NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Denise Sabo
4 Angela's Way, Burlington CT 06013
203-435-3640
denise@northeastsitesolutions.com

March 31, 2021

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

RE: Notice of Exempt Modification
25 Lower Boulevard, New London CT 06320
Latitude: 41.32247500
Longitude: -72.09370000
T-Mobile Site#: CTNL041A_L600_Anchor_L1900

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 59-foot level of the existing 60-foot self-support tower at 25 Lower Boulevard, New London CT 06320. The 60-foot self-support tower and property are both owned by The City of New London. T-Mobile now intends to replace six (6) of its existing antennas with three (3) new antenna 1900/2100 MHz antenna, and three (3) new 2500 MHz antenna. T-Mobile also intends to add three (3) new 600/700/1900 MHz antenna. The new antennas would be installed at the 59-foot and 57-foot level of the tower. T-Mobile is also proposing tower mount reinforcements, and tower modifications from the 5-ft – 25-ft level of the support tower. See attached modification plan.

Planned Modifications:
Remove:
(12) 7/8" Coax
(1) Hybrid Line
(3) Twin Style 1B- AWS

Remove and Replace:
(3) Air21 B2P B4A Antenna (Remove) - (3) Air32 B66A B2A- 1900/2100 MHz Antenna (Replace)
(3) Air21 B2A B12P (Remove) – (3) Air6449 B41- 2500 MHz 5G Antenna (Replace)
(3) RRUS11 B12 (Remove) – (3) Radio 4449 B71+B85 (Replace)

Install New:
(3) RFS APXVAALL24_43-U-NA20- 600/700/1900/2100 MHz 5G Antenna
(2) Hybrid Line
(3) Radio 4415 B25
Mount Stiff Arm Kit (STK-U)

Existing to Remain:
(1) Hybrid line

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Ground Work:
(1) AAV Cabinet
(1) BBU
(1) 6160 Radio Cabinet

This facility was approved by the CT Siting Council TS- T-MOBILE-095-060929–on October 17, 2006. T-Mobile tower share was approved to install three (3) antenna on the existing tower. Please see attached.

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 Passero, Steven Fields, Chief Administrative Officer, Felix J. Reyes, Director of the Office of Development & Planning, Thomas J. Curcio, Fire Chief.

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,

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

NORTHEAST SITE SOLUTIONS
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Attachments
cc: Mayor Michael Passero
New London City Hall
181 State Street
New London, CT 06320

Steven Fields- Chief Administrative Officer
New London City Hall
181 State Street
New London, CT 06320

Felix J. Reyes- Director of the Office of Development & Planning
New London City Hall
181 State Street
New London, CT 06320

Thomas J. Curcio- Fire Chief
New London Fire Department Headquarters
289 Bank Street
New London, CT 06320

Exhibit A

CTNL-041

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

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

Daniel F. Caruso
Chairman

October 17, 2006

Karina Fournier
Zoning Dept.
T-Mobile
30 Cold Springs Road
Rocky Hill, CT 06067

RE: **TS-T-MOBILE-095-060929** - Omnipoint Communications, Inc. request for an order to approve tower sharing at an approved telecommunications facility located at 25 Lower Boulevard, New London, Connecticut.

Dear Ms. Fournier:

At a public meeting held October 10, 2006, the Connecticut Siting Council (Council) ruled that the shared use of this tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility may require an explicit request to this agency pursuant to General Statutes § 16-50aa or notice pursuant to Regulations of Connecticut State Agencies Section 16-50j-73, as applicable. Such request or notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction. Please be advised that the validity of this action shall expire one year from the date of this letter.

The proposed shared use is to be implemented as specified in your letter dated September 29, 2006, including the placement of all necessary equipment and shelters within the tower compound.

Thank you for your attention and cooperation.

Very truly yours,

Daniel F. Caruso
Chairman

DFC/MP/laf

c: The Honorable Elizabeth Sabilia, Mayor, City of New London
Michelle J. Greiner, Zoning Enforcement Officer, City of New London

G:\EM\T-MOBILE\NewLondon\dc101006.DOC

Exhibit B

LOWER BLVD

Location	LOWER BLVD	**City, State, Zip**	
Mblu	G23/ 41/ 36/ /	**Acct#**	G23 0041 0036
Owner	NEW LONDON CITY OF-LOW	**Assessment**	$794,080
Appraisal	$1,134,400	**PID**	1088
Building Count	1		

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$956,900	$177,500	$1,134,400

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$669,830	$124,250	$794,080

Owner of Record

Owner	NEW LONDON CITY OF-LOW	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	181 STATE ST NEW LONDON, CT 06320	**Book & Page**	0446/0303
		Sale Date	01/01/1700
		Instrument	

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
NEW LONDON CITY OF-LOW	$0		0446/0303		01/01/1700

Building Information

Building 1 : Section 1

Year Built:	1979
Living Area:	7,206
Replacement Cost:	$1,230,946
Building Percent Good:	77

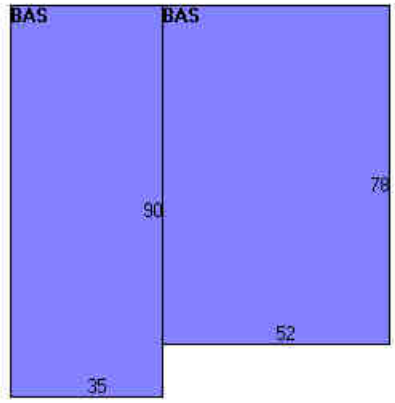
Replacement Cost
Less Depreciation: $947,800

Building Attributes	
Field	**Description**
STYLE	Fire Station
MODEL	Ind/Lg UnfinCM
Grade	Above Ave
Stories:	1
Occupancy	1.00
Exterior Wall 1	Brick/Masonry
Exterior Wall 2	
Roof Structure	Steel Frm/Trus
Roof Cover	Tar & Gravel
Interior Wall 1	Minim/Masonry
Interior Wall 2	Drywall/Sheet
Interior Floor 1	Concr-Finished
Interior Floor 2	Vinyl/Asphalt
Heating Fuel	Gas
Heating Type	Hot Water
AC Type	None
Struct Class	
Bldg Use	MUN FIRE MDL-96
Total Rooms	
Total Bedrms	00
Total Baths	0
Conv Type	
Usrfld 219	
1st Floor Use:	903K
Heat/AC	NONE
Frame Type	STEEL
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	16.00
% Comn Wall	0.00

Building Photo

(http://images.vgsi.com/photos/NewLondonCTPhotos//\00\01\18\37.jpg)

Building Layout



(http://images.vgsi.com/photos/NewLondonCTPhotos//Sketches/1088_110

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	7,206	7,206
		7,206	7,206

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	903K
Description	MUN FIRE MDL-96
Zone	R-1
Neighborhood	EX1
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0.36
Frontage	0
Depth	0
Assessed Value	$124,250
Appraised Value	$177,500

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV1	PAVING-ASPHALT			3000.00 S.F.	$4,500	1
SHD1	SHED FRAME			48.00 S.F.	$400	1
PAV2	PAVING-CONC			1850.00 S.F.	$4,200	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$956,900	$177,500	$1,134,400
2018	$956,900	$177,500	$1,134,400
2017	$870,600	$177,500	$1,048,100

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$669,830	$124,250	$794,080
2018	$669,830	$124,250	$794,080
2017	$609,420	$124,250	$733,670

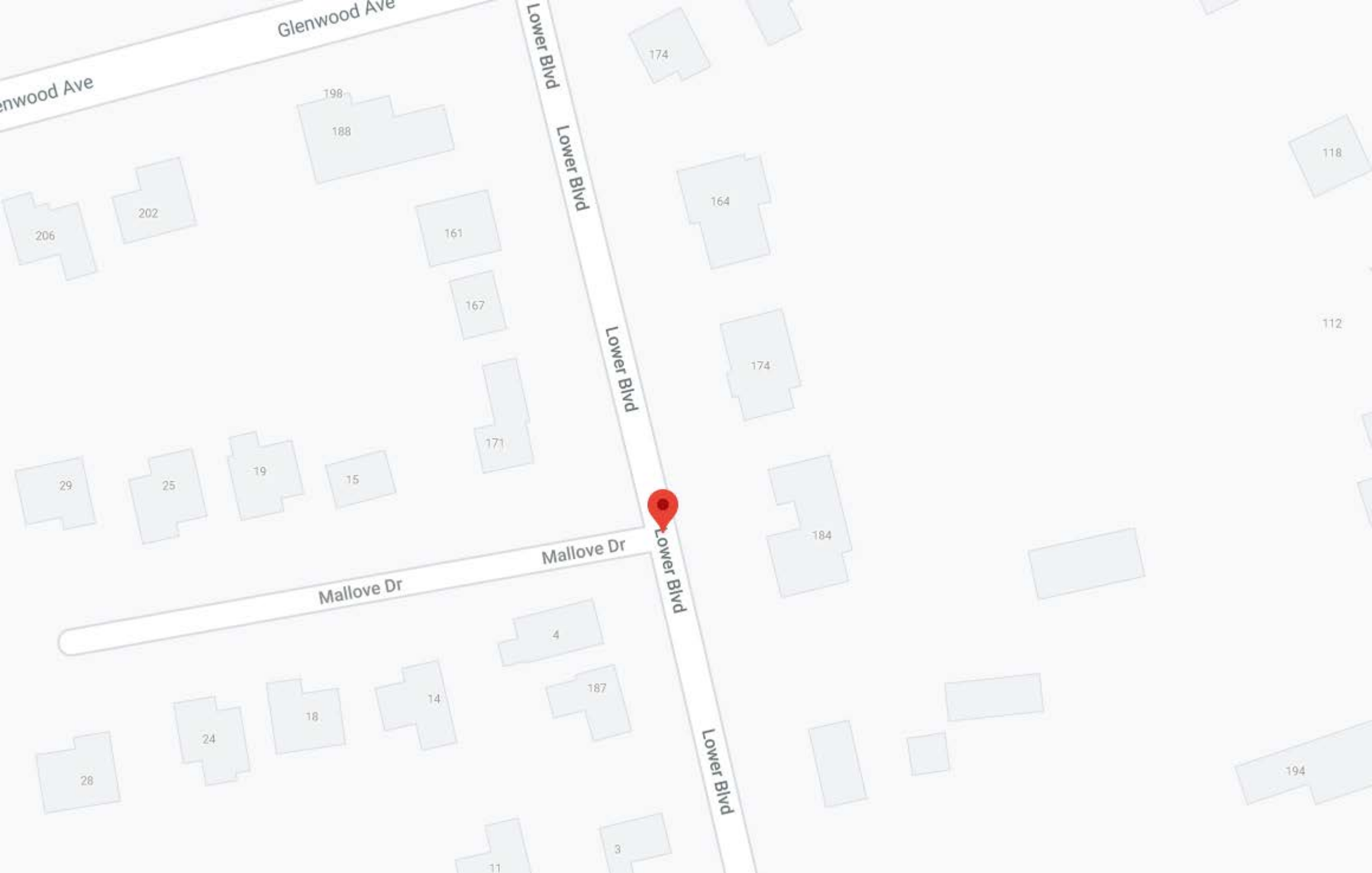

Glenwood Ave
enwood Ave
Lower Blvd
Lower Blvd
Lower Blvd
Lower Blvd
Lower Blvd
Mallove Dr
Mallove Dr
198
188
202
206
161
167
171
174
164
174
118
112
29
25
19
15
184
4
187
14
18
24
28
194
3
11

Exhibit C

MODIFICATION OF EXISTING WIRELESS FACILITY BY

T-Mobile

T-MOBILE NORTHEAST LLC

PROJECT TITLE: ANCHOR

SITE NUMBER: CTNL041A
SITE NAME: NL041GARDNER-NEW LONDON
SITE ADDRESS: 25 LOWER BLVD.
NEW LONDON, CT 06230
67D5997DB_2XAIR+1OP (U21 MARKET)

PROJECT NOTES:

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

CODE COMPLIANCE:

ALL WORK SHALL COMPLY WITH THE CURRENT NATIONAL AND CONNECTICUT STATE BUILDING AND LIFE SAFETY CODES, SUPPLEMENTS AND AMENDMENTS INCLUDING BUT NOT LIMITED TO THE LATEST EDITION OF:

CONNECTICUT STATE BUILDING CODE (CSBC).

ANSI/TIA-222-G STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.

NATIONAL ELECTRICAL CODE (NEC) FOR POWER AND GROUNDING REQUIREMENTS.

OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA).

NFPA - NATIONAL FIRE PROTECTION ASSOCIATION.

811 Know what's below. Call before you dig.
Connecticut - Call Before You Dig
811 or
1-800-922-4455
Advance Notice:
Minimum of 2 working days in advance, no more than 30 days in advance

CONTRACTOR'S NOTES:

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

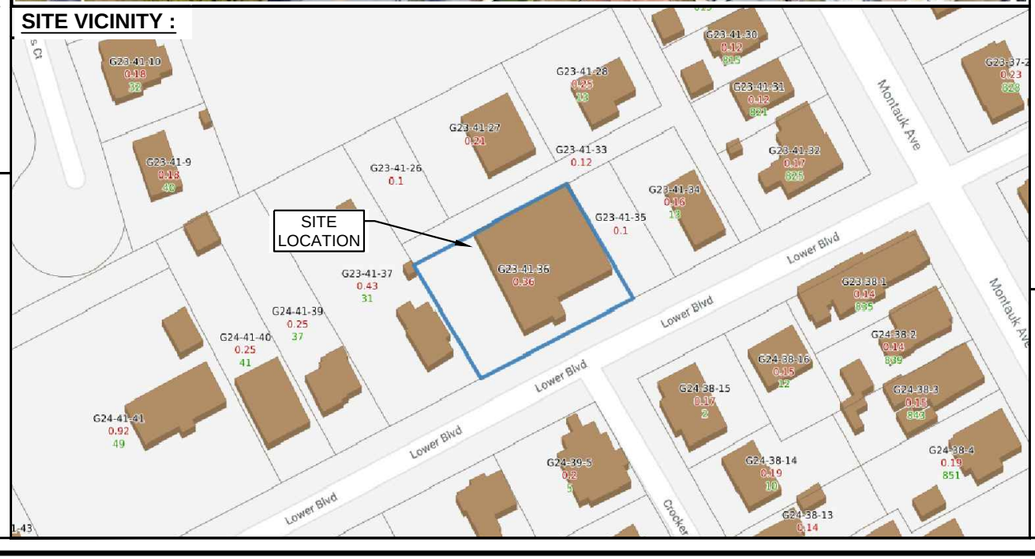
REFER TO STRUCTURAL REPORTS / DRAWINGS:
TOWER ANALYSIS REPORT - UPGRADES, DATED 03/05/2021 BY EFI GLOBAL INC.
MOUNT STRUCTURAL ANALYSIS REPORT, DATED 10/26/2020 BY EFI GLOBAL INC.

APPROVALS:

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

SITE IMAGE:

SITE VICINITY :



PROJECT SCOPE:

THE PROPOSED PROJECT SCOPE WILL INCLUDE THE FOLLOWING EQUIPMENT MODIFICATIONS:
UPGRADE EXISTING RBS 6102 CABINET INTERNALLY.
REPLACE EXISTING ANTENNA MOUNTS.
REPLACE (6) OF (6) EXISTING AND ADD (3) FOR TOTAL OF (9) ANTENNAS.
REPLACE (3) OF (3) EXISTING AND ADD (3) FOR TOTAL OF (6) RRU.
REMOVE (3) OF (3) EXISTING TMA AT ANTENNAS.
ADD (1) 6160 AND (1) B160 CABINETS ON EXISTING CONCRETE PAD.
REMOVE (12) OF (12) EXISTING COAX, ADD (2) 6X12 HCS, FOR FINAL CONFIGURATION OF (3) 6X12 HCS CABLES.

PROJECT INFORMATION:

ADDRESS:	25 LOWER BLVD. NEW LONDON, CT 06230
STRUCTURE TYPE:	SELF SUPPORT TOWER
PARCEL ID:	95-G23-41-36
ZONING DISTRICT:	R-1
COORDINATES:	41° 19' 22.35" N, 72° 05' 37.51" W
APPROX. GROUND ELEV:	35'±

PROJECT TEAM:

APPLICANT:	T-MOBILE NORTHEAST, LLC. 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 860-692-7100
PROPERTY OWNER:	CITY OF NEW LONDON, CT 181 STATE STREET NEW LONDON, CT 6320
PROJECT MANAGER:	NORTHEAST SITE SOLUTIONS 420 MAIN STREET, BLDG 4 STURBRIDGE, MA 01566 SHELDON FREINCLE SHELDON@NORTHEASTSITESOLUTIONS.COM 201-776-8521
ENGINEERING CONSULTANTS:	FORESITE LLC 462 WALNUT ST NEWTON, MA 02460 SAEED MOSSAVAT SMOSSAVAT@FORESITELLC.COM 617-212-3123

SHEET INDEX:

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

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

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

PROFESSIONAL SEAL
STATE OF CONNECTICUT
NO. ARI. 11162
LICENSED ARCHITECT

REV	DESCRIPTION	DATE
A	PRELIMINARY	03/18/21
0	FINAL ISSUED	03/27/21
1	REVISED CABLE COUNTS	03/30/21

SITE NUMBER: CTNL041A
SITE NAME: NL041GARDNER-NEW LONDON

SITE ADDRESS: 25 LOWER BLVD.
NEW LONDON, CT 06230

SHEET TITLE:
T-1: TITLE SHEET

GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

11. BOLTING:

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

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

C. ALL CONNECTIONS SHALL BE 2 BOLTS MINIMUM.

12. FABRICATION:

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

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

13. ERECTION OF STEEL:

A. PROVIDE ALL ERECTION EQUIPMENT, BRACING, PLANKING, FIELD BOLTS, NUTS, WASHERS, DRIFT PINS, AND SIMILAR MATERIALS WHICH DO NOT FORM A PART OF THE COMPLETED CONSTRUCTION BUT ARE NECESSARY FOR ITS PROPER ERECTION.

B. ERECT AND ANCHOR ALL STRUCTURAL STEEL IN ACCORDANCE WITH AISC REFERENCE STANDARDS. ALL WORK SHALL BE ACCURATELY SET TO ESTABLISHED LINES AND ELEVATIONS AND RIGIDLY FASTENED IN PLACE WITH SUITABLE ATTACHMENTS TO THE CONSTRUCTION OF THE BUILDING.

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

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

A. FLASHING OF OPENING INTO OUTSIDE WALLS

B. SEALING AND CAULKING ALL OPENINGS

C. PAINTING

D. CUTTING AND PATCHING

15. REQUIREMENTS OF REGULATORY AGENCIES:

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

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

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

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

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

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

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

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

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

J. 2018 LIFE SAFETY CODE NFPA - 101.

APPLICANT:

T-Mobile

T-MOBILE NORTHEAST LLC

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

PROJECT MANAGER

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420 MAIN STREET, BLDG 4
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CONSULTANT:

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Architects . Engineers . Surveyors

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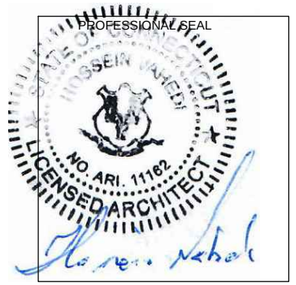
PROFESSIONAL SEAL



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0	FINAL ISSUED	03/27/21
1	REVISED CABLE COUNTS	03/30/21

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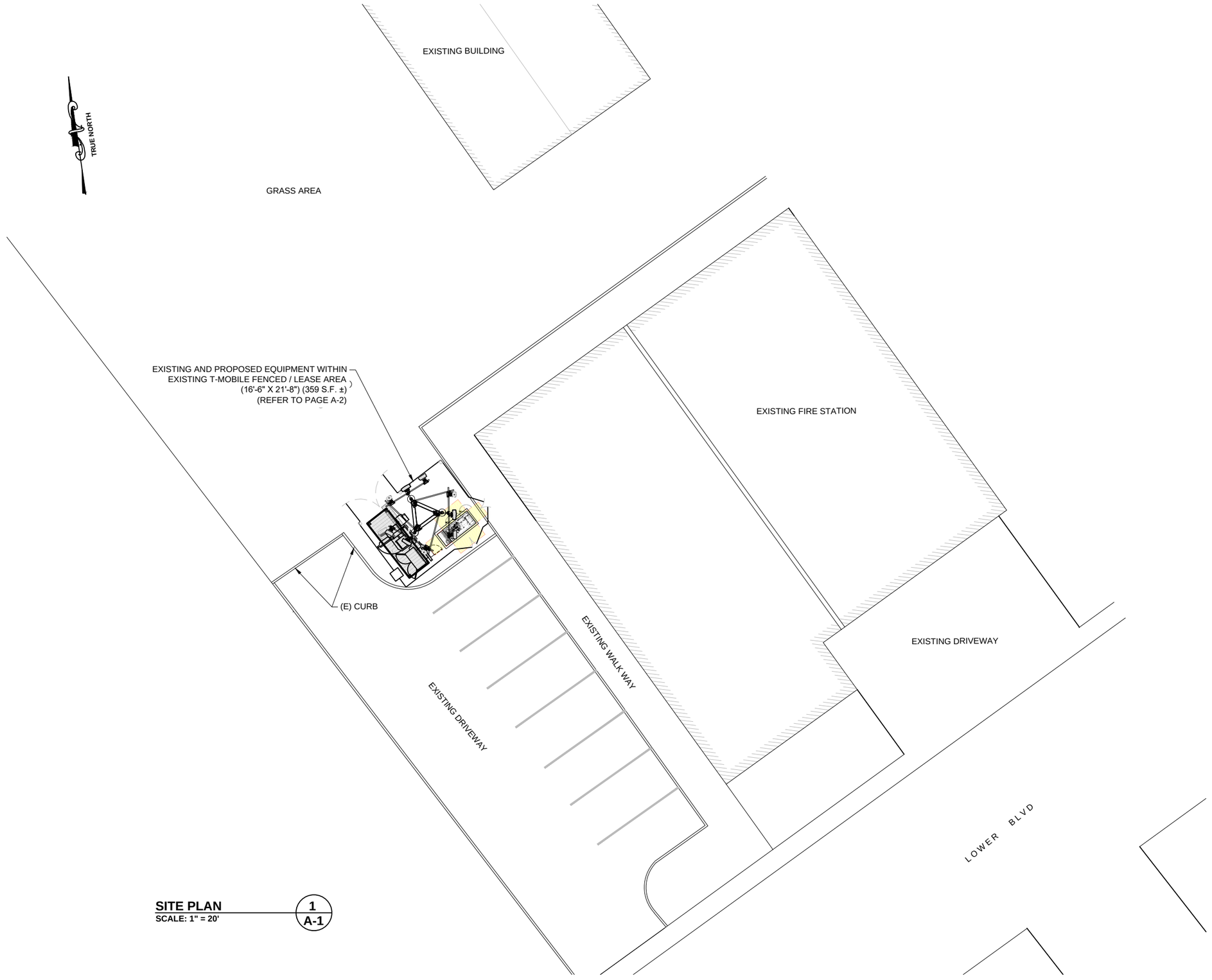
SITE NAME: NL041GARDNER-NEW LONDON

SITE ADDRESS: 25 LOWER BLVD.
NEW LONDON, CT 06230

SHEET TITLE:
N-1: NOTES AND DISCLAIMERS



SITE PLAN 1
SCALE: 1" = 20' A-1

APPLICANT:

T-Mobile

T-MOBILE NORTHEAST LLC

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

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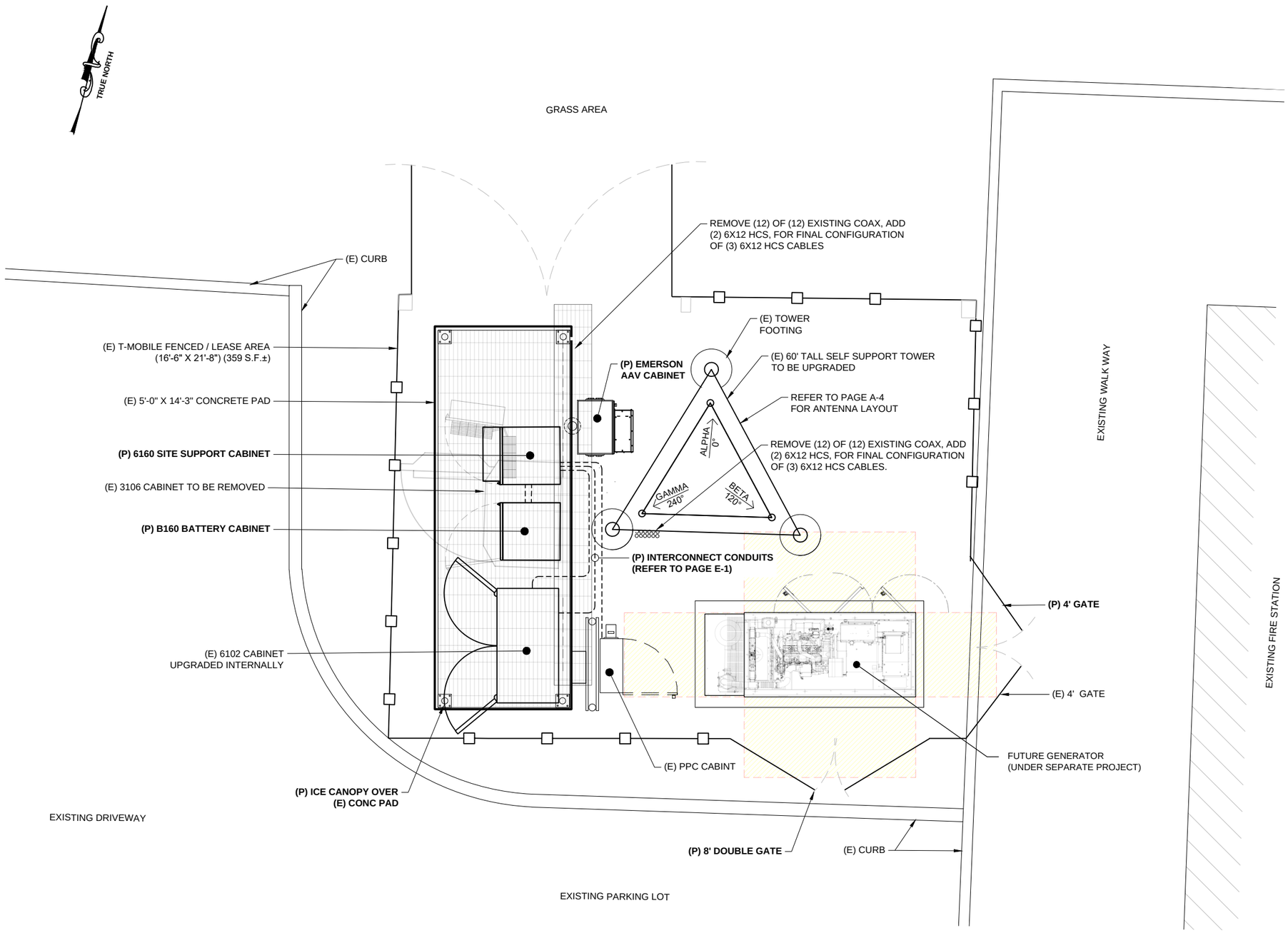
NEW LONDON, CT 06230

SHEET TITLE:

A-1: PLAN



EQUIPMENT LAYOUT

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

1
A-2

APPLICANT:

T-Mobile

T-MOBILE NORTHEAST LLC

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

PROJECT MANAGER

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

CONSULTANT:

FORESITE LLC
Architects . Engineers . Surveyors

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

PROFESSIONAL SEAL

STATE OF CONNECTICUT
NO. ARI. 11162
LICENSED ARCHITECT

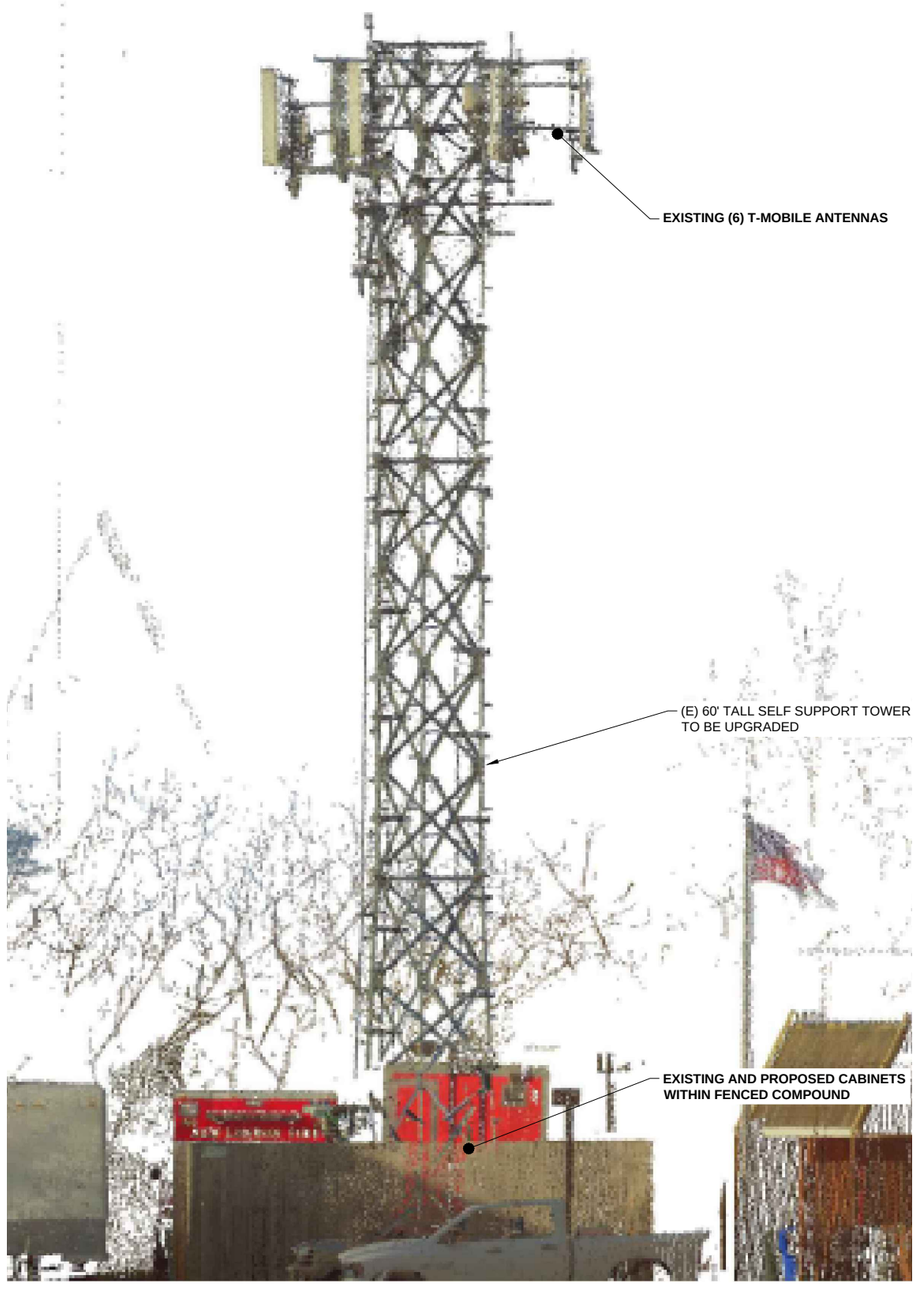
REV	DESCRIPTION	DATE
A	PRELIMINARY	03/18/21
0	FINAL ISSUED	03/27/21
1	REVISED CABLE COUNTS	03/30/21

SITE NUMBER: CTNL041A
SITE NAME: NL041GARDNER-NEW LONDON

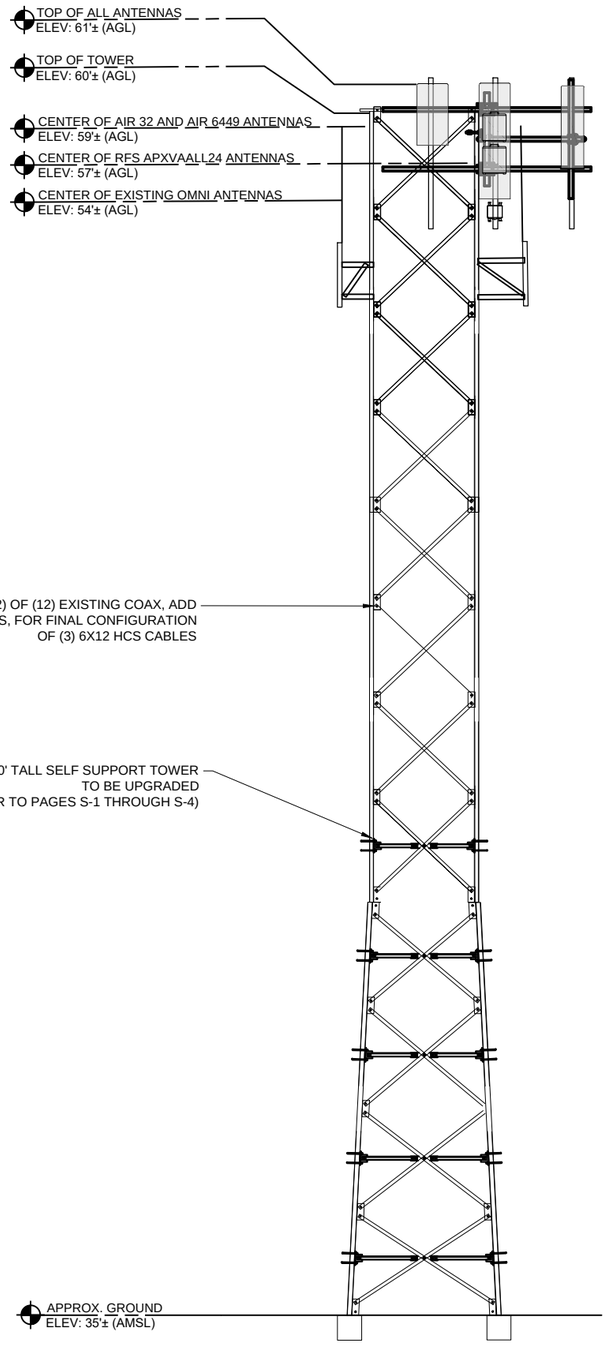
SITE ADDRESS: 25 LOWER BLVD.
NEW LONDON, CT 06230

SHEET TITLE:

A-2: EQUIPMENT LAYOUT



EXISTING TOWER ELEVATION 1 / A-3
N.T.S.



PROPOSED TOWER ELEVATION 2 / A-3
N.T.S.

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

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

CONSULTANT:
FORESITE LLC
Architects . Engineers . Surveyors
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PROFESSIONAL SEAL
STATE OF CONNECTICUT
NO. ARI. 11162
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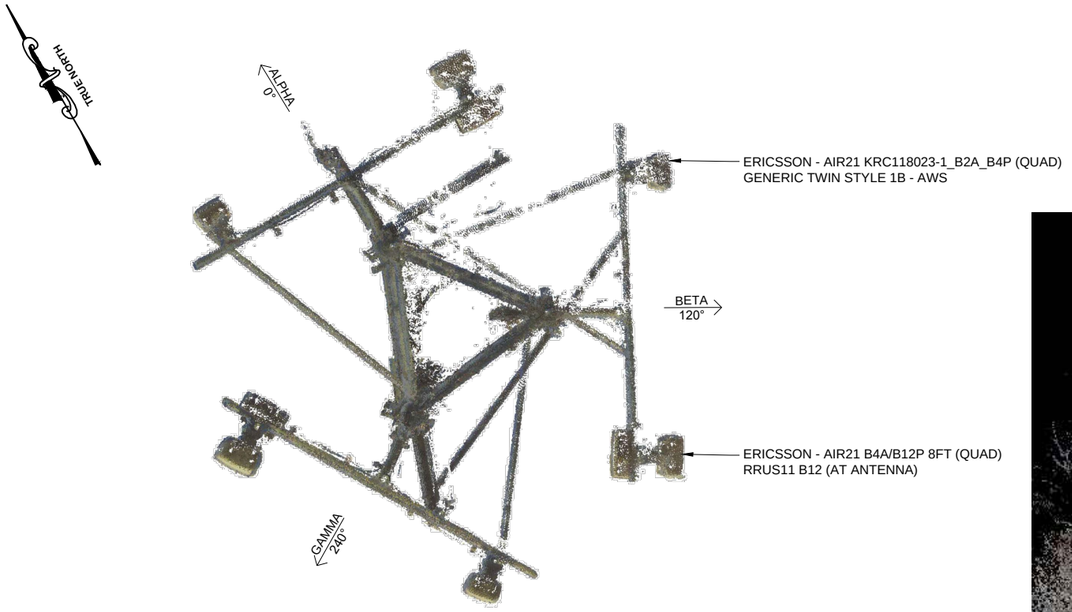
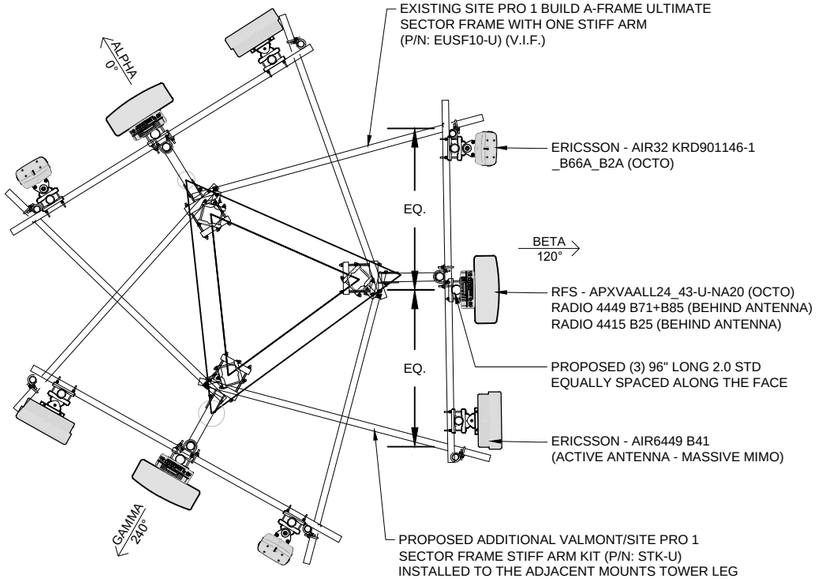
SITE NAME: NL041GARDNER-NEW LONDON

SITE ADDRESS: 25 LOWER BLVD.
NEW LONDON, CT 06230

SHEET TITLE:
A-3: ELEVATION



EXISTING ANTENNA PLAN — 1 / A-4
N.T.S.



PROPOSED ANTENNA PLAN — 2 / A-4
N.T.S.

EXISTING SITE CONDITIONS — 3 / A-4
N.T.S.

APPLICANT:
T-MOBILE NORTHEAST LLC
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BLOOMFIELD, CT 06002
860-692-7100

PROJECT MANAGER
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CONSULTANT:
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PROFESSIONAL SEAL
STATE OF CONNECTICUT
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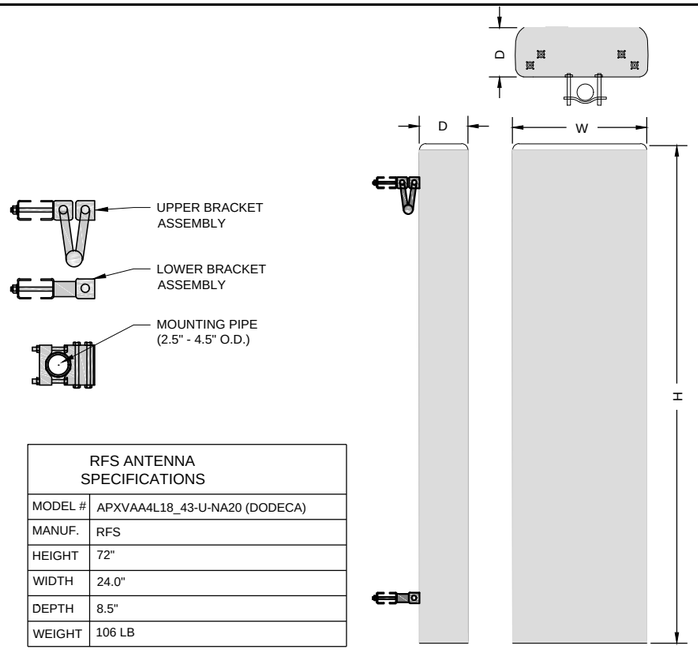
SITE NAME: NL041GARDNER-NEW LONDON

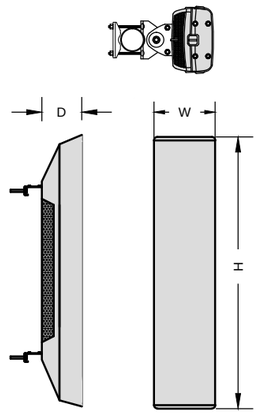
SITE ADDRESS: 25 LOWER BLVD.
NEW LONDON, CT 06230

SHEET TITLE:
A-4: ANTENNA PLANS



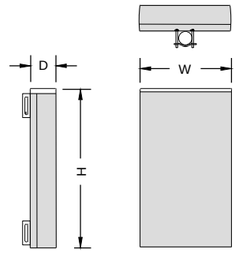
RFS ANTENNA SPECIFICATIONS	
MODEL #	APXVAA4L18_43-U-NA20 (DODECA)
MANUF.	RFS
HEIGHT	72"
WIDTH	24.0"
DEPTH	8.5"
WEIGHT	106 LB

RFS ANTENNA — 1 / A-5
N.T.S



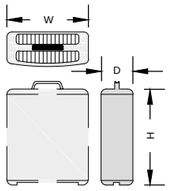
ERICSON ANTENNA SPECIFICATIONS	
MODEL #	AIR32 KRD901146-1_ B66A_B2A (OCTO)
MANUF.	ERICSSON
HEIGHT	56.6"
WIDTH	12.9"
DEPTH	8.7"
WEIGHT	132.2 LB

ERICSSON ANTENNA — 2 / A-5
N.T.S



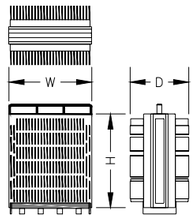
ERICSON ANTENNA SPECIFICATIONS	
MODEL #	AIR6449 B41
MANUF.	ERICSSON
HEIGHT	33.1"
WIDTH	20.5"
DEPTH	8.3"
WEIGHT	103 LB

ERICSSON ANTENNA — 3 / A-5
N.T.S



REMOTE RADIO UNIT SPECIFICATIONS	
MODEL #	RADIO 4415 B25
MANUF.	ERICSSON
HEIGHT	14.9"
WIDTH	13.2"
DEPTH	5.4"
WEIGHT	46.3 LB

REMOTE RADIO UNIT — 4 / A-5
N.T.S

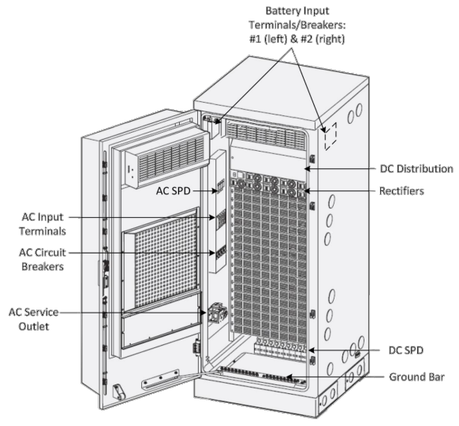


REMOTE RADIO UNIT SPECIFICATIONS	
MODEL #	RADIO 4449 B71+B85
MANUF.	ERICSSON
HEIGHT	14.9"
WIDTH	13.2"
DEPTH	10.4"
WEIGHT	74 LB

REMOTE RADIO UNIT — 5 / A-5
N.T.S

BATTERY CABINET SPECIFICATIONS	
MODEL #	B160
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	26"
DEPTH	26"
WEIGHT	1883 lbs

BATTERY CABINET — 6 / A-5
N.T.S.



SITE SUPPORT CABINET SPECIFICATIONS	
MODEL #	6160
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	25.6"
DEPTH	33.5"
WEIGHT	605 lbs

SITE SUPPORT CABINET — 7 / A-5
N.T.S.

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

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

PROFESSIONAL SEAL
STATE OF CONNECTICUT
NO. ARI. 11162
LICENSED ARCHITECT

REV	DESCRIPTION	DATE
A	PRELIMINARY	03/18/21
0	FINAL ISSUED	03/27/21
1	REVISED CABLE COUNTS	03/30/21

SITE NUMBER: CTNL041A
SITE NAME: NL041GARDNER-NEW LONDON

SITE ADDRESS: 25 LOWER BLVD.
NEW LONDON, CT 06230

SHEET TITLE:
A-5: ANTENNA AND EQUIPMENT SPECS

ELECTRICAL & GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.

2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PRODUCED PER SPECIFICATION REQUIREMENTS.

3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.

4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.

5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) ND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.

6. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.

7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.

8. RUN ELECTRICAL CONDUIT OR CABLING BETWEEN ELECTRICAL ROOM AND PROPOSED CELL SITE ARE PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.

9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELECOM CABINET AND RBS CABINET AS INDICATED ON DRAWING A -1. PROVIDE FULL LENGTH PULL ROPE INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.

10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NAME 3R ENCLOSURE.

11. GROUNDING SHALL COMPLY WITH NEC ART. 250.

12. GROUNDING COAX CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURES COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.

13. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSTALLATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE GROUND.

14. ALL GROUND CONNECTION TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.

15. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AS RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY BOND ANY METER OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.

16. CONNECTIONS TO MGB SHALL BE ARRANGED IN THREE MAIN GROUPS: SURGE PROCEDURES (COAXIAL CABLE GROUND KITS, TELCO AND POWER PANEL GROUND); (GROUNDING ELECTRODE RING OR BUILDING STEEL); NON-SURGING OBJECTS (EGB GROUND IN RBS UNIT).

17. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.

18. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTION.

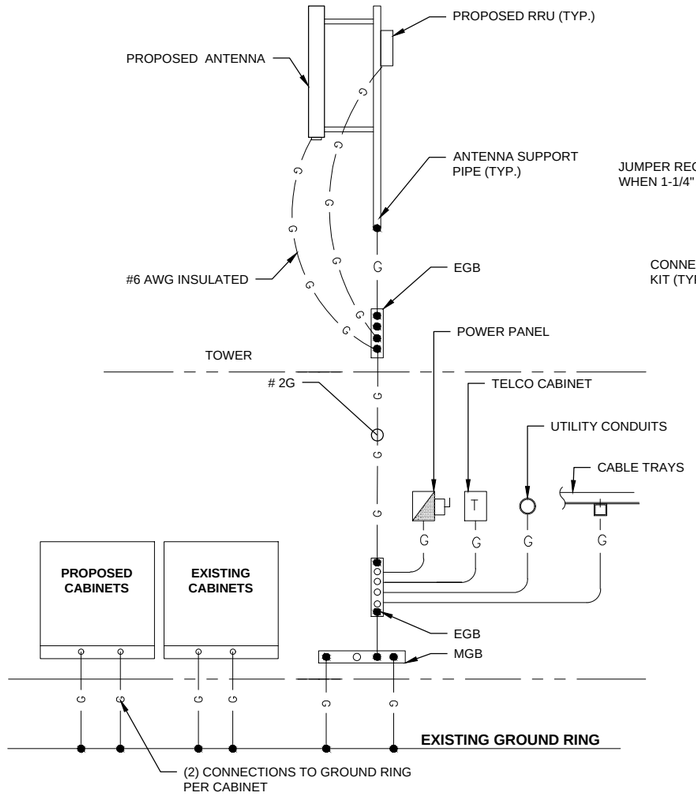
19. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.

20 BOND ANTENNA EGB'S AND MGB TO WATER MAIN.

21. TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.

22. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.

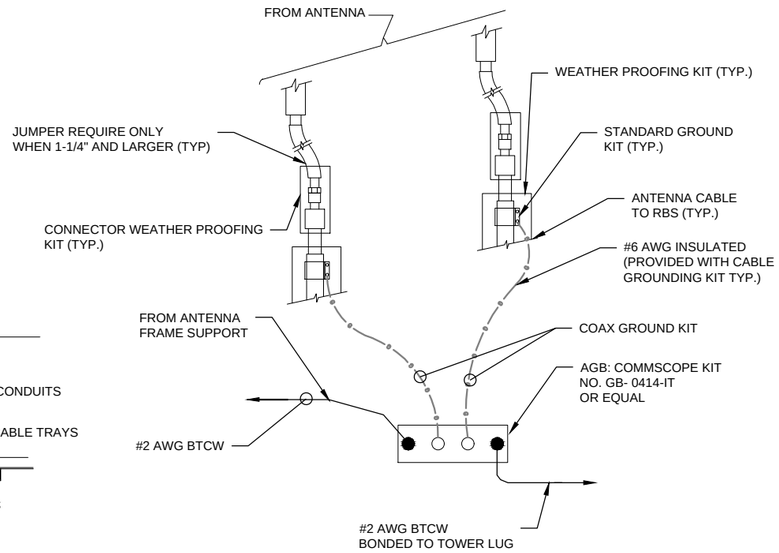
23. VERIFY PROPOSED SERVICE UPGRADE WITH LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTION.



GROUNDING RISER DIAGRAM

1 E–1

N.T.S.

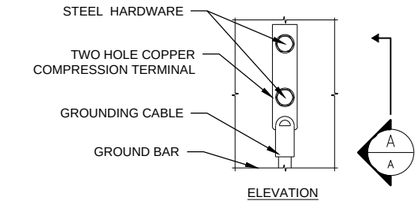


NOTES:
INSTALL CABLE GROUND KIT ABOVE HORIZONTAL BEND
AND ALWAYS DIRECT GROUND WIRE DOWN TO AGB/EGB

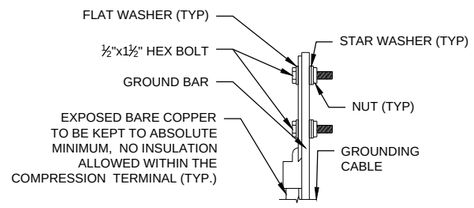
TOWER TOP CABLE GROUNDING DETAIL

2 E–1

N.T.S.



ELEVATION



SECTION A-A

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

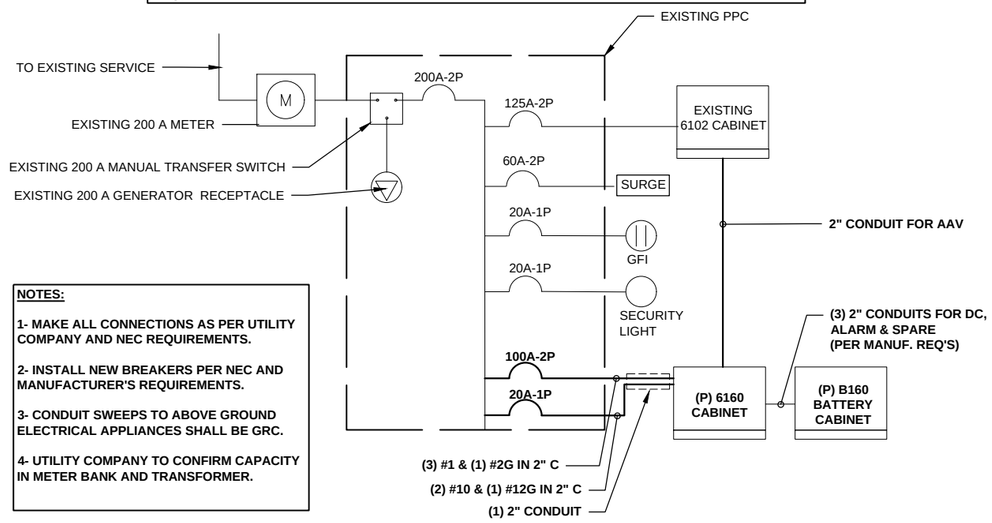
TYPICAL GROUND BAR CONNECTIONS DETAIL

3 E–1

N.T.S.

SPECIAL CONTRACTOR'S NOTES:

CONTRACTOR TO VERIFY THE POWER FEED & PHASE OF METER BANK AND THAT THE EXISTING AND PROPOSED CONDUITS AND WIRE SIZES ARE ADEQUATE FOR THE PROPOSED LOADING IN ACCORDANCE WITH NEC AND INCLUDE ELECTRICAL UPGRADES IN THE SCOPE OF WORK AS REQUIRED.



NOTES:

1- MAKE ALL CONNECTIONS AS PER UTILITY COMPANY AND NEC REQUIREMENTS.

2- INSTALL NEW BREAKERS PER NEC AND MANUFACTURER'S REQUIREMENTS.

3- CONDUIT SWEEPS TO ABOVE GROUND ELECTRICAL APPLIANCES SHALL BE GRC.

4- UTILITY COMPANY TO CONFIRM CAPACITY IN METER BANK AND TRANSFORMER.

TYPICAL ONE LINE DIAGRAM

4 E–1

N.T.S.

APPLICANT:

T-Mobile

T-MOBILE NORTHEAST LLC

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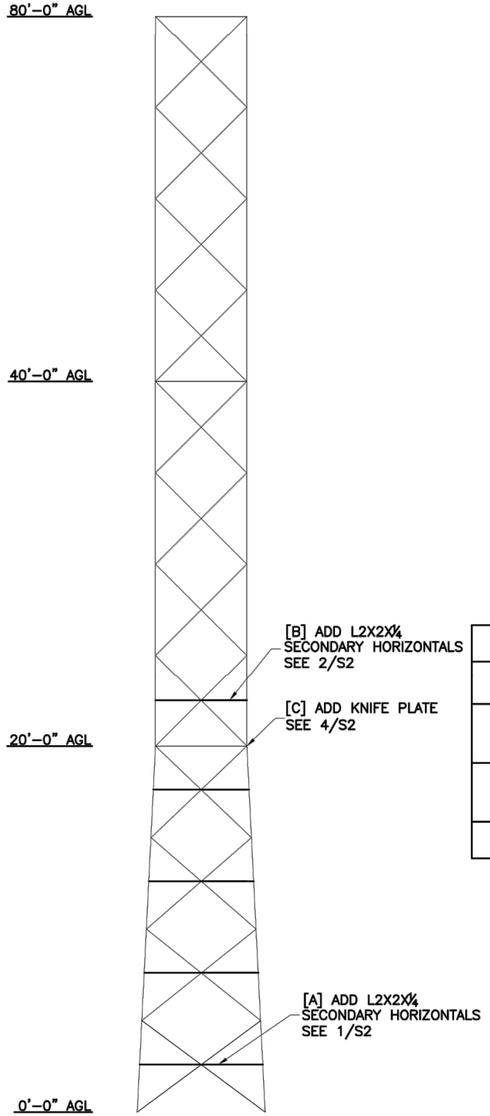
SITE NAME: NL041GARDNER-NEW LONDON

SITE ADDRESS: 25 LOWER BLVD.
NEW LONDON, CT 06230

SHEET TITLE:
E-1: ELECTRICAL & GROUNDING DETAIL

SELF-SUPPORT TOWER EXISTING MEMBER SIZES

SECTION	T3	T2	T1
LEGS	P2.5x0.203	P2.0x0.218	P2.0x0.154
DIAGONALS	L2X2X⅛	L2X2X⅛	



1 / S1 **TOWER ELEVATION**
1/8" = 1'-0"

NOTES:

1. UPGRADE DESIGN VALID FOR APPURTENANCES LISTED IN EFI ANALYSIS REPORT DATED 03/05/2021. CONTRACTOR TO REVIEW AND SHOULD ADHERE TO THE REPORT.

2. CONTRACTOR TO REMOVE AND REATTACH EXISTING APPURTENANCES AS NEEDED.

3. ALL DIMENSIONS ARE BASED ON STRUCTURAL ANALYSIS REPORT PREPARED BY EBI CONSULTING, DATED 02/13/2015.

4. CONTRACTOR TO FIELD VERIFY EXISTING TOWER MEMBER SIZES AND TOWER DIMENSIONS IN THE VICINITY OF THE UPGRADE, BEFORE FABRICATION OF STEEL AND COMMENCEMENT OF WORK. ANY DISCREPANCY SHOULD BE REPORTED TO EFI IMMEDIATELY FOR FURTHER EVALUATION.

5. DO NOT PERFORM THE WORK ON THE TOWER WHEN WINDS GUST MORE THAN 15 MPH AT THE GROUND LEVEL.

6. NEW TOWER REACTIONS:
   LEG UPLIFT: 54 KIPS
   LEG COMPRESSION: 61 KIPS
   LEG SHEAR: 6 KIPS

7. CONTRACTOR TO HAVE THE SAFETY CLIMB INTACT AND FUNCTIONAL AFTER WORK IS COMPLETE.

8. TOWER WILL BECOME UNSTABLE WHEN MEMBERS ARE DISCONNECTED OR BEING REPLACED. CONTRACTOR IS FULLY RESPONSIBLE TO MAINTAIN STABILITY OF THE TOWER DURING WORK AND SHOULD CONSULT WITH AN ENGINEER.

9. EFI DISCLAIMS ANY LIABILITY ARISING FROM THE ORIGINAL MATERIAL, FABRICATION OR ERECTION OF THE TOWER.

10. 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 GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION), OSHA, AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.

TOWER MODIFICATION SCHEDULE

	FROM (FT)	TO (FT)	MODIFICATION	REFERENCE SHEET
A	0'-0"	25'-0"	ADD L2x2x¼ SECONDARY HORIZONTALS	S2
B	20'-0"	20'-0"	ADD NEW KNIFE PLATES	S2

NOTE: APPLY INDICATED MODIFICATIONS TO ALL 3 TOWER FACES

1. DESIGN INFORMATION AND GENERAL REQUIREMENTS

1.1 CODES
a. 2018 CONNECTICUT BUILDING CODE (2015 IBC).
b. MINIMUM DESIGN LOADS AND ASSOCIATED CRITERIA FOR BUILDINGS AND OTHER STRUCTURES, ASCE/SEI 7-10, AMERICAN SOCIETY OF CIVIL ENGINEERS
c. STEEL CONSTRUCTION MANUAL, 14TH EDITION, AMERICAN INSTITUTE OF STEEL CONSTRUCTION
d. STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS, ANSI/TIA-222-G TELECOMMUNICATIONS INDUSTRY ASSOCIATION

1.2 GENERAL
a. PRIOR TO PURCHASE OR FABRICATION OF MATERIAL, THE CONTRACTOR SHALL PERFORM AN INSPECTION VERIFYING MEMBER DIMENSIONS AND BOLT SIZES. SHOULD THE CONTRACTOR DISCOVER ANY DAMAGED OR MISSING MEMBERS OR THE MEMBER OR BOLT SIZES DO NOT MATCH THOSE LISTED, EFI SHALL BE NOTIFIED IMMEDIATELY.
b. CONTRACTOR TO REPLACE ALL BOLTS REMOVED WITH NEW BOLTS OF SAME TYPE, UNLESS NOTED OTHERWISE.

1.3 LOADS & DESIGN CRITERIA
a. WIND LOADING: V=135MPH (ULTIMATE DESIGN WIND SPEED), EXPOSURE CATEGORY C, RISK CATEGORY II

2. STRUCTURAL STEEL

2.1 MATERIALS
a. STRUCTURAL STEEL . . . . . ASTM A992
ANGLE & PLATE . . . . . .ASTM A36 U.N.O.
PIPE . . . . . .ASTM A53 GRADE B (OR Fy>35KSI)
HSS ROUND . . . . . .ASTM A500 GRADE B (OR Fy>42KSI)
BARS (SOLID RODS) . . . . . ASTM A572 GRADE 50
b. BOLTS . . . . . ASTM A325N U.N.O.
c. WELDING ELECTRODES . . . . . AWS A5.1 (E70XX)
d. STEEL CONSTRUCTION SHALL CONFORM TO "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, ANSI/AISC 360-10"
e. WELDING SHALL CONFORM TO AWS D1.1/D1.3/D1.7 AS APPLICABLE.
f. THE FABRICATOR SHALL FURNISH CHECKED SHOP AND ERECTION DRAWINGS TO THE ENGINEER, AND OBTAIN APPROVAL PRIOR TO FABRICATING ANY STRUCTURAL STEEL. SHOP DRAWINGS SHALL CONFORM TO "DETAILING FOR STEEL CONSTRUCTION, 2ND EDITION"
g. POOR MATCHING OF HOLES SHALL BE CORRECTED BY DRILLING TO THE NEXT LARGER SIZE. WELDING FOR RE-DRILLING WILL NOT BE PERMITTED.

2.2 CONNECTIONS
a. SHOP CONNECTIONS MAY BE BOLTED OR WELDED
b. FIELD CONNECTIONS BOLTED WITH A325-N BOLTS, (INSTALLED SNUG TIGHT) UNLESS OTHERWISE SPECIFIED OR IF WELDED CONNECTIONS ARE NOTED ON DRAWINGS
c. FIELD CONNECTIONS SHALL BE MADE WITH A325-N BOLTS AND HARDENED WASHERS EXCEPT AS INDICATED ON THE DESIGN DRAWINGS
d. CONNECTIONS NOT SHOWN ON DRAWINGS SHALL BE DESIGNED BY THE STEEL FABRICATOR. CONNECTIONS SHALL BE DESIGNED IN ACCORDANCE WITH AISC "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS" AND "AISC CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"
e. DO NOT FIELD CUT OR ALTER STRUCTURAL MEMBERS WITHOUT PRIOR WRITTEN APPROVAL OF ENGINEER.
f. BOLT HOLES SHALL BE CUT, DRILLED OR PUNCHED AT RIGHT ANGLES TO THE SURFACE OF THE METAL AND SHALL NOT BE MADE OR ENLARGED BY BURNING. HOLES SHALL BE CLEAN CUT WITHOUT TORN OR RAGGED EDGES. OUTSIDE BURRS RESULTING FROM DRILLING OR REAMING OPERATION SHALL BE REMOVED WITH A TOOL MAKING A 1/16 INCH BEVEL. BOLT HOLES SHALL BE 1/16 INCH OVERSIZE.

2.3 FINISHES
a. STRUCTURAL STEEL SHALL BE HOT DIP GALVANIZED AFTER FABRICATION PER ASTM A123
b. BOLTS AND NUTS SHALL BE HOT DIP GALVANIZED PER ASTM A153.
c. ALL SURFACES DAMAGED DURING THE WORK SHALL BE PAINTED WITH COLD GALVANIZING COMPOUND TWICE. THE PAINT SHOULD BE AT LEAST 93% PURE ZINC. RUST-OLEUM PROFESSIONAL, (MODEL# 7585838) OR SIMILAR.

2.4 WELDING
a. CONTRACTOR TO TAKE ALL NECESSARY PRECAUTIONS FOR FIRE PREVENTION DURING WELDING, SUCH AS; INSTALLING 3000 (NFPA 701) FIRE BLANKET AROUND COAX. MORE SPLATTER AND SPARKS SHOULD BE ANTICIPATED WHILE WELDING ON GALVANIZED SURFACE. COAX IS FLAMMABLE AND SHALL CATCH FIRE IF NOT PROTECTED. WATER SHALL BE ON SITE OF ADEQUATE AMOUNT AND AVAILABLE AT SHORT NOTICE AT ALL TIMES DURING WELDING ACTIVITY. CONTRACTOR SHOULD BE ABLE TO TRANSPORT THE WATER TO THE HEIGHT WELDING BEING PERFORMED.
b. WELDING ON GALVANIZED SURFACE SHOULD BE DONE WITH EXTREME CAUTION. IF THE WELD MATERIAL IS CONTAMINATED WITH ZINC, IT DOES NOT PROVIDE A STRUCTURAL WELD. GRIND GALVANIZING BEFORE WELDING.
c. WELDING CERTIFICATE MUST BE PROVIDED PRIOR TO WELDING. ALL WELDING SHALL BE PERFORMED BY AWS QUALIFIED WELDER WHO HAS EXPERIENCE WITH GALVANIZED SURFACES.

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

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203-275-6669

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

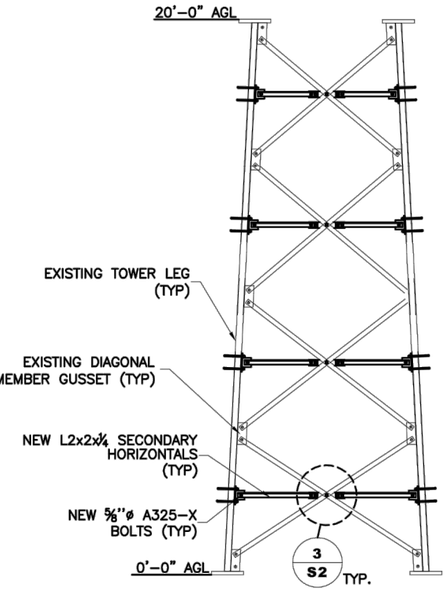
PROFESSIONAL SEAL
STATE OF CONNECTICUT
NO. ARI. 11162
LICENSED ARCHITECT

REV	DESCRIPTION	DATE
A	PRELIMINARY	03/18/21
0	FINAL ISSUED	03/27/21
1	REVISED CABLE COUNTS	03/30/21

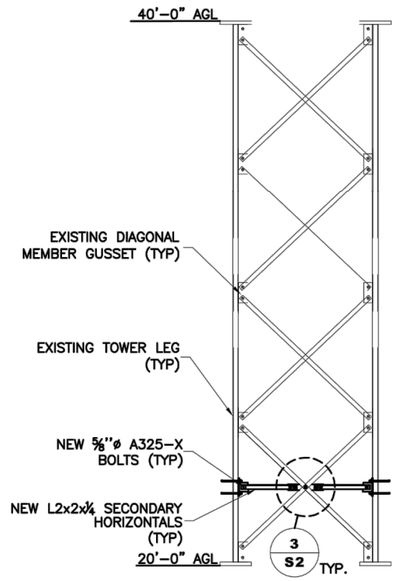
SITE NUMBER: CTNL041A
SITE NAME: NL041GARDNER-NEW LONDON

SITE ADDRESS: 25 LOWER BLVD.
NEW LONDON, CT 06230

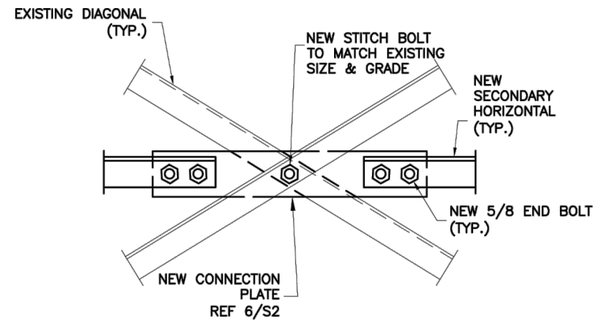
SHEET TITLE:



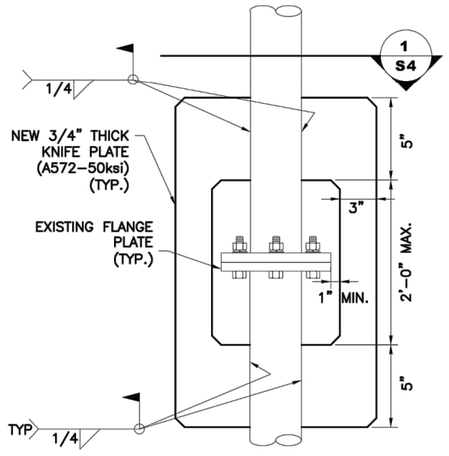
1 S2 **ELEVATION VIEW: 0' - 20'**
N.T.S.



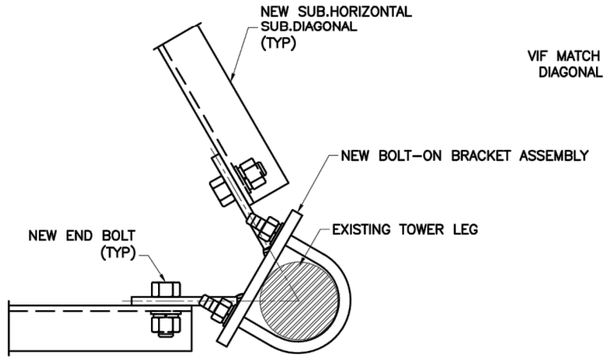
2 S2 **ELEVATION VIEW: 20' - 40'**
N.T.S.



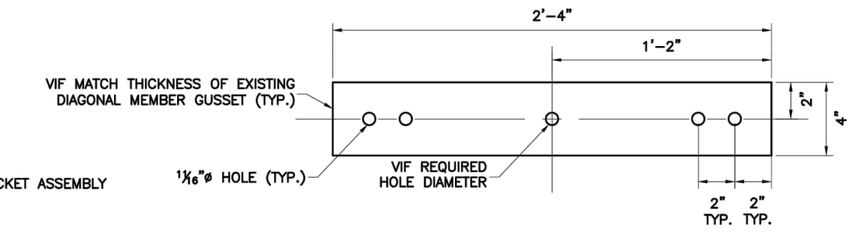
3 S2 **CONNECTION PLATE**
N.T.S.



4 S2 **KNIFE PLATE DETAIL @ 20'**
N.T.S.



5 S2 **BOLT-ON BRACKET**
N.T.S.



6 S2 **CONNECTION PLATE DETAIL**
N.T.S.

APPLICANT:

T··Mobile·

T-MOBILE NORTHEAST LLC

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
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PROJECT MANAGER

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CONSULTANT:

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617-212-3123

PROFESSIONAL SEAL

REV	DESCRIPTION	DATE
A	PRELIMINARY	03/18/21
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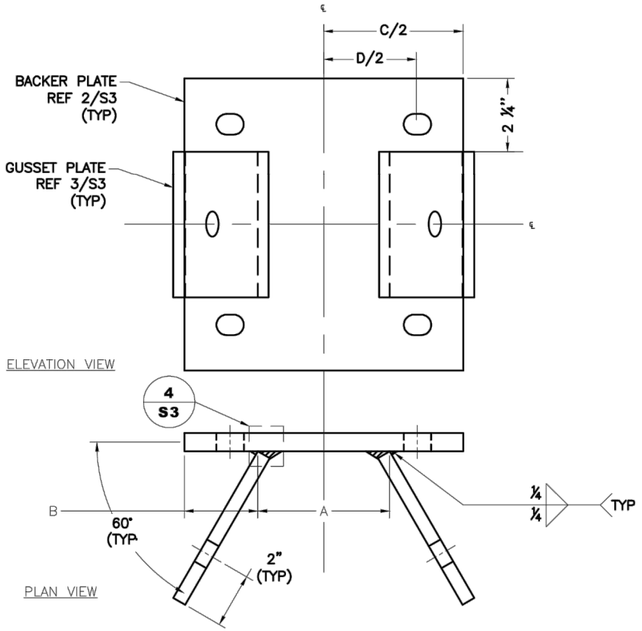
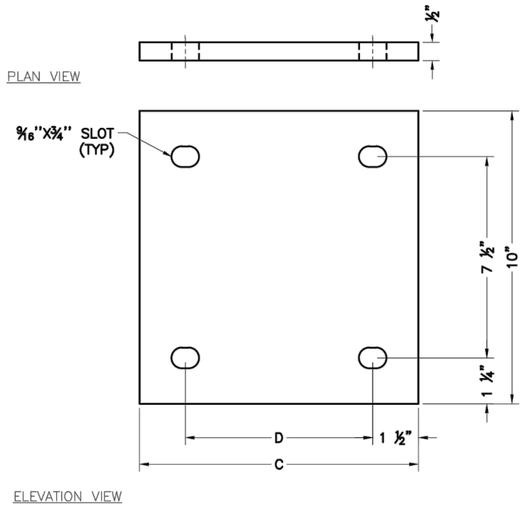
SITE NAME: NL041GARDNER-NEW LONDON

SITE ADDRESS: 25 LOWER BLVD.
NEW LONDON, CT 06230

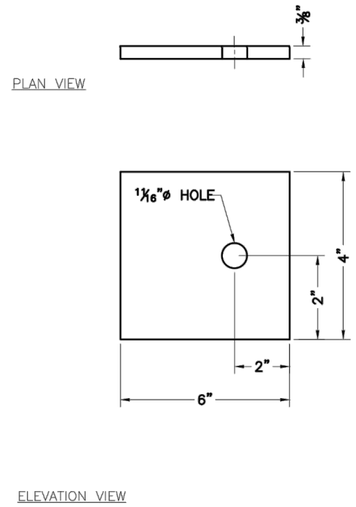
SHEET TITLE:



1 S3 BOLT-ON BRACKET ASSEMBLY
N.T.S.



2 S3 BACKER PLATE
N.T.S.

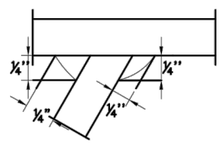


3 S3 GUSSET PLATE
N.T.S.

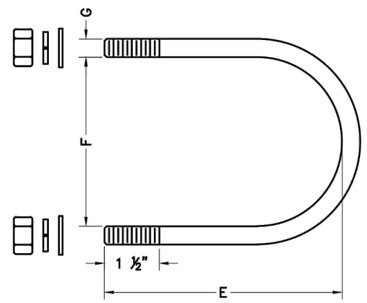
PIPE2.5STD+HSS3.5X0.203
SPLIT PIPE

LEG	OUTER DIAMETER	ASSEMBLY		BACKER PLATE		U–BOLT		
		A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	G (in)
PIPE2.5STD	2⅞	2 1/16	1 21/32	6	3½	4⅞	3	½
PIPE2.0X STD	2⅜	2⅜	1 13/16	6	3	4⅜	2½	½

NOTES:
1. ALL HOLES TO BE SHOP FABRICATED, UNLESS NOTED OTHERWISE.
2. TOLERANCES UNLESS NOTED OTHERWISE: FRACTIONS ± 1/16"
   ANGLES ± ½°
   DECIMALS ± 0.010"
3. U–BOLTS SHALL MEET REQUIREMENTS OF ASME B18.31.5–2011 BENT BOLTS.
4. U–BOLTS TO BE ASTM A36/A307, SAE 429 GR 2. PLATES TO BE ASTM A572 GRADE 50.
5. USE 2 U–BOLTS PER ASSEMBLY, COMPLETE W/ NUTS, WASHERS AND LOCK WASHERS.
6. FOR WELDING, WELD TO BE E70xx ELECTRODES.
7. FULL ASSEMBLY TO BE HOT DIP GALVANIZED PER ASTM 153/ A153M OR A123, AS APPLICABLE
8. STANDARD 9/16" HOLES IN PLACE OF SLOTTED HORIZONTAL HOLES ON THE BACKER PLATE ARE PERMITTED
9. NO FIELD FABRICATION PERMITTED ON THIS PART



4 S3 WELD DETAIL
N.T.S.



5 S3 U-BOLT
N.T.S.

APPLICANT:
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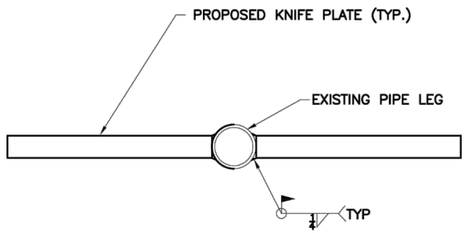
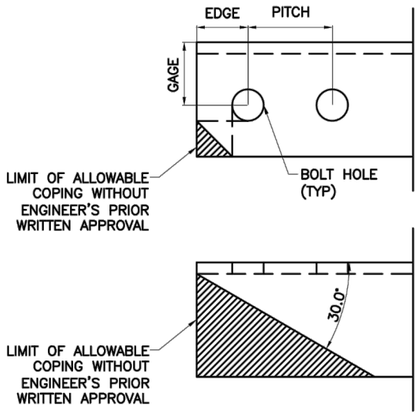
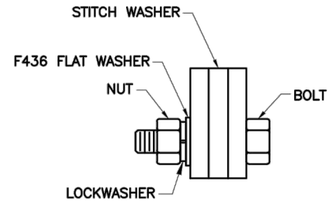
NEW LONDON, CT 06230

SHEET TITLE:



1 / S4 KNIFE PLATE CONNECTION
NTS





2 / S4 TYPICAL BOLT ASSEMBLY
N.T.S.

BOLT SCHEDULE

MEMBER SIZE	CONNECTION TYPE	BOLT SIZE	MIN EDGE DISTANCE	PITCH DISTANCE	GAGE DISTANCE	BOLT HOLE
L2X2X¼	END	⅝"ø X 2" LONG	⅞"	1⅔"	1⅛"	1 1/16"
NOTE: ALL BOLTS TO BE A325–X						

APPLICANT:
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SITE NAME: NL041GARDNER-NEW LONDON

SITE ADDRESS: 25 LOWER BLVD.
NEW LONDON, CT 06230

SHEET TITLE:

Exhibit D

STRUCTURAL ANALYSIS REPORT - UPGRADE
SELF-SUPPORT TOWER

Prepared For:

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

Structure Rating	
Self-Support Tower:	**85.3% (Pass)**
Anchor bolts:	**57.7% (Pass)**
Foundation:	**65.7% (Pass)**

Sincerely,
EFI Global, Inc.
License No: PEC0001245

03/05/2021

Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: 27057

Site ID: CTNL041A
Site Name: NL041/Gardner-NewLondon
25 Lower Boulevard,
New London, CT 06320

EFI GLOBAL, INC.
1117 Perimeter Center West, Suite E500, Atlanta GA 30338 - Tel: (470) 990-6593

CONTENTS

EFI GLOBAL, INC.
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1.0 SUBJECT AND REFERENCES

The purpose of this analysis is to evaluate the structural capacity of the existing 60 feet tall self-support tower, located at 25 Lower Boulevard, New London, CT 06320 for the additions and alterations proposed by T-Mobile.

The structural analysis is based on the following information provided to EFI Global, Inc. (EFI):

- Geotechnical Report prepared by HighTower Solutions, Inc., dated 02/07/2021.
- RFDS prepared by T-Mobile, dated 10/09/2020.
- Construction Drawings prepared by EBI Consulting, dated 03/23/2015.
- Structural Analysis Report prepared by EBI Consulting, dated 02/13/2015.
- Structural Design Report prepared by Saber Communication Corporation, dated 12/27/2006.

1.1 STRUCTURE

The subject structure is a 3-sided 60 feet tall self-support tower formed by three (3) sections which are X-braced with single angle diagonals. The tower tapers from 7.0 feet wide at the base to 5.0 feet wide at elevation 20 feet. Between elevations 20 feet and 60 feet, the tower is 5.00 feet wide. Please refer to the software output in Appendix A for tower geometry, member sizes, and other details.

2.0 EXISTING AND PROPOSED APPURTENANCES

Existing Configuration of T-Mobile Appurtenances:

RAD Center (ft.)	Antennas and Equipment	Coax	Mount
59	(3) Ericsson AIR21 B2A B4P (3) Ericsson AIR21 B4A B12P (4) RRUS 11 B12 (4) Generic Style 1B – Twin AWS	(12) 7/8” (1) 6x12 HCS	(3) Sector Mounts

Proposed and Final Configuration of T-Mobile Appurtenances:

RAD Center (ft.)	Antennas and Equipment	Coax	Mount
59	(3) Ericsson AIR32 B66A B2A (3) AIR6449 B41	(3) 6x12 HCS	(3) Sector Mounts
57	(3) RFS APXVAALL24_43-U-NA20 (3) Radio 4449 B71+B85* (3) Radio 4415 B25*		

*** To be mounted behind antennas.**

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Existing and Remaining Appurtenances by Others:

RAD Center (ft.)	Antennas and Equipment	Coax	Mount
56	26T-2400 (4’ Grid Dish)	(1) 7/8”	(1) Standoff
54	7’ Omni 6’ Dipole	(2) 7/8”	(2) Standoff

3.0 CODES AND LOADING

This analysis has been performed in accordance with the 2018 Connecticut State Building Code (2015 IBC) based upon an ultimate 3-second gust wind speed of 135 mph (Risk Category II) converted to a nominal 3-second gust wind speed of 105 mph per section 1609.3.1 as required for use in the ANSI/TIA-222-G Standard per Exception #5 of Section 1609.1.1. The following loading criteria were used in the analysis:

- Basic wind speed 105 mph without ice (V)
- Basic wind speed 50 mph concurrent with design ice thickness 3/4" (V_i and t_i)
- Exposure Category C, Structural Class II, I=1.0
- Topographic Category 1, K_{zt}=1.0

The following load combinations were used with wind blowing at 30° increment measured from a line normal to the face of the smokestack.

- 1.2 D + 1.6 W_0
- 0.9 D + 1.6 W_0
- 1.2 D + 1.0 D_i + 1.0 W_i

D: Dead Load of structure and appurtenances
W_0: Wind Load, without ice
W_i: Wind Load, with ice
D_i: Weight of Ice

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4.0 STANDARD CONDITIONS FOR ENGINEERING SERVICES ON EXISTING STRUCTURES

The analysis is based on the information provided to EFI and is assumed to be current and correct. Unless otherwise noted, the structure and the foundation system are assumed to be in good condition, free of defects and can achieve theoretical strength.

It is assumed that the structure has been maintained and shall be maintained during its service. The superstructure and the foundation system are assumed to be designed with proper engineering practice and fabricated, constructed and erected in accordance with the design documents. EFI will accept no liability which may arise due to any existing deficiency in design, material, fabrication, erection, construction, etc. or lack of maintenance.

The analysis does not include a qualification of the mounts attached on the structure or their connections. The analysis is performed to verify the capacity of the main structural members, which is the current practice in the tower industry.

The analysis results presented in this report are only applicable for the previously mentioned existing and proposed additions and alterations. Any deviation of the proposed equipment and placement, etc., will require EFI to generate an additional structural analysis.

5.0 ANALYSIS AND ASSUMPTIONS

The tower was analyzed by utilizing tnxTower, a non-linear, three-dimensional, finite element-analysis software package, a product of Tower Numerics, Inc. Software output for this analysis is provided in Appendix A of this report.

Tower Leg connections are considered designed to meet the full capacity of the adjoining leg members.

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6.0 RESULTS AND CONCLUSION

Based on a structural analysis per *ANSI/TIA-222-G*, the existing self-support tower **will have adequate** structural capacity for the proposed changes by T-Mobile, **once it has been upgraded in accordance with the upgrade drawings attached with this report, dated 03/05/2021**. For the code specified load combinations and as a maximum, the tower legs are stressed to **85.3%** of their structural capacities. The tower diagonals, anchor bolts and horizontals are stressed to **72.4%, 57.7%** & **8.0%** of their structural capacities, respectively.

The existing base foundation has **adequate** structural capacity for the proposed changes by T-Mobile. For the code specified load combinations and as a maximum, the base foundation is stressed to **65.7%** of its structural capacity.

Therefore, the additions and alterations proposed by T-Mobile **can** be implemented as intended and with the conditions outlined in this report**.**

Should you need any clarifications or have any questions about this report, please contact EFI at telecom@efiglobal.com.

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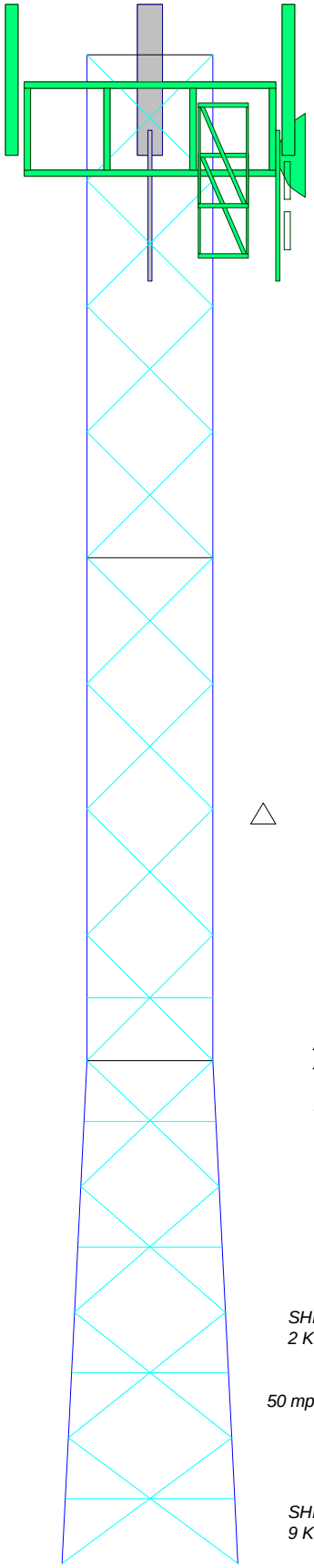
APPENDIX A
SOFTWARE OUTPUT

Section	T1	T2	T3	T4	T5
Legs	P2x.154	P2x.218		P2.5x.203	
Leg Grade	A572-50				
Diagonals	L2x2x1/8				
Diagonal Grade	A36				
Top Girts	L2x2x1/8		N.A.	L2x2x1/8	N.A.
Sec. Horizontals	N.A.			L2x2x1/4	
Face Width (ft)	5			7	6.5
# Panels @ (ft)	12 @ 5				
Weight (K)	0.6	0.5	0.2	0.7	0.2

60.0 ft
40.0 ft
25.0 ft
20.0 ft
5.0 ft
0.0 ft



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
AIR 32 B2a/B66Aa	57	Radio 4449 B71+B85	57
AIR 32 B2a/B66Aa	57	Radio 4449 B71+B85	57
AIR 32 B2a/B66Aa	57	Radio 4415 B25	57
AIR 6449 B41	57	Radio 4415 B25	57
AIR 6449 B41	57	Radio 4415 B25	57
AIR 6449 B41	57	(3) Site Pro 1 - EUSF10-U	57
APXVAALL24_43-U-NA20 w/ Mount Pipe	57	Side Arm Mount [SO 201-1]	56
		26T-1900/2127/2400	56
APXVAALL24_43-U-NA20 w/ Mount Pipe	57	Side Arm Mount [SO 201-1]	54
		6' Dipole	54
APXVAALL24_43-U-NA20 w/ Mount Pipe	57	7' Omni	54
		Side Arm Mount [SO 201-1]	54
Radio 4449 B71+B85	57		

MATERIAL STRENGTH

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

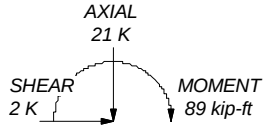
TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-G Standard.
2. Tower designed for a 105 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 85.3%

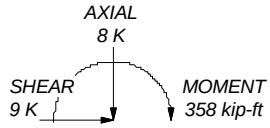
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 62 K
SHEAR: 6 K

UPLIFT: -54 K
SHEAR: 5 K



TORQUE 1 kip-ft
50 mph WIND - 0.7500 in ICE



TORQUE 2 kip-ft
REACTIONS - 105 mph WIND

EFI Global, INC
efi global 1117 Perimeter Center West, Ste E500
Atlanta, GA
Phone: 770-693-0835
FAX:

Job: **CTNL041A**			
Project: ***049.00940 - 2075089***			
Client: T-Mobile	Drawn by: Ahmet Colakoglu		App'd:
Code: TIA-222-G	Date: 03/05/21		Scale: NTS
Path:			Dwg No. E-1

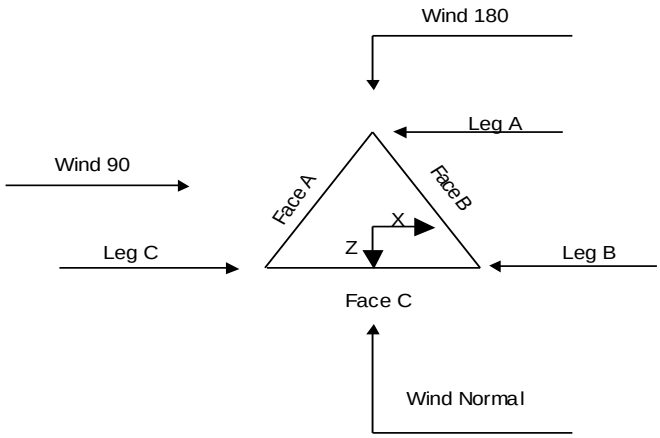
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 60.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 5.00 ft at the top and 7.00 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Basic wind speed of 105 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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-G Bracing Resist. Exemption
√ Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-G Tension Splice Exemption
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Poles
√ Secondary Horizontal Braces Leg	√ Sort Capacity Reports By Component	Include Shear-Torsion Interaction
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Always Use Sub-Critical Flow
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Use Top Mounted Sockets
SR Members Are Concentric	Ignore KL/ry For 60 Deg. Angle Legs	Pole Without Linear Attachments
		Pole With Shroud Or No Appurtenances
		Outside and Inside Corner Radii Are Known



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	60.00-40.00			5.00	1	20.00
T2	40.00-25.00			5.00	1	15.00
T3	25.00-20.00			5.00	1	5.00
T4	20.00-5.00			5.00	1	15.00
T5	5.00-0.00			6.50	1	5.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	60.00-40.00	5.00	X Brace	No	Steps	0.0000	0.0000
T2	40.00-25.00	5.00	X Brace	No	Yes	0.0000	0.0000
T3	25.00-20.00	5.00	X Brace	No	Yes	0.0000	0.0000
T4	20.00-5.00	5.00	X Brace	No	Yes	0.0000	0.0000
T5	5.00-0.00	5.00	X Brace	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 60.00-40.00	Pipe	P2x.154	A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T2 40.00-25.00	Pipe	P2x.218	A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T3 25.00-20.00	Pipe	P2x.218	A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T4 20.00-5.00	Pipe	P2.5x.203	A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T5 5.00-0.00	Pipe	P2.5x.203	A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 60.00-40.00	Equal Angle	L2x2x1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T2 40.00-25.00	Equal Angle	L2x2x1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T4 20.00-5.00	Equal Angle	L2x2x1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T3 25.00-20.00	Equal Angle	L2x2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T4 20.00-5.00	Equal Angle	L2x2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T5 5.00-0.00	Equal Angle	L2x2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T2 40.00-25.00	0.00	0.0000	A36	1.03	1	1.05	36.0000	36.0000	36.0000

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
T3 25.00-20.00	0.00	0.0000	(36 ksi) A36	1.03	1	1.05	36.0000	36.0000	36.0000
T4 20.00-5.00	0.00	0.0000	(36 ksi) A36	1.03	1	1.05	36.0000	36.0000	36.0000
T5 5.00-0.00	0.00	0.0000	(36 ksi) A36	1.03	1	1.05	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	Y	K Brace Diags X	Y	Single Diags X	Y	Girts X	Y	Horiz. X	Y	Sec. Horiz. X	Y	Inner Brace X	Y
T1	No	No	1	1		1		1		1		1		1		1	
60.00-40.00				1		1		1		1		1		1		1	
T2	No	No	1	1		1		1		1		1		1		1	
40.00-25.00				1		1		1		1		1		1		1	
T3	No	No	1	1		1		1		1		1		1		1	
25.00-20.00				1		1		1		1		1		0.5		1	
T4 20.00-5.00	No	No	1	1		1		1		1		1		1		1	
				1		1		1		1		1		0.5		1	
T5 5.00-0.00	No	No	1	1		1		1		1		1		1		1	
				1		1		1		1		1		0.5		1	

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	U	Diagonal Net Width Deduct in	U	Top Girt Net Width Deduct in	U	Bottom Girt Net Width Deduct in	U	Mid Girt Net Width Deduct in	U	Long Horizontal Net Width Deduct in	U	Short Horizontal Net Width Deduct in	U
T1 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 40.00-25.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 25.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 20.00-5.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 5.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T1 60.00-40.00	Sleeve DS	0.0000 A325N	0	0.6250 A325X	1	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 40.00-25.00	Flange	0.5000 A325N	0	0.6250 A325X	1	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 25.00-20.00	Flange	0.5000 A325N	0	0.6250 A325X	1	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 20.00-5.00	Flange	0.5000 A325N	0	0.6250 A325X	1	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 5.00-0.00	Flange	0.5000 A325N	0	0.6250 A325X	1	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
RFS HYBRIFLEX 1 1/4	C	No	No	Ar (CaAa)	59.00 - 0.00	-1.0000	0.45	3	3	0.5000 1.5400	1.5400		1.30
Feedline Ladder (Af) ***	C	No	No	Af (CaAa)	59.00 - 0.00	-1.0000	0.45	1	1	3.0000	3.0000		8.40
VXL5-50(7/8)	B	No	No	Ar (CaAa)	54.00 - 0.00	-1.0000	0.45	3	3	0.5000 1.0800	1.0800		0.29
VXL5-50(7/8)	B	No	No	Ar (CaAa)	56.00 - 54.00	-1.0000	0.45	1	1	0.5000 1.0800	1.0800		0.29
Feedline Ladder (Af) ****	B	No	No	Af (CaAa)	56.00 - 0.00	-1.0000	0.45	1	1	3.0000	3.0000		8.40

Feed Line/Linear Appurtenances - Entered As Area

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

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	60.00-40.00	A	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	12.741	0.000	0.15
		C	0.000	0.000	18.278	0.000	0.23
T2	40.00-25.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	12.360	0.000	0.14
		C	0.000	0.000	14.430	0.000	0.18
T3	25.00-20.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	4.120	0.000	0.05
		C	0.000	0.000	4.810	0.000	0.06
T4	20.00-5.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	12.360	0.000	0.14
		C	0.000	0.000	14.430	0.000	0.18
T5	5.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	4.120	0.000	0.05
		C	0.000	0.000	4.810	0.000	0.06

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	60.00-40.00	A	1.564	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	28.403	0.000	0.46
		C		0.000	0.000	38.989	0.000	0.67
T2	40.00-25.00	A	1.498	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	27.564	0.000	0.43
		C		0.000	0.000	30.249	0.000	0.51
T3	25.00-20.00	A	1.444	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	9.042	0.000	0.14
		C		0.000	0.000	9.938	0.000	0.16
T4	20.00-5.00	A	1.361	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	26.458	0.000	0.40
		C		0.000	0.000	29.149	0.000	0.47
T5	5.00-0.00	A	1.159	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	8.275	0.000	0.12
		C		0.000	0.000	9.175	0.000	0.14

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	60.00-40.00	-1.9433	4.1283	-2.2811	5.0117
T2	40.00-25.00	-1.3336	4.6014	-1.5183	5.5359
T3	25.00-20.00	-1.2324	4.2696	-1.3776	4.9354
T4	20.00-5.00	-1.2256	4.3572	-1.4555	5.2154
T5	5.00-0.00	-1.3408	4.9033	-1.7611	6.0394

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	RFS HYBRIFLEX 1 1/4	40.00 - 59.00	0.6000	0.5979
T1	2	Feedline Ladder (Af)	40.00 - 59.00	0.6000	0.5979
T1	4	VXL5-50(7/8)	40.00 - 54.00	0.6000	0.5979
T1	5	VXL5-50(7/8)	54.00 - 56.00	0.6000	0.5979
T1	6	Feedline Ladder (Af)	40.00 - 56.00	0.6000	0.5979
T2	1	RFS HYBRIFLEX 1 1/4	25.00 - 40.00	0.6000	0.6000
T2	2	Feedline Ladder (Af)	25.00 - 40.00	0.6000	0.6000
T2	4	VXL5-50(7/8)	25.00 - 40.00	0.6000	0.6000
T2	6	Feedline Ladder (Af)	25.00 - 40.00	0.6000	0.6000
T3	1	RFS HYBRIFLEX 1 1/4	20.00 - 25.00	0.6000	0.5600
T3	2	Feedline Ladder (Af)	20.00 - 25.00	0.6000	0.5600
T3	4	VXL5-50(7/8)	20.00 - 25.00	0.6000	0.5600
T3	6	Feedline Ladder (Af)	20.00 - 25.00	0.6000	0.5600
T4	1	RFS HYBRIFLEX 1 1/4	5.00 - 20.00	0.6000	0.5710
T4	2	Feedline Ladder (Af)	5.00 - 20.00	0.6000	0.5710
T4	4	VXL5-50(7/8)	5.00 - 20.00	0.6000	0.5710
T4	6	Feedline Ladder (Af)	5.00 - 20.00	0.6000	0.5710
T5	1	RFS HYBRIFLEX 1 1/4	0.00 - 5.00	0.6000	0.6000
T5	2	Feedline Ladder (Af)	0.00 - 5.00	0.6000	0.6000
T5	4	VXL5-50(7/8)	0.00 - 5.00	0.6000	0.6000
T5	6	Feedline Ladder (Af)	0.00 - 5.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
AIR 32 B2a/B66Aa	A	From Leg	3.50	0.0000	57.00	No Ice	3.86	2.51	0.17
			0.00			1/2" Ice	4.23	2.86	0.22
			2.00			1" Ice	4.61	3.22	0.27
AIR 32 B2a/B66Aa	B	From Leg	3.50	0.0000	57.00	No Ice	3.86	2.51	0.17
			0.00			1/2" Ice	4.23	2.86	0.22
			2.00			1" Ice	4.61	3.22	0.27
AIR 32 B2a/B66Aa	C	From Leg	3.50	0.0000	57.00	No Ice	3.86	2.51	0.17
			0.00			1/2" Ice	4.23	2.86	0.22
			2.00			1" Ice	4.61	3.22	0.27
AIR 6449 B41	A	From Leg	3.50	0.0000	57.00	No Ice	5.65	2.42	0.10
			0.00			1/2" Ice	5.96	2.64	0.14
			2.00			1" Ice	6.26	2.87	0.18
AIR 6449 B41	B	From Leg	3.50	0.0000	57.00	No Ice	5.65	2.42	0.10
			0.00			1/2" Ice	5.96	2.64	0.14
			2.00			1" Ice	6.26	2.87	0.18
AIR 6449 B41	C	From Leg	3.50	0.0000	57.00	No Ice	5.65	2.42	0.10
			0.00			1/2" Ice	5.96	2.64	0.14
			2.00			1" Ice	6.26	2.87	0.18
APXVAALL24_43-U-NA20 w/ Mount Pipe	A	From Leg	3.50	0.0000	57.00	No Ice	14.69	6.87	0.18
			0.00			1/2" Ice	15.46	7.55	0.31
			0.00			1" Ice	16.23	8.25	0.45
APXVAALL24_43-U-NA20 w/ Mount Pipe	B	From Leg	3.50	0.0000	57.00	No Ice	14.69	6.87	0.18
			0.00			1/2" Ice	15.46	7.55	0.31

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
			0.00			1" Ice	16.23	8.25	0.45
APXVAALL24_43-U-NA20 w/ Mount Pipe	C	From Leg	3.50 0.00 0.00	0.0000	57.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.18 0.31 0.45
Radio 4449 B71+B85	A	From Leg	3.50 0.00 2.00	0.0000	57.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33	1.59 1.75 1.92	0.07 0.09 0.12
Radio 4449 B71+B85	B	From Leg	3.50 0.00 2.00	0.0000	57.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33	1.59 1.75 1.92	0.07 0.09 0.12
Radio 4449 B71+B85	C	From Leg	3.50 0.00 2.00	0.0000	57.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33	1.59 1.75 1.92	0.07 0.09 0.12
Radio 4415 B25	A	From Leg	3.50 0.00 2.00	0.0000	57.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	0.05 0.06 0.07
Radio 4415 B25	B	From Leg	3.50 0.00 2.00	0.0000	57.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	0.05 0.06 0.07
Radio 4415 B25	C	From Leg	3.50 0.00 0.00	0.0000	57.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	0.05 0.06 0.07
(3) Site Pro 1 - EUSF10-U	C	None		0.0000	57.00	No Ice 1/2" Ice 1" Ice	17.82 25.01 32.11	17.82 25.01 32.11	0.80 1.14 1.60
*** 56 ft ***									
Side Arm Mount [SO 201-1]	B	From Leg	0.50 0.00 0.00	0.0000	56.00	No Ice 1/2" Ice 1" Ice	1.78 2.24 2.75	2.61 3.15 3.73	0.10 0.12 0.14
*** 54 ft ***									
Side Arm Mount [SO 201-1]	A	From Leg	0.50 0.00 0.00	0.0000	54.00	No Ice 1/2" Ice 1" Ice	1.78 2.24 2.75	2.61 3.15 3.73	0.10 0.12 0.14
Side Arm Mount [SO 201-1]	B	From Leg	0.50 0.00 0.00	0.0000	54.00	No Ice 1/2" Ice 1" Ice	1.78 2.24 2.75	2.61 3.15 3.73	0.10 0.12 0.14
6' Dipole	B	From Leg	3.00 0.00 0.00	0.0000	54.00	No Ice 1/2" Ice 1" Ice	1.20 1.80 2.40	1.20 1.80 2.40	0.02 0.03 0.04
7' Omni	A	From Leg	3.00 0.00 0.00	0.0000	54.00	No Ice 1/2" Ice 1" Ice	1.74 2.60 3.46	1.74 2.60 3.46	0.04 0.05 0.07

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
26T-1900/2127/2400	B	Grid	From	3.00	0.0000		56.00	3.27	No Ice	8.40	0.00

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
			Leg	0.00					1/2" Ice	8.84	0.05
				0.00					1" Ice	9.27	0.10

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 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
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service

Comb. No.	Description
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
T1	60 - 40	Leg	Max Tension	7	12.81	-0.06	0.02
			Max. Compression	10	-15.76	-0.06	-0.02
			Max. Mx	20	-1.74	-0.88	0.01
			Max. My	14	-1.63	0.02	0.88
			Max. Vy	20	-0.79	0.55	0.01
			Max. Vx	2	-0.81	-0.01	0.58
		Diagonal	Max Tension	7	2.40	0.00	0.00
			Max. Compression	18	-2.57	0.00	0.00
			Max. Mx	31	0.32	0.02	0.00
			Max. My	24	-2.19	0.00	-0.00
			Max. Vy	31	-0.02	0.02	0.00
			Max. Vx	24	0.00	0.00	-0.00
		Top Girt	Max Tension	23	0.11	0.00	0.00
			Max. Compression	18	-0.15	0.00	0.00
			Max. Mx	27	-0.11	-0.03	0.00
			Max. My	18	0.04	0.00	-0.00
			Max. Vy	27	0.03	0.00	0.00
			Max. Vx	18	0.00	0.00	0.00
T2	40 - 25	Leg	Max Tension	15	31.90	0.00	0.05
			Max. Compression	10	-36.24	0.06	0.04
			Max. Mx	8	-1.63	-0.21	-0.02
			Max. My	24	-1.82	0.09	0.20
			Max. Vy	8	0.06	-0.21	-0.02
			Max. Vx	24	-0.07	0.09	0.20
		Diagonal	Max Tension	20	3.03	0.00	0.00
			Max. Compression	20	-3.06	0.00	0.00
			Max. Mx	10	-2.52	-0.03	-0.01
			Max. My	20	-3.03	-0.02	0.01
			Max. Vy	31	-0.02	0.02	0.00
			Max. Vx	20	-0.00	-0.02	0.01
		Top Girt	Max Tension	6	0.36	0.00	0.00
			Max. Compression	11	-0.35	0.00	0.00
			Max. Mx	26	0.10	-0.03	0.00
			Max. My	18	0.21	0.00	-0.00
			Max. Vy	26	0.02	0.00	0.00
			Max. Vx	18	0.00	0.00	0.00
T3	25 - 20	Leg	Max Tension	15	38.40	0.00	-0.25
			Max. Compression	10	-43.17	0.11	0.07
			Max. Mx	10	-43.15	-0.25	-0.14
			Max. My	2	-42.82	-0.00	0.28
			Max. Vy	10	-0.15	-0.25	-0.14
			Max. Vx	2	0.17	-0.00	0.28
		Diagonal	Max Tension	21	3.30	0.02	-0.00
			Max. Compression	18	-3.55	0.00	0.00
			Max. Mx	18	2.69	0.05	-0.01
			Max. My	7	-2.00	-0.03	-0.02
			Max. Vy	31	-0.02	0.03	0.00
			Max. Vx	7	0.00	-0.03	-0.02
		Secondary Horizontal	Max Tension	10	0.75	0.00	0.00
			Max. Compression	10	-0.75	0.01	-0.01
			Max. Mx	16	-0.04	0.04	-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. My	18	-0.75	0.02	-0.02
			Max. Vy	34	-0.02	0.03	-0.00
			Max. Vx	18	0.01	0.00	0.00
T4	20 - 5	Leg	Max Tension	15	49.98	-0.46	-0.00
			Max. Compression	18	-56.21	-0.41	0.00
			Max. Mx	10	-52.86	0.56	-0.00
			Max. My	16	-2.28	-0.05	0.49
			Max. Vy	10	-0.42	0.56	-0.00
			Max. Vx	16	0.27	-0.05	0.49
		Diagonal	Max Tension	7	1.88	0.03	-0.01
			Max. Compression	18	-2.10	0.00	0.00
			Max. Mx	18	1.40	0.04	-0.01
			Max. My	18	-2.10	-0.03	0.02
			Max. Vy	33	0.02	0.02	-0.00
			Max. Vx	18	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	18	0.97	0.00	0.00
			Max. Compression	18	-0.97	-0.01	-0.01
			Max. Mx	6	0.49	0.03	-0.01
			Max. My	4	-0.41	0.02	0.01
			Max. Vy	31	0.03	0.03	0.00
			Max. Vx	16	-0.00	0.00	0.00
		Top Girt	Max Tension	33	0.14	0.00	0.00
			Max. Compression	10	-0.14	0.00	0.00
			Max. Mx	26	0.13	-0.03	0.00
			Max. My	29	0.12	0.00	0.00
			Max. Vy	26	0.02	0.00	0.00
			Max. Vx	29	-0.00	0.00	0.00
T5	5 - 0	Leg	Max Tension	15	52.81	-0.39	-0.00
			Max. Compression	18	-59.53	0.00	0.00
			Max. Mx	18	-59.52	0.46	0.00
			Max. My	16	-2.67	-0.04	0.47
			Max. Vy	18	-0.37	0.46	0.00
			Max. Vx	16	0.23	-0.04	0.47
		Diagonal	Max Tension	7	1.77	0.02	-0.00
			Max. Compression	18	-2.00	0.00	0.00
			Max. Mx	18	1.28	0.03	-0.01
			Max. My	18	0.77	0.03	0.01
			Max. Vy	31	-0.02	0.02	0.00
			Max. Vx	18	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	18	1.03	0.00	0.00
			Max. Compression	18	-1.03	0.02	-0.01
			Max. Mx	6	0.52	0.03	-0.00
			Max. My	16	-0.37	-0.01	0.01
			Max. Vy	31	0.02	0.00	0.00
			Max. Vx	16	-0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	61.54	5.09	-2.70
	Max. H_x	18	61.54	5.09	-2.70
	Max. H_z	7	-53.96	-4.49	2.36
	Min. Vert	7	-53.96	-4.49	2.36

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. H_x	7	-53.96	-4.49	2.36
	Min. H_z	18	61.54	5.09	-2.70
Leg B	Max. Vert	10	61.41	-5.01	-2.77
	Max. H_x	23	-53.53	4.39	2.42
	Max. H_z	23	-53.53	4.39	2.42
	Min. Vert	23	-53.53	4.39	2.42
	Min. H_x	10	61.41	-5.01	-2.77
	Min. H_z	10	61.41	-5.01	-2.77
Leg A	Max. Vert	2	61.29	0.05	5.77
	Max. H_x	23	29.34	0.21	2.68
	Max. H_z	2	61.29	0.05	5.77
	Min. Vert	15	-54.48	-0.05	-5.10
	Min. H_x	11	-27.55	-0.21	-2.65
	Min. H_z	15	-54.48	-0.05	-5.10

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	6.31	-0.00	-0.00	1.56	-0.16	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	7.58	0.01	-8.98	-356.27	-0.53	0.62
0.9 Dead+1.6 Wind 0 deg - No Ice	5.68	0.01	-8.98	-356.18	-0.48	0.62
1.2 Dead+1.6 Wind 30 deg - No Ice	7.58	4.33	-7.44	-297.74	-174.99	1.76
0.9 Dead+1.6 Wind 30 deg - No Ice	5.68	4.33	-7.44	-297.75	-174.67	1.75
1.2 Dead+1.6 Wind 60 deg - No Ice	7.58	7.23	-4.16	-167.23	-294.81	2.48
0.9 Dead+1.6 Wind 60 deg - No Ice	5.68	7.23	-4.16	-167.44	-294.30	2.47
1.2 Dead+1.6 Wind 90 deg - No Ice	7.58	8.37	-0.01	1.55	-340.96	2.04
0.9 Dead+1.6 Wind 90 deg - No Ice	5.68	8.37	-0.01	1.08	-340.37	2.04
1.2 Dead+1.6 Wind 120 deg - No Ice	7.58	7.69	4.42	179.24	-308.72	1.26
0.9 Dead+1.6 Wind 120 deg - No Ice	5.68	7.69	4.42	178.49	-308.19	1.26
1.2 Dead+1.6 Wind 150 deg - No Ice	7.58	4.23	7.32	299.16	-172.22	0.65
0.9 Dead+1.6 Wind 150 deg - No Ice	5.68	4.23	7.32	298.22	-171.90	0.65
1.2 Dead+1.6 Wind 180 deg - No Ice	7.58	0.00	8.38	342.73	-0.36	-0.61
0.9 Dead+1.6 Wind 180 deg - No Ice	5.68	0.00	8.38	341.73	-0.31	-0.61
1.2 Dead+1.6 Wind 210 deg - No Ice	7.58	-4.30	7.46	302.40	173.06	-1.76
0.9 Dead+1.6 Wind 210 deg - No Ice	5.68	-4.30	7.46	301.46	172.84	-1.75
1.2 Dead+1.6 Wind 240 deg - No Ice	7.58	-7.74	4.46	180.10	309.14	-2.49
0.9 Dead+1.6 Wind 240 deg - No Ice	5.68	-7.74	4.46	179.35	308.71	-2.48

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.6 Wind 270 deg - No Ice	7.58	-8.37	0.02	2.77	340.57	-2.09
0.9 Dead+1.6 Wind 270 deg - No Ice	5.68	-8.37	0.02	2.30	340.09	-2.09
1.2 Dead+1.6 Wind 300 deg - No Ice	7.58	-7.15	-4.11	-166.20	292.29	-1.26
0.9 Dead+1.6 Wind 300 deg - No Ice	5.68	-7.15	-4.11	-166.41	291.88	-1.26
1.2 Dead+1.6 Wind 330 deg - No Ice	7.58	-4.22	-7.32	-295.67	171.36	-0.60
0.9 Dead+1.6 Wind 330 deg - No Ice	5.68	-4.22	-7.32	-295.68	171.14	-0.60
1.2 Dead+1.0 Ice+1.0 Temp	20.79	-0.00	-0.00	5.30	-1.25	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	20.79	-0.06	-2.16	-81.69	2.26	0.07
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	20.79	1.04	-1.80	-67.34	-43.38	0.52
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	20.79	1.78	-1.02	-36.11	-73.69	0.76
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	20.79	2.05	-0.00	5.19	-84.59	0.64
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	20.79	1.81	1.04	47.65	-74.85	0.35
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	20.79	1.03	1.78	77.86	-43.15	0.11
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	20.79	0.00	2.07	89.20	-1.48	-0.17
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	20.79	-1.04	1.80	77.99	40.81	-0.52
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	20.79	-1.89	1.02	45.43	75.52	-0.66
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	20.79	-2.07	-0.04	3.24	83.43	-0.49
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	20.79	-1.78	-1.02	-36.79	71.91	-0.35
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	20.79	-1.08	-1.79	-67.32	43.21	-0.26
Dead+Wind 0 deg - Service	6.31	0.00	-1.83	-71.45	-0.23	0.13
Dead+Wind 30 deg - Service	6.31	0.88	-1.52	-59.52	-35.80	0.36
Dead+Wind 60 deg - Service	6.31	1.48	-0.85	-32.91	-60.22	0.50
Dead+Wind 90 deg - Service	6.31	1.71	-0.00	1.50	-69.63	0.42
Dead+Wind 120 deg - Service	6.31	1.57	0.90	37.73	-63.06	0.26
Dead+Wind 150 deg - Service	6.31	0.86	1.49	62.17	-35.23	0.13
Dead+Wind 180 deg - Service	6.31	0.00	1.71	71.06	-0.20	-0.12
Dead+Wind 210 deg - Service	6.31	-0.88	1.52	62.83	35.16	-0.36
Dead+Wind 240 deg - Service	6.31	-1.58	0.91	37.90	62.91	-0.51
Dead+Wind 270 deg - Service	6.31	-1.71	0.00	1.75	69.31	-0.43
Dead+Wind 300 deg - Service	6.31	-1.46	-0.84	-32.70	59.47	-0.26
Dead+Wind 330 deg - Service	6.31	-0.86	-1.49	-59.09	34.81	-0.12

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-6.31	0.00	0.00	6.31	0.00	0.000%
2	0.01	-7.58	-8.98	-0.01	7.58	8.98	0.001%
3	0.01	-5.68	-8.98	-0.01	5.68	8.98	0.001%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
4	4.33	-7.58	-7.44	-4.33	7.58	7.44	0.001%
5	4.33	-5.68	-7.44	-4.33	5.68	7.44	0.001%
6	7.23	-7.58	-4.16	-7.23	7.58	4.16	0.001%
7	7.23	-5.68	-4.16	-7.23	5.68	4.16	0.001%
8	8.37	-7.58	-0.01	-8.37	7.58	0.01	0.001%
9	8.37	-5.68	-0.01	-8.37	5.68	0.01	0.001%
10	7.69	-7.58	4.42	-7.69	7.58	-4.42	0.001%
11	7.69	-5.68	4.42	-7.69	5.68	-4.42	0.001%
12	4.23	-7.58	7.32	-4.23	7.58	-7.32	0.001%
13	4.23	-5.68	7.32	-4.23	5.68	-7.32	0.001%
14	0.00	-7.58	8.38	-0.00	7.58	-8.38	0.001%
15	0.00	-5.68	8.38	-0.00	5.68	-8.38	0.001%
16	-4.30	-7.58	7.46	4.30	7.58	-7.46	0.001%
17	-4.30	-5.68	7.46	4.30	5.68	-7.46	0.001%
18	-7.74	-7.58	4.46	7.74	7.58	-4.46	0.001%
19	-7.74	-5.68	4.46	7.74	5.68	-4.46	0.001%
20	-8.37	-7.58	0.02	8.37	7.58	-0.02	0.001%
21	-8.37	-5.68	0.02	8.37	5.68	-0.02	0.001%
22	-7.15	-7.58	-4.11	7.15	7.58	4.11	0.001%
23	-7.15	-5.68	-4.11	7.15	5.68	4.11	0.001%
24	-4.22	-7.58	-7.32	4.22	7.58	7.32	0.001%
25	-4.22	-5.68	-7.32	4.22	5.68	7.32	0.001%
26	0.00	-20.79	0.00	0.00	20.79	0.00	0.000%
27	-0.06	-20.79	-2.16	0.06	20.79	2.16	0.000%
28	1.04	-20.79	-1.80	-1.04	20.79	1.80	0.000%
29	1.78	-20.79	-1.02	-1.78	20.79	1.02	0.000%
30	2.05	-20.79	-0.00	-2.05	20.79	0.00	0.000%
31	1.81	-20.79	1.04	-1.81	20.79	-1.04	0.000%
32	1.03	-20.79	1.78	-1.03	20.79	-1.78	0.000%
33	0.00	-20.79	2.07	-0.00	20.79	-2.07	0.000%
34	-1.04	-20.79	1.80	1.04	20.79	-1.80	0.000%
35	-1.89	-20.79	1.02	1.89	20.79	-1.02	0.000%
36	-2.07	-20.79	-0.04	2.07	20.79	0.04	0.000%
37	-1.78	-20.79	-1.02	1.78	20.79	1.02	0.000%
38	-1.08	-20.79	-1.79	1.08	20.79	1.79	0.000%
39	0.00	-6.31	-1.83	-0.00	6.31	1.83	0.000%
40	0.88	-6.31	-1.52	-0.88	6.31	1.52	0.000%
41	1.48	-6.31	-0.85	-1.48	6.31	0.85	0.000%
42	1.71	-6.31	-0.00	-1.71	6.31	0.00	0.000%
43	1.57	-6.31	0.90	-1.57	6.31	-0.90	0.000%
44	0.86	-6.31	1.49	-0.86	6.31	-1.49	0.000%
45	0.00	-6.31	1.71	-0.00	6.31	-1.71	0.000%
46	-0.88	-6.31	1.52	0.88	6.31	-1.52	0.000%
47	-1.58	-6.31	0.91	1.58	6.31	-0.91	0.000%
48	-1.71	-6.31	0.00	1.71	6.31	-0.00	0.000%
49	-1.46	-6.31	-0.84	1.46	6.31	0.84	0.000%
50	-0.86	-6.31	-1.49	0.86	6.31	1.49	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	9	0.00000001	0.00005422
3	Yes	9	0.00000001	0.00003896
4	Yes	9	0.00000001	0.00005956

5	Yes	9	0.00000001	0.00004412
6	Yes	9	0.00000001	0.00006411
7	Yes	9	0.00000001	0.00004843
8	Yes	9	0.00000001	0.00005951
9	Yes	9	0.00000001	0.00004408
10	Yes	9	0.00000001	0.00005428
11	Yes	9	0.00000001	0.00003900
12	Yes	9	0.00000001	0.00005948
13	Yes	9	0.00000001	0.00004405
14	Yes	9	0.00000001	0.00006403
15	Yes	9	0.00000001	0.00004839
16	Yes	9	0.00000001	0.00005946
17	Yes	9	0.00000001	0.00004404
18	Yes	9	0.00000001	0.00005423
19	Yes	9	0.00000001	0.00003898
20	Yes	9	0.00000001	0.00005936
21	Yes	9	0.00000001	0.00004397
22	Yes	9	0.00000001	0.00006398
23	Yes	9	0.00000001	0.00004836
24	Yes	9	0.00000001	0.00005944
25	Yes	9	0.00000001	0.00004403
26	Yes	8	0.00000001	0.00009966
27	Yes	9	0.00000001	0.00013339
28	Yes	9	0.00000001	0.00013493
29	Yes	9	0.00000001	0.00013837
30	Yes	9	0.00000001	0.00013929
31	Yes	9	0.00000001	0.00014029
32	Yes	9	0.00000001	0.00014133
33	Yes	9	0.00000001	0.00014182
34	Yes	9	0.00000001	0.00013908
35	Yes	9	0.00000001	0.00013691
36	Yes	9	0.00000001	0.00013498
37	Yes	9	0.00000001	0.00013436
38	Yes	9	0.00000001	0.00013302
39	Yes	9	0.00000001	0.00004616
40	Yes	9	0.00000001	0.00004725
41	Yes	9	0.00000001	0.00004820
42	Yes	9	0.00000001	0.00004731
43	Yes	9	0.00000001	0.00004641
44	Yes	9	0.00000001	0.00004732
45	Yes	9	0.00000001	0.00004815
46	Yes	9	0.00000001	0.00004720
47	Yes	9	0.00000001	0.00004616
48	Yes	9	0.00000001	0.00004697
49	Yes	9	0.00000001	0.00004787
50	Yes	9	0.00000001	0.00004703

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	60 - 40	1.236	43	0.1504	0.0145
T2	40 - 25	0.618	43	0.1310	0.0112
T3	25 - 20	0.245	43	0.0914	0.0071
T4	20 - 5	0.157	43	0.0716	0.0054
T5	5 - 0	0.009	47	0.0172	0.0011

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
57.00	AIR 32 B2a/B66Aa	43	1.140	0.1485	0.0141	146032
56.00	26T-1900/2127/2400	43	1.108	0.1479	0.0139	146032
54.00	Side Arm Mount [SO 201-1]	43	1.045	0.1465	0.0137	121693

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	60 - 40	5.976	10	0.7238	0.0710
T2	40 - 25	2.996	10	0.6331	0.0552
T3	25 - 20	1.191	18	0.4426	0.0347
T4	20 - 5	0.763	18	0.3470	0.0265
T5	5 - 0	0.045	2	0.0834	0.0056

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
57.00	AIR 32 B2a/B66Aa	10	5.514	0.7153	0.0691	31021
56.00	26T-1900/2127/2400	10	5.360	0.7124	0.0684	31021
54.00	Side Arm Mount [SO 201-1]	10	5.054	0.7062	0.0671	25851

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	60	Diagonal	A325X	0.6250	1	2.40	4.55	0.527	1	Member Block Shear
		Top Girt	A325X	0.6250	1	0.11	4.55	0.024	1	Member Block Shear
T2	40	Diagonal	A325X	0.6250	1	3.03	4.55	0.665	1	Member Block Shear
		Top Girt	A325X	0.6250	1	0.36	4.55	0.080	1	Member Block Shear
T3	25	Diagonal	A325X	0.6250	1	3.30	4.55	0.724	1	Member Block Shear
T4	20	Diagonal	A325X	0.6250	1	1.88	4.55	0.414	1	Member Block Shear
		Top Girt	A325X	0.6250	1	0.14	4.55	0.030	1	Member Block Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T5	5	Diagonal	A325X	0.6250	1	1.77	4.55	0.388	1	Member Block Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	60 - 40	P2x.154	20.00	5.00	76.2 K=1.00	1.0745	-15.76	31.62	0.498 [1]
T2	40 - 25	P2x.218	15.00	5.00	78.3 K=1.00	1.4773	-36.24	42.47	0.853 [1]
T3	25 - 20	P2x.218	5.00	2.50	39.1 K=1.00	1.4773	-43.17	59.43	0.726 [1]
T4	20 - 5	P2.5x.203	15.03	2.60	33.0 K=1.00	1.7040	-56.21	70.82	0.794 [1]
T5	5 - 0	P2.5x.203	5.01	2.60	32.9 K=1.00	1.7040	-59.53	70.85	0.840 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	60 - 40	L2x2x1/8	7.07	3.40	102.5 K=1.00	0.4844	-2.57	8.89	0.289 [1]
T2	40 - 25	L2x2x1/8	7.07	3.40	102.5 K=1.00	0.4844	-3.06	8.89	0.344 [1]
T3	25 - 20	L2x2x1/8	7.07	3.40	102.5 K=1.00	0.4844	-3.55	8.89	0.399 [1]
T4	20 - 5	L2x2x1/8	7.25	3.64	110.0 K=1.00	0.4844	-2.10	8.19	0.257 [1]
T5	5 - 0	L2x2x1/8	8.40	4.21	127.0 K=1.00	0.4844	-2.00	6.68	0.300 [1]

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T3	25 - 20	L2x2x1/4	5.00	2.40	73.7 K=1.00	0.9380	-0.75	22.83	0.033 [1]
T4	20 - 5	L2x2x1/4	6.24	3.00	92.1 K=1.00	0.9380	-0.97	19.45	0.050 [1]
T5	5 - 0	L2x2x1/4	6.74	3.25	99.8 K=1.00	0.9380	-1.03	18.00	0.057 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	60 - 40	L2x2x1/8	5.00	4.80	145.0 K=1.00	0.4844	-0.15	5.21	0.030 [1]
T2	40 - 25	L2x2x1/8	5.00	4.80	145.0 K=1.00	0.4844	-0.35	5.21	0.067 [1]
T4	20 - 5	L2x2x1/8	5.00	4.80	145.0 K=1.00	0.4844	-0.14	5.21	0.027 [1]

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	60 - 40	P2x.154	20.00	5.00	76.2	1.0745	12.81	48.35	0.265 [1]
T2	40 - 25	P2x.218	15.00	5.00	78.3	1.4773	31.90	66.48	0.480 [1]
T3	25 - 20	P2x.218	5.00	2.50	39.1	1.4773	38.40	66.48	0.578 [1]
T4	20 - 5	P2.5x.203	15.03	2.40	30.4	1.7040	49.98	76.68	0.652 [1]
T5	5 - 0	P2.5x.203	5.01	2.41	30.5	1.7040	52.81	76.68	0.689 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	60 - 40	L2x2x1/8	7.07	3.40	65.1	0.2930	2.40	12.74	0.188 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	40 - 25	L2x2x1/8	7.07	3.40	65.1	0.2930	3.03	12.74	0.238 [1]
T3	25 - 20	L2x2x1/8	7.07	3.40	65.1	0.2930	3.30	12.74	0.259 [1]
T4	20 - 5	L2x2x1/8	7.25	3.64	69.8	0.2930	1.88	12.74	0.148 [1]
T5	5 - 0	L2x2x1/8	8.40	4.21	80.6	0.2930	1.77	12.74	0.139 [1]

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T3	25 - 20	L2x2x1/4	5.00	2.40	94.6	0.9380	0.75	30.39	0.025 [1]
T4	20 - 5	L2x2x1/4	6.24	3.00	118.2	0.9380	0.97	30.39	0.032 [1]
T5	5 - 0	L2x2x1/4	6.74	3.25	128.1	0.9380	1.03	30.39	0.034 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	60 - 40	L2x2x1/8	5.00	4.80	92.0	0.2930	0.11	12.74	0.009 [1]
T2	40 - 25	L2x2x1/8	5.00	4.80	92.0	0.2930	0.36	12.74	0.028 [1]
T4	20 - 5	L2x2x1/8	5.00	4.80	92.0	0.2930	0.14	12.74	0.011 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	60 - 40	Leg	P2x.154	2	-15.76	31.62	49.8	Pass
T2	40 - 25	Leg	P2x.218	32	-36.24	42.47	85.3	Pass
T3	25 - 20	Leg	P2x.218	56	-43.17	59.43	72.6	Pass
T4	20 - 5	Leg	P2.5x.203	67	-56.21	70.82	79.4	Pass
T5	5 - 0	Leg	P2.5x.203	100	-59.53	70.85	84.0	Pass
T1	60 - 40	Diagonal	L2x2x1/8	7	-2.57	8.89	28.9 52.7 (b)	Pass
T2	40 - 25	Diagonal	L2x2x1/8	37	-3.06	8.89	34.4 66.5 (b)	Pass
T3	25 - 20	Diagonal	L2x2x1/8	58	-3.55	8.89	39.9 72.4 (b)	Pass
T4	20 - 5	Diagonal	L2x2x1/8	91	-2.10	8.19	25.7 41.4 (b)	Pass
T5	5 - 0	Diagonal	L2x2x1/8	103	-2.00	6.68	30.0	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
							38.8 (b)	
T3	25 - 20	Secondary Horizontal	L2x2x1/4	64	-0.75	22.83	3.3	Pass
T4	20 - 5	Secondary Horizontal	L2x2x1/4	79	-0.97	19.45	5.0	Pass
T5	5 - 0	Secondary Horizontal	L2x2x1/4	111	-1.03	18.00	5.7	Pass
T1	60 - 40	Top Girt	L2x2x1/8	5	-0.15	5.21	3.0	Pass
T2	40 - 25	Top Girt	L2x2x1/8	36	-0.35	5.21	6.7	Pass
							8.0 (b)	
T4	20 - 5	Top Girt	L2x2x1/8	72	-0.14	5.21	2.7	Pass
							3.0 (b)	
							Summary	
						Leg (T2)	85.3	Pass
						Diagonal (T3)	72.4	Pass
						Secondary Horizontal (T5)	5.7	Pass
						Top Girt (T2)	8.0	Pass
						Bolt Checks	72.4	Pass
						RATING =	**85.3**	**Pass**

Jump Plate Reinforcement Check (Plate, typ)

Jump Plate

Number of jump plates: $N := 2$

Yield strength of plate: $F_y := 50ksi$

Ultimate strength of plate: $F_u := 65ksi$

Thickness of plate: $t_{plate} := 0.75in$

Effective width of plate: $w_{effective} := 3in$

Applied Compression (Tnx): $P_{tnx} := 43.17 \cdot kip$

Applied Tension (Tnx): $T_{tnx} := 0kip$

Determine the force distribution

EXISTING PIPE LEG INPUTS

Outside Diameter: $D_{L\_out} := 2.375in$

Thickness: $t_{leg} := 0.218in$

Inside Diameter: $D_{L\_in} := D_{L\_out} - 2 \cdot t_{leg} = 1.939 \cdot in$

Area: $A_L := \frac{\pi}{4} \cdot \left(D_{L\_out}^{2} - D_{L\_in}^{2} \right) = 1.477 \cdot in^2$

$A_{mod} := 2.1917 \cdot in^2$

gross area of the plate cross section: $A_g := t_{plate} \cdot w_{effective} = 2.25 \cdot in^2$

Total Area: $A_{tot} := A_L + A_{mod} + N A_g$

Tensile load carried through the tower leg: $P_{TLeg} := \frac{A_L + A_{mod}}{A_{tot}} \cdot T_{tnx} = 0 \cdot kip$

Tensile load carried through the Knife Plates: $P_{TPl} := \frac{N \cdot A_g}{A_{tot}} \cdot T_{tnx} = 0 \cdot kip$

Tensile load carried through the tower leg: $P_{CLeg} := \frac{A_L + A_{mod}}{A_{tot}} \cdot P_{tnx} = 19.389 \cdot kip$

Compressive load carried through the Knife Plates: $P_{CPl} := \frac{N \cdot A_g}{A_{tot}} \cdot P_{tnx} = 23.781 \cdot kip$

Tensile Strength of the Jump Plate

AISC 13th Edition Chapter D
Equation (D2-1)

Safety Factor $\phi_t := 0.9$

Tensile strength in the gross cross section $P_{n.plate} := F_y \cdot A_g = 112.5 \cdot kip$

Design Tensile Strength of one Jump Plate $\phi P_{n.tension} := \phi_t \cdot P_{n.plate} = 101.25 \cdot kip$

Tensile force needed to be resisted by each jump plate $P_t := \frac{P_{TPl}}{N} = 0 \cdot kip$

Tension Check

Gross Section Yield

$$Check_{ten\_yieldHSS} := \begin{cases} \text{"OK"} & \text{if } \phi P_{n.tension} \geq \frac{P_{TPl}}{N} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{ten\_yieldHSS} = \text{"OK"}$

$$Check_{tension} := \frac{P_t}{\phi P_{n.tension}} = 0 \cdot \%$$

CALCULATION SHEET

Compression Check of the Jump Plate

AISC 13th Edition Chapter E Equation (E3-1 to E3-4)

Unbraced Length $l_u := 24in$

K Factor $K := 0.8$

Radius of gyration (calculated from AutoCAD) $r_x := \frac{t_{plate}}{\sqrt{12}} = 0.217 \cdot in$

Modulus of elasticity $E := 29000ksi$

compression force needed to be resisted by each jump plate $P_c := \frac{P_{CPl}}{N} = 11.89 \cdot kip$

Compression Strength of Jump Plate

Safety Factor $\phi_c := 0.9$

$\phi P_{n\_comp} = \phi_c \cdot F_{cr} \cdot A_g$

$F_e := \frac{\pi^2 \cdot 29000ksi}{\left(\frac{K \cdot l_u}{r_x}\right)^2} = 36.395 \cdot ksi$

$\frac{K \cdot l_u}{r_x} = 88.681 < 4.71 \cdot \sqrt{\frac{29000 \cdot ksi}{F_y}} = 113.432$

$\therefore \quad F_{cr} := 0.658^{\frac{F_y}{F_e}} \cdot F_y = 28.135 \cdot ksi$

AISC 13th Edition Chapter J Equation (J4-6)

$$\phi P_{n\_comp} := \begin{cases} \phi_c \cdot F_y \cdot A_g & \text{if } \frac{K \cdot l_u}{r_x} \le 25 \\ \phi_c \cdot F_{cr} \cdot A_g & \text{otherwise} \end{cases}$$

$\phi P_{n\_comp} = 56.973 \cdot kip$

$$Check_{comp} := \begin{cases} \text{"OK"} & \text{if } \phi P_{n\_comp} \ge P_c \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{comp} = \text{"OK"}$

$Check_{compression} := \frac{P_c}{\phi P_{n\_comp}} = 20.87 \cdot \%$

CALCULATION SHEET

WELD CONNECTION

Weld Sizing

Length of vertical weld

$l_{weld} := 5 \cdot in$

Electrode Strength

$F_{EXX} := 70 \cdot ksi$

Vertical fillet weld size - jump plate to leg (in sixteenths of an inch):

$D_{vplate} := 4$

$Weldsize := \frac{D_{vplate}}{16} = 0.25$

Horizontal component of eccentricity with respect to centroid of the weld group

$e_x := 5.5 \cdot in$

Load Not in Plane with Weld Group

$k := 0$

$a := \frac{e_x}{l_{weld}} = 1.1$

Electrode Strength Coefficient

$C_1 = 1$

Coefficient for eccentrically Loaded Weld Groups

$C := 1.175$

(Linearly interpolated from AISC, 13th Edition, Table 8-4)

Weld Capacity

Design Strength

$\phi_w := 0.75$

$D_{min} := ceil\left(\frac{\max(P_t, P_c) \cdot in}{\phi_w \cdot C \, C_1 \cdot l_{weld} \cdot kip}\right) = 3$

$minweldsize := \frac{D_{min}}{16} = \frac{3}{16}$

$Check_{weld} := \begin{cases} \text{"OK"} & \text{if } D_{vplate} \geq D_{min} \wedge D_{vplate} \geq Min_{weldsize} \wedge D_{vplate} \leq Max_{weldsize} \\ \text{"N/G"} & \text{otherwise} \end{cases}$

$Check_{weld} = \text{"N/G"}$

$\phi Rn_{weld2} := \phi_w \cdot C \, ksi \cdot in \cdot C_1 \cdot D_{vplate} \cdot l_{weld} = 17.625 \cdot kip$

$Check_{weld3} := \begin{cases} \text{"OK"} & \text{if } \phi Rn_{weld2} \geq P_t \\ \text{"N/G"} & \text{otherwise} \end{cases}$

$Check_{weld3} = \text{"OK"}$

$\frac{\max(P_t, P_c)}{\phi Rn_{weld2}} = 67.463 \cdot \%$

Project Information

BU #	
Site Name	CTNL041A
Order #	

Tower Information

Tower Type	Self Support
TIA-222 Rev	G

☐ Load Z Normalization

Applied Loads

	Comp.	Uplift
Axial (k)	62.00	54.00
Shear (k)	6.00	5.00

Anchor Rod Data

Quantity:	4
Diameter (in):	0.75
Material Grade:	A449
Grout Considered:	No
l_{ar} (in):	0
Eta Factor, η:	0.5
Thread Type:	N-Included
Configuration:	Symmetrical

Fy=92 ksi Fu=120 ksi

Anchor Rod Results

Axial, Pu_c (kips)	15.50
Shear, Vu (kips)	1.50
Moment, Mu (kip-in)	-
Axial Cap., φPn_t (kips)	32.06
Shear Cap., ϕVn (kips)	-
Moment Cap., ϕMn (kip-in)	-
Stress Rating	57.7%

Pass

SST Unit Base Foundation

BU # :	
Site Name:	CTNL041A
App. Number:	
TIA-222 Revision:	G

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

Superstructure Analysis Reactions		
Global Moment, **M**:	358	ft-kips
Global Axial, **P**:	8	kips
Global Shear, **V**:	9	kips
Leg Compression, P_{comp}:	62	kips
Leg Comp. Shear, V_{u_comp}:	6	kips
Leg Uplift, P_{uplift}:	54	kips
Leg Uplift. Shear, V_{u_uplift}:	5	kips
Tower Height, **H**:	60	ft
Base Face Width, **BW**:	7	ft
BP Dist. Above Fdn, bp_{dist}:	3	in

Foundation Analysis Checks	Capacity	Demand	Rating	Check
Lateral (Sliding) (kips)	36.54	9.00	**24.6%**	**Pass**
Bearing Pressure (ksf)	5.94	1.49	**25.0%**	**Pass**
*Overturning (kip*ft)*	610.42	400.75	**65.7%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	236.06	18.00	**7.6%**	**Pass**
*Pier Flexure (Tension) (kip*ft)*	146.24	15.00	**10.3%**	**Pass**
Pier Compression (kip)	2343.24	64.65	**2.8%**	**Pass**
*Pad Flexure (kip*ft)*	631.92	103.97	**16.5%**	**Pass**
Pad Shear - 1-way (kips)	179.68	40.24	**22.4%**	**Pass**
Pad Shear - Comp 2-way (ksi)	0.164	0.036	**21.8%**	**Pass**

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, **dpier**:	2.5	ft
Ext. Above Grade, **E**:	0.50	ft
Pier Rebar Size, **Sc**:	7	
Pier Rebar Quantity, **mc**:	6	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	6	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Soil Rating:	**65.7%**
Structural Rating:	**22.4%**

Pad Properties		
Depth, **D**:	4.00	ft
Pad Width, **W**:	13.50	ft
Pad Thickness, **T**:	1.50	ft
Pad Rebar Size (Bottom), **Sp**:	8	
Pad Rebar Quantity (Bottom), **mp**:	14	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	3	ksi
Dry Concrete Density, δ**c**:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	120	pcf
Ultimate Net Bearing, Qnet:	7.500	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	35	degrees
SPT Blow Count, N_{blows}:	22	
Base Friction, μ:	0.35	
Neglected Depth, **N**:	3.0	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	3	ft

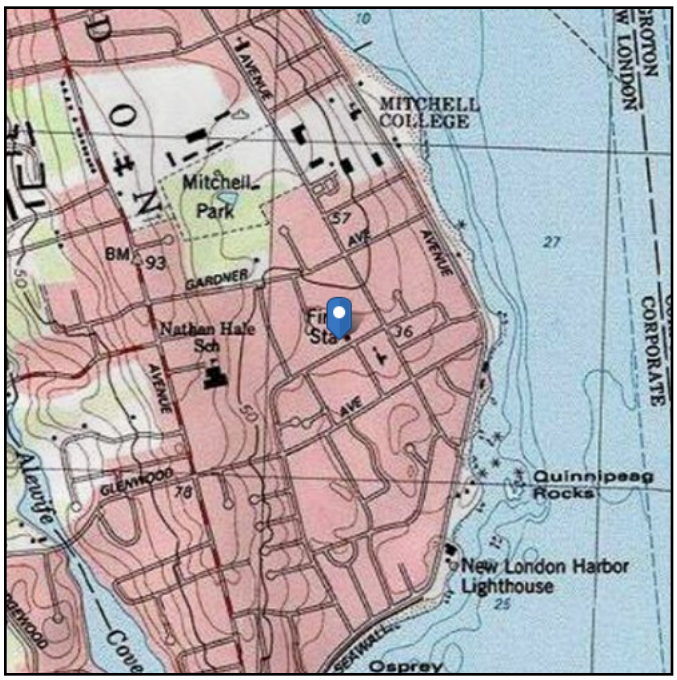
<-- Toggle between Gross and Net

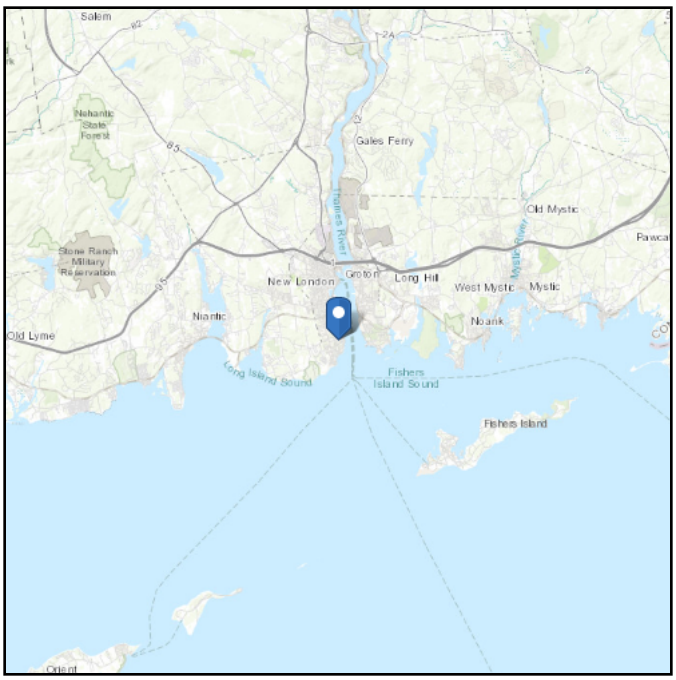
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 33.93 ft (NAVD 88)
Latitude: 41.322475
Longitude: -72.0937





Wind

Results:

Wind Speed:	135 Vmph
10-year MRI	80 Vmph
25-year MRI	90 Vmph
50-year MRI	99 Vmph
100-year MRI	110 Vmph

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

Date Accessed: Thu Oct 22 2020

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

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings shall be protected against wind-borne debris as specified in Section 26.10.3.

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

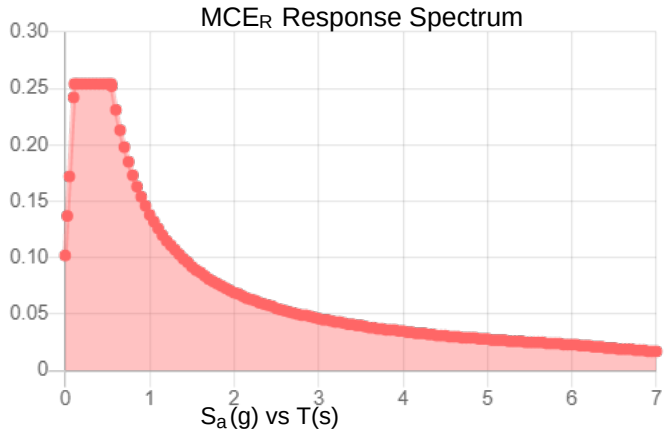
Seismic

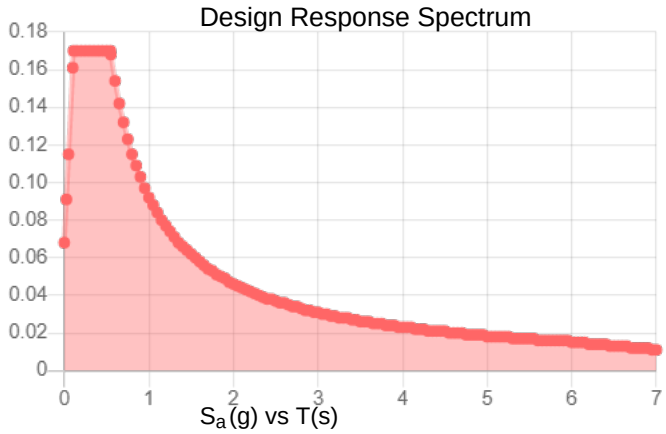
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.159	S_{DS} :	0.17
S_1 :	0.058	S_{D1} :	0.092
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.079
S_{MS} :	0.254	PGA_M :	0.126
S_{M1} :	0.138	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Thu Oct 22 2020

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

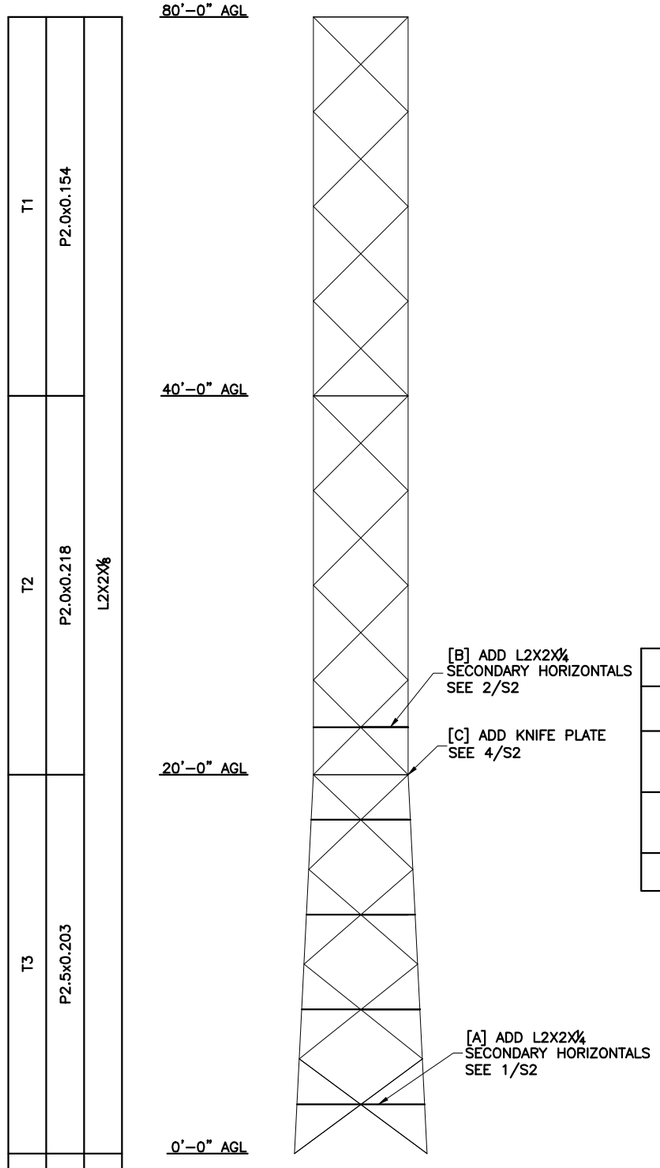
Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Thu Oct 22 2020

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

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



1 / S1 **TOWER ELEVATION**
1/8" = 1'-0"

SELF-SUPPORT TOWER EXISTING MEMBER SIZES

DRAWINGS PLOTTED TO SCALE ON 11x17 SHEETS

NOTES:

1. UPGRADE DESIGN VALID FOR APPURTENANCES LISTED IN EFI ANALYSIS REPORT DATED 03/05/2021. CONTRACTOR TO REVIEW AND SHOULD ADHERE TO THE REPORT.

2. CONTRACTOR TO REMOVE AND REATTACH EXISTING APPURTENANCES AS NEEDED.

3. ALL DIMENSIONS ARE BASED ON STRUCTURAL ANALYSIS REPORT PREPARED BY EBI CONSULTING, DATED 02/13/2015.

4. CONTRACTOR TO FIELD VERIFY EXISTING TOWER MEMBER SIZES AND TOWER DIMENSIONS IN THE VICINITY OF THE UPGRADE, BEFORE FABRICATION OF STEEL AND COMMENCEMENT OF WORK. ANY DISCREPANCY SHOULD BE REPORTED TO EFI IMMEDIATELY FOR FURTHER EVALUATION.

5. DO NOT PERFORM THE WORK ON THE TOWER WHEN WINDS GUST MORE THAN 15 MPH AT THE GROUND LEVEL.

6. NEW TOWER REACTIONS:

LEG UPLIFT:	54 KIPS
LEG COMPRESSION:	61 KIPS
LEG SHEAR:	6 KIPS

7. CONTRACTOR TO HAVE THE SAFETY CLIMB INTACT AND FUNCTIONAL AFTER WORK IS COMPLETE.

8. TOWER WILL BECOME UNSTABLE WHEN MEMBERS ARE DISCONNECTED OR BEING REPLACED. CONTRACTOR IS FULLY RESPONSIBLE TO MAINTAIN STABILITY OF THE TOWER DURING WORK AND SHOULD CONSULT WITH AN ENGINEER.

9. EFI DISCLAIMS ANY LIABILITY ARISING FROM THE ORIGINAL MATERIAL, FABRICATION OR ERECTION OF THE TOWER.

10. 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 GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION), OSHA, AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.

TOWER MODIFICATION SCHEDULE

	FROM (FT)	TO (FT)	MODIFICATION	REFERENCE SHEET
A	0'-0"	25'-0"	ADD L2x2x¼ SECONDARY HORIZONTALS	S2
B	20'-0"	20'-0"	ADD NEW KNIFE PLATES	S2

NOTE: APPLY INDICATED MODIFICATIONS TO ALL 3 TOWER FACES

1. DESIGN INFORMATION AND GENERAL REQUIREMENTS

1.1 CODES
a. 2018 CONNECTICUT BUILDING CODE (2015 IBC).
b. MINIMUM DESIGN LOADS AND ASSOCIATED CRITERIA FOR BUILDINGS AND OTHER STRUCTURES, ASCE/SEI 7-10, AMERICAN SOCIETY OF CIVIL ENGINEERS
c. STEEL CONSTRUCTION MANUAL, 14TH EDITION, AMERICAN INSTITUTE OF STEEL CONSTRUCTION
d. STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS, ANSI/TIA-222-G TELECOMMUNICATIONS INDUSTRY ASSOCIATION

1.2 GENERAL
a. PRIOR TO PURCHASE OR FABRICATION OF MATERIAL, THE CONTRACTOR SHALL PERFORM AN INSPECTION VERIFYING MEMBER DIMENSIONS AND BOLT SIZES. SHOULD THE CONTRACTOR DISCOVER ANY DAMAGED OR MISSING MEMBERS OR THE MEMBER OR BOLT SIZES DO NOT MATCH THOSE LISTED, EFI SHALL BE NOTIFIED IMMEDIATELY.
b. CONTRACTOR TO REPLACE ALL BOLTS REMOVED WITH NEW BOLTS OF SAME TYPE, UNLESS NOTED OTHERWISE.

1.3 LOADS & DESIGN CRITERIA
a. WIND LOADING: V=135MPH (ULTIMATE DESIGN WIND SPEED), EXPOSURE CATEGORY C, RISK CATEGORY II

2. STRUCTURAL STEEL

2.1 MATERIALS
a. STRUCTURAL STEEL . . . . . ASTM A992
ANGLE & PLATE . . . . . .ASTM A36 U.N.O.
PIPE . . . . . .ASTM A53 GRADE B (OR Fy>35KSI)
HSS ROUND . . . . . .ASTM A500 GRADE B (OR Fy>42KSI)
BARS (SOLID RODS) . . . . . ASTM A572 GRADE 50
b. BOLTS . . . . . ASTM A325N U.N.O.
c. WELDING ELECTRODES . . . . . AWS A5.1 (E70XX)
d. STEEL CONSTRUCTION SHALL CONFORM TO "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, ANSI/AISC 360-10"
e. WELDING SHALL CONFORM TO AWS D1.1/D1.3/D1.7 AS APPLICABLE.
f. THE FABRICATOR SHALL FURNISH CHECKED SHOP AND ERECTION DRAWINGS TO THE ENGINEER, AND OBTAIN APPROVAL PRIOR TO FABRICATING ANY STRUCTURAL STEEL. SHOP DRAWINGS SHALL CONFORM TO "DETAILING FOR STEEL CONSTRUCTION, 2ND EDITION"
g. POOR MATCHING OF HOLES SHALL BE CORRECTED BY DRILLING TO THE NEXT LARGER SIZE. WELDING FOR RE-DRILLING WILL NOT BE PERMITTED.

2.2 CONNECTIONS
a. SHOP CONNECTIONS MAY BE BOLTED OR WELDED
b. FIELD CONNECTIONS BOLTED WITH A325-N BOLTS, (INSTALLED SNUG TIGHT) UNLESS OTHERWISE SPECIFIED OR IF WELDED CONNECTIONS ARE NOTED ON DRAWINGS
c. FIELD CONNECTIONS SHALL BE MADE WITH A325-N BOLTS AND HARDENED WASHERS EXCEPT AS INDICATED ON THE DESIGN DRAWINGS
d. CONNECTIONS NOT SHOWN ON DRAWINGS SHALL BE DESIGNED BY THE STEEL FABRICATOR. CONNECTIONS SHALL BE DESIGNED IN ACCORDANCE WITH AISC "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS" AND "AISC CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"
e. DO NOT FIELD CUT OR ALTER STRUCTURAL MEMBERS WITHOUT PRIOR WRITTEN APPROVAL OF ENGINEER.
f. BOLT HOLES SHALL BE CUT, DRILLED OR PUNCHED AT RIGHT ANGLES TO THE SURFACE OF THE METAL AND SHALL NOT BE MADE OR ENLARGED BY BURNING. HOLES SHALL BE CLEAN CUT WITHOUT TORN OR RAGGED EDGES. OUTSIDE BURRS RESULTING FROM DRILLING OR REAMING OPERATION SHALL BE REMOVED WITH A TOOL MAKING A 1/16 INCH BEVEL. BOLT HOLES SHALL BE 1/16 INCH OVERSIZE.

2.3 FINISHES
a. STRUCTURAL STEEL SHALL BE HOT DIP GALVANIZED AFTER FABRICATION PER ASTM A123
b. BOLTS AND NUTS SHALL BE HOT DIP GALVANIZED PER ASTM A153.
c. ALL SURFACES DAMAGED DURING THE WORK SHALL BE PAINTED WITH COLD GALVANIZING COMPOUND TWICE. THE PAINT SHOULD BE AT LEAST 93% PURE ZINC. RUST-OLEUM PROFESSIONAL, (MODEL# 7585838) OR SIMILAR.

2.4 WELDING
a. CONTRACTOR TO TAKE ALL NECESSARY PRECAUTIONS FOR FIRE PREVENTION DURING WELDING, SUCH AS; INSTALLING 3000 (NFPA 701) FIRE BLANKET AROUND COAX. MORE SPLATTER AND SPARKS SHOULD BE ANTICIPATED WHILE WELDING ON GALVANIZED SURFACE. COAX IS FLAMMABLE AND SHALL CATCH FIRE IF NOT PROTECTED. WATER SHALL BE ON SITE OF ADEQUATE AMOUNT AND AVAILABLE AT SHORT NOTICE AT ALL TIMES DURING WELDING ACTIVITY. CONTRACTOR SHOULD BE ABLE TO TRANSPORT THE WATER TO THE HEIGHT WELDING BEING PERFORMED.
b. WELDING ON GALVANIZED SURFACE SHOULD BE DONE WITH EXTREME CAUTION. IF THE WELD MATERIAL IS CONTAMINATED WITH ZINC, IT DOES NOT PROVIDE A STRUCTURAL WELD. GRIND GALVANIZING BEFORE WELDING.
c. WELDING CERTIFICATE MUST BE PROVIDED PRIOR TO WELDING. ALL WELDING SHALL BE PERFORMED BY AWS QUALIFIED WELDER WHO HAS EXPERIENCE WITH GALVANIZED SURFACES.

STATE OF CONNECTICUT AHMET COLAKOGLU PEN 27057 LICENSED PROFESSIONAL ENGINEER
03/05/2021

Ahmet Colakoglu, PE
CT License No: PEN 27057

efi global
EFI GLOBAL, INC.
1117 PERIMETER CENTER W
SUITE E500
ATLANTA, GA 30338
TEL NO: 770-693-0835
TELECOM@EFIGLOBAL.COM

PREPARED FOR:
T-Mobile Northeast, LLC
35 Griffin Road South
Bloomfield, CT 06002

NUM	DATE	DESCRIPTION:
A	03/05/21	ISSUED FOR CONSTRUCTION

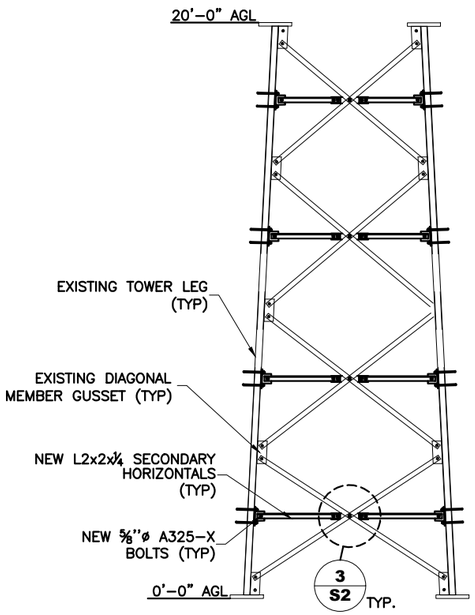
CTNL041A

ADDRESS:
25 Lower Boulevard,
New London, CT 06320

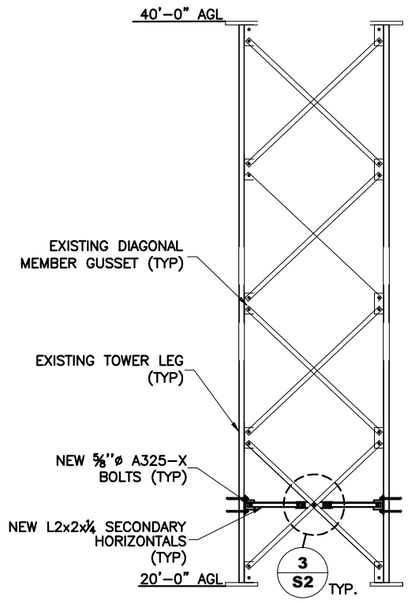
DESIGNED: SK
DRAWN: SK
CHECKED: AC

JOB #: 049.00940-2075089

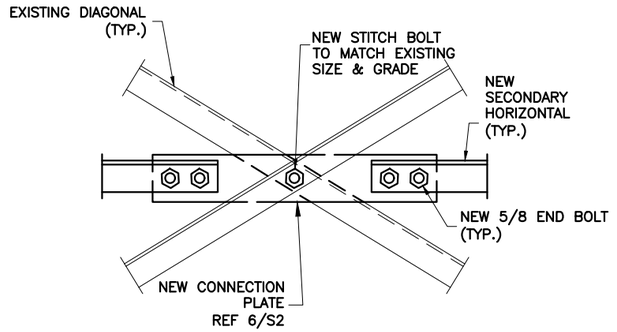
S1
SCOPE OF MODIFICATION



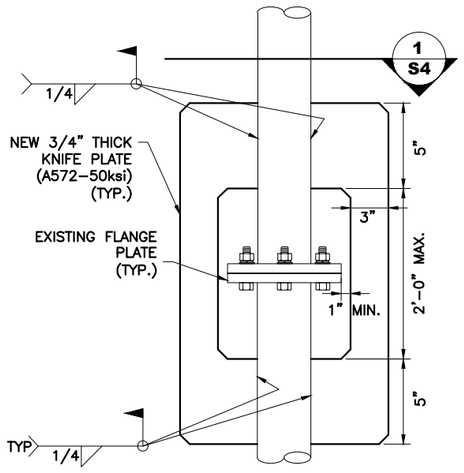
1 S2 **ELEVATION VIEW: 0' - 20'**
N.T.S.



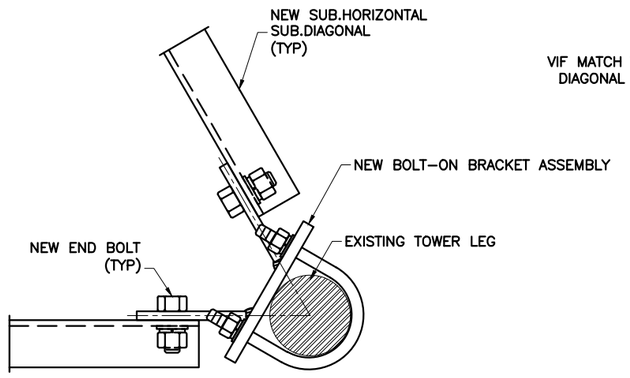
2 S2 **ELEVATION VIEW: 20' - 40'**
N.T.S.



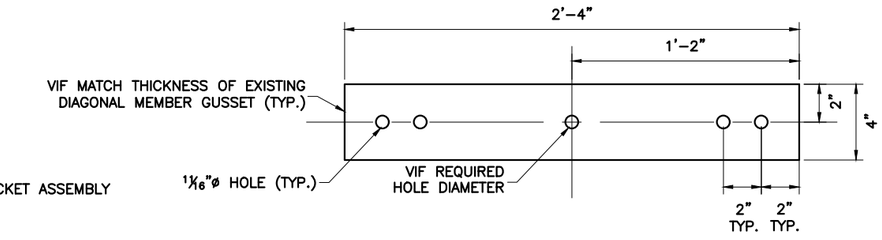
3 S2 **CONNECTION PLATE**
N.T.S.



4 S2 **KNIFE PLATE DETAIL @ 20'**
N.T.S.



5 S2 **BOLT-ON BRACKET**
N.T.S.



6 S2 **CONNECTION PLATE DETAIL**
N.T.S.

DRAWINGS PLOTTED TO SCALE ON 11x17 SHEETS

efi global
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25 Lower Boulevard,
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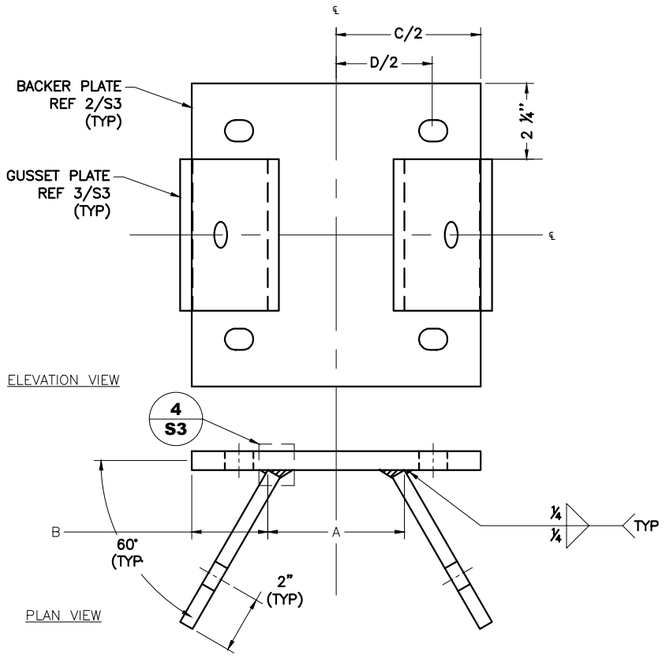
STATE OF CONNECTICUT
AHMET COLAKOGLU
PEN. 27057
LICENSED PROFESSIONAL ENGINEER
03/05/2021

Ahmet Colakoglu, PE
CT License No: PEN 27057

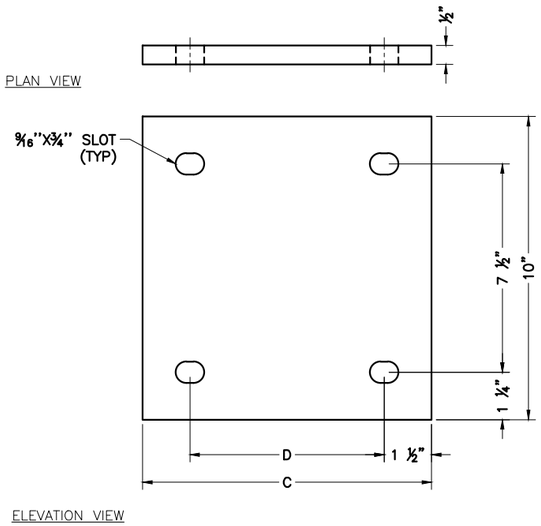
DESIGNED: SK
DRAWN: SK
CHECKED: AC

JOB #: 049.00940-2075089

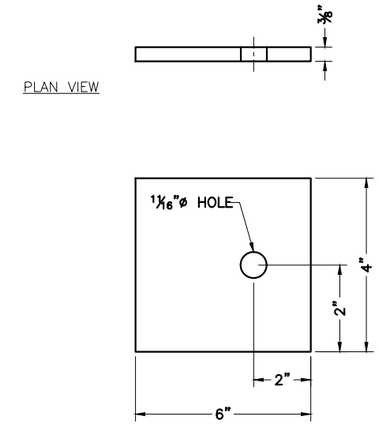
S2 STRUCTURAL DETAILS



1 S3 BOLT-ON BRACKET ASSEMBLY
N.T.S.



2 S3 BACKER PLATE
N.T.S.

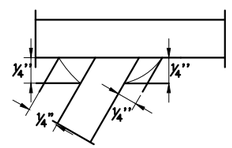


3 S3 GUSSET PLATE
N.T.S.

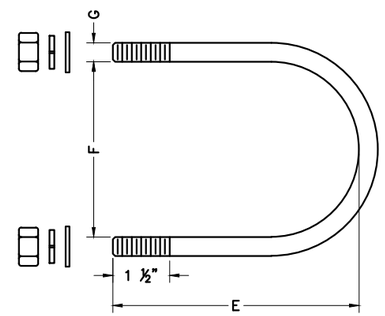
PIPE2.5STD+HSS3.5X0.203
SPLIT PIPE

LEG	OUTER DIAMETER	ASSEMBLY		BACKER PLATE		U–BOLT		
		A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	G (in)
PIPE2.5STD	2⅞	2 1⁄16	1 23⁄32	6	3½	4⅞	3	½
PIPE2.0X STD	2⅜	2⅜	1 13⁄16	6	3	4⅜	2½	½

NOTES:
1. ALL HOLES TO BE SHOP FABRICATED, UNLESS NOTED OTHERWISE.
2. TOLERANCES UNLESS NOTED OTHERWISE: FRACTIONS ± 1⁄16"
   ANGLES ± ½°
   DECIMALS ± 0.010"
3. U–BOLTS SHALL MEET REQUIREMENTS OF ASME B18.31.5–2011 BENT BOLTS.
4. U–BOLTS TO BE ASTM A36/A307, SAE 429 GR 2. PLATES TO BE ASTM A572 GRADE 50.
5. USE 2 U–BOLTS PER ASSEMBLY, COMPLETE W/ NUTS, WASHERS AND LOCK WASHERS.
6. FOR WELDING, WELD TO BE E70xx ELECTRODES.
7. FULL ASSEMBLY TO BE HOT DIP GALVANIZED PER ASTM 153/ A153M OR A123, AS APPLICABLE
8. STANDARD 9⁄16" HOLES IN PLACE OF SLOTTED HORIZONTAL HOLES ON THE BACKER PLATE ARE PERMITTED
9. NO FIELD FABRICATION PERMITTED ON THIS PART



4 S3 WELD DETAIL
N.T.S.



5 S3 U-BOLT
N.T.S.

STATE OF CONNECTICUT
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LICENSED PROFESSIONAL ENGINEER

03/05/2021

Ahmet Colakoglu, PE
CT License No: PEN 27057

DRAWINGS PLOTTED TO SCALE ON 11x17 SHEETS

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DESIGNED: SK
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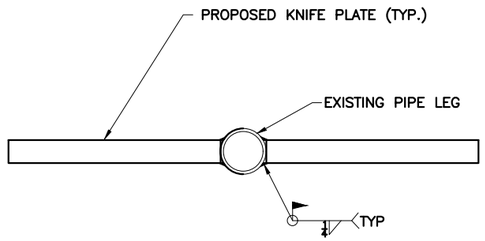
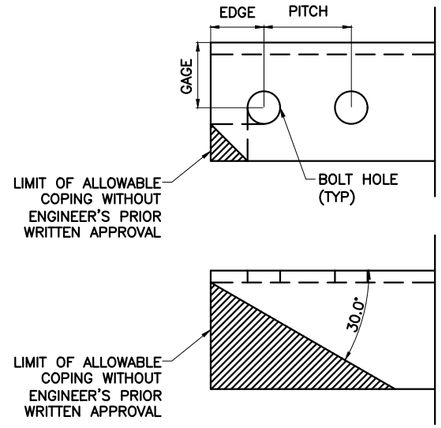
CHECKED: AC

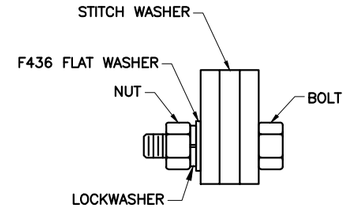
JOB #:049.00940–2075089

S3 STRUCTURAL DETAILS



1 S4 **KNIFE PLATE CONNECTION**
NTS





2 S4 **TYPICAL BOLT ASSEMBLY**
N.T.S.

BOLT SCHEDULE						
MEMBER SIZE	CONNECTION TYPE	BOLT SIZE	MIN EDGE DISTANCE	PITCH DISTANCE	GAGE DISTANCE	BOLT HOLE
L2X2X¼	END	⅝"ø X 2" LONG	⅞"	1⅔"	1⅛"	1 1/16"
NOTE: ALL BOLTS TO BE A325-X						

DRAWINGS PLOTTED TO SCALE ON 11x17 SHEETS

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03/05/2021

Ahmet Colakoglu, PE
CT License No: PEN 27057

DESIGNED: SK
DRAWN: SK
CHECKED: AC

JOB #: 049.00940-2075089

S4 STRUCTURAL DETAILS

Exhibit E

Date: 10/26/2020

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

Subject:	**Mount Structural Analysis Report**	
T-Mobile Designation:	**Site Name:**	NL041/Gardner-NewLondon
	Site ID:	CTNL041A
EFI Designation:	**Project Number:**	049.00940 - 2075089
Site Data:	**25 Lower Boulevard, New London, CT 06320** **Latitude 41.322475°, Longitude -72.093700°**	

EFI Global, Inc. is pleased to submit this **"Mount Structural Analysis Report"** to determine the structural capacity of the antenna mounts utilized by T-Mobile at the above referenced site.

The purpose of the analysis is to determine acceptability of the mount stress level for the changes proposed by T-Mobile. Under the following load case we have determined the mounts to have:

Existing + Proposed Equipment **Adequate Capacity w/ Mods (85.8%)**
Note: See Analysis Criteria for loading configuration

The analysis has been performed in accordance with the TIA-222-G Standard and 2018 Connecticut State Building Code (2015 IBC).

We at *EFI Global, Inc.* appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or any other projects, please give us a call.

Sincerely,
EFI Global, Inc.
License No: PEC0001245

10/26/2020

Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: 27057

EFI Global, Inc.
1117 Perimeter Center West, Suite E500, Atlanta, GA 30338 - Tel: (770) 693-0835

1) ANALYSIS CRITERIA

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

Table 1 – Loading and Analysis Criteria

Rad Center	59’ & 57’
Structure Type	Self-Support Tower
Exposure Category	C
Basic Wind Speed (3-Second Gust)	135 * √0.6 = 105 mph (Nominal)
Ice Loading	0.75” with 50 mph Wind
Risk Category	II
Topographic Factor	Kzt = 1.0

Table 1.1 – Existing Appurtenance Configuration

Qty	Model
3	Ericsson AIR21 B2A B4P – Antennas
3	Ericsson AIR21 B4A B12P – Antennas
3	RRUS 11 B12 – RRHs
3	Generic Twin Style 1B – AWS – TMAs

Table 1.2 – Proposed and Final Appurtenance Configuration

Qty	Model
3	Ericsson AIR32 B66A B2A – Antennas
3	RFS APXVAALL24_43-U-NA20 – Antennas
3	Ericsson AIR6449 B41 – Antennas
3	Radio 4449 B71 + B85 – RRHs*
3	Radio 4415 B25 – RRHs*

*** To be mounted behind antennas**

Table 1.3 – Assumed Material Properties

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

EFI Global, Inc.
1117 Perimeter Center West, Suite E500, Atlanta, GA 30338 - Tel: (770) 693-0835

2) ANALYSIS PROCEDURE

The analysis is based on the following information:

Table 2 – Documents

Document	Provided By	Date
RFDS	T-Mobile	10/14/2020
Construction Drawings	EBI Consulting	04/01/2015
Structural Analysis Report	EBI Consulting	02/13/2015

2.1) Analysis Method

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

2.2) Analysis Conditions and Assumptions

1) The mount was built and installed in accordance with the manufacturer's specifications.
2) The mount has been maintained and will be maintained in accordance with the manufacturer's specifications. All structural members and connections of the mount are in good condition and can achieve theoretical strength.
3) The configuration of antennas is as specified in "1) Analysis Criteria".
4) The analysis was performed for the subject mount only. It does not include an evaluation of the other mounts or the tower, which should be analyzed by others.
5) The evaluation does not include any antenna rigging loads. The equipment should not be rigged using the subject antenna mount as the support.
6) The analysis includes a minimum 250 lbf maintenance point load at the worst-case location on the mount, as well as a minimum 500 lbf maintenance point load at each antenna location in conjunction with a 30 mph wind load.
7) Any steel grating represented in this model is for loading purposes only and it is not considered to provide any structural restraint or support.
8) Member sizes per the available mount specifications and assumed based on our experience with similar structures. Please refer to calculation output in the appendix of this report for sizes and lengths assumed.
9) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.

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

3) ANALYSIS RESULTS AND CONCLUSION

The analysis results are shown on the table below.

Table 3.1 – Mount Component Stresses vs. Capacity

Component	% Capacity	Pass / Fail
Horizontal Face Pipe	85.8	Pass
Standoff Tube	28.5	Pass
Vertical Standoff Pipe	43.4	Pass
Antenna Mount Pipe	60.8	Pass
Pipe Stiffener	< 20	Pass

Sector Mounts: The existing sector mounts **will have adequate** capacity for the proposed changes by T-Mobile, **once an additional Valmont/Site Pro 1 Sector Frame Stiff Arm Kit (P/N: STK-U) is attached directly to the outside mount pipe on the opposite side of the existing tie back and equally spaced between the horizontal face members at each sector. The existing stiff arm (tie back) is assumed to be installed to the outer mount pipe and equally spaced between the horizontal face members at each sector.** For the code specified load combinations and as a maximum, the mount members will be stressed to **85.8%** of their structural capacity.

EFI Global Inc., assumes that a Valmont/Site Pro 1 Build A-Frame Ultimate Sector Frame with one Stiff Arm (P/N: EUSF10-U) has been installed at each sector per the construction drawings prepared by EBI Consulting, dated 04/01/2015. This analysis also assumes the following:

- **The mount centerline is equal to 57' AGL (above grade level), to be verified at field.**
- **The two (2) stiff arms are installed to the adjacent mounts tower legs.**
- **Three (3) 96" long 2.0 STD mount pipes are equally spaced along the face.**

APPENDIX

INPUT LOADS
ANALYSIS OUTPUT

EFI Global, Inc.
1117 Perimeter Center West, Suite E500, Atlanta, GA 30338 - Tel: (770) 693-0835

CLIENT: ForeSite / T-Mobile

PROJECT: CTNL041A

SUBJECT: Antenna Loads - G Code with Sections 16 Revisions

Tower Height	60.00	ft	Type of Mount: Sector
Basic Wind Speed, V	105	mph (=Ultimate Speed*Sqrt(0.6))	
Basic Wind Speed with Ice, V_i	50	mph	
Maintanence Load Factor, L_{FM}	0.0816	Load Factor for Maint. Load Cases (Basic Wind Speed=30 mph)	
Design Ice Thickness, t_i	0.75	inches	

Table 2-3 Importance Factors

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

1

Table 2-4 Exposure Category Coefficients

Exposure Category	Zg	α	Kzmin	Ke	m
C	900	9.5	0.85	1	0.6

Table 2-5 Topographic Categories

Kzt 1.000

Table 2-2 Wind Directionality Factor, Kd

Structure Type	Kd	
1 Lattice Tower	0.95	DOES NOT CHANGE

Gust Effect Factor Gh

Structure Type	Gh	
1 Lattice Tower	1.00	DOES NOT CHANGE

Shielding Factor, Ka

Structure Type	Ka	
Lattice Tower	0.90	DOES NOT CHANGE

CLIENT: ForeSite / T-Mobile

PROJECT: CTNL041A

SUBJECT: Antenna Loads - G Code with Sections 16 Revisions

Rad Center 59.00 ft

Antenna AND Mount Without Ice

																	Pounds					
Mounting Pole	Height (ft)	Model Number	#	Weight (lbs)	H (in)	*W (in)	D (in)	Ka	**A_N (ft2)	***A_T (ft2)	Aspect (FRONT)	Aspect (SIDE)	Ca (FRONT)	Ca (SIDE)	K_z	q_z (psf)	Wind Load (Front)	Wind Load (Side)	Dead Load	Total Wind Load (Front)	Total Wind Load (Side)	Total Dead Load
Pos. 1	**59.00**	Ericsson AIR 32 B66A B2A	1	172.0	59.3	12.9	8.7	0.90	5.30	3.58	4.60	6.81	1.29	1.39	1.133	30.4	187.2	136.1	171.96	187	136	172
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0			
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0			
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0			
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0			
																				94	**69**	**86**
Pos. 2	**59.00**	RFS APXVAALL24_43-U-NA20	1	149.9	95.9	24.0	8.5	0.90	15.98	5.66	4.00	11.28	1.27	1.54	1.133	30.4	553.2	238.7	149.9	553	301	267
	59.00	Radio 4449 B71+B85	1	73.2	17.9	N/A	10.6	0.90	-	1.32	-	1.68	-	1.20	1.133	30.4	0.0	43.4	73.21			
	59.00	Radio 4415 B25	1	44.0	15.0	N/A	5.4	0.90	-	0.56	-	2.78	-	1.21	1.133	30.4	0.0	18.6	44			
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0			
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0			
																				277	**151**	**134**
Pos. 3	**59.00**	Ericsson AIR6449 B41	1	115.0	33.1	20.6	8.6	0.90	4.74	1.98	1.61	3.85	1.20	1.26	1.133	30.4	155.3	68.1	115	155	68	115
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0			
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0			
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0			
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0			
																				78	**35**	**58**
Pos. 4		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0	0	0	0
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0			
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0			
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0			
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0			
																				0	**0**	**0**

* Enter N/A in the W column for front sheilded apurtanances.

** A_N is the product of H and W

*** A_T is the product of H and D

DL #REF!

Mount	Height (ft)	Member	*L (in)	**W (in)	D (in)	*** Ca	K_z	q_z (psf)	Wind Load (PLF)
	59.00	3.0 STD Pipe	12.00	3.50	0.00	1.20	1.133	27.3	10
	59.00	2.5 STD Pipe	0.00	2.88	0.00	-	-	-	-
	59.00	2.0 STD Pipe	12.00	2.38	0.00	1.20	1.133	27.3	6
	59.00	3/4" SR	0.00	0.75	0.00	-	-	-	-
	59.00	L2.5x2.5	0.00	2.50	2.50	-	-	-	-
	59.00	L2x2	0.00	2.00	2.00	-	-	-	-
	59.00	Angle Diagonal	0.00	0.00	0.00	-	-	-	-
	59.00	Plate Horizontal (P6x5/8)	0.00	6.00	0.63	-	-	-	-
	59.00	Tube Radial (3x3)	12.00	3.00	3.00	2.00	1.133	27.3	14
	59.00	Tube Radial (4.5x4.5)	0.00	4.50	4.50	-	-	-	-
	59.00	Double Angle (LL2x2x3x0)	0.00	2.00	2.00	-	-	-	-
	59.00	Double Angle (LL2.5x2.5x3x0)	0.00	5.00	2.50	-	-	-	-
	59.00	Channel (Weak Axis Bending)	0.00	0.00	0.00	-	-	-	-
	59.00	Invert U 5.375x3.625x.375	0.00	3.63	5.38	-	-	-	-

* The dimension L is the longest dimension of the member

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

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

CLIENT: ForeSite / T-Mobile

PROJECT: CTNL041A

SUBJECT: Antenna Loads - G Code with Sections 16 Revisions

ti (in) 1.589736 Kiz 1.0598241 reduction 0.22676

Antenna AND Mount With Ice

Mounting Pole	Height (ft)	Model Number	#	H (in)	W (in)	D (in)	Ka	*A_N (ft2)	*A_T (ft2)	*Volume Ice (ft3)	*Weight Ice (lbs)	**Ca (FRONT)	**Ca (SIDE)	Kz	q_z (psf)	Pounds: Ice Wind Load (Front)	Ice Wind Load (Side)	Combined Wind Load (Front)	Combined Wind Load (Side)	Ice Dead Load	**Total Wind Load (Front)	**Total Wind Load (Side)	Total Ice Load
Pos. 1	**59.00**	Ericsson AIR 32 B66A B2A	1	59.3	12.9	8.7	0.90	1.66	1.57	3.05	170.74	0.73	0.76	1.133	6.9	7.5	7.4	50.0	38.3	171	50	38	171
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
																					25	**20**	**86**
Pos. 2	**59.00**	RFS APXVAALL24_43-U-NA20	1	95.9	24.0	8.5	0.90	2.72	2.38	6.88	385.27	0.73	0.83	1.133	6.9	12.2	12.3	137.7	66.4	385	138	86	506
	59.00	Radio 4449 B71+B85	1	17.9	13.2	10.6	0.90	-	0.70	1.31	73.15	0.70	0.70	1.133	6.9	0.0	3.0	0.0	12.9	73			
	59.00	Radio 4415 B25	1	15.0	13.2	5.4	0.90	-	0.52	0.86	48.00	0.70	0.70	1.133	6.9	0.0	2.3	0.0	6.5	48			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
																					69	**43**	**254**
Pos. 3	**59.00**	Ericsson AIR6449 B41	1	33.1	20.6	8.6	0.90	1.26	0.99	2.49	139.33	0.70	0.71	1.133	6.9	5.4	4.4	40.7	19.8	139	41	20	139
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
																					21	**10**	**70**
Pos. 4		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0	0
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
																					0	**0**	**0**

* A_N ,A_T, Volume Ice and Weight Ice are calculated per unit

** Ca will equal 1.2 for all ice load calculations

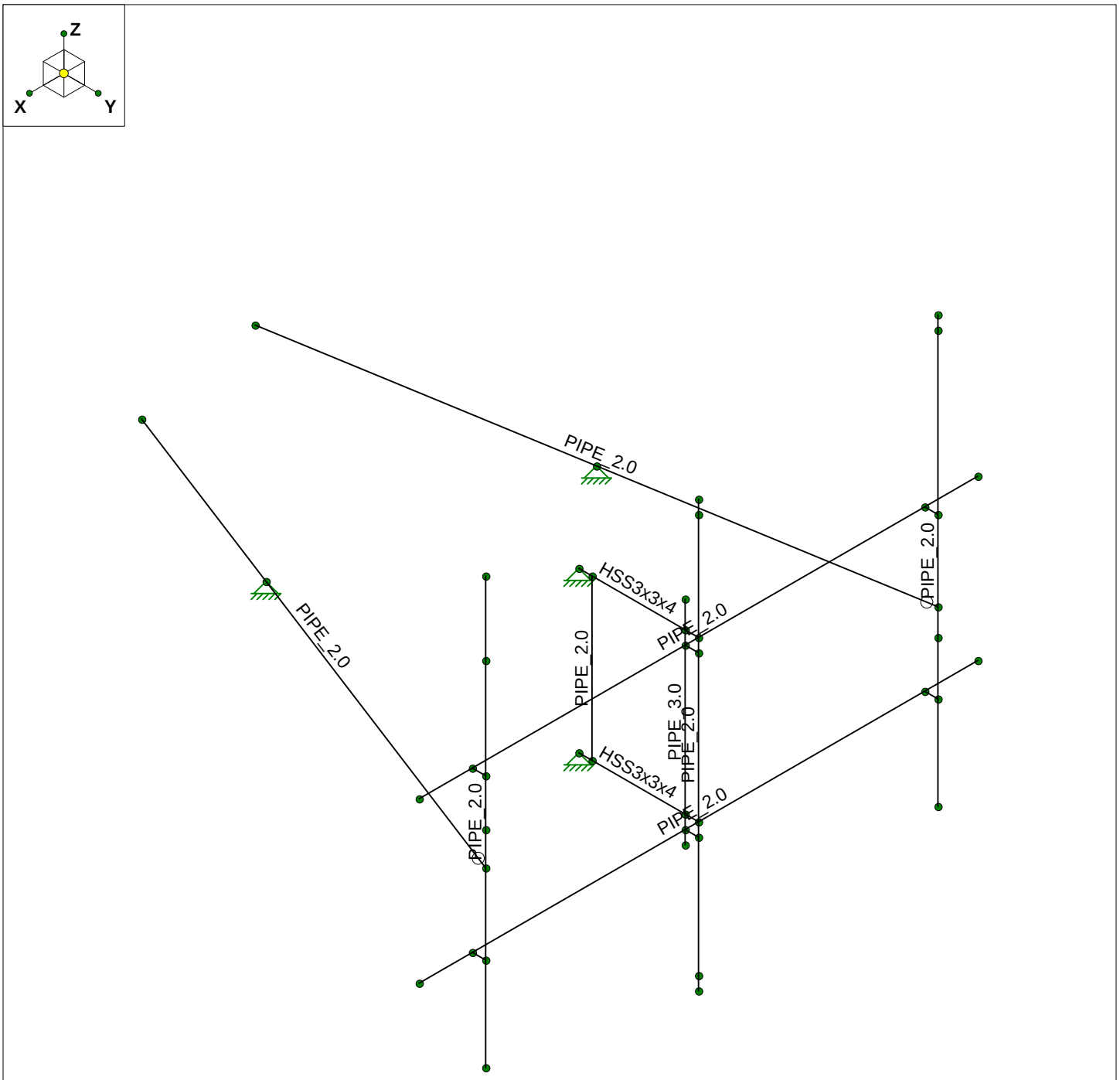
Mount	Height (ft)	Member	*L (in)	**W (in)	D (in)	***A_N (ft2)	Volume Ice (ft3)	Weight Ice (lbs)	****Ca (FRONT)	Kz	q_z (psf)	PLF: Ice Wind Load (Front)	Combined Wind Load (Front)	Ice Dead Load
	59.00	3.0 STD Pipe	12.00	3.50	0.00	0.41	0.18	9.89	1.20	1.133	6.2	3.1	5.2	10
	59.00	2.5 STD Pipe	0.00	2.88	0.00	-	-	-	-	-	-	-	-	-
	59.00	2.0 STD Pipe	12.00	2.38	0.00	0.39	0.14	7.70	1.20	1.133	6.2	2.9	4.4	8
	59.00	3/4" SR	0.00	0.75	0.00	-	-	-	-	-	-	-	-	-
	59.00	L2.5x2.5	0.00	2.50	2.50	-	-	-	-	-	-	-	-	-
	59.00	L2x2	0.00	2.00	2.00	-	-	-	-	-	-	-	-	-
	59.00	Angle Diagonal	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	59.00	Plate Horizontal (P6x5/8)	0.00	6.00	0.63	-	-	-	-	-	-	-	-	-
	59.00	Tube Radial (3x3)	12.00	3.00	3.00	0.40	0.27	15.28	1.20	1.133	6.2	3.0	6.1	15
	59.00	Tube Radial (4.5x4.5)	0.00	4.50	4.50	-	-	-	-	-	-	-	-	-
	59.00	Double Angle (LL2x2x3x0)	0.00	2.00	2.00	-	-	-	-	-	-	-	-	-
	59.00	Double Angle (LL2.5x2.5x3x0)	0.00	5.00	2.50	-	-	-	-	-	-	-	-	-
	59.00	Channel (Weak Axis Bending)	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	59.00	Invert U 5.375x3.625x.375	0.00	3.63	5.38	-	-	-	-	-	-	-	-	-

* The dimension L is the longest dimension of the member

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

*** A_N is the area of ice built up on the LW plane

**** Ca will equal 1.2 for all ice load calculations



Envelope Only Solution

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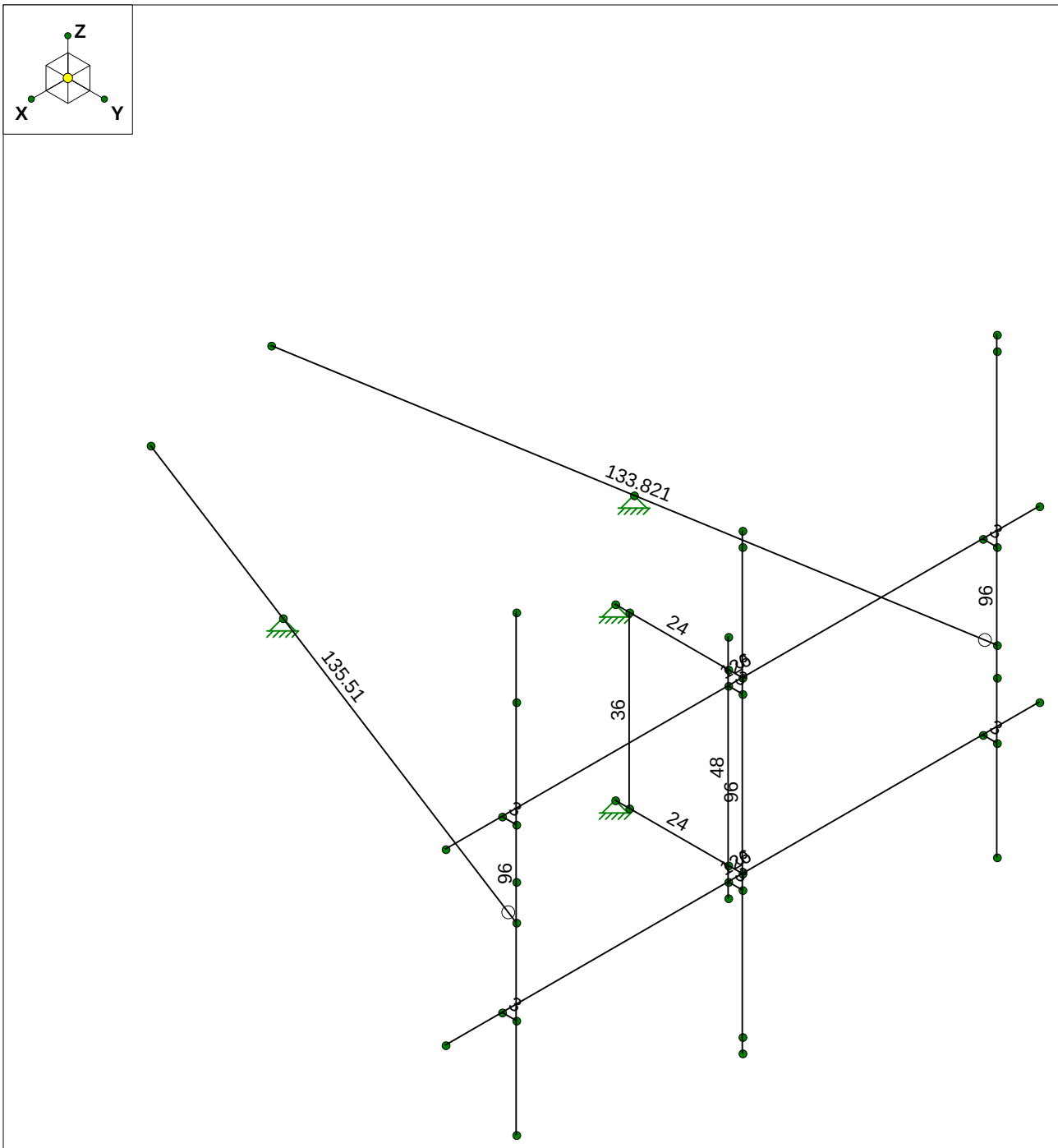

Member Length (in) Displayed
Envelope Only Solution

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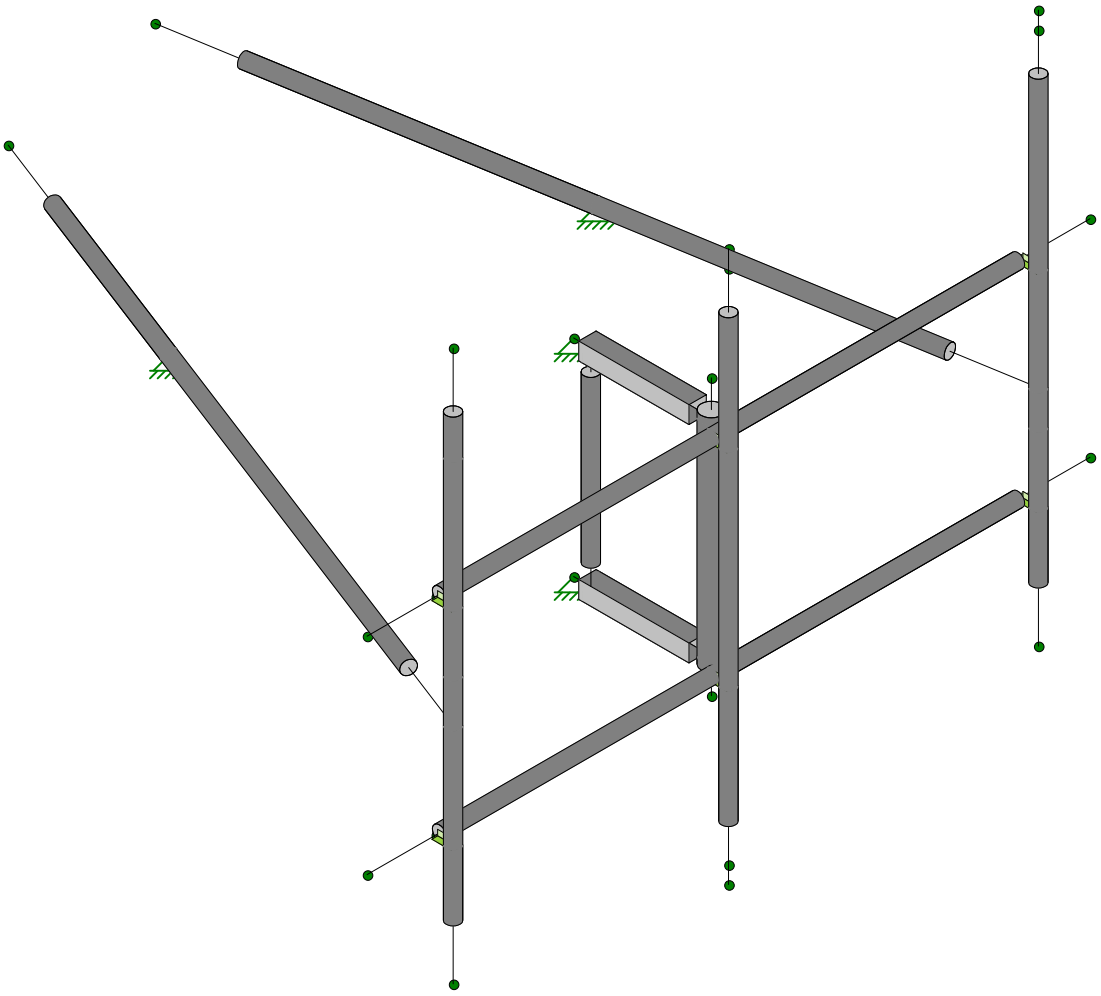

Envelope Only Solution

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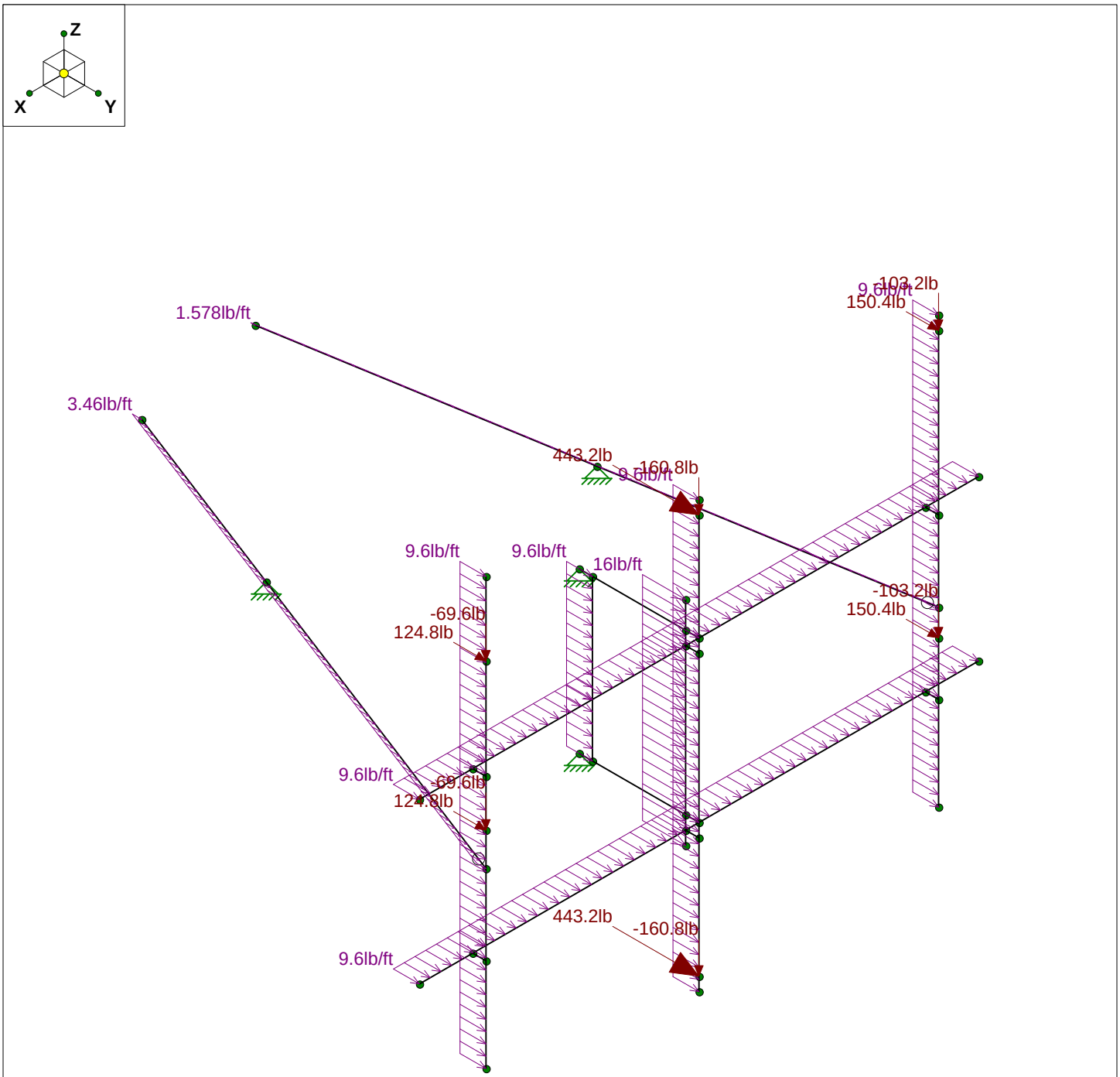

Loads: LC 1, DL + WL (NO ICE) 0 Degree
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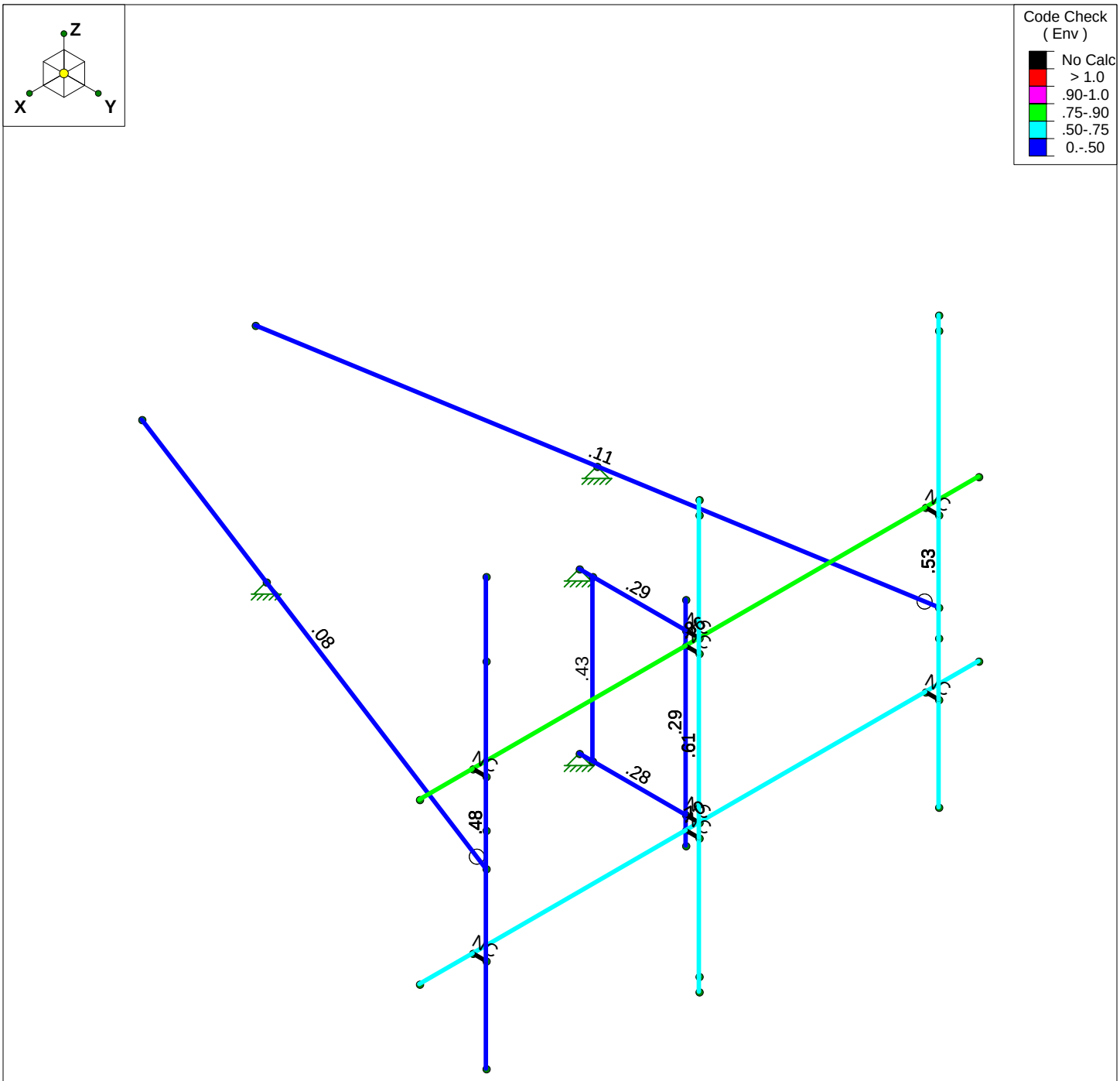

Member Code Checks Displayed (Enveloped)
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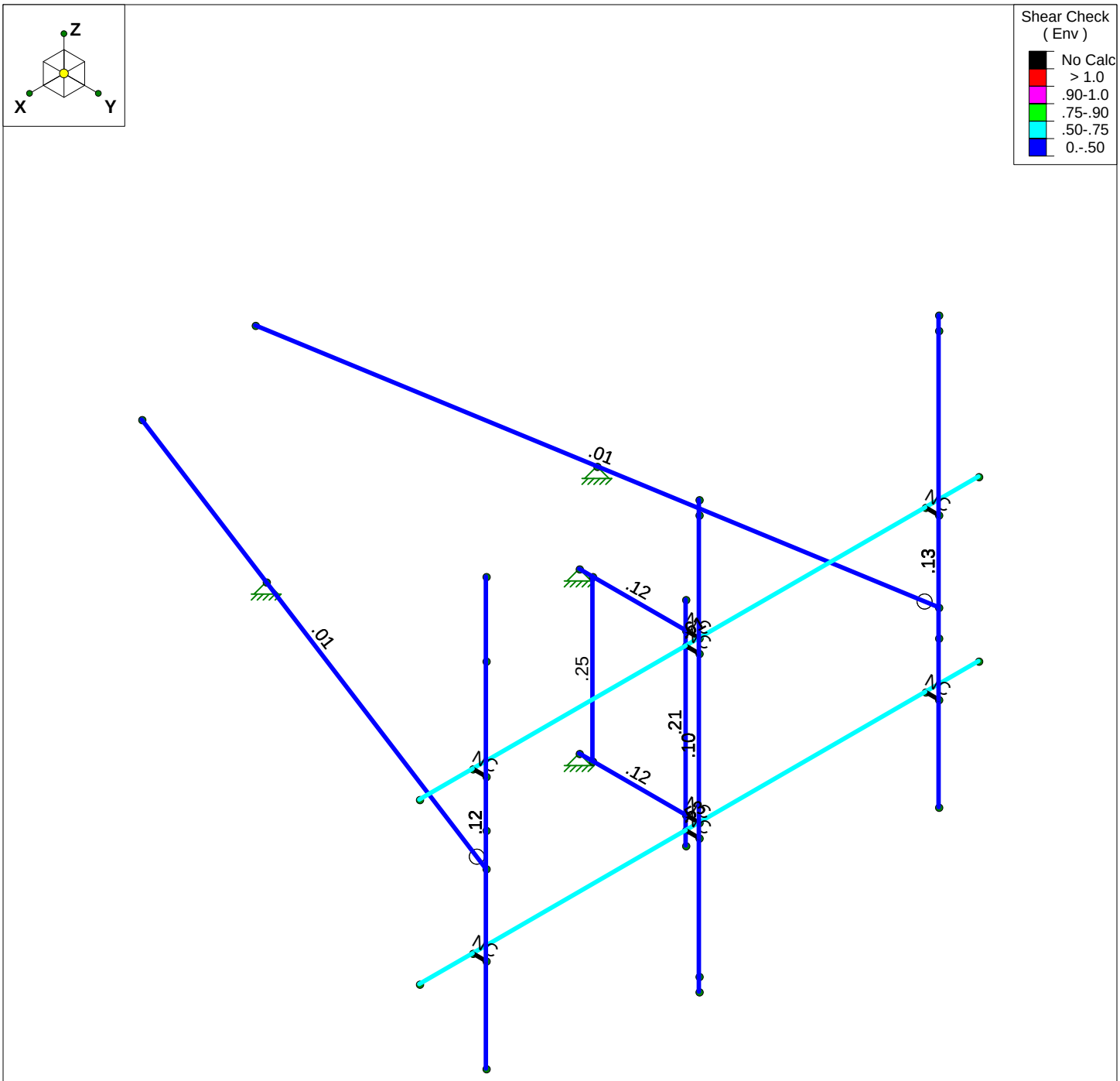

Member Shear Checks Displayed (Enveloped)
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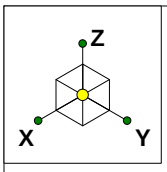

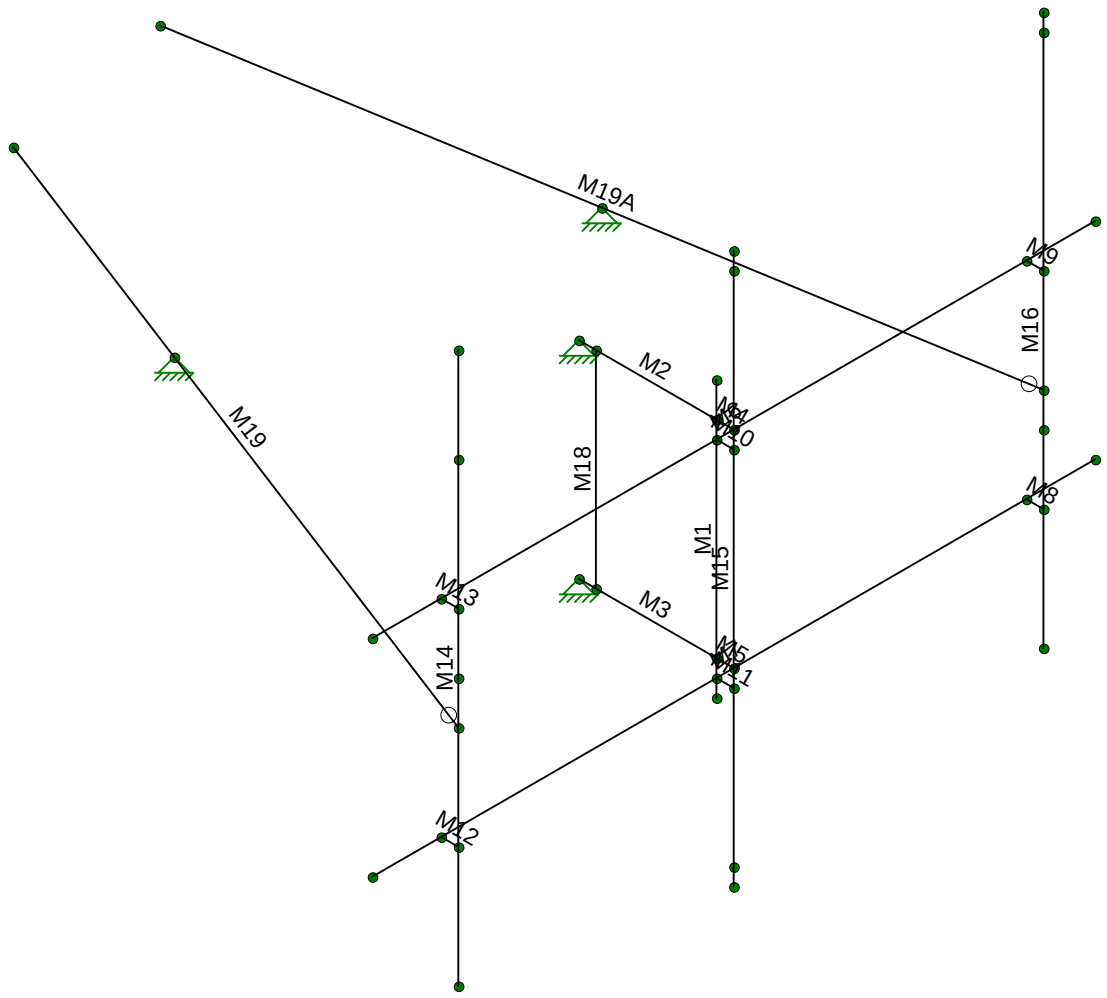

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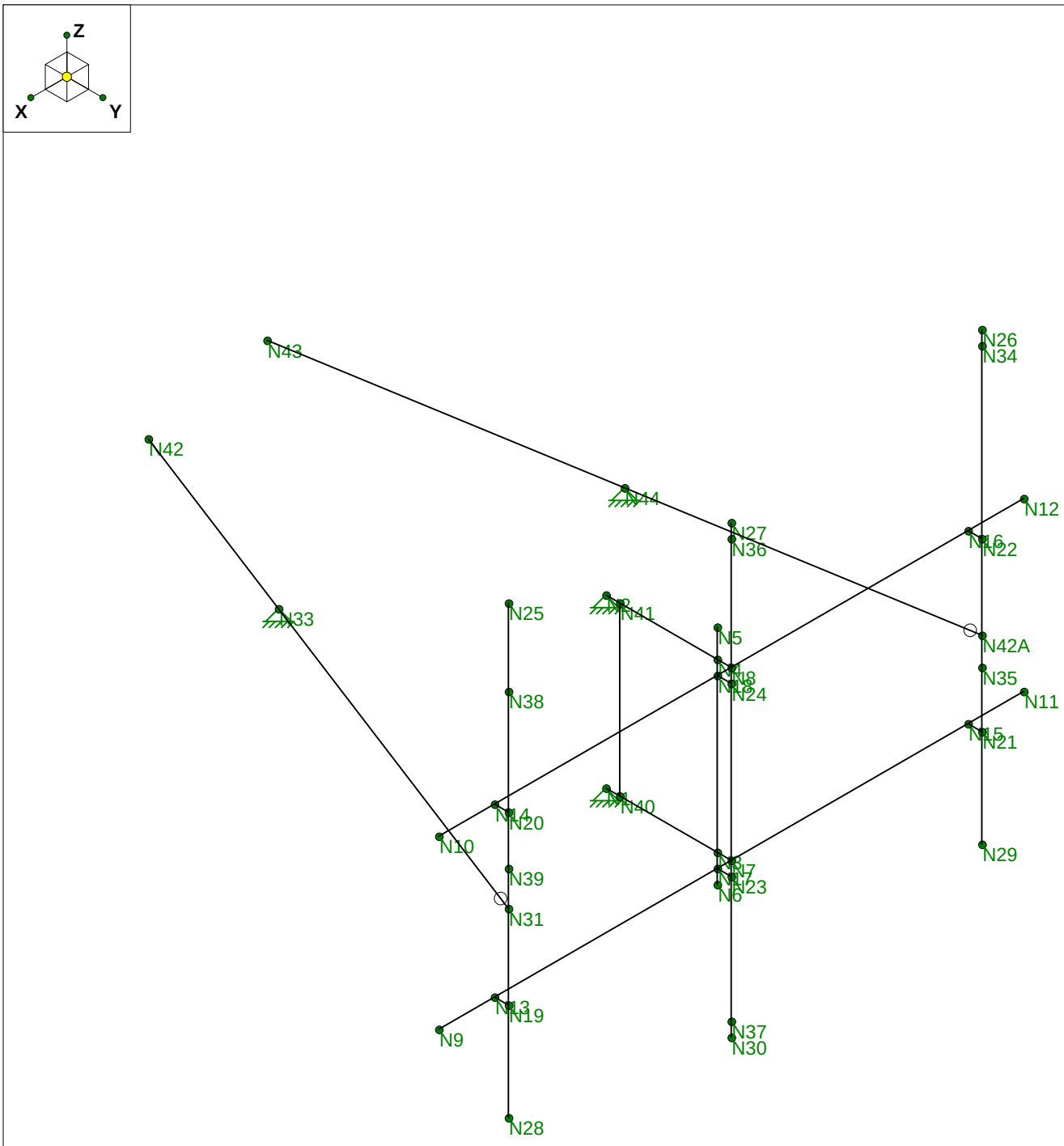

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EFI Global, Inc/ ForeSite, ...	CTNL041A	SK - 8
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(Global) Model Settings

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

Hot Rolled Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): LRFD
Cold Formed Steel Code	AISI NAS-01: ASD
Wood Code	AF&PA NDS-05/08: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-05
Masonry Code	ACI 530-05: ASD
Aluminum Code	AA ADM1-05: ASD - Building AISC 14th(360-10): ASD

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

(Global) Model Settings, Continued

Seismic Code	ASCE 7-05
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.035
Ct Z	.035
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	8.5
R Z	8.5
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	Not Entered
Occupancy Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1

Project Grid Lines

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

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
3	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	HR1	W4x13	Beam	Wide Flange	A36 Gr.36	Typical	3.83	3.86	11.3	.151

Member Primary Data

	Label	I Joint	J Joint	...	Rotate...	Section/Shape	Type	Design List	Material	Design ...
1	M4	N4	N8			RIGID	None	None	RIGID	Typical
2	M5	N3	N7			RIGID	None	None	RIGID	Typical
3	M8	N15	N21			RIGID	None	None	RIGID	Typical
4	M9	N16	N22			RIGID	None	None	RIGID	Typical
5	M10	N18	N24			RIGID	None	None	RIGID	Typical
6	M11	N17	N23			RIGID	None	None	RIGID	Typical
7	M12	N13	N19			RIGID	None	None	RIGID	Typical
8	M13	N14	N20			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	...	Rotate...	Section/Shape	Type	Design List	Material	Design ...
9	M1	N5	N6			PIPE_3.0	Beam	Wide Flan...	A53 Gr.B	Typical
10	M6	N10	N12			PIPE_2.0	Beam	Wide Flan...	A53 Gr.B	Typical
11	M7	N9	N11			PIPE_2.0	Beam	Wide Flan...	A53 Gr.B	Typical
12	M14	N25	N28			PIPE_2.0	Beam	Wide Flan...	A53 Gr.B	Typical
13	M15	N27	N30			PIPE_2.0	Beam	Wide Flan...	A53 Gr.B	Typical
14	M16	N26	N29			PIPE_2.0	Beam	Wide Flan...	A53 Gr.B	Typical
15	M2	N2	N4			HSS3x3x4	Beam	Wide Flan...	A500 Gr.B Rect	Typical
16	M3	N1	N3			HSS3x3x4	Beam	Wide Flan...	A500 Gr.B Rect	Typical
17	M18	N41	N40			PIPE_2.0	Beam	Wide Flan...	A53 Gr.B	Typical
18	M19	N42	N31			PIPE_2.0	Beam	Wide Flan...	A53 Gr.B	Typical
19	M19A	N43	N42A			PIPE_2.0	Beam	Wide Flan...	A53 Gr.B	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Analysis ...	Inactive	Seismic Design ...
1	M4						Yes			None
2	M5						Yes			None
3	M8						Yes			None
4	M9						Yes			None
5	M10						Yes			None
6	M11						Yes			None
7	M12						Yes			None
8	M13						Yes			None
9	M1						Yes			None
10	M6						Yes			None
11	M7						Yes			None
12	M14						Yes			None
13	M15						Yes			None
14	M16						Yes			None
15	M2						Yes			None
16	M3						Yes			None
17	M18						Yes			None
18	M19		BenPIN				Yes			None
19	M19A		BenPIN				Yes			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torq...	Kyy	Kzz	Cb	Function
1	M1	PIPE_3.0	48			Lbyy						Lateral
2	M6	PIPE_2.0	126			Lbyy						Lateral
3	M7	PIPE_2.0	126			Lbyy						Lateral
4	M14	PIPE_2.0	96			Lbyy						Lateral
5	M15	PIPE_2.0	96			Lbyy						Lateral
6	M16	PIPE_2.0	96			Lbyy						Lateral
7	M2	HSS3x3x4	24			Lbyy						Lateral
8	M3	HSS3x3x4	24			Lbyy						Lateral
9	M18	PIPE_2.0	36			Lbyy						Lateral
10	M19	PIPE_2.0	135.51			Lbyy						Lateral
11	M19A	PIPE_2.0	133.821			Lbyy						Lateral

Joint Coordinates and Temperatures

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
1	N1	0	0	0	0	
2	N2	0	0	36	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
3	N3	0	24	0	0	
4	N4	0	24	36	0	
5	N5	0	24	42	0	
6	N6	0	24	-6	0	
7	N7	0	27	0	0	
8	N8	0	27	36	0	
9	N9	63	27	0	0	
10	N10	63	27	36	0	
11	N11	-63	27	0	0	
12	N12	-63	27	36	0	
13	N13	51	27	0	0	
14	N14	51	27	36	0	
15	N15	-51	27	0	0	
16	N16	-51	27	36	0	
17	N17	3	27	0	0	
18	N18	3	27	36	0	
19	N19	51	30	0	0	
20	N20	51	30	36	0	
21	N21	-51	30	0	0	
22	N22	-51	30	36	0	
23	N23	3	30	0	0	
24	N24	3	30	36	0	
25	N25	51	30	75	0	
26	N26	-51	30	75	0	
27	N27	3	30	66	0	
28	N28	51	30	-21	0	
29	N29	-51	30	-21	0	
30	N30	3	30	-30	0	
31	N31	51	30	18	0	
32	N33	19.82196	-50.696103	18	0	
33	N34	-51	30	72	0	
34	N35	-51	30	12	0	
35	N36	3	30	63	0	
36	N37	3	30	-27	0	
37	N38	51	30	58.5	0	
38	N39	51	30	25.5	0	
39	N40	0	3	0	0	
40	N41	0	3	36	0	
41	N42	2.162396	-96.403211	18	0	
42	N42A	-51	30	18	0	
43	N43	-29	-102	18	0	
44	N44	-40	-36	18	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N2	Reaction	Reaction	Reaction			
2	N1	Reaction	Reaction	Reaction			
3	N3						
4	N4						
5	N5						
6	N6						
7	N7						
8	N8						
9	N9						
10	N10						

Joint Boundary Conditions (Continued)

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
11	N11						
12	N12						
13	N13						
14	N14						
15	N15						
16	N16						
17	N17						
18	N18						
19	N19						
20	N20						
21	N21						
22	N22						
23	N23						
24	N24						
25	N25						
26	N26						
27	N27						
28	N28						
29	N29						
30	N30						
31	N33	Reaction	Reaction	Reaction			
32	N34						
33	N35						
34	N36						
35	N37						
36	N38						
37	N39						
38	N40						
39	N41						
40	N43						
41	N44	Reaction	Reaction	Reaction			

Basic Load Cases

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

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N34	L	Z	-86
2	N35	L	Z	-86
3	N36	L	Z	-134
4	N37	L	Z	-134

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
5	N38	L	Z	-58
6	N39	L	Z	-58

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N34	L	Z	-86
2	N35	L	Z	-86
3	N36	L	Z	-254
4	N37	L	Z	-254
5	N38	L	Z	-70
6	N39	L	Z	-70

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N34	L	Y	94
2	N35	L	Y	94
3	N36	L	Y	277
4	N37	L	Y	277
5	N38	L	Y	78
6	N39	L	Y	78

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N34	L	X	69
2	N35	L	X	69
3	N36	L	X	151
4	N37	L	X	151
5	N38	L	X	35
6	N39	L	X	35

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N34	L	Y	26
2	N35	L	Y	26
3	N36	L	Y	69
4	N37	L	Y	69
5	N38	L	Y	21
6	N39	L	Y	21

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N34	L	X	20
2	N35	L	X	20
3	N36	L	X	43
4	N37	L	X	43
5	N38	L	X	10
6	N39	L	X	10

Joint Loads and Enforced Displacements (BLC 7 : LIVE LOAD 1)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N11	L	Z	-250

Joint Loads and Enforced Displacements (BLC 8 : LIVE LOAD 2)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...

Joint Loads and Enforced Displacements (BLC 8 : LIVE LOAD 2) (Continued)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N9	L	Z	-250

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N29	L	Z	-500

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N30	L	Z	-500

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N28	L	Z	-500

Member Point Loads

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

Member Distributed Loads (BLC 2 : DEAD LOAD ICE)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	Z	-10	-10	0	0
2	M6	Z	-8	-8	0	0
3	M7	Z	-8	-8	0	0
4	M14	Z	-8	-8	0	0
5	M15	Z	-8	-8	0	0
6	M16	Z	-8	-8	0	0
7	M18	Z	-8	-8	0	0
8	M2	Z	-15	-15	0	0
9	M3	Z	-15	-15	0	0
10	M19	Z	-8	-8	0	0
11	M19A	Z	-8	-8	0	0

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	PY	10	10	0	0
2	M6	PY	6	6	0	0
3	M7	PY	6	6	0	0
4	M14	PY	6	6	0	0
5	M15	PY	6	6	0	0
6	M16	PY	6	6	0	0
7	M18	PY	6	6	0	0
8	M2	PY	14	14	0	0
9	M3	PY	14	14	0	0
10	M19	PY	6	6	0	0
11	M19A	PY	6	6	0	0

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	PX	10	10	0	0
2	M6	PX	6	6	0	0
3	M7	PX	6	6	0	0

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
4	M14	PX	6	6	0	0
5	M15	PX	6	6	0	0
6	M16	PX	6	6	0	0
7	M18	PX	6	6	0	0
8	M2	PX	14	14	0	0
9	M3	PX	14	14	0	0
10	M19	PX	6	6	0	0
11	M19A	PX	6	6	0	0

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	PY	5.2	5.2	0	0
2	M6	PY	4.4	4.4	0	0
3	M7	PY	4.4	4.4	0	0
4	M14	PY	4.4	4.4	0	0
5	M15	PY	4.4	4.4	0	0
6	M16	PY	4.4	4.4	0	0
7	M18	PY	4.4	4.4	0	0
8	M2	PY	6.1	6.1	0	0
9	M3	PY	6.1	6.1	0	0
10	M19	PY	4.4	4.4	0	0
11	M19A	PY	4.4	4.4	0	0

Member Distributed Loads (BLC 6 : WIND LOAD (ICE) SIDE)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	PX	5.2	5.2	0	0
2	M6	PX	4.4	4.4	0	0
3	M7	PX	4.4	4.4	0	0
4	M14	PX	4.4	4.4	0	0
5	M15	PX	4.4	4.4	0	0
6	M16	PX	4.4	4.4	0	0
7	M18	PX	4.4	4.4	0	0
8	M2	PX	6.1	6.1	0	0
9	M3	PX	6.1	6.1	0	0
10	M19	PX	4.4	4.4	0	0
11	M19A	PX	4.4	4.4	0	0

Member Area Loads

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

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	DL + WL (NO ICE) 0 Degree	Yes	Y		1	1.2			3	1.6																
2	DL + WL (NO ICE) 30 Degree	Yes	Y		1	1.2			3	1.3...	4	.8														
3	DL + WL (NO ICE) 60 Degree	Yes	Y		1	1.2			3	.8	4	1.3...														
4	DL + WL (NO ICE) 90 Degree	Yes	Y		1	1.2					4	1.6														
5	DL + WL (NO ICE) 120 Degree	Yes	Y		1	1.2			3	-.8	4	1.3...														
6	DL + WL (NO ICE) 150 Degree	Yes	Y		1	1.2			3	-1....	4	.8														
7	DL + WL (NO ICE) 180 Degree	Yes	Y		1	1.2			3	-1.6																
8	DL + WL (NO ICE) 210 Degree	Yes	Y		1	1.2			3	-1....	4	-.8														
9	DL + WL (NO ICE) 240 Degree	Yes	Y		1	1.2			3	-.8	4	-1....														
10	DL + WL (NO ICE) 270 Degree	Yes	Y		1	1.2					4	-1.6														

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
11	DL + WL (NO ICE) 300 Degree	Yes	Y		1	1.2			3	.8	4	-1....														
12	DL + WL (NO ICE) 330 Degree	Yes	Y		1	1.2			3	1.3...	4	-.8														
13	DL + DL ICE + WL (ICE) 0 Degr...	Yes	Y		1	1.2	2	1	5	1																
14	DL + DL ICE + WL (ICE) 30 De...	Yes	Y		1	1.2	2	1	5	.866	6	.5														
15	DL + DL ICE + WL (ICE) 60 De...	Yes	Y		1	1.2	2	1	5	.5	6	.866														
16	DL + DL ICE + WL (ICE) 90 De...	Yes	Y		1	1.2	2	1			6	1														
17	DL + DL ICE + WL (ICE) 120 D...	Yes	Y		1	1.2	2	1	5	-.5	6	.866														
18	DL + DL ICE + WL (ICE) 150 D...	Yes	Y		1	1.2	2	1	5	-.8...	6	.5														
19	DL + DL ICE + WL (ICE) 180 D...	Yes	Y		1	1.2	2	1	5	-1																
20	DL + DL ICE + WL (ICE) 210 D...	Yes	Y		1	1.2	2	1	5	-.8...	6	-.5														
21	DL + DL ICE + WL (ICE) 240 D...	Yes	Y		1	1.2	2	1	5	-.5	6	-.8...														
22	DL + DL ICE + WL (ICE) 270 D...	Yes	Y		1	1.2	2	1			6	-1														
23	DL + DL ICE + WL (ICE) 300 D...	Yes	Y		1	1.2	2	1	5	.5	6	-.8...														
24	DL + DL ICE + WL (ICE) 330 D...	Yes	Y		1	1.2	2	1	5	.866	6	-.5														
25	DEAD LOAD + LIVE LOAD1	Yes	Y		1	1.2					7	1.5														
26	DEAD LOAD + LIVE LOAD2	Yes	Y		1	1.2					8	1.5														
27	DEAD LOAD + LIVE LOAD3	Yes	Y		1	1.2					9	1.5														
28	DL + MAIN L1+30MPH WL FR...	Yes	Y		1	1.2	10	1.5	3	.082																
29	DL + MAIN L2+30MPH WL FR...	Yes	Y		1	1.2	11	1.5	3	.082																
30	DL + MAIN L3+30MPH WL FR...	Yes	Y		1	1.2	12	1.5	3	.082																
31	DL + MAIN L4+30MPH WL FR...	Yes	Y		1	1.2	13	1.5	3	.082																
32	DL + MAIN L1+30MPH WL SIDE	Yes	Y		1	1.2	10	1.5	4	.082																
33	DL + MAIN L2+30MPH WL SIDE	Yes	Y		1	1.2	11	1.5	4	.082																
34	DL + MAIN L3+30MPH WL SIDE	Yes	Y		1	1.2	12	1.5	4	.082																
35	DL + MAIN L4+30MPH WL SIDE	Yes	Y		1	1.2	13	1.5	4	.082																
36	DL + MAIN L1+30MPH WL FR...	Yes	Y		1	1.2	10	1.5	3	-.0...																
37	DL + MAIN L2+30MPH WL FR...	Yes	Y		1	1.2	11	1.5	3	-.0...																
38	DL + MAIN L3+30MPH WL FR...	Yes	Y		1	1.2	12	1.5	3	-.0...																
39	DL + MAIN L4+30MPH WL FR...	Yes	Y		1	1.2	13	1.5	3	-.0...																
40	DL + MAIN L1+30MPH WL SID...	Yes	Y		1	1.2	10	1.5	4	-.0...																
41	DL + MAIN L2+30MPH WL SID...	Yes	Y		1	1.2	11	1.5	4	-.0...																
42	DL + MAIN L3+30MPH WL SID...	Yes	Y		1	1.2	12	1.5	4	-.0...																
43	DL + MAIN L4+30MPH WL SID...	Yes	Y		1	1.2	12	1.5	4	-.0...																

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N2	max	1158.5222	40	250.9164	7	1170.5473	24	0	1	0	1	0	1
2		min	-1055.9243	34	-1997.7331	13	350.2089	6	0	1	0	1	0	1
3	N1	max	1030.9506	42	1835.1087	19	1159.1439	18	0	1	0	1	0	1
4		min	-1133.3479	32	565.0129	1	346.8708	12	0	1	0	1	0	1
5	N33	max	180.0268	6	589.2531	6	108.1672	24	0	1	0	1	0	1
6		min	-173.4356	12	-583.3376	12	35.5594	5	0	1	0	1	0	1
7	N44	max	68.5338	12	562.7177	9	136.4225	15	0	1	0	1	0	1
8		min	-66.5701	6	-557.2985	3	44.2045	9	0	1	0	1	0	1
9	Totals:	max	1435.5228	10	2018.2331	7	2520.8568	22						
10		min	-1435.5225	4	-2018.2266	1	1037.2854	4						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...	LC
1	N1	max	0	32	0	1	0	12	-1.368e-03	7	3.4418e-03	30	1.5274e-02	10
2		min	0	42	0	19	0	18	-3.803e-03	13	-3.8301e-03	36	-1.5673e-02	4
3	N2	max	0	34	0	13	0	6	-1.4908e-03	8	3.4717e-03	34	1.8164e-02	10
4		min	0	40	0	7	0	24	-3.7784e-03	14	-3.8579e-03	40	-1.7737e-02	4
5	N3	max	.3564	4	-.0002	1	-.0296	7	-5.8098e-04	9	5.7565e-03	34	1.2961e-02	10

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...	LC
6		min	-.3483	10	-.0006	19	-.0842	13	-1.8635e-03	15	-6.4437e-03	40	-1.3154e-02	4
7	N4	max	.4011	4	.0007	13	-.0308	7	-3.2501e-04	6	5.8045e-03	34	1.4663e-02	10
8		min	-.4099	10	-.0002	7	-.084	13	-1.9134e-03	24	-6.4888e-03	40	-1.444e-02	4
9	N5	max	.4106	4	.0121	24	-.0308	7	-3.2438e-04	6	5.8045e-03	34	1.4663e-02	10
10		min	-.4233	10	.0018	6	-.084	13	-1.9137e-03	24	-6.4888e-03	40	-1.444e-02	4
11	N6	max	.3528	4	-.0038	9	-.0296	7	-5.8134e-04	9	5.7564e-03	34	1.2961e-02	10
12		min	-.3409	10	-.0117	15	-.0842	13	-1.8634e-03	15	-6.4436e-03	40	-1.3154e-02	4
13	N7	max	.3959	4	-.0002	1	-.0316	7	-5.8098e-04	9	5.7565e-03	34	1.2961e-02	10
14		min	-.3871	10	-.0006	19	-.0897	13	-1.8635e-03	15	-6.4437e-03	40	-1.3154e-02	4
15	N8	max	.4444	4	.0007	13	-.0319	7	-3.2501e-04	6	5.8045e-03	34	1.4663e-02	10
16		min	-.4539	10	-.0002	7	-.0897	13	-1.9134e-03	24	-6.4888e-03	40	-1.444e-02	4
17	N9	max	.3959	4	.1647	9	.229	40	2.539e-03	8	1.069e-02	34	1.5784e-03	6
18		min	-.3877	10	-.1848	3	-.969	34	-4.009e-03	2	-5.5007e-03	40	-1.5186e-03	12
19	N10	max	.4453	4	.2946	12	.229	40	9.0013e-03	7	1.0739e-02	34	3.0252e-03	1
20		min	-.4542	10	-.275	6	-.9694	34	-1.0486e-02	1	-5.4718e-03	40	-3.0639e-03	7
21	N11	max	.3963	4	.1072	7	.1608	34	3.7612e-03	7	4.8325e-03	34	3.899e-03	4
22		min	-.3869	10	-.1304	1	-1.0506	40	-5.3808e-03	1	-1.1339e-02	40	-3.943e-03	10
23	N12	max	.4448	4	.2393	2	.1623	34	1.1125e-02	7	4.9163e-03	34	5.3811e-03	6
24		min	-.455	10	-.216	8	-1.0526	40	-1.2763e-02	1	-1.1517e-02	40	-5.2329e-03	12
25	N13	max	.3959	4	.1692	9	.1629	40	2.539e-03	8	1.0684e-02	34	1.5922e-03	6
26		min	-.3877	10	-.1895	3	-.8407	34	-4.009e-03	2	-5.5076e-03	40	-1.5323e-03	12
27	N14	max	.4453	4	.2755	11	.1633	40	9.0013e-03	7	1.0732e-02	34	3.0093e-03	1
28		min	-.4542	10	-.2549	5	-.8405	34	-1.0486e-02	1	-5.4786e-03	40	-3.048e-03	7
29	N15	max	.3963	4	.1238	6	.1028	34	3.7612e-03	7	4.8393e-03	34	3.899e-03	4
30		min	-.3869	10	-.1458	12	-.9146	40	-5.3808e-03	1	-1.1332e-02	40	-3.943e-03	10
31	N16	max	.4448	4	.2152	2	.1033	34	1.1125e-02	7	4.9232e-03	34	5.3673e-03	6
32		min	-.455	10	-.192	8	-.9144	40	-1.2763e-02	1	-1.151e-02	40	-5.2192e-03	12
33	N17	max	.3959	4	.0363	10	-.0279	8	5.6517e-04	12	7.8438e-03	30	1.1484e-02	10
34		min	-.3872	10	-.0375	4	-.092	14	-1.7722e-03	6	-6.1108e-03	36	-1.1732e-02	4
35	N18	max	.4445	4	.0415	10	-.0308	9	1.4059e-03	7	7.9321e-03	34	1.2876e-02	10
36		min	-.454	10	-.0401	4	-.0916	15	-2.6103e-03	1	-6.2065e-03	40	-1.2595e-02	4
37	N19	max	.3925	4	.1692	9	.1542	40	2.539e-03	8	1.0684e-02	34	1.5922e-03	6
38		min	-.3844	10	-.1895	3	-.8418	34	-4.009e-03	2	-5.5076e-03	40	-1.5323e-03	12
39	N20	max	.4431	4	.2755	11	.1541	40	9.0013e-03	7	1.0732e-02	34	3.0093e-03	1
40		min	-.4519	10	-.2549	5	-.8413	34	-1.0486e-02	1	-5.4786e-03	40	-3.048e-03	7
41	N21	max	.3846	4	.1238	6	.0927	34	3.7612e-03	7	4.8393e-03	34	3.899e-03	4
42		min	-.375	10	-.1458	12	-.9162	40	-5.3808e-03	1	-1.1332e-02	40	-3.943e-03	10
43	N22	max	.4348	4	.2152	2	.0927	34	1.1125e-02	7	4.9232e-03	34	5.3673e-03	6
44		min	-.4452	10	-.192	8	-.9156	40	-1.2763e-02	1	-1.151e-02	40	-5.2192e-03	12
45	N23	max	.4311	4	.0363	10	-.032	8	5.6517e-04	12	7.8438e-03	30	1.1484e-02	10
46		min	-.4217	10	-.0375	4	-.0959	14	-1.7722e-03	6	-6.1108e-03	36	-1.1732e-02	4
47	N24	max	.4823	4	.0415	10	-.0295	8	1.4059e-03	7	7.9321e-03	34	1.2876e-02	10
48		min	-.4926	10	-.0401	4	-.0964	14	-2.6103e-03	1	-6.2065e-03	40	-1.2595e-02	4
49	N25	max	.5801	4	.7468	12	.1541	40	1.1733e-02	7	1.0826e-02	34	3.0093e-03	1
50		min	-.5328	10	-.669	6	-.8414	34	-1.322e-02	1	-5.5643e-03	40	-3.048e-03	7
51	N26	max	.6525	4	.8814	1	.0925	34	1.8448e-02	7	7.2215e-03	4	5.3673e-03	6
52		min	-.783	10	-.7928	7	-.9158	40	-2.0094e-02	1	-1.1846e-02	40	-5.2192e-03	12
53	N27	max	.7052	4	.3276	1	-.0297	8	1.2797e-02	7	9.2809e-03	4	1.2876e-02	10
54		min	-.7073	10	-.2903	7	-.0969	14	-1.4006e-02	1	-9.0067e-03	10	-1.2595e-02	4
55	N28	max	.3316	4	.2058	9	.1542	40	2.4654e-03	8	1.0558e-02	34	1.5922e-03	6
56		min	-.354	10	-.257	3	-.8425	34	-3.9353e-03	2	-5.5029e-03	40	-1.5323e-03	12
57	N29	max	.3807	4	.1997	6	.0927	34	3.6761e-03	7	4.8347e-03	34	3.899e-03	4
58		min	-.3062	10	-.2551	12	-.9168	40	-5.2956e-03	1	-1.1199e-02	40	-3.943e-03	10
59	N30	max	.5534	4	.2606	1	-.0322	8	1.1843e-02	1	8.0745e-03	42	1.1484e-02	10
60		min	-.5521	10	-.2982	7	-.0964	14	-1.3044e-02	7	-6.3469e-03	32	-1.1732e-02	4
61	N31	max	.4247	4	.1657	10	.1542	40	6.0917e-03	7	4.181e-03	34	1.2655e-03	2
62		min	-.4249	10	-.1657	4	-.8416	34	-7.2961e-03	1	-6.8628e-03	40	-1.2871e-03	9

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...	LC
63	N33	max	0	12	0	12	0	5	-3.1609e-04	7	7.3144e-03	38	4.9037e-03	10
64		min	0	6	0	6	0	24	-7.4606e-03	30	-7.7541e-03	28	-4.9063e-03	4
65	N34	max	.6309	4	.8212	1	.0925	34	1.8447e-02	7	7.2213e-03	4	5.3673e-03	6
66		min	-.7521	10	-.7382	8	-.9158	40	-2.0094e-02	1	-1.1846e-02	40	-5.2192e-03	12
67	N35	max	.397	4	.0791	5	.0927	34	5.5654e-03	7	6.4992e-03	34	3.7362e-03	5
68		min	-.4008	10	-.0851	11	-.916	40	-6.8069e-03	1	-5.0536e-03	40	-3.7195e-03	10
69	N36	max	.6774	4	.2856	1	-.0297	8	1.2797e-02	7	9.2807e-03	4	1.2876e-02	10
70		min	-.6803	10	-.2519	7	-.0969	14	-1.4006e-02	1	-9.0064e-03	10	-1.2595e-02	4
71	N37	max	.5356	4	.2251	1	-.0322	8	1.1843e-02	1	8.0745e-03	42	1.1484e-02	10
72		min	-.5335	10	-.259	7	-.0964	14	-1.3043e-02	7	-6.3469e-03	32	-1.1732e-02	4
73	N38	max	.5171	4	.5365	12	.1541	40	1.1691e-02	7	1.0823e-02	34	3.0093e-03	1
74		min	-.4935	10	-.4832	6	-.8414	34	-1.3178e-02	1	-5.562e-03	40	-3.048e-03	7
75	N39	max	.4297	4	.1987	11	.1541	40	7.8105e-03	7	5.3088e-03	34	1.9742e-03	2
76		min	-.4393	10	-.1924	5	-.8415	34	-9.0592e-03	1	-6.6042e-03	40	-2.0136e-03	8
77	N40	max	.0471	4	0	1	-.0042	7	-1.3296e-03	7	3.4418e-03	30	1.5246e-02	10
78		min	-.0459	10	0	19	-.0116	13	-3.7316e-03	13	-3.8301e-03	36	-1.5639e-02	4
79	N41	max	.0534	4	.0001	13	-.0045	8	-1.4653e-03	8	3.4717e-03	34	1.8098e-02	10
80		min	-.0547	10	0	7	-.0115	14	-3.7044e-03	14	-3.8579e-03	40	-1.7677e-02	4
81	N42	max	.1918	10	.0742	4	.4505	34	1.2067e-04	7	7.1456e-03	38	3.9631e-03	10
82		min	-.192	4	-.0741	10	-.1135	40	-7.0244e-03	30	-7.9227e-03	28	-3.9702e-03	4
83	N42A	max	.4061	4	.0689	4	.0927	34	6.9955e-03	7	6.7041e-03	34	4.0594e-03	5
84		min	-.4066	10	-.069	10	-.9159	40	-8.1949e-03	1	-4.2781e-03	40	-3.981e-03	11
85	N43	max	.1481	11	.0247	11	.7962	40	2.2395e-03	34	7.6865e-03	30	1.6783e-03	11
86		min	-.1548	5	-.0258	5	-.2124	34	-1.0736e-02	40	-6.1766e-03	36	-1.7799e-03	5
87	N44	max	0	6	0	3	0	9	1.0645e-03	34	7.4906e-03	30	4.1584e-03	10
88		min	0	12	0	9	0	15	-1.191e-02	40	-6.3725e-03	36	-4.1476e-03	4

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

	Member	Shape	Code Check	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc ...	phi*Pnt [...	phi*Mn ...	phi*Mn ...	Cb	Eqn
1	M1	PIPE_3.0	.287	6	13	.209	6		40	59852.6...	65205	5.7487	5.7487	1...	H1-1b
2	M6	PIPE_2.0	.858	63	6	.615	63		7	8922.08...	32130	1.8716	1.8716	1...	H3-6
3	M7	PIPE_2.0	.699	63	32	.525	63		1	8922.08...	32130	1.8716	1.8716	1...	H1-1b
4	M14	PIPE_2.0	.485	39	34	.117	57		6	14916.0...	32130	1.8716	1.8716	1...	H1-1b
5	M15	PIPE_2.0	.608	66	1	.102	66		40	14916.0...	32130	1.8716	1.8716	1...	H1-1b
6	M16	PIPE_2.0	.531	39	40	.129	57		1	14916.0...	32130	1.8716	1.8716	1...	H1-1b
7	M2	HSS3x3x4	.285	24	40	.123	3	z	40	97902.6...	101016	8.556	8.556	2...	H1-1b
8	M3	HSS3x3x4	.285	24	32	.121	3	z	36	97902.6...	101016	8.556	8.556	2...	H1-1b
9	M18	PIPE_2.0	.434	0	40	.250	0		40	28843.4...	32130	1.8716	1.8716	2...	H1-1b
10	M19	PIPE_2.0	.079	49.4...	6	.006	49.4...		22	7713.76...	32130	1.8716	1.8716	2...	H1-1b*
11	M19A	PIPE_2.0	.115	66.9...	21	.007	66.9...		16	7909.70...	32130	1.8716	1.8716	1...	H1-1b

Exhibit F

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: CTNL041A

NL041/Gardner-NewLondon
25 Lower Boulevard
New London, Connecticut 06320

December 6, 2020

EBI Project Number: 6220006133

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**70.92%**

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

December 6, 2020

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

Emissions Analysis for Site: CTNL041A - NL041/Gardner-NewLondon

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **25 Lower Boulevard** in **New London, 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 25 Lower Boulevard in New London, 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, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, 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.

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

1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

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) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

5) 2 UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

6) 4 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

7) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

8) 1 LTE channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.

9) 1 NR channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.

10) 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.

11) 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, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, 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.

12) The antennas used in this modeling are the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector A, the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector B, the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 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, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative

estimate as gain reductions for these particular antennas are typically much higher in this direction.

13) The antenna mounting height centerline of the proposed antennas is 59 feet above ground level (AGL).

14) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

15) 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 AIR 32	Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32
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 / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd
Height (AGL):	59 feet	Height (AGL):	59 feet	Height (AGL):	59 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts
ERP (W):	12,841.53	ERP (W):	12,841.53	ERP (W):	12,841.53
Antenna A1 MPE %:	**13.26%**	Antenna B1 MPE %:	**13.26%**	Antenna C1 MPE %:	**13.26%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20
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:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd
Height (AGL):	57 feet	Height (AGL):	57 feet	Height (AGL):	57 feet
Channel Count:	9	Channel Count:	9	Channel Count:	9
Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts
ERP (W):	10,465.36	ERP (W):	10,465.36	ERP (W):	10,465.36
Antenna A2 MPE %:	**17.92%**	Antenna B2 MPE %:	**17.92%**	Antenna C2 MPE %:	**17.92%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd
Height (AGL):	59 feet	Height (AGL):	59 feet	Height (AGL):	59 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	38,477.89	ERP (W):	38,477.89	ERP (W):	38,477.89
Antenna A3 MPE %:	**39.74%**	Antenna B3 MPE %:	**39.74%**	Antenna C3 MPE %:	**39.74%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	70.92%
Police	0%
Fire	0%
Tactical Channel	0%
Site Total MPE % :	70.92%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	70.92%
T-Mobile Sector B Total:	70.92%
T-Mobile Sector C Total:	70.92%
Site Total MPE % :	70.92%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 1900 MHz GSM	4	1028.30	59.0	42.48	1900 MHz GSM	1000	4.25%
T-Mobile 1900 MHz LTE	2	2056.61	59.0	42.48	1900 MHz LTE	1000	4.25%
T-Mobile 2100 MHz LTE	2	2307.55	59.0	47.66	2100 MHz LTE	1000	4.77%
T-Mobile 600 MHz LTE	2	591.73	57.0	13.10	600 MHz LTE	400	3.27%
T-Mobile 600 MHz NR	1	1577.94	57.0	17.46	600 MHz NR	400	4.37%
T-Mobile 700 MHz LTE	2	695.22	57.0	15.39	700 MHz LTE	467	3.29%
T-Mobile 1900 MHz UMTS	2	1052.26	57.0	23.29	1900 MHz UMTS	1000	2.33%
T-Mobile 1900 MHz LTE	2	2104.51	57.0	46.57	1900 MHz LTE	1000	4.66%
T-Mobile 2500 MHz LTE	1	19238.94	59.0	198.70	2500 MHz LTE	1000	19.87%
T-Mobile 2500 MHz NR	1	19238.94	59.0	198.70	2500 MHz NR	1000	19.87%
						Total:	**70.92%**

• 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:	70.92%
Sector B:	70.92%
Sector C:	70.92%
T-Mobile Maximum MPE % (Sector A):	70.92%
Site Total:	70.92%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **70.92%** 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.

Exhibit G

Deborah Chase

From: Deborah Chase
Sent: Friday, April 2, 2021 5:38 PM
To: 'pzw@newlondonct.org'
Subject: 25 LOWER BOULEVARD NEW LONDON CT 06320 T-MOBILE EM APPLICATION (CTNL041A-ANCHOR)
Attachments: 25 LOWER BOULEVARD NEW LONDON CT 06320 T-MOBILE EM APPLICATION (CTNL041A-Anchor).pdf

Dear Mr. Reyes
Attached please find T-Mobile's exempt modification application that is being submitted to the Connecticut Siting Council today, April 2, 2021.
In light of the present circumstances with Covid-19, The Council has advised that electronic notification of this filing is acceptable.
If you could kindly confirm receipt.
Thank you.

Deborah Chase
Senior Project Coordinator & Analyst
Mobile: 860-490-8839

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Deborah Chase

From: Deborah Chase
Sent: Friday, April 2, 2021 5:35 PM
To: 'sfields@newlondonct.org'
Subject: 25 LOWER BOULEVARD NEW LONDON CT 06320 T-MOBILE EM APPLICATION (CTNL041A-ANCHOR)
Attachments: 25 LOWER BOULEVARD NEW LONDON CT 06320 T-MOBILE EM APPLICATION (CTNL041A-Anchor).pdf

Dear Mr. Fields
Attached please find T-Mobile's exempt modification application that is being submitted to the Connecticut Siting Council today, April 2, 2021.
In light of the present circumstances with Covid-19, The Council has advised that electronic notification of this filing is acceptable.
If you could kindly confirm receipt.
Thank you.

Deborah Chase
Senior Project Coordinator & Analyst
Mobile: 860-490-8839

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Deborah Chase

From: Deborah Chase
Sent: Friday, April 2, 2021 5:33 PM
To: 'mpassero@newlondonct.org'
Subject: 25 LOWER BOULEVARD NEW LONDON CT 06320 T-MOBILE EM APPLICATION (CTNL041A-ANCHOR)
Attachments: 25 LOWER BOULEVARD NEW LONDON CT 06320 T-MOBILE EM APPLICATION (CTNL041A-Anchor).pdf

Dear
Attached please find T-Mobile's exempt modification application that is being submitted to the Connecticut Siting Council today, April 2, 2021.
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Deborah Chase
Senior Project Coordinator & Analyst
Mobile: 860-490-8839

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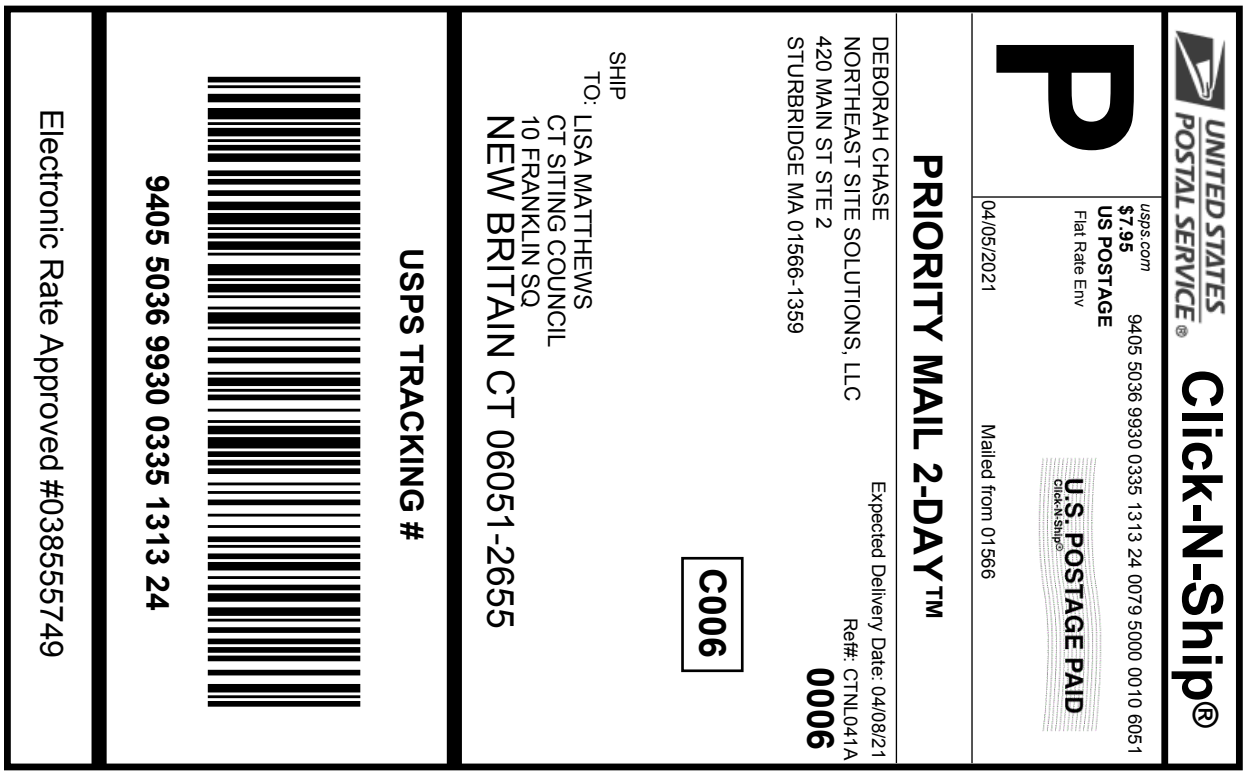

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2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

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9405 5036 9930 0335 1313 24

Trans. #:	529599668
Print Date:	04/02/2021
Ship Date:	04/05/2021
Expected Delivery Date:	04/08/2021

Priority Mail® Postage:	**$7.95**
Total:	**$7.95**

From: DEBORAH CHASE Ref#: CTNL041A
NORTHEAST SITE SOLUTIONS, LLC
420 MAIN ST STE 2
STURBRIDGE MA 01566-1359

To: LISA MATTHEWS
CT SITING COUNCIL
10 FRANKLIN SQ
NEW BRITAIN CT 06051-2655

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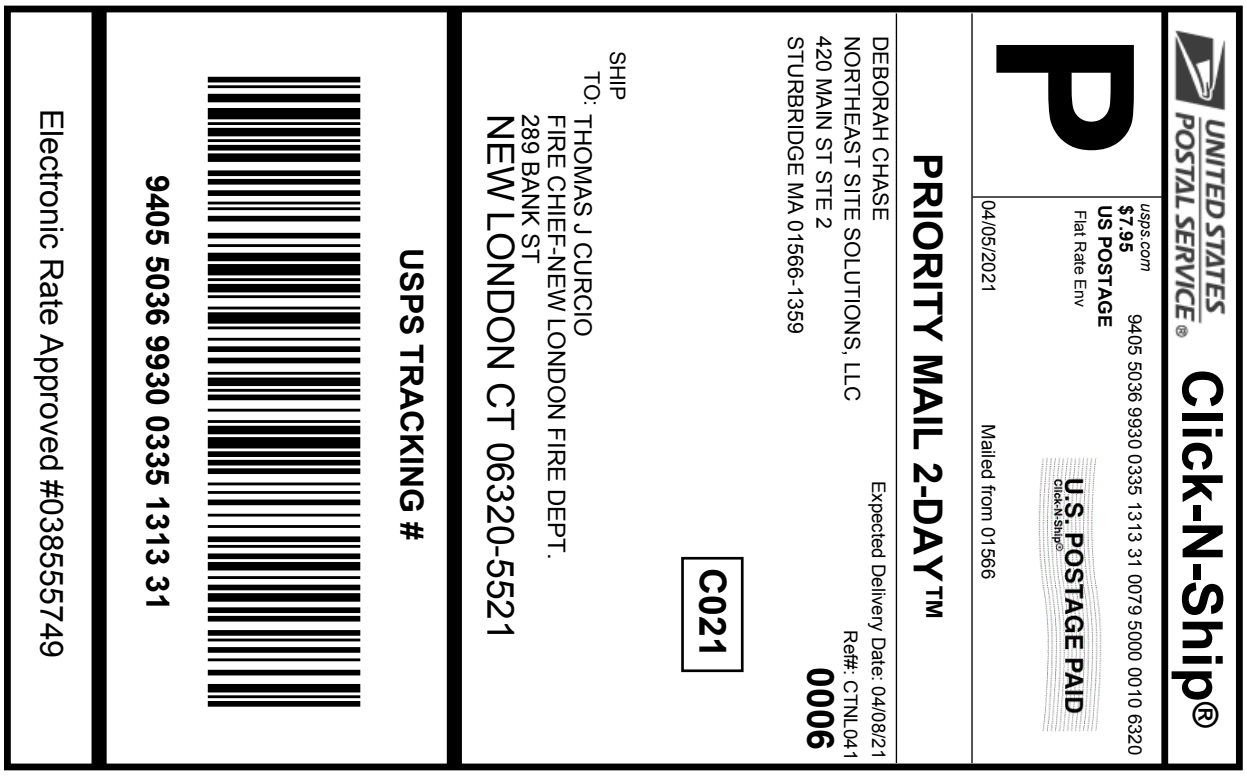

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0335 1313 31

Trans. #:	529599668
Print Date:	04/02/2021
Ship Date:	04/05/2021
Expected Delivery Date:	04/08/2021

Priority Mail® Postage:	**$7.95**
Total:	**$7.95**

From: DEBORAH CHASE Ref#: CTNL041
NORTHEAST SITE SOLUTIONS, LLC
420 MAIN ST STE 2
STURBRIDGE MA 01566-1359

To: THOMAS J CURCIO
FIRE CHIEF-NEW LONDON FIRE DEPT.
289 BANK ST
NEW LONDON CT 06320-5521

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

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