN FEET



PLAN VIEW



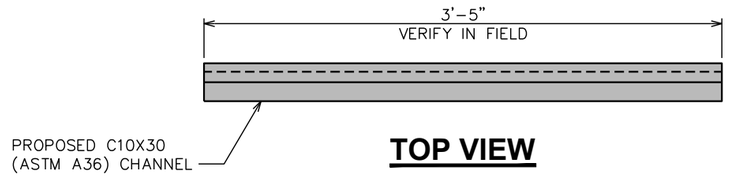
ELEVATION VIEW (FLAT)

PIECEMARK: PL-3B

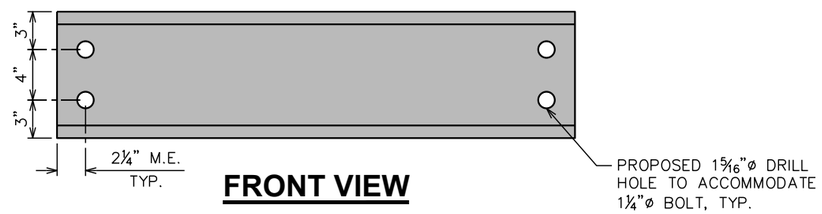
SCALE: 1" = 1'-0"

0 1 2

SCALE IN FEET



TOP VIEW



FRONT VIEW

CHANNEL BRACING DETAILS (CH2)

SCALE: 1" = 1'-0"

0 1 2

SCALE IN FEET

PLANS PREPARED FOR:

EVEREST INFRASTRUCTURE PARTNERS

1435 BEDFORD AVENUE
PITTSBURGH, PA 15219

PROJECT INFORMATION:

WETHERSFIELD CO
SITE #: 638512

75 WELLS ROAD
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PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603
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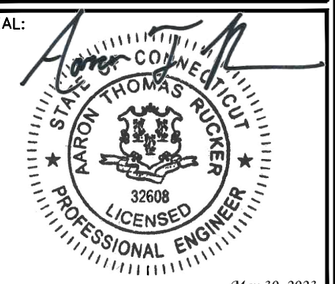
www.tepgroup.net

SEAL:



May 30, 2023

REV	DATE	ISSUED FOR:
0	05-30-23	MODIFICATION DRAWINGS

DRAWN BY: TLI | CHECKED BY: JLW

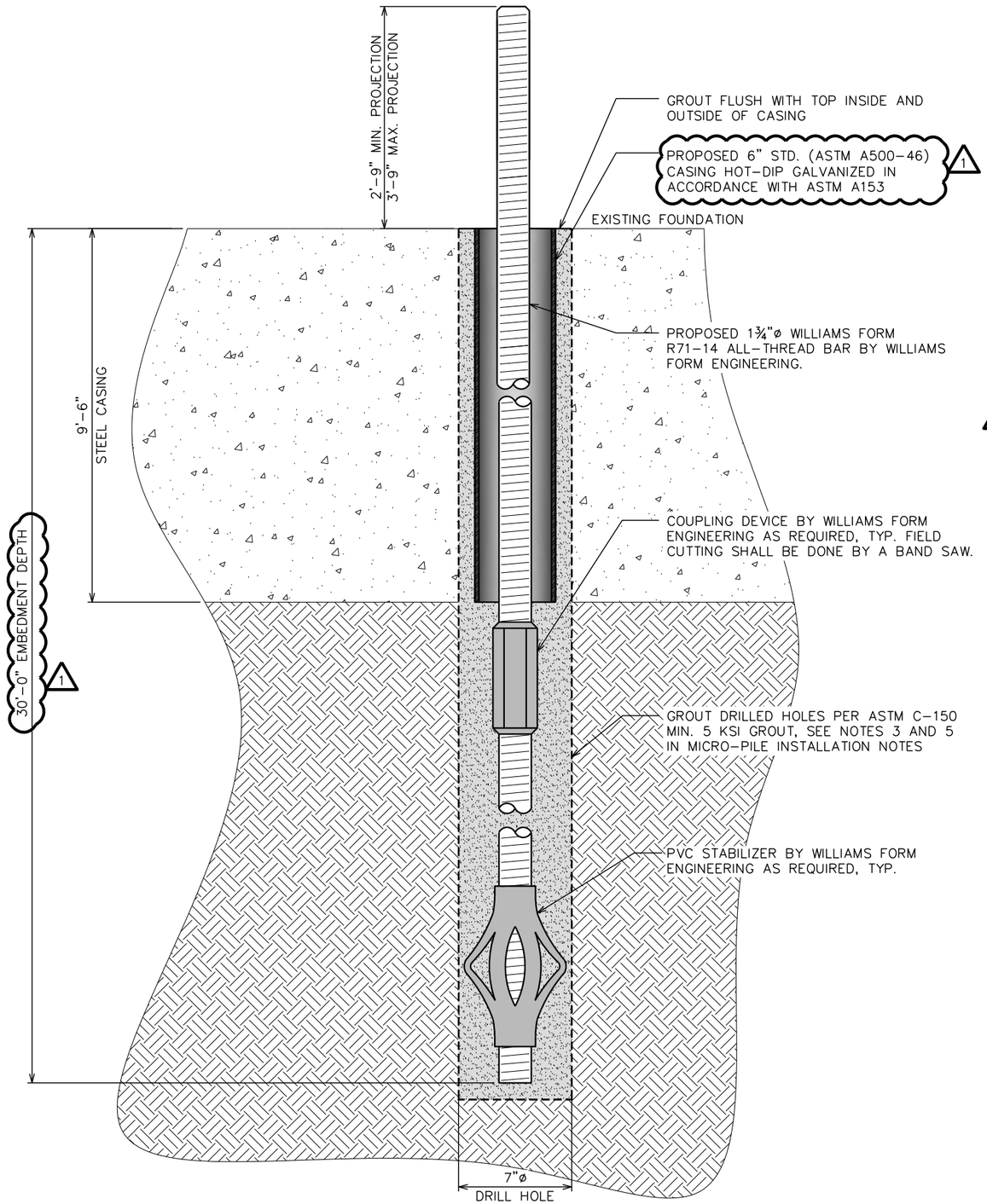
SHEET TITLE:

FOUNDATION REINFORCEMENT DETAILS IV

SHEET NUMBER: **S-10**

REVISION: **0**

TEP#: 25669.855826



MICRO-PILE DETAILS

SCALE: N.T.S.

MICRO-PILE INSTALLATION NOTES

1. INSTALL MICRO-PILE IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
2. GENERALLY THE SYSTEM IS INSTALLED WITH ROTARY PERCUSSIVE DRILLING.
3. THE THICKNESS OF THE GROUT CAN BE VARIED DEPENDING ON SUSCEPTIBILITY OF THE BOREHOLE TO COLLAPSE, HOWEVER A GROUT MIXTURE OF 0.44 WATER TO CEMENT RATIO IS RECOMMENDED IN POOR, COLLAPSIBLE SOILS TO ENSURE A HIGH ENOUGH DENSITY TO SUPPORT ANNULUS.
4. ALTERNATIVE INSTALLATION PROCEDURES ARE ACCEPTABLE. THE GC SHALL PROVIDE PROCEDURE TO EOR TO REVIEW PRIOR TO PROCEEDING WITH INSTALLATION.
5. GROUTS ARE DESIGNED TO PROVIDE HIGH STRENGTH AND STABILITY, BUT MUST ALSO BE PUMPABLE. GROUTS ARE TO BE PRODUCED WITH POTABLE WATER TO REDUCE THE DANGER OF REINFORCEMENT CORROSION. TYPE I/II CEMENT CONFORMING TO ASTM C150 IS MOST COMMONLY USED, SUPPLIED EITHER IN BAGGED OR BULK FORM DEPENDING ON AVAILABILITY.

CONTACT INFORMATION

1

1. GEOTECHNICAL ENGINEER:
   - JOHN D. LONGEST, P.E. (TEP)
     (919) 661-6351
2. DESIGN ENGINEER:
   - TRAVIS L. INFANTE, P.E. (TEP)
     (919) 661-6351

PLANS PREPARED FOR:

EVEREST INFRASTRUCTURE PARTNERS
1435 BEDFORD AVENUE
PITTSBURGH, PA 15219

PROJECT INFORMATION:

WETHERSFIELD CO
SITE #: 638512
75 WELLS ROAD
WETHERSFIELD, CT 06109
(HARTFORD COUNTY)

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

SEAL:

STATE OF CONNECTICUT
SHAWN HOFFMEYER
No. 31228
LICENSED PROFESSIONAL ENGINEER

July 7, 2023

REV	DATE	ISSUED FOR:
1	07-07-23	REVISED MOD. DRAWINGS
0	05-30-23	MODIFICATION DRAWINGS

DRAWN BY: TLI | CHECKED BY: RKE

SHEET TITLE:

MICRO-PILE DETAILS

SHEET NUMBER: **S-11**

REVISION: 1

TEP#: 25669.855826

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

Antenna Mount Analysis

Proposed T-Mobile Antenna Upgrade

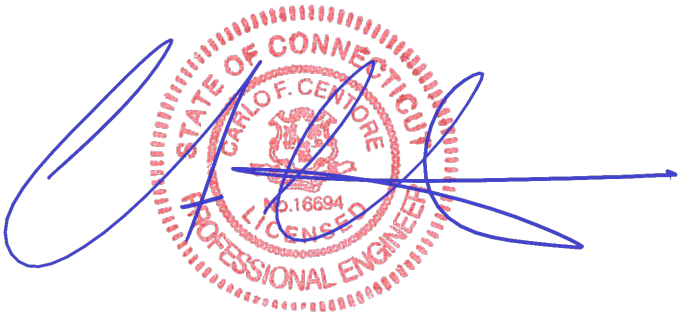
Site Ref: CTHA506A

75 Wells Road
Wethersfield, CT

CENTEK Project No. 20074.56

~~Rev 2: December 9, 2022~~

Rev 3: June 23, 2023



Prepared for:

T-Mobile Northeast
35 Griffin Road South
Bloomfield, CT 06002

63-2 North Branford Road, Branford, CT 06405 203.488.0580 Fax 203.488.8587 www.CentekEng.com

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Introduction

This structural analysis report (SAR) was prepared to address the structural viability of installing T-Mobile's proposed antenna configuration on the existing sector mounts attached to the 101-ft host monopole located at 75 Wells Road, Wethersfield, Connecticut.

The existing T-Arm sector mounts with attached handrail kit consist of an HSS arm attached to the monopole at one end and a standard pipe horizontal at the other. The pipe masts are attached at the bottom to the T-Arm horizontal and at the top to the handrail horizontal. This structural analysis report verifies the adequacy of aforementioned antenna mount assembly only and not of the host structure.

The antenna mount assembly geometry and member information were gathered through a site visit to investigate the current conditions, performed by Centek personnel on 07/07/2020 and Construction Drawings prepared by Centek Engineering, Job No. 19027.22, dated 04/24/19. Proposed/existing antenna and appurtenance information was taken from an RF data sheet dated 04/05/2022 provided by T-Mobile.

Primary Assumptions Used in the Analysis

- The host structure's theoretical capacity not including any assessment of the condition of the host structure.
- The existing elevated steel antenna frames carry the horizontal and vertical loads due to the weight of equipment, and wind and transfers into host structure.
- Structure is in plumb condition.
- Loading for equipment and enclosure as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All members are assumed to be as observed during roof framing mapping.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.

Antenna and Equipment Summary

Location	Appurtenance / Equipment	Rad Center Elevation (AGL)	Mount Type
Per Sector	**(1) Ericsson AIR32 KRD901146-1_B66A_B2A** **(1) RFS APXVAARR24_43-U-NA20 Antenna** **(1) Ericsson AIR 6419 B41 Antenna** **(1) 4460 B25+B66 Radio** **(1) 4449 B71+B85 Radio**	±95-ft	Existing T-Arm Sector Mounts

Equipment – Indicates proposed equipment to be installed.

Analysis

The antenna frames were analyzed using a comprehensive computer program titled Risa3D. The program examines the antenna mounts considering the worst-case code prescribed loading condition. The structures were considered to be loaded by concentric forces, and the model assumes that the members are subjected to bending, axial, and shear forces.

Design Loading

Loading was determined per the requirements of the 2017 ANSI/TIA-222-H, 2021 International Building Code amended by the 2022 CSBC and ASCE 7-16 “Minimum Design Loads for Buildings and Other Structures”.

Basic Wind Speed:	V = 120 mph	*Appendix P of the 2022 CT State Building Code*
Basic Wind Speed w/ Ice:	V_i = 50 mph	*Annex B of TIA-222-H*
Risk Category:	II	*2021 IBC; Table 1604.05*
Exposure Category:	Surface Roughness B	*ASCE 7-16; Section 26.7.2*
Dead Load	Equipment and framing self-weight	*Identified within SAR design calculations*

Reference Standards

2021 International Building Code:

1. AISC 360-10, *Specification for Structural Steel Buildings.*

Results

Member stresses and design reactions were calculated utilizing the structural analysis software RISA 3D.

The antenna mounting assembly and impacted host building components were found to be structurally acceptable as presented in the following table:

Sector	Component	Stress Ratio (percentage of capacity)	Result
All Sectors	Pipe 3.0 STD (Existing T-Arm Frame Horizontal)	71%	**PASS**
	Pipe 2.5 STD (Proposed Position 3 Pipe Mast)	58%	**PASS**
	Pipe 2.0 STD (Existing Pipe Mast)	48%	**PASS**
	HSS4x4x1/4" (Existing T-Arm Frame Stand-Off)	51%	**PASS**
	5/8" ∅ threaded rod (Sector Frame Connection to Host Monopole)	77%	**PASS**

Conclusion

This analysis shows that the proposed subject antenna mount assemblies are **STRUCTURALLY ADEQUETE** to support the proposed T-Mobile modified antenna configuration.

The analysis is based, in part, on the information provided to this office by T-Mobile. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:

Carlo F. Centore, PE
Principle ~ Structural Engineer

STATE OF CONNECTICUT
CARLO F. CENTORE
No.16694
LICENSED
PROFESSIONAL ENGINEER

Prepared by:

Pablo Perez-Gomez
Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

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

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the “as new” condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

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Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: Loads on Equipment

Location: Wethersfield, CT

Date: 6/21/2023 Prepared by: PPG Checked by: CFC

Job No. 20074.56

Development of Design Heights, Exposure Coefficients, and Velocity Pressures Per TIA-222-H

Wind Speeds

Basic Wind Speed	$V := 120$	mph	(User Input - 2022 CSBC Appendix P)
Basic Wind Speed with Ice	$V_i := 50$	mph	(User Input per Annex B of TIA-222-H)

Input

Structure Type =	$Structure\_Type := Antennas$		(User Input)
Structure Category =	$SC := II$		(User Input)
Exposure Category =	$Exp := B$		(User Input)
Topographic Category =	$T_c := 1$		(User Input)
Structure Height =	$h := 101$	ft	(User Input)
Height of Crest =	$H := 1$	ft	(User Input)
Base Elevation Above Sea Level =	$Zs := 60$	ft	(User Input)
Height to Center of Antennas =	$z := 95$	ft	(User Input)
Radial Ice Thickness =	$t_i := 1.5$	in	(User Input per Annex B of TIA-222-H)
Radial Ice Density =	$Id := 56.00$	pcf	(User Input)
Shielding Factor For Appurtenances =	$K_a := 0.9$		(Section 16.6 TIA-222-H)
Gust Effect Factor =	$G_H = 1$		(Section 16.6 TIA-222-H)
Wind Direction Probability Factor =	$K_d = 0.95$		(Table 2-2 & S16.6 TIA-222-H)

Output

Importance Factors =

$$I_{Wind} := \left\| \begin{array}{l} \text{if } SC = 1 \\ \quad \| \, 0.87 \\ \text{if } SC = 2 \\ \quad \| \, 1.00 \\ \text{if } SC = 3 \\ \quad \| \, 1.15 \end{array} \right\| = 1 \qquad I_{Wind\_w\_Ice} := \left\| \begin{array}{l} \text{if } SC = 1 \\ \quad \| \, 0 \\ \text{if } SC = 2 \\ \quad \| \, 1.00 \\ \text{if } SC = 3 \\ \quad \| \, 1.00 \end{array} \right\| = 1 \qquad I_{ice} := \left\| \begin{array}{l} \text{if } SC = 1 \\ \quad \| \, 0 \\ \text{if } SC = 2 \\ \quad \| \, 1.00 \\ \text{if } SC = 3 \\ \quad \| \, 1.15 \\ \text{if } SC = 4 \\ \quad \| \, 1.25 \end{array} \right\| = 1$$

Topographic Factor =

$$K_{zt} := \left\| \begin{array}{l} \text{if } T_c = 1 \\ \quad \| \, 1.0 \\ \text{if } T_c > 1 \\ \quad \| \, \left(1 + \left(\frac{K_c \cdot K_t}{K_h}\right)\right)^2 \end{array} \right\| = 1$$

(2.6.6.2.1 - TIA-222-H)

Ground Elevation Factor = $K_e := 2.71828^{(-0.0000362 \cdot Zs)} = 0.998$

Height Escalation Factor = $K_{iz} := \left(\frac{z}{33}\right)^{0.1} = 1.112$ (2.6.5.2 - TIA-222-H)

Factored Ice Thickness = $t_{iz} := t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}{}^{0.35} = 1.667$

Velocity Pressure Coefficient Antennas = $Kz := 2.01 \cdot \left(\left(\frac{z}{zg}\right)\right)^{\frac{2}{\alpha}} = 0.974$ (2.6.5.2 - TIA-222-H)

Velocity Pressure w/o Ice Antennas = $qz := 0.00256 \cdot Kz \cdot K_{zt} \cdot K_e \cdot K_d \cdot V^2 = 34.031$ psf

Velocity Pressure with Ice Antennas = $qz_{ice} := 0.00256 \cdot Kz \cdot K_{zt} \cdot K_e \cdot K_d \cdot V_i{}^2 = 5.908$ psf

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Ericsson AIR6419 B41		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 36.3$	in	(User Input)
Antenna Width =	$W_{ant} := 20.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 9.0$	in	(User Input)
Antenna Weight =	$WT_{ant} := 83$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 1.7$		
Antenna Force Coefficient =	$Ca_{ant} = 1.2$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 5.3$	sf
Total Antenna Wind Force Front =	$F_{ant} := qz \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 194$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 2.3$	sf
Total Antenna Wind Force Side =	$F_{ant} := qz \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 83$	lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 6.7$	sf
Total Antenna Wind Force w/ Ice Front =	$Fi_{ant} := qz_{ice} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 43$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 3.4$	sf
Total Antenna Wind Force w/ Ice Side =	$Fi_{ant} := qz_{ice} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 22$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 83$	lbs

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 6828$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 5020$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 163$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 163$	lbs

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Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: Loads on Equipment

Location: Wethersfield, CT

Date: 6/21/2023 Prepared by: PPG Checked by: CFC
Job No. 20074.56

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFS- APXVAARR24_43-U-NA20		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 95.9$	in	(User Input)
Antenna Width =	$W_{ant} := 24$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.7$	in	(User Input)
Antenna Weight =	$WT_{ant} := 154$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.0$		
Antenna Force Coefficient =	$Ca_{ant} = 1.27$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 16$	sf
Total Antenna Wind Force Front =	$F_{ant} := qz \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 620$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 5.8$	sf
Total Antenna Wind Force Side =	$F_{ant} := qz \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 225$	lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 18.8$	sf
Total Antenna Wind Force w/ Ice Front =	$Fi_{ant} := qz_{ice} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 127$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 8.3$	sf
Total Antenna Wind Force w/ Ice Side =	$Fi_{ant} := qz_{ice} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 56$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 154$	lbs

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2 \cdot 10^4$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 1 \cdot 10^4$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 409$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 409$	lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Ericsson AIR32 KRD901146-1_B66A-B2A		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 56.6$	in	(User Input)
Antenna Width =	$W_{ant} := 12.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.7$	in	(User Input)
Antenna Weight =	$WT_{ant} := 132$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.4$		
Antenna Force Coefficient =	$Ca_{ant} = 1.28$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 5.1$	sf
Total Antenna Wind Force Front =	$F_{ant} := qz \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 199$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 3.4$	sf
Total Antenna Wind Force Side =	$F_{ant} := qz \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 134$	lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 6.8$	sf
Total Antenna Wind Force w/ Ice Front =	$Fi_{ant} := qz_{ice} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 46$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 5$	sf
Total Antenna Wind Force w/ Ice Side =	$Fi_{ant} := qz_{ice} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 34$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 132$	lbs

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 6352$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 5358$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 174$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 174$	lbs

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Subject: Loads on Equipment

Location: Wethersfield, CT

Date: 6/21/2023

Prepared by: PPG Checked by: CFC
Job No. 20074.56

Development of Wind & Ice Load on RRUS's

RRUS Data:

RRUS Model = Ericsson 4460 B25+B66

RRUS Shape = Flat (User Input)

RRUS Height = $L_{RRUS} := 19.6$ in (User Input)

RRUS Width = $W_{RRUS} := 15.7$ in (User Input)

RRUS Thickness = $T_{RRUS} := 12.1$ in (User Input)

RRUS Weight = $WT_{RRUS} := 109$ lbs (User Input)

Number of RRUS's = $N_{RRUS} := 1$

RRUS Aspect Ratio = $Ar_{RRUS} := \frac{L_{RRUS}}{W_{RRUS}} = 1.2$

RRUS Force Coefficient = $Ca_{RRUS} = 1.2$

Wind Load (without ice)

Surface Area for One RRUS = $SA_{RRUSF} := \frac{L_{RRUS} \cdot W_{RRUS}}{144} = 2.1$ sf

Total RRUS Wind Force = $F_{RRUS} := qz \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUSF} = 79$ lbs

Surface Area for One RRUS = $SA_{RRUSS} := \frac{L_{RRUS} \cdot T_{RRUS}}{144} = 1.6$ sf

Total RRUS Wind Force = $F_{RRUS} := qz \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUSS} = 61$ lbs

Wind Load (with ice)

Surface Area for One RRUS w/ Ice = $SA_{ICERRUSF} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (W_{RRUS} + 2 \cdot t_{iz})}{144} = 3$ sf

Total RRUS Wind Force w/ Ice = $Fi_{RRUS} := qz_{ice} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUSF} = 19$ lbs

Surface Area for One RRUS w/ Ice = $SA_{ICERRUSS} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz})}{144} = 2.5$ sf

Total RRUS Wind Force w/ Ice = $Fi_{RRUS} := qz_{ice} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUSS} = 16$ lbs

Gravity Load (without ice)

Weight of All RRUSs = $WT_{RRUS} \cdot N_{RRUS} = 109$ lbs

Gravity Loads (ice only)

Volume of Each RRUS = $V_{RRUS} := L_{RRUS} \cdot W_{RRUS} \cdot T_{RRUS} = 3723$ cu in

Volume of Ice on Each RRUS = $V_{ice} := (L_{RRUS} + 2 \cdot t_{iz}) \cdot (W_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz}) - V_{RRUS} = 3015$ cu in

Weight of Ice on Each RRUS = $W_{ICERRUS} := \frac{V_{ice}}{1728} \cdot Id = 98$ lbs

Weight of Ice on All RRUSs = $W_{ICERRUS} \cdot N_{RRUS} = 98$ lbs

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63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: Loads on Equipment

Location: Wethersfield, CT

Date: 6/21/2023 Prepared by: PPG Checked by: CFC

Job No. 20074.56

Development of Wind & Ice Load on RRUS's

RRUS Data:

RRUS Model = Ericsson 4449 B71+B85

RRUS Shape = Flat (User Input)

RRUS Height = $L_{RRUS} := 17.9$ in (User Input)

RRUS Width = $W_{RRUS} := 13.2$ in (User Input)

RRUS Thickness = $T_{RRUS} := 9.5$ in (User Input)

RRUS Weight = $WT_{RRUS} := 75$ lbs (User Input)

Number of RRUS's = $N_{RRUS} := 1$

RRUS Aspect Ratio = $Ar_{RRUS} := \frac{L_{RRUS}}{W_{RRUS}} = 1.4$

RRUS Force Coefficient = $Ca_{RRUS} = 1.2$

Wind Load (without ice)

Surface Area for One RRUS = $SA_{RRUSF} := \frac{L_{RRUS} \cdot W_{RRUS}}{144} = 1.6$ sf

Total RRUS Wind Force = $F_{RRUS} := qz \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUSF} = 60$ lbs

Surface Area for One RRUS = $SA_{RRUSS} := \frac{L_{RRUS} \cdot T_{RRUS}}{144} = 1.2$ sf

Total RRUS Wind Force = $F_{RRUS} := qz \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUSS} = 43$ lbs

Wind Load (with ice)

Surface Area for One RRUS w/ Ice = $SA_{ICERRUSF} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (W_{RRUS} + 2 \cdot t_{iz})}{144} = 2.4$ sf

Total RRUS Wind Force w/ Ice = $Fi_{RRUS} := qz_{ice} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUSF} = 16$ lbs

Surface Area for One RRUS w/ Ice = $SA_{ICERRUSS} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz})}{144} = 1.9$ sf

Total RRUS Wind Force w/ Ice = $Fi_{RRUS} := qz_{ice} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUSS} = 12$ lbs

Gravity Load (without ice)

Weight of All RRUSs = $WT_{RRUS} \cdot N_{RRUS} = 75$ lbs

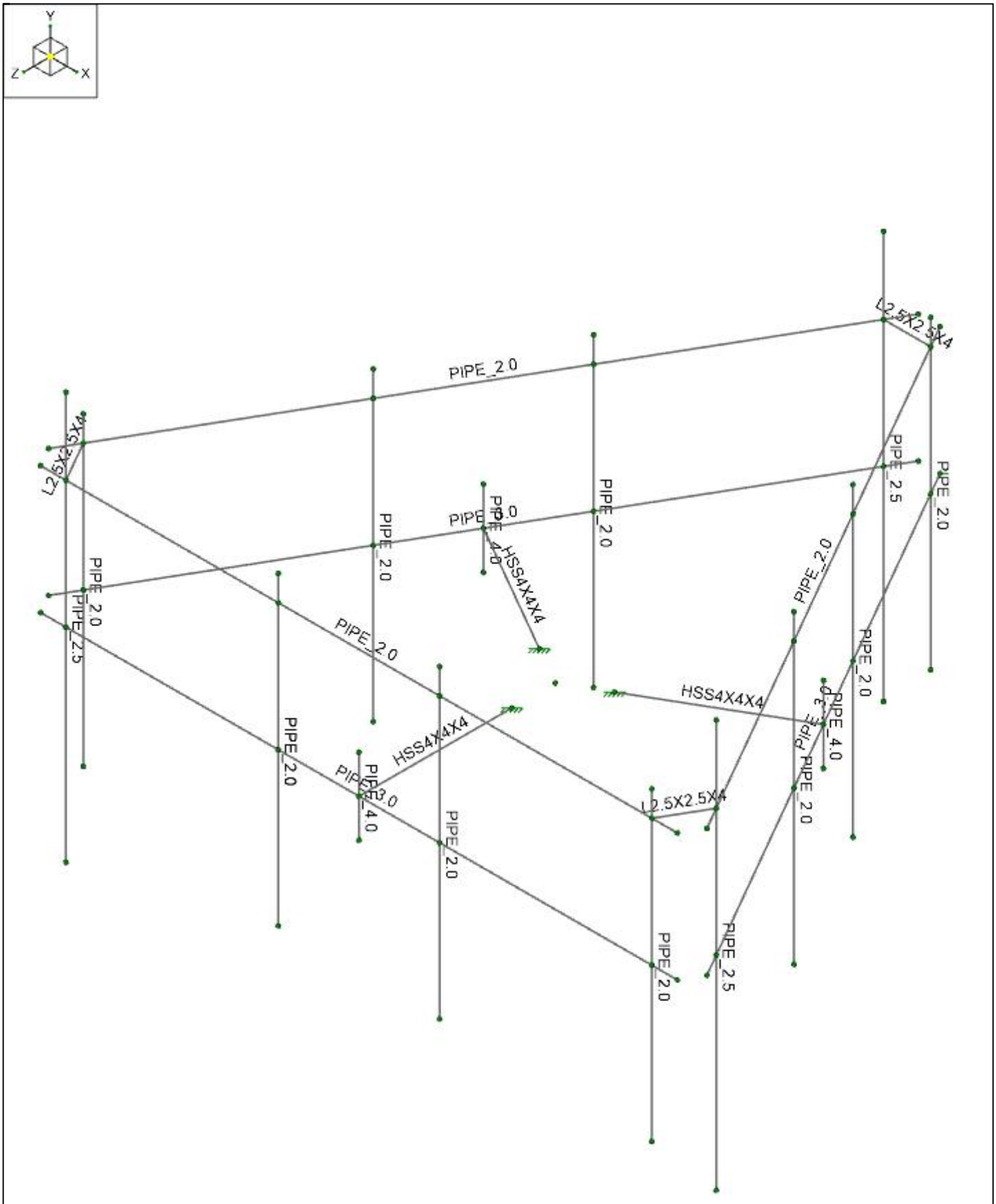
Gravity Loads (ice only)

Volume of Each RRUS = $V_{RRUS} := L_{RRUS} \cdot W_{RRUS} \cdot T_{RRUS} = 2245$ cu in

Volume of Ice on Each RRUS = $V_{ice} := (L_{RRUS} + 2 \cdot t_{iz}) \cdot (W_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz}) - V_{RRUS} = 2262$ cu in

Weight of Ice on Each RRUS = $W_{ICERRUS} := \frac{V_{ice}}{1728} \cdot Id = 73$ lbs

Weight of Ice on All RRUSs = $W_{ICERRUS} \cdot N_{RRUS} = 73$ lbs



Envelope Only Solution

Centek	CTHA506A - Mount	SK-2
PPG		Jun 22, 2023
20074.56		CTHA506A_AMA.r3d

Node Coordinates

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
1	N1	0	0	10.25	
2	N2	0	0	46.25	
3	N3	0	9	46.25	
4	N4	0	-9	46.25	
5	N5	75	0	46.25	
6	N6	-75	0	46.25	
7	N7	69	0	46.25	
8	N8	-69	0	46.25	
9	N9	69	-36	46.25	
10	N10	-69	-48	46.25	
11	N11	69	36	46.25	
12	N12	-69	48	46.25	
13	N13	19.	0	46.25	
14	N14	19.	-36	46.25	
15	N15	19.	36	46.25	
16	N16	0	0	0	
17	N17	8.87676	0	-5.125	
18	N18	40.053675	0	-23.125	
19	N19	40.053675	9	-23.125	
20	N20	40.053675	-9	-23.125	
21	N21	2.553675	0	-88.076905	
22	N22	77.553675	0	41.826905	
23	N23	5.553675	0	-82.880753	
24	N24	74.553675	0	36.630753	
25	N25	5.553675	-36	-82.880753	
26	N26	74.553675	-48	36.630753	
27	N27	5.553672	36	-82.880748	
28	N28	74.553675	48	36.630753	
29	N29	30.553675	0	-39.579483	
30	N30	30.553675	-36	-39.579483	
31	N31	30.553675	36	-39.579483	
32	N32	-8.87676	0	-5.125	
33	N33	-40.053675	0	-23.125	
34	N34	-40.053675	9	-23.125	
35	N35	-40.053675	-9	-23.125	
36	N36	-77.553675	0	41.826905	
37	N37	-2.553675	0	-88.076905	
38	N38	-74.553675	0	36.630753	
39	N39	-5.553675	0	-82.880753	
40	N40	-74.553675	-36	36.630753	
41	N41	-5.553675	-48	-82.880753	
42	N42	-74.553675	36	36.630753	
43	N43	-5.553672	48	-82.880748	
44	N44	-49.553675	0	-6.670517	
45	N45	-49.553675	-36	-6.670517	
46	N46	-49.553675	36	-6.670517	
47	N47	75	30	46.25	
48	N48	-75	30	46.25	
49	N49	69	30	46.25	
50	N50	-69	30	46.25	
51	N51	19.	30	46.25	
52	N52	2.553675	30	-88.076905	
53	N53	77.553675	30	41.826905	
54	N54	5.553672	30	-82.880753	
55	N55	74.553675	30	36.630753	

Node Coordinates (Continued)

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
56	N56	30.553675	30	-39.579483	
57	N57	-77.553675	30	41.826905	
58	N58	-2.553675	30	-88.076905	
59	N59	-74.553675	30	36.630753	
60	N60	-5.553672	30	-82.880753	
61	N61	-49.553675	30	-6.670517	
62	N62	-19.	30	46.25	
63	N63	-19.	0	46.25	
64	N64	-19.	-36	46.25	
65	N65	-19.	36	46.25	
66	N66	49.553675	30	-6.670517	
67	N67	49.553675	-36	-6.670517	
68	N68	49.553675	0	-6.670517	
69	N69	49.553675	36	-6.670517	
70	N70	-30.553675	30	-39.579483	
71	N71	-30.553675	-36	-39.579483	
72	N72	-30.553675	0	-39.579483	
73	N73	-30.553675	36	-39.579483	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N17	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N32	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^{3}]	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	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	58	1.2
3	A992	29000	11154	0.3	0.65	0.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	0.3	0.65	0.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	0.3	0.65	0.49	46	1.2	58	1.1
6	A53 Grade B	29000	11154	0.3	0.65	0.49	35	1.5	58	1.2

Member Point Loads (BLC 2 : Dead Load)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]
1	M16	Y	-0.042	18.996
2	M16	Y	-0.042	51.996
3	M19	Y	-0.042	18.996
4	M19	Y	-0.042	51.996
5	M22	Y	-0.042	18.996
6	M22	Y	-0.042	51.996
7	M17	Y	-0.067	8
8	M17	Y	-0.067	65
9	M20	Y	-0.067	8
10	M20	Y	-0.067	65
11	M23	Y	-0.067	8
12	M23	Y	-0.067	65
13	M18	Y	-0.077	6
14	M18	Y	-0.077	92
15	M21	Y	-0.077	6
16	M21	Y	-0.077	92

Member Point Loads (BLC 2 : Dead Load) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]
17	M24	Y	-0.077	6
18	M24	Y	-0.077	92
19	M24	Y	-0.109	%30
20	M18	Y	-0.109	%30
21	M21	Y	-0.109	%30
22	M24	Y	-0.075	%70
23	M21	Y	-0.075	%70
24	M18	Y	-0.075	%70
25	M25	Y	-0.067	8
26	M25	Y	-0.067	65
27	M26	Y	-0.067	8
28	M26	Y	-0.067	65
29	M27	Y	-0.067	8
30	M27	Y	-0.067	65
31	M28	Y	-0.067	8
32	M28	Y	-0.067	65

Member Point Loads (BLC 3 : Ice Load)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]
1	M16	Y	-0.082	18.996
2	M16	Y	-0.082	51.996
3	M19	Y	-0.082	18.996
4	M19	Y	-0.082	51.996
5	M22	Y	-0.082	18.996
6	M22	Y	-0.082	51.996
7	M17	Y	-0.087	8.004
8	M17	Y	-0.087	65.004
9	M20	Y	-0.087	8.004
10	M20	Y	-0.087	65.004
11	M23	Y	-0.087	8.004
12	M23	Y	-0.087	65.004
13	M18	Y	-0.205	6
14	M18	Y	-0.205	92.004
15	M21	Y	-0.205	6
16	M21	Y	-0.205	92.004
17	M24	Y	-0.205	6
18	M24	Y	-0.205	92.004
19	M24	Y	-0.073	%70
20	M18	Y	-0.073	%70
21	M21	Y	-0.073	%70
22	M24	Y	-0.098	%30
23	M18	Y	-0.098	%30
24	M21	Y	-0.098	%30
25	M25	Y	-0.087	8.004
26	M25	Y	-0.087	65.004
27	M26	Y	-0.087	8.004
28	M26	Y	-0.087	65.004
29	M27	Y	-0.087	8.004
30	M27	Y	-0.087	65.004
31	M28	Y	-0.087	8.004
32	M28	Y	-0.087	65.004

Member Point Loads (BLC 4 : Wind with Ice X)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]
1	M16	X	0.022	18.996
2	M16	X	0.022	51.996
3	M19	X	0.022	18.996
4	M19	X	0.022	51.996
5	M22	X	0.011	18.996
6	M22	X	0.011	51.996
7	M17	X	0.023	8.004
8	M17	X	0.023	65.004
9	M20	X	0.023	8.004
10	M20	X	0.023	65.004
11	M23	X	0.017	8.004
12	M23	X	0.017	65.004
13	M18	X	0.064	6
14	M18	X	0.064	92.004
15	M21	X	0.064	6
16	M21	X	0.064	92.004
17	M24	X	0.028	6
18	M24	X	0.028	92.004
19	M21	X	0.016	%70
20	M18	X	0.016	%70
21	M24	X	0.012	%70
22	M24	X	0.016	%30
23	M18	X	0.019	%30
24	M21	X	0.019	%30
25	M25	X	0.017	8.004
26	M25	X	0.017	65.004
27	M26	X	0.017	65.004
28	M26	X	0.017	8.004
29	M27	X	0.017	65.004
30	M27	X	0.017	8.004
31	M28	X	0.017	65.004
32	M28	X	0.017	8.004

Member Point Loads (BLC 5 : Wind X)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]
1	M16	X	0.097	18.996
2	M16	X	0.097	51.996
3	M19	X	0.097	18.996
4	M19	X	0.097	51.996
5	M22	X	0.042	18.996
6	M22	X	0.042	51.996
7	M17	X	0.1	8.004
8	M17	X	0.1	65.004
9	M20	X	0.1	8.004
10	M20	X	0.1	65.004
11	M23	X	0.067	8.004
12	M23	X	0.067	65.004
13	M18	X	0.31	6
14	M18	X	0.31	92.004
15	M21	X	0.31	6
16	M21	X	0.31	92.004
17	M24	X	0.113	6
18	M24	X	0.113	92.004
19	M21	X	0.06	%70

Member Point Loads (BLC 5 : Wind X) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]
20	M18	X	0.06	%70
21	M24	X	0.043	%70
22	M24	X	0.061	%30
23	M18	X	0.079	%30
24	M21	X	0.079	%30
25	M25	X	0.067	65.004
26	M25	X	0.067	8.004
27	M26	X	0.067	8.004
28	M26	X	0.067	65.004
29	M27	X	0.067	8.004
30	M27	X	0.067	65.004
31	M28	X	0.067	8.004
32	M28	X	0.067	65.004

Member Point Loads (BLC 6 : Wind with Ice Z)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]
1	M16	Z	0.011	18.996
2	M16	Z	0.011	51.996
3	M19	Z	0.011	18.996
4	M19	Z	0.011	51.996
5	M22	Z	0.022	18.996
6	M22	Z	0.022	51.996
7	M17	Z	0.017	8.004
8	M17	Z	0.017	65.004
9	M20	Z	0.017	8.004
10	M20	Z	0.017	65.004
11	M23	Z	0.023	8.004
12	M23	Z	0.023	65.004
13	M18	Z	0.028	6
14	M18	Z	0.028	92.004
15	M21	Z	0.028	6
16	M21	Z	0.028	92.004
17	M24	Z	0.064	6
18	M24	Z	0.064	92.004
19	M24	Z	0.016	%70
20	M18	Z	0.012	%70
21	M21	Z	0.012	%70
22	M24	Z	0.019	%30
23	M18	Z	0.016	%30
24	M21	Z	0.016	%30
25	M25	Z	0.023	65.004
26	M25	Z	0.023	8.004
27	M26	Z	0.023	8.004
28	M26	Z	0.023	65.004
29	M27	Z	0.023	8.004
30	M27	Z	0.023	65.004
31	M28	Z	0.023	8.004
32	M28	Z	0.023	65.004

Member Point Loads (BLC 7 : Wind Z)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]
1	M16	Z	0.042	18.996
2	M16	Z	0.042	51.996

Member Point Loads (BLC 7 : Wind Z) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]
3	M19	Z	0.042	18.996
4	M19	Z	0.042	51.996
5	M22	Z	0.097	18.996
6	M22	Z	0.097	51.996
7	M17	Z	0.067	8.004
8	M17	Z	0.067	65.004
9	M20	Z	0.067	8.004
10	M20	Z	0.067	65.004
11	M23	Z	0.1	8.004
12	M23	Z	0.1	65.004
13	M18	Z	0.113	6
14	M18	Z	0.113	92.004
15	M21	Z	0.113	6
16	M21	Z	0.113	92.004
17	M24	Z	0.31	6
18	M24	Z	0.31	92.004
19	M18	Z	0.043	%70
20	M21	Z	0.043	%70
21	M24	Z	0.06	%70
22	M24	Z	0.079	%30
23	M18	Z	0.061	%30
24	M21	Z	0.061	%30
25	M25	Z	0.1	8.004
26	M25	Z	0.1	65.004
27	M26	Z	0.1	65.004
28	M26	Z	0.1	8.004
29	M27	Z	0.1	65.004
30	M27	Z	0.1	8.004
31	M28	Z	0.1	65.004
32	M28	Z	0.1	8.004

Member Distributed Loads (BLC 4 : Wind with Ice X)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/in]	End Magnitude [k/ft, F, ksf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M11	X	0.002	0.002	0	%100
2	M12	X	0.002	0.002	0	%100
3	M13	X	0.002	0.002	0	%100
4	M14	X	0.002	0.002	0	%100
5	M9	X	0.002	0.002	0	%100
6	M6	X	0.002	0.002	0	%100
7	M2	X	0.003	0.003	0	%100
8	M5	X	0.003	0.003	0	%100
9	M8	X	0.003	0.003	0	%100
10	M1	X	0.003	0.003	0	%100
11	M4	X	0.003	0.003	0	%100
12	M7	X	0.003	0.003	0	%100

Member Distributed Loads (BLC 5 : Wind X)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/in]	End Magnitude [k/ft, F, ksf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M11	X	0.006	0.006	0	%100
2	M12	X	0.006	0.006	0	%100
3	M13	X	0.006	0.006	0	%100
4	M14	X	0.006	0.006	0	%100
5	M9	X	0.008	0.008	0	%100

Member Distributed Loads (BLC 5 : Wind X) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/in]	End Magnitude [k/ft, F, ksf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
6	M6	X	0.008	0.008	0	%100
7	M2	X	0.011	0.011	0	%100
8	M5	X	0.011	0.011	0	%100
9	M8	X	0.011	0.011	0	%100
10	M1	X	0.01	0.01	0	%100
11	M4	X	0.01	0.01	0	%100
12	M7	X	0.01	0.01	0	%100

Member Distributed Loads (BLC 6 : Wind with Ice Z)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/in]	End Magnitude [k/ft, F, ksf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M10	Z	0.002	0.002	0	%100
2	M11	Z	0.002	0.002	0	%100
3	M12	Z	0.002	0.002	0	%100
4	M13	Z	0.002	0.002	0	%100
5	M14	Z	0.002	0.002	0	%100
6	M15	Z	0.002	0.002	0	%100
7	M9	Z	0.002	0.002	0	%100
8	M6	Z	0.002	0.002	0	%100
9	M3	Z	0.002	0.002	0	%100
10	M2	Z	0.003	0.003	0	%100
11	M5	Z	0.003	0.003	0	%100
12	M8	Z	0.003	0.003	0	%100
13	M4	Z	0.003	0.003	0	%100
14	M7	Z	0.003	0.003	0	%100

Member Distributed Loads (BLC 7 : Wind Z)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/in]	End Magnitude [k/ft, F, ksf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M10	Z	0.006	0.006	0	%100
2	M15	Z	0.006	0.006	0	%100
3	M11	Z	0.006	0.006	0	%100
4	M12	Z	0.006	0.006	0	%100
5	M13	Z	0.006	0.006	0	%100
6	M14	Z	0.006	0.006	0	%100
7	M9	Z	0.008	0.008	0	%100
8	M6	Z	0.008	0.008	0	%100
9	M3	Z	0.008	0.008	0	%100
10	M2	Z	0.011	0.011	0	%100
11	M5	Z	0.011	0.011	0	%100
12	M8	Z	0.011	0.011	0	%100
13	M4	Z	0.01	0.01	0	%100
14	M7	Z	0.01	0.01	0	%100

Member Area Loads

No Data to Print...

Basic Load Cases

	BLC Description	Category	Y Gravity	Point	Distributed
1	Self Weight	None	-1		
2	Dead Load	None		32	
3	Ice Load	None		32	
4	Wind with Ice X	None		32	12

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Point	Distributed
5	Wind X	None		32	12
6	Wind with Ice Z	None		32	14
7	Wind Z	None		32	14

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.2D + 1.6W (X-direction)	Yes	Y	1	1.2	2	1.2	5	1.6		
2	0.9D + 1.6W (X-direction)	Yes	Y	1	0.9	2	0.9	5	1.6		
3	1.2D + 1.0Di + 1.0Wi (X-direction)	Yes	Y	1	1.2	2	1.2	3	1	4	1
4	1.2D + 1.6W (Z-direction)	Yes	Y	1	1.2	2	1.2	7	1.6		
5	0.9D + 1.6W (Z-direction)	Yes	Y	1	0.9	2	0.9	7	1.6		
6	1.2D + 1.0Di + 1.0Wi (Z-direction)	Yes	Y	1	1.2	2	1.2	3	1	6	1

Envelope Node Reactions

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N1	max	-0.092	6	2.675	6	0.244	3	-2.217	5	-0.131	6	0.423	2
2		min	-2.102	1	1.033	2	-1.931	5	-7.1	3	-4.622	2	-0.25	6
3	N17	max	0.173	6	2.26	3	-0.159	3	2.815	3	3.72	4	5.194	6
4		min	-2.067	2	0.678	5	-1.738	4	0.651	5	0.585	3	1.778	2
5	N32	max	0.345	5	2.302	6	0.506	2	3.199	3	4.237	1	-2.121	5
6		min	-2.091	1	0.6	2	-2.299	4	0.713	5	-5	5	-5.451	3
7	Totals:	max	0	6	7.17	6	0	3						
8		min	-6.233	2	2.788	2	-5.938	4						

Envelope Node Displacements

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
1	N1	max	0	1	0	2	0	5	0	3	0	2	0	6
2		min	0	6	0	6	0	3	0	5	0	6	0	2
3	N2	max	0.113	2	-0.04	5	0.001	5	7.593e-3	3	3.597e-3	2	7.562e-4	6
4		min	0.002	6	-0.198	3	0	3	4.282e-4	5	-1.502e-5	6	-1.279e-3	2
5	N3	max	0.125	2	-0.04	5	0.068	3	7.593e-3	3	3.597e-3	2	7.562e-4	6
6		min	-0.005	6	-0.198	3	0.005	5	4.293e-4	5	-1.502e-5	6	-1.28e-3	2
7	N4	max	0.102	1	-0.04	5	-0.003	5	7.593e-3	3	3.597e-3	2	7.562e-4	6
8		min	0.009	6	-0.198	3	-0.068	3	4.271e-4	5	-1.502e-5	6	-1.278e-3	2
9	N5	max	0.114	2	-0.214	5	0.317	5	5.605e-3	1	8.593e-4	1	-2.149e-3	5
10		min	0.001	6	-0.493	3	-0.129	1	-2.599e-3	5	-6.463e-3	5	-4.518e-3	1
11	N6	max	0.115	2	-0.04	2	0.853	5	4.691e-3	3	1.295e-2	5	3.95e-3	6
12		min	0.003	6	-0.562	6	-0.169	3	-1.9e-2	5	-3.122e-3	3	-6.691e-4	2
13	N7	max	0.114	2	-0.201	5	0.278	5	5.605e-3	1	8.593e-4	1	-2.149e-3	5
14		min	0.001	6	-0.471	3	-0.124	1	-2.599e-3	5	-6.462e-3	5	-4.518e-3	1
15	N8	max	0.115	2	-0.044	2	0.775	5	4.691e-3	3	1.295e-2	5	3.95e-3	6
16		min	0.003	6	-0.539	6	-0.15	3	-1.9e-2	5	-3.122e-3	3	-6.694e-4	2
17	N9	max	-0.018	2	-0.201	5	0.414	5	5.597e-3	1	8.593e-4	1	-2.147e-3	5
18		min	-0.118	6	-0.471	3	-0.326	1	-3.96e-3	5	-6.462e-3	5	-3.921e-3	1
19	N10	max	0.294	1	-0.045	2	2.184	5	4.652e-3	3	1.295e-2	5	5.352e-3	1
20		min	0.145	5	-0.539	6	-0.374	3	-3.372e-2	5	-3.122e-3	3	1.896e-3	5
21	N11	max	0.249	2	-0.202	5	0.159	4	7.307e-3	1	4.401e-4	3	-1.043e-3	6
22		min	-0.027	6	-0.471	3	0.051	3	-4.292e-3	5	-2.678e-3	5	-3.648e-3	1
23	N12	max	0.305	2	-0.044	2	0.118	4	4.363e-3	3	5.867e-3	5	1.531e-3	6
24		min	-0.065	6	-0.539	6	-0.146	2	-1.06e-2	5	-2.668e-3	3	-4.546e-3	2
25	N13	max	0.114	2	-0.061	5	0.006	5	6.429e-3	3	2.249e-3	1	-1.9e-3	5
26		min	0.001	6	-0.234	3	-0.055	1	-7.373e-4	5	-2.587e-3	5	-3.609e-3	1

Envelope Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
27	N14	max	0.078	2	-0.061	5	0.155	5	6.404e-3	3	2.249e-3	1	-1.63e-4	2
28		min	-0.106	6	-0.235	3	-0.239	3	-5.357e-3	5	-2.587e-3	5	-2.975e-3	6
29	N15	max	0.244	2	-0.062	5	0.163	3	4.134e-3	1	1.502e-3	3	-9.746e-5	6
30		min	-0.034	6	-0.235	3	0.026	5	1.334e-4	5	-2.173e-3	5	-3.053e-3	2
31	N16	max	0	6	0	6	0	6	0	6	0	6	0	6
32		min	0	1	0	1	0	1	0	1	0	1	0	1
33	N17	max	0	2	0	5	0	4	0	5	0	3	0	2
34		min	0	6	0	3	0	3	0	3	0	4	0	6
35	N18	max	0.047	4	-0.034	2	0.083	4	6.145e-4	2	-7.42e-4	3	-7.931e-4	2
36		min	0.009	3	-0.164	6	0.015	3	-2.704e-3	6	-3.242e-3	4	-5.688e-3	6
37	N19	max	0.08	4	-0.034	2	0.081	5	6.145e-4	2	-7.42e-4	3	-7.942e-4	2
38		min	0.049	2	-0.164	6	-0.008	3	-2.704e-3	6	-3.242e-3	4	-5.688e-3	6
39	N20	max	0.035	2	-0.034	2	0.087	4	6.145e-4	2	-7.42e-4	3	-7.92e-4	2
40		min	-0.041	6	-0.164	6	0.039	3	-2.704e-3	6	-3.242e-3	4	-5.688e-3	6
41	N21	max	0.507	2	0.033	5	0.151	4	2.068e-3	2	3.544e-3	4	4.256e-3	2
42		min	-0.069	4	-0.451	3	-0.196	2	-4.207e-3	3	-8.418e-3	2	-9.32e-4	6
43	N22	max	0.51	2	-0.266	5	0.244	4	8.664e-3	1	9.737e-3	2	1.126e-2	2
44		min	-0.231	4	-0.502	3	-0.198	2	-2.069e-3	5	-4.219e-3	4	-8.824e-3	4
45	N23	max	0.463	2	0.022	5	0.14	4	2.068e-3	2	3.544e-3	4	4.255e-3	2
46		min	-0.051	4	-0.43	3	-0.17	2	-4.207e-3	3	-8.418e-3	2	-9.322e-4	6
47	N24	max	0.459	2	-0.252	5	0.231	4	8.664e-3	1	9.736e-3	2	1.126e-2	2
48		min	-0.209	4	-0.482	3	-0.169	2	-2.07e-3	5	-4.219e-3	4	-8.823e-3	4
49	N25	max	0.659	2	0.022	5	0.193	6	2.066e-3	2	3.544e-3	4	5.615e-3	2
50		min	-0.068	4	-0.43	3	-0.245	2	-4.27e-3	6	-8.418e-3	2	-9.292e-4	6
51	N26	max	1.498	2	-0.252	5	0.516	4	8.633e-3	1	9.736e-3	2	2.6e-2	2
52		min	-0.631	4	-0.483	3	-0.58	2	-7.634e-3	5	-4.219e-3	4	-8.792e-3	4
53	N27	max	0.276	1	0.022	5	0.288	4	5.304e-3	2	2.153e-3	4	7.836e-3	1
54		min	-0.065	5	-0.43	3	0.011	3	-3.617e-4	6	-3.817e-3	2	1.107e-3	5
55	N28	max	0.227	4	-0.252	5	0.197	1	7.043e-3	2	3.841e-3	2	3.493e-3	2
56		min	0.053	3	-0.482	3	0.047	3	-1.009e-3	6	-2.456e-3	6	-8.989e-3	4
57	N29	max	0.118	1	-0.037	2	0.073	4	3.945e-4	5	6.272e-4	4	1.62e-3	2
58		min	0.014	6	-0.197	6	0.009	3	-4.984e-3	3	-6.133e-3	2	-2.733e-3	6
59	N30	max	0.299	2	-0.037	2	0.206	6	1.55e-4	2	6.272e-4	4	6.239e-3	2
60		min	-0.084	6	-0.197	6	0.023	2	-5.394e-3	6	-6.133e-3	2	-2.722e-3	6
61	N31	max	0.146	1	-0.037	2	0.194	5	2.81e-3	5	2.512e-3	4	8.052e-4	2
62		min	0.092	5	-0.198	6	-0.024	3	-1.4e-3	3	-4.19e-3	2	-1.399e-3	6
63	N32	max	0	1	0	2	0	4	0	5	0	5	0	3
64		min	0	5	0	6	0	2	0	3	0	1	0	5
65	N33	max	0.062	1	-0.064	5	0.11	5	-1.509e-4	5	4.29e-3	5	5.95e-3	3
66		min	-0.063	5	-0.178	3	-0.105	1	-3.592e-3	3	-4.871e-3	1	2.941e-3	5
67	N34	max	0.029	2	-0.064	5	0.109	5	-1.498e-4	5	4.29e-3	5	5.95e-3	3
68		min	-0.096	4	-0.178	3	-0.137	1	-3.592e-3	3	-4.871e-3	1	2.941e-3	5
69	N35	max	0.1	1	-0.064	5	0.115	4	-1.52e-4	5	4.29e-3	5	5.95e-3	3
70		min	-0.037	5	-0.178	3	-0.077	2	-3.592e-3	3	-4.871e-3	1	2.941e-3	5
71	N36	max	0.282	4	-0.05	2	0.31	4	2.088e-3	6	5.914e-3	1	6.793e-3	4
72		min	0.054	3	-0.547	6	0.005	3	-2.711e-3	2	1.042e-3	6	2.568e-3	2
73	N37	max	0.856	1	0.009	5	0.352	1	7.355e-5	5	-2.985e-3	6	1.847e-2	1
74		min	0.06	5	-0.491	3	0.096	6	-1.164e-2	1	-1.375e-2	1	2.683e-3	6
75	N38	max	0.255	4	-0.057	2	0.294	4	2.087e-3	6	5.913e-3	1	6.793e-3	4
76		min	0.048	3	-0.519	6	-0.003	2	-2.711e-3	2	1.042e-3	6	2.568e-3	2
77	N39	max	0.784	1	0	5	0.311	1	7.379e-5	5	-2.984e-3	6	1.847e-2	1
78		min	0.04	5	-0.474	3	0.087	6	-1.164e-2	1	-1.375e-2	1	2.683e-3	6
79	N40	max	0.499	4	-0.057	2	0.266	5	1.984e-3	6	5.913e-3	1	6.783e-3	4
80		min	0.251	3	-0.519	6	-0.054	3	-2.708e-3	2	1.042e-3	6	3.929e-3	2
81	N41	max	2.168	1	0	5	0.868	1	-5.346e-3	6	-2.984e-3	6	3.317e-2	1

Envelope Node Displacements (Continued)

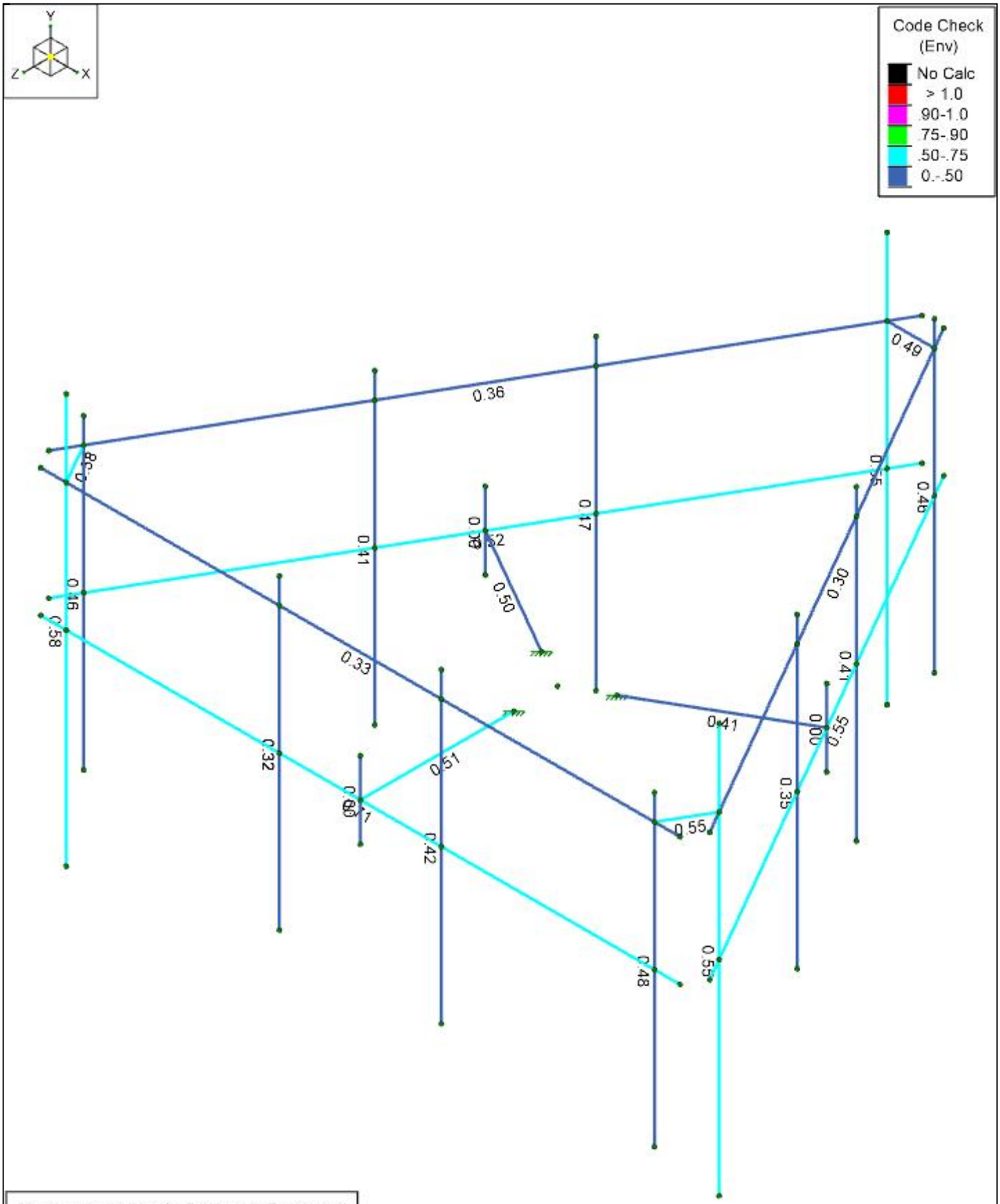
	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
82		min	0.183	5	-0.474	3	0.333	6	-1.159e-2	1	-1.375e-2	1	2.661e-3	6
83	N42	max	0.22	2	-0.057	2	0.312	5	1.841e-3	6	2.298e-3	1	8.887e-3	4
84		min	-0.039	6	-0.519	6	-0.114	1	-2.465e-3	2	2.298e-4	6	3.755e-4	2
85	N43	max	0.128	2	0	5	0.348	5	4.461e-3	5	-1.387e-3	5	1.098e-2	1
86		min	-0.116	4	-0.474	3	-0.247	1	-1.124e-2	1	-7.527e-3	1	2.897e-3	5
87	N44	max	0.039	1	-0.086	2	0.157	5	1.212e-3	4	5.239e-3	4	6.894e-3	6
88		min	0.004	6	-0.227	6	-0.118	1	-2.506e-3	2	3.545e-4	3	3.281e-3	2
89	N45	max	0.31	1	-0.086	2	0.198	5	3.437e-4	3	5.239e-3	4	8.728e-3	1
90		min	0.17	5	-0.227	6	-0.033	3	-2.502e-3	2	3.545e-4	3	4.259e-3	5
91	N46	max	0.042	2	-0.086	2	0.255	5	2.036e-3	5	3.433e-3	4	3.919e-3	4
92		min	-0.143	4	-0.227	6	-0.223	1	-2.024e-3	1	1.51e-3	3	1.074e-4	2
93	N47	max	0.227	2	-0.208	5	0.2	4	7.307e-3	1	4.401e-4	3	-1.044e-3	6
94		min	-0.033	6	-0.48	3	0.041	3	-4.292e-3	5	-2.68e-3	5	-3.649e-3	1
95	N48	max	0.224	2	-0.019	2	0.337	5	4.36e-3	3	5.869e-3	5	1.531e-3	6
96		min	-0.037	6	-0.548	6	-0.112	1	-1.166e-2	5	-2.668e-3	3	-4.158e-3	2
97	N49	max	0.227	2	-0.202	5	0.184	4	7.307e-3	1	4.401e-4	3	-1.043e-3	6
98		min	-0.033	6	-0.471	3	0.044	3	-4.292e-3	5	-2.678e-3	5	-3.648e-3	1
99	N50	max	0.224	2	-0.044	2	0.302	5	4.36e-3	3	5.867e-3	5	1.53e-3	6
100		min	-0.037	6	-0.539	6	-0.101	1	-1.166e-2	5	-2.668e-3	3	-4.158e-3	2
101	N51	max	0.226	2	-0.062	5	0.14	3	4.134e-3	1	1.502e-3	3	-9.746e-5	6
102		min	-0.034	6	-0.235	3	0.026	5	1.334e-4	5	-2.173e-3	5	-3.053e-3	2
103	N52	max	0.343	1	0.039	5	0.272	4	5.304e-3	2	2.154e-3	4	7.837e-3	1
104		min	-0.069	5	-0.439	3	-0.002	2	-3.625e-4	6	-3.819e-3	2	1.108e-3	5
105	N53	max	0.239	2	-0.276	5	0.205	4	7.042e-3	2	3.842e-3	2	4.554e-3	2
106		min	-0.032	6	-0.49	3	0.054	3	-1.068e-3	6	-2.456e-3	6	-8.987e-3	4
107	N54	max	0.323	1	0.022	5	0.265	4	5.304e-3	2	2.153e-3	4	7.836e-3	1
108		min	-0.058	5	-0.43	3	0.009	2	-3.617e-4	6	-3.817e-3	2	1.107e-3	5
109	N55	max	0.219	2	-0.252	5	0.197	4	7.041e-3	2	3.841e-3	2	4.554e-3	2
110		min	-0.02	6	-0.482	3	0.049	3	-1.069e-3	6	-2.456e-3	6	-8.987e-3	4
111	N56	max	0.149	1	-0.037	2	0.177	5	2.81e-3	5	2.512e-3	4	8.052e-4	2
112		min	0.092	5	-0.198	6	-0.016	3	-1.4e-3	3	-4.19e-3	2	-1.399e-3	6
113	N57	max	0.234	2	-0.045	2	0.323	5	1.841e-3	6	2.3e-3	1	8.887e-3	4
114		min	-0.026	6	-0.534	6	-0.094	1	-2.464e-3	2	2.3e-4	6	3.758e-4	2
115	N58	max	0.363	1	0.03	5	0.274	4	4.072e-3	5	-1.388e-3	5	1.204e-2	1
116		min	-0.051	5	-0.478	3	-0.023	2	-1.124e-2	1	-7.529e-3	1	2.896e-3	5
117	N59	max	0.222	2	-0.057	2	0.318	5	1.841e-3	6	2.298e-3	1	8.887e-3	4
118		min	-0.027	6	-0.519	6	-0.101	1	-2.465e-3	2	2.298e-4	6	3.755e-4	2
119	N60	max	0.324	1	0	5	0.269	4	4.073e-3	5	-1.387e-3	5	1.204e-2	1
120		min	-0.058	5	-0.474	3	-0.045	2	-1.124e-2	1	-7.527e-3	1	2.896e-3	5
121	N61	max	0.043	2	-0.086	2	0.243	5	2.036e-3	5	3.433e-3	4	3.919e-3	4
122		min	-0.119	4	-0.227	6	-0.21	1	-2.024e-3	1	1.51e-3	3	1.074e-4	2
123	N62	max	0.225	2	-0.061	2	0.143	6	4.576e-3	3	4.912e-3	5	1.537e-3	6
124		min	-0.036	6	-0.258	6	0.043	2	-1.849e-3	5	-1.862e-3	3	-2.884e-3	2
125	N63	max	0.114	2	-0.061	2	0.131	5	6.176e-3	3	9.644e-3	5	4.389e-3	6
126		min	0.002	6	-0.258	6	-0.016	3	-5.027e-3	5	-1.636e-3	3	-7.882e-4	2
127	N64	max	0.186	1	-0.061	2	0.434	5	6.151e-3	3	9.644e-3	5	4.452e-3	3
128		min	0.128	5	-0.258	6	-0.237	3	-9.641e-3	5	-1.636e-3	3	2.073e-3	5
129	N65	max	0.242	2	-0.061	2	0.169	6	4.576e-3	3	4.912e-3	5	1.537e-3	6
130		min	-0.046	6	-0.258	6	0.043	2	-1.849e-3	5	-1.862e-3	3	-2.884e-3	2
131	N66	max	0.127	4	-0.081	2	0.164	5	2.592e-3	2	1.575e-3	2	-1.67e-5	2
132		min	0.081	2	-0.221	6	-0.006	3	8.331e-5	6	-1.88e-3	6	-3.842e-3	4
133	N67	max	0.193	2	-0.081	2	0.231	5	4.694e-3	1	4.932e-3	2	4.239e-3	2
134		min	-0.265	6	-0.221	6	-0.111	1	-4.36e-3	5	-4.173e-3	4	-6.844e-3	6
135	N68	max	0.07	2	-0.081	2	0.119	4	4.704e-3	1	4.932e-3	2	1.144e-3	2
136		min	-0.018	6	-0.22	6	0.023	3	2.613e-4	5	-4.173e-3	4	-6.871e-3	6

Envelope Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
137	N69	max	0.15	4	-0.081	2	0.17	5	2.592e-3	2	1.575e-3	2	-1.67e-5	2
138		min	0.081	2	-0.221	6	-0.005	3	8.331e-5	6	-1.88e-3	6	-3.842e-3	4
139	N70	max	0.062	2	-0.045	5	0.216	5	2.487e-3	5	-8.049e-4	5	4.642e-3	1
140		min	-0.163	4	-0.229	3	-0.2	1	-4.667e-3	1	-4.802e-3	1	6.968e-4	5
141	N71	max	0.532	1	-0.045	5	0.254	4	-4.829e-3	5	-5.105e-4	5	1.016e-2	1
142		min	-0.003	5	-0.229	3	0.195	2	-6.972e-3	1	-1.058e-2	1	2.406e-3	5
143	N72	max	0.195	1	-0.045	5	0.097	4	-2.081e-4	5	-5.105e-4	5	7.079e-3	1
144		min	-0.09	5	-0.228	3	-0.029	2	-6.987e-3	1	-1.058e-2	1	2.409e-3	5
145	N73	max	0.036	2	-0.045	5	0.231	5	2.487e-3	5	-8.049e-4	5	4.642e-3	1
146		min	-0.169	4	-0.229	3	-0.228	1	-4.667e-3	1	-4.802e-3	1	6.968e-4	5

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M1	HSS4X4X4	0.512	0	1	0.088	0	y	6	134.361	139.518	16.181	16.181	1.809	H1-1b
2	M2	PIPE_4.0	0	9	3	0	9		4	92.571	93.24	10.631	10.631	1	H1-1b*
3	M3	PIPE_3.0	0.714	75	4	0.384	75		4	53.776	65.205	5.749	5.749	1	H3-6
4	M4	HSS4X4X4	0.408	0	6	0.075	0	z	4	134.361	139.518	16.181	16.181	1.798	H1-1b
5	M5	PIPE_4.0	0	9	6	0	9		1	92.571	93.24	10.631	10.631	1	H1-1b*
6	M6	PIPE_3.0	0.554	75	1	0.264	75		1	53.776	65.205	5.749	5.749	1	H1-1b
7	M7	HSS4X4X4	0.498	0	4	0.089	0	z	4	134.361	139.518	16.181	16.181	1.701	H1-1b
8	M8	PIPE_4.0	0	9	6	0	9		5	92.571	93.24	10.631	10.631	1	H1-1b*
9	M9	PIPE_3.0	0.523	75	1	0.28	54.687		2	53.776	65.205	5.749	5.749	1	H3-6
10	M10	PIPE_2.0	0.333	6.25	3	0.16	54.688		4	6.295	32.13	1.872	1.872	1	H1-1b
11	M11	PIPE_2.0	0.359	143.75	6	0.143	143.75		2	6.295	32.13	1.872	1.872	1	H1-1b
12	M12	PIPE_2.0	0.304	6.25	3	0.132	95.312		1	6.295	32.13	1.872	1.872	1	H1-1b
13	M13	L2.5X2.5X4	0.585	0	5	0.206	11.107	z	5	37.493	38.556	1.114	2.537	1.5	H2-1
14	M14	L2.5X2.5X4	0.553	11.107	2	0.128	0	y	2	37.493	38.556	1.114	2.537	1.5	H2-1
15	M15	L2.5X2.5X4	0.489	0	1	0.238	11.107	z	1	37.493	38.556	1.114	2.537	1.5	H2-1
16	M16	PIPE_2.0	0.46	36	3	0.168	36		1	20.867	32.13	1.872	1.872	1	H1-1b
17	M17	PIPE_2.0	0.407	36	1	0.103	36		1	20.867	32.13	1.872	1.872	1	H1-1b
18	M18	PIPE_2.5	0.551	48	1	0.205	48		2	30.038	50.715	3.596	3.596	1	H1-1b
19	M19	PIPE_2.0	0.463	36	3	0.118	36		1	20.867	32.13	1.872	1.872	1	H1-1b
20	M20	PIPE_2.0	0.414	36	3	0.079	36		1	20.867	32.13	1.872	1.872	1	H1-1b
21	M21	PIPE_2.5	0.554	48	2	0.215	48		1	30.038	50.715	3.596	3.596	1	H1-1b
22	M22	PIPE_2.0	0.479	36	6	0.131	36		4	20.867	32.13	1.872	1.872	1	H1-1b
23	M23	PIPE_2.0	0.423	36	6	0.082	7.5		6	20.867	32.13	1.872	1.872	1	H1-1b
24	M24	PIPE_2.5	0.581	48	4	0.239	48		5	30.038	50.715	3.596	3.596	1	H1-1b
25	M25	PIPE_2.0	0.321	36	1	0.141	36		4	20.867	32.13	1.872	1.872	1	H1-1b
26	M26	PIPE_2.0	0.347	36	3	0.1	36		1	20.867	32.13	1.872	1.872	1	H1-1b
27	M27	PIPE_2.0	0.469	36	4	0.157	36		2	20.867	32.13	1.872	1.872	1	H1-1b
28	M28	PIPE_2.0	0.321	36	1	0.141	36		4	20.867	32.13	1.872	1.872	1	H1-1b



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek	CTHA506A - Mount	SK-1
PPG		Jun 22, 2023
20074.56		CTHA506A_AMA.r3d

CENTEK engineering
Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: Connection to Monopole

Location: Stratford, CT

Date: 06/19/2023

Prepared by: PPG; Checked by: CFC
Job No. 23002.02

Low Profile Platform Frame Connection to Monopole:

Anchor Data

5/8" Dia. SAE J429 GR-2 Thru Bolt

Diameter of Bolts =	$D := 0.625 \cdot in$	(User Input)
Number of Bolts =	$N := 3$	(User Input)
Spacing Between Bolts =	$S := 4\ in$	(User Input)
Tensile Strength =	$F_{ut} := 74000\ psi$	(User Input)
Yield Strength =	$F_{uv} := 57000\ psi$	(User Input)
Design Tension Strength =	$\Phi F_{nt} := \frac{1}{4} \cdot D^2 \cdot \pi \cdot F_{ut} = 22.7\ kip$	(User Input)
Design Shear Strength=	$\Phi F_{nv} := \frac{1}{4} \cdot D^2 \cdot \pi \cdot F_{uv} = 17.487\ kip$	(User Input)

Design Reactions:

Envelope

Force X =	$Shear_x := 0.394 \cdot kip$	(User Input)
Force Y=	$Vertical := 2.626\ kip$	(User Input)
Force Z=	$Shear_z := 0.244 \cdot kip$	(User Input)
Moment X=	$M_X := 7.1 \cdot kip \cdot ft$	(User Input)
Moment Y=	$M_Y := 0.669 \cdot kip \cdot ft$	(User Input)
Moment Z=	$M_Z := 0.179\ kip \cdot ft$	(User Input)

Anchor Check:

Max Tension Force = $T_{Max} := \frac{Shear_z}{N} + \frac{M_Y + M_X}{S \cdot \frac{N}{2}} = 15.62\ kip$

Max Shear Force = $V_{Max} := \frac{Shear_x + Vertical}{N} + \frac{M_Z}{S \cdot \frac{N}{2}} = 1.36\ kip$

Condition 1 = $Condition1 := \text{if}\left(\frac{T_{Max}}{\Phi F_{nt}} \le 1.00\ , \text{“OK”}\ , \text{“NG”}\right) = \text{“OK”}$

Condition 2 = $Condition2 := \text{if}\left(\frac{V_{Max}}{\Phi F_{nv}} \le 1.00\ , \text{“OK”}\ , \text{“NG”}\right) = \text{“OK”}$

Condition 3 = $Condition3 := \text{if}\left(\frac{T_{Max}}{\Phi F_{nt}} + \frac{V_{Max}}{\Phi F_{nv}} \le 1.0\ , \text{“OK”}\ , \text{“NG”}\right) = \text{“OK”}$

% of Capacity = $\max\left(\frac{T_{Max}}{\Phi F_{nt}}, \frac{V_{Max}}{\Phi F_{nv}}, \left(\frac{T_{Max}}{\Phi F_{nt}}\right) + \left(\frac{V_{Max}}{\Phi F_{nv}}\right)\right) = 76.6\%$

EBI Consulting

environmental | engineering | due diligence

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CTHA506A

AT&T Wethersfield Monopole
75 Wells Road
Wethersfield, Connecticut 06109

June 23, 2023

EBI Project Number: 6223002639

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**9.13%**

21 B Street, Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

June 23, 2023

T-Mobile
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, Connecticut 06002

Emissions Analysis for Site: CTHA506A - AT&T Wethersfield Monopole

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **75 Wells Road** in **Wethersfield, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 75 Wells Road in Wethersfield, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower. **All calculations were performed using Far Field Analysis.**

For all calculations, all equipment was calculated using the following assumptions:

1) 1 LTE channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts.

2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.

3) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts per Channel.

4) 1 LTE channel (PCS Band - 1900 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 60 Watts per Channel.

5) 1 LTE channel (PCS Band - 1900 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts per Channel.

6) 1 NR channel (PCS Band - 1900 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 60 Watts per Channel.

7) 1 NR channel (PCS Band - 1900 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts per Channel.

8) 1 LTE channel (AWS Band – 2100 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts per Channel.

9) 1 LTE Traffic channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 45 Watts.

10) 1 LTE Broadcast channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 15 Watts.

11) 1 NR Traffic channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 90 Watts.

12) 1 NR Broadcast channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 30 Watts.

13) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

14) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

15) The antennas used in this modeling are the ERICSSON SON_AIR6419 B41 LTE TB 02.09.21 2500 TMO for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32_KRD901146-1 02DT 1900 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24 43-U-NA20 02DT 600 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s) in Sector A, the ERICSSON SON_AIR6419 B41 LTE TB 02.09.21 2500 TMO for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32_KRD901146-1 02DT 1900 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24 43-U-NA20 02DT 600 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s) in Sector B, the ERICSSON SON_AIR6419 B41 LTE TB 02.09.21 2500 TMO for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32_KRD901146-1 02DT 1900 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the

RFS APXVAARR24 43-U-NA20 02DT 600 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

16) The antenna mounting height centerline of the proposed antennas is 95 feet above ground level (AGL).

17) Emissions values for additional carriers were calculated in Far Field utilizing the antenna models provided in the structural analysis.

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	ERICSSON SON_AIR6419 B41 LTE TB 02.09.21 2500 TMO	Make / Model:	ERICSSON SON_AIR6419 B41 LTE TB 02.09.21 2500 TMO	Make / Model:	ERICSSON SON_AIR6419 B41 LTE TB 02.09.21 2500 TMO
Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz
Gain:	22.05 dBd / 22.05 dBd / 15.55 dBd / 15.55 dBd	Gain:	22.05 dBd / 22.05 dBd / 15.55 dBd / 15.55 dBd	Gain:	22.05 dBd / 22.05 dBd / 15.55 dBd / 15.55 dBd
Height (AGL):	95 feet	Height (AGL):	95 feet	Height (AGL):	95 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	180.00 Watts	Total TX Power (W):	180.00 Watts	Total TX Power (W):	180.00 Watts
ERP (W):	23,258.96	ERP (W):	23,258.96	ERP (W):	23,258.96
Antenna A1 MPE %:	**10.56%**	Antenna B1 MPE %:	**10.56%**	Antenna C1 MPE %:	**10.56%**
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR 32_KRD901146-1 02DT 1900	Make / Model:	Ericsson AIR 32_KRD901146-1 02DT 1900	Make / Model:	Ericsson AIR 32_KRD901146-1 02DT 1900
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.35 dBd / 15.35 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.35 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.35 dBd
Height (AGL):	95 feet	Height (AGL):	95 feet	Height (AGL):	95 feet
Channel Count:	3	Channel Count:	3	Channel Count:	3
Total TX Power (W):	240.00 Watts	Total TX Power (W):	240.00 Watts	Total TX Power (W):	240.00 Watts
ERP (W):	8,226.43	ERP (W):	8,226.43	ERP (W):	8,226.43
Antenna A2 MPE %:	**3.73%**	Antenna B2 MPE %:	**3.73%**	Antenna C2 MPE %:	**3.73%**
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	RFS APXVAARR24 43-U-NA20 02DT 600	Make / Model:	RFS APXVAARR24 43-U-NA20 02DT 600	Make / Model:	RFS APXVAARR24 43-U-NA20 02DT 600
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz
Gain:	13.14 dBd / 13.14 dBd / 13.2 dBd / 15.29 dBd / 15.29 dBd	Gain:	13.14 dBd / 13.14 dBd / 13.2 dBd / 15.29 dBd / 15.29 dBd	Gain:	13.14 dBd / 13.14 dBd / 13.2 dBd / 15.29 dBd / 15.29 dBd
Height (AGL):	95 feet	Height (AGL):	95 feet	Height (AGL):	95 feet
Channel Count:	5	Channel Count:	5	Channel Count:	5
Total TX Power (W):	320.00 Watts	Total TX Power (W):	320.00 Watts	Total TX Power (W):	320.00 Watts
ERP (W):	7,580.96	ERP (W):	7,580.96	ERP (W):	7,580.96
Antenna A3 MPE %:	**5.29%**	Antenna B3 MPE %:	**5.29%**	Antenna C3 MPE %:	**5.29%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector B):	4.91%
AT&T	3.09%
Site Total MPE % :	9.13%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	3.86%
T-Mobile Sector B Total:	4.91%
T-Mobile Sector C Total:	4.40%
Site Total MPE % :	9.13%

T-Mobile Maximum MPE Power Values (Sector B)

T-Mobile Frequency Band / Technology (Sector B)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 2500 MHz LTE	1	7214.604258	95	32.74530515	2500 MHz LTE	1000.0	3.27%
T-Mobile 2500 MHz NR	1	14429.20852	95	65.49061031	2500 MHz NR	1000.0	6.55%
T-Mobile 2500 MHz LTE	1	538.382902	95	2.443586894	2500 MHz LTE	1000.0	0.24%
T-Mobile 2500 MHz NR	1	1076.765804	95	4.887173789	2500 MHz NR	1000.0	0.49%
T-Mobile 1900 MHz LTE	1	2056.606719	95	9.33442947	1900 MHz LTE	1000.0	0.93%
T-Mobile 1900 MHz NR	1	2056.606719	95	9.33442947	1900 MHz NR	1000.0	0.93%
T-Mobile 2100 MHz LTE	1	4113.213439	95	18.66885894	2100 MHz LTE	1000.0	1.87%
T-Mobile 600 MHz LTE	1	720.3772538	95	3.269614265	600 MHz LTE	400.0	0.82%
T-Mobile 600 MHz NR	1	1440.754508	95	6.53922853	600 MHz NR	400.0	1.63%
T-Mobile 700 MHz LTE	1	730.3986996	95	3.31509913	700 MHz LTE	467.0	0.71%
T-Mobile 1900 MHz LTE	1	2344.714596	95	10.6420799	1900 MHz LTE	1000.0	1.06%
T-Mobile 1900 MHz NR	1	2344.714596	95	10.6420799	1900 MHz NR	1000.0	1.06%
						Total:	**5.02%**

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	3.86%
Sector B:	4.91%
Sector C:	4.40%
T-Mobile Maximum MPE % (Sector B):	4.91%
Site Total:	9.13%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **9.13%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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