



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

August 25, 2020

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

RE: Exempt Modification Application
60 Industrial Park Road, Vernon CT 06076
Latitude: 41.835626
Longitude: -72.454885
T-Mobile Site#: CT11140J-Anchor

Dear Ms. Bachman:

T-Mobile is requesting to file an exempt modification for an existing 175-foot monopole tower located at 60 Industrial Park Road, Vernon CT 06076. T-Mobile currently has nine (9) antennas at the 178.6-foot level of the existing 175-foot tower. The tower is owned by Millenicom, LLC and property is owned by DJV REAL ESTATE LLC. T-Mobile now intends to replace three (3) antenna with three (3) new 2500 MHz antenna. The new antenna would be installed at the 178.6-foot and level of the tower.

Planned Tower Modifications:

Remove:

- (6) 1-5/8" coax
- (3) TMA

Remove and Replace:

- (3) APX16DWV Antenna (**REMOVE**) – AIR6449 B41 Antenna 2500 Mhz (**REPLACE**)

Install New:

- (3) Fiber line
- (3) RRU 4415 B25
- (3) Diplexers
- (1) HRK12 Handrail Kit

Existing to Remain:

- (3) RFS-APXAARR24_43U-NA20 Antenna 600/700 MHz
- (6) 1-5/8" coax
- (3) Fiber line
- (3) RRU 4449 B71+B12



(3) AIR32 Antenna – 1900/2100 MHz
(3)TMA

Ground:

Upgrade Existing 6102 Cabinet (Internally)
New 6160 Cabinet
New B160 Cabinet

This facility was approved by the Town of Vernon P&Z on March 8, 2000. This modification complies with this original approval. 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.S.A. § 16-SOj-73, a copy of this letter is being sent Mayor Daniel A. Champagne, Elected Official and Andrew Marchese, Zoning Enforcement Officer for the Town of Vernon, as well as the property owner and the tower owner.

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

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

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

Sincerely,

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



NSS

NORTHEAST
SITE SOLUTIONS

Turnkey Wireless Development

Attachments

cc:

Mayor Daniel A. Champagne
Vernon Town Hall
14 Park Place, 3rd Fl.
Vernon CT 06066

Office of Zoning Administration
55 W Main Street
Vernon CT 06066
Attn: Andrew Marchese
Zoning Enforcement Officer

Karen Thorne
DJV REAL ESTATE LLC
75 Gerber Road
South Windsor CT 06074

Millenicom, LLC
c/o Marcus Communications
P.O. Box 1498
Manchester CT 06045

NORTHEAST SITE SOLUTIONS, LLC
420 MAIN ST. BUILDING #4, 2nd FLOOR
Sturbridge, MA 01566

WEBSTER BANK
51-7010/2111

4108

08/11/2020

PAY TO THE ORDER OF Connecticut Siting Council

*625.00

\$

EXACTLY SIX HUNDRED TWENTY-FIVE DOLLARS

DOLLARS

Connecticut Siting Council
10 Franklin Square
New Britain CT 06051

MEMO

Lisa Lin Allen
AUTHORIZED SIGNATURE

Photo Safe Deposit®
Details on Back.

CT11140J Anchor

⑈004108⑈ ⑆211170101⑆10 0010608887⑈

Check#: 4108

Date: 08/11/2020

Vendor#: 10023 Connecticut Siting Co

Check Total: *625.00

4108

Invoice#	Invoice Date	Job/Description	Balance	Retain	Discount	This Check
CT11140J Zoning	08/11/2020	2 TMO Anchor Program	625.00			625.00

Check#: 4108

Date: 08/11/2020

Vendor#: 10023 Connecticut Siting Co

Check Total: *625.00

4108

Invoice#	Invoice Date	Job/Description	Balance	Retain	Discount	This Check
CT11140J Zoning	08/11/2020	2 TMO Anchor Program	625.00			625.00

Exhibit A

Town of Vernon, Conn.

BUILDING PERMIT

and

CERTIFICATE OF ZONING COMPLIANCE

No 29885

ESTIMATED COST

Structural \$ 95,000.00
Plumbing
Heating
Wiring

FINAL COST: \$

FEE \$ 950.00

March 8 2000

APPLICANT'S PERMIT

Permission is hereby granted to Omnipoint Communications
To installation of telecommunications tower
on the side of No. 60 Industrial Park Road Owner: Beauregard

Class	Size	Heating	Air Condition
Type			Oil Burner
Foundations	Porch X	Basement	Cement
Ext. Walls		Plumbing	Earth
Roof		Bath	Lavatory
Roofing		Fire Places	
Interior	Ceiling Height	Weatherstrip	Insulation
No. of Rooms	1st Floor 2nd Floor	Attach. Garage	Cement
Floors		Interior Finish	
Flooring		Breezeway	X
Joists			

This permit expires six (6) months from the above date.

All building permits are approved subject to field inspection.

BUILDING DEPARTMENT TOWN OF VERNON, CONN.

Gene F. Balles

Building Official/
Zoning Enforcement Officer

APPLICATION FOR BUILDING PERMIT

(Continued from the other side)

9. Size of building _____ (No of stories) Height 17.5' Depth _____ Front _____
10. Material of footing _____ Depth below grade _____ Width _____ Thickness _____
11. Material of foundation _____ Below Grade (DEPTH) _____ (Thickness) _____
Above Grade (HEIGHT) _____ (Thickness) _____
12. Material of chimney _____ Foundation _____ Height _____ Width _____ Depth _____
13. No. of flues _____ Size _____ Thickness of lining _____ City Sewer _____ Septic Tank _____

14.

MASONRY CONSTRUCTION

	Front Wall	Side Wall	Rear Wall	Partition Wall	Veneer
Basement					
1st Story					
2nd Story					

15.

WOOD CONSTRUCTION

Floors	Size	Joists			Girders			Columns or Piers			Footing
		Longest Span	Centers	Bridging	Size	Longest Span	Centers	Size	Length	Centers	
1st											
2nd											

16. Size of sill _____ Size of outside studs _____ Distance on centers _____
17. Size studs of bearing partitions _____ Centers _____ Are joists doubled under partitions? _____
18. Size of plate _____ Size of headers _____ Will firestops be provided? _____
19. Size of rafters _____ Distances on centers _____ Size of hip or valley rafter _____
20. Species and grade of framing _____
Type and grade of sheathing _____
21. Further Details Installation of a telecommunications monopole with antennas and an associated equipment compound

Call Before You Dig #: _____

22. All work covered by this application has been authorized by the (owner) or (agent) of this property and will be done according to approved plans and all local codes and regulations. Notice must be given to the Building Department when job is ready for inspection and when job is completed.

25 February, 2000
DATE

Print name under signature

J. Swenden Sharkey
APPLICANT J. Swenden Sharkey,
Attorney for Omnipoint Communications, Inc.

Exhibit B

INDUSTRIAL PARK ROAD LLC 75 GERBER ROAD EAST SOUTH WINDSOR, CT 06074 CENSUS TRACT: 530600 Neighborhood Number 12100 Neighborhood Name General Commercial TAXING DISTRICT INFORMATION Jurisdiction NameTown of Vernon Area146 Routing Number5044	Tax ID 30-0133-0005G										Printed 02/06/2019										Card No. 1 of 1																													
	Transfer of Ownership																																																	
	Owner										Consideration										Transfer Date										Deed Book/Page										Deed Type									
	DJV REAL ESTATE LLC										0										03/22/2018										2546 253										W									
	LILYMAXJACK LLC										700000										10/30/2017										2529 193										W									
	BEAUREGARD GEORGE W										0										07/05/2005										1744 267										Q									
	BEAUREGARD GEORGE W & KAREN S										0										07/05/2005										1744 264										Q									
	BEAUREGARD KAREN S & GEORGE W										0										03/07/2000										1244 40										Q									
	BEAUREGARD GEORGE W										0										04/13/1999										1200 11										Q									
Site Description Topography Public Utilities Water, Sewer, Gas, Electric Street or Road Paved Neighborhood Zoning: Industrial Legal Acres: 5.1000	Valuation Record																																																	
	Assessment Year					2011					2016					2017					2018																													
	Reason for Change																																																	
						2011 REVAL					2016 Reval					BAA					2018 ASMT																													
	Market					L					313380					245720					245720					245720																								
						I					668250					1449820					754280					574280																								
						T					981630					1695540					1000000					820000																								
	70% Assessed/Use					L					219370					172000					172000					172000																								
						I					467770					1014880					528000					401990																								
						T					687140					1186880					700000					573990																								



Land Size				
Land Type	Rating, Soil ID - or - Actual Frontage	Acreage - or - Effective Frontage	Square Feet - or - Effective Depth	Influence Factor

Physical Characteristics

ROOFING

Built-up

Insulation

WALLS

	B	1	2	U
Frame		Yes		
Guard	Yes	Yes	Yes	Yes

FRAMING

	B	1	2	U
F Res	0	34908	0	4000

FINISH

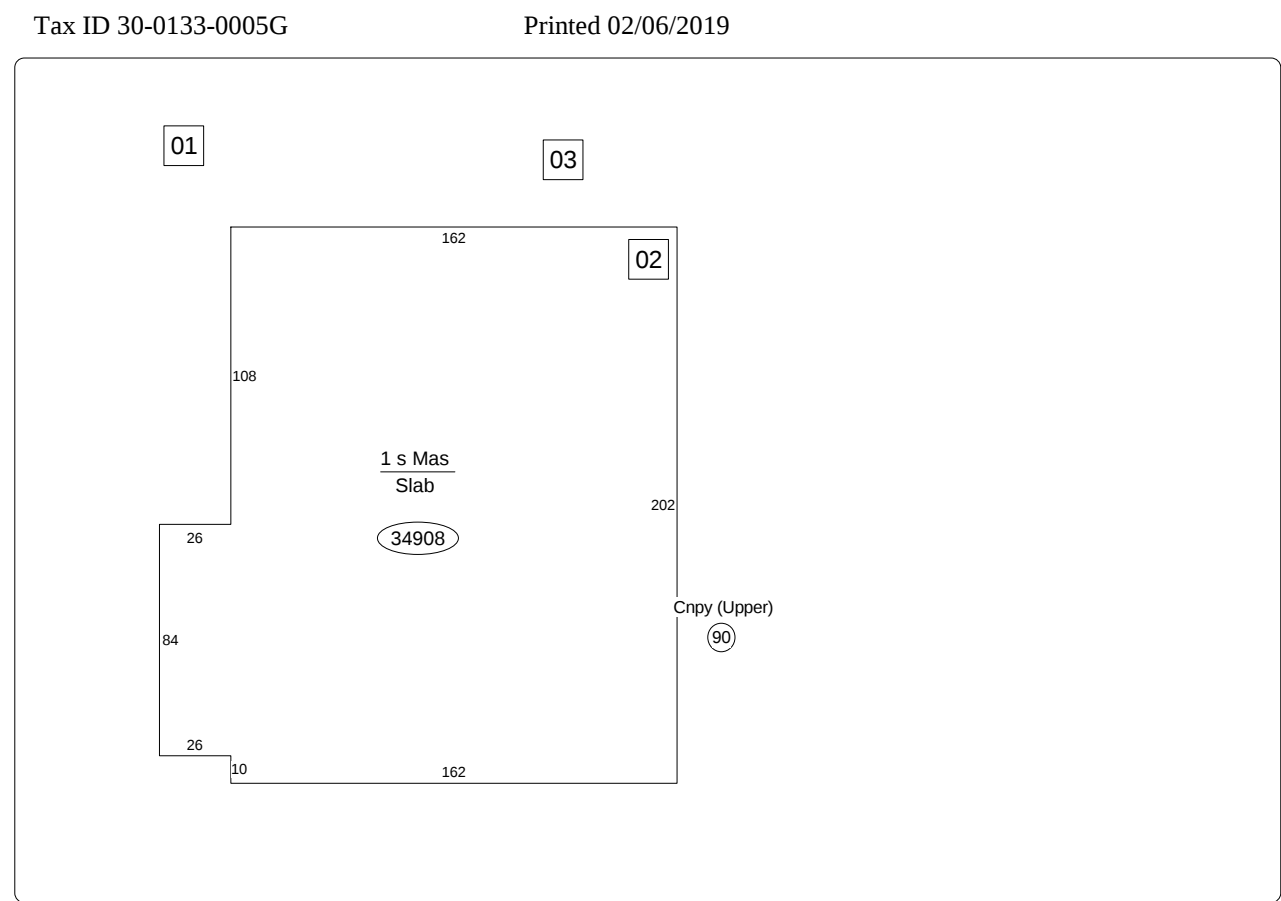
	UF	SF	FO	FD
1	34908	0	0	0
U	4000	0	0	0
Total	38908	0	0	0

HEATING AND AIR CONDITIONING

	B	1	2	U
Heat	0	34908	0	4000
Sprink	0	34908	0	4000

PLUMBING

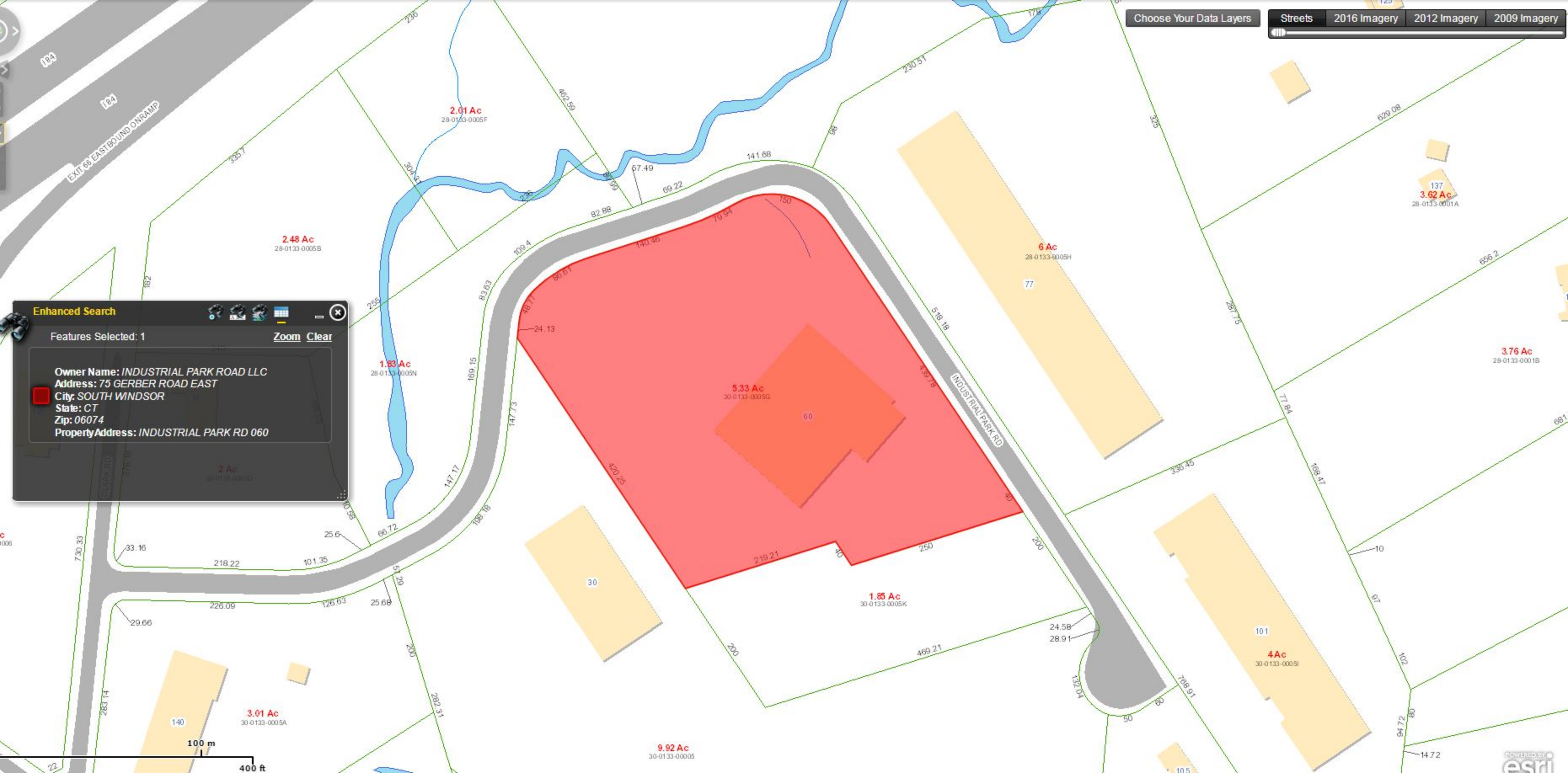
	Residential	Commercial		
	#	TF	#	TF
Full Baths				
Half Baths			3	6
Extra Fixtures				
TOTAL		0		6



Special Features

Description

Summary of Improvements								
ID	USE	Story Height	Const Type	Grade	Year Cons	Eff Year	Cond	Size or Area
C	LMFG	0.00	85	Fair	1968	1970	FR	34908
01	PAVING	0.00		Avg	1968	1968	AV	23800
02	MEZZSF	1.00		Fair	1968	1968	AV	4000
03	TOWERMON	0.00		Avg	2000	2000	AV	380



Enhanced Search

Features Selected: 1

Zoom

Clear

Owner Name: INDUSTRIAL PARK ROAD LLC

Address: 75 GERBER ROAD EAST

City: SOUTH WINDSOR

State: CT

Zip: 06074

Property Address: INDUSTRIAL PARK RD 060

Exhibit C

..T..Mobile..

NORTHEAST, LLC.

PROJECT: ANCHOR

SITE I.D. NUMBER:

CT11140J

SITE NAME:

MANCHESTER/ I-84 X63

SITE ADDRESS:

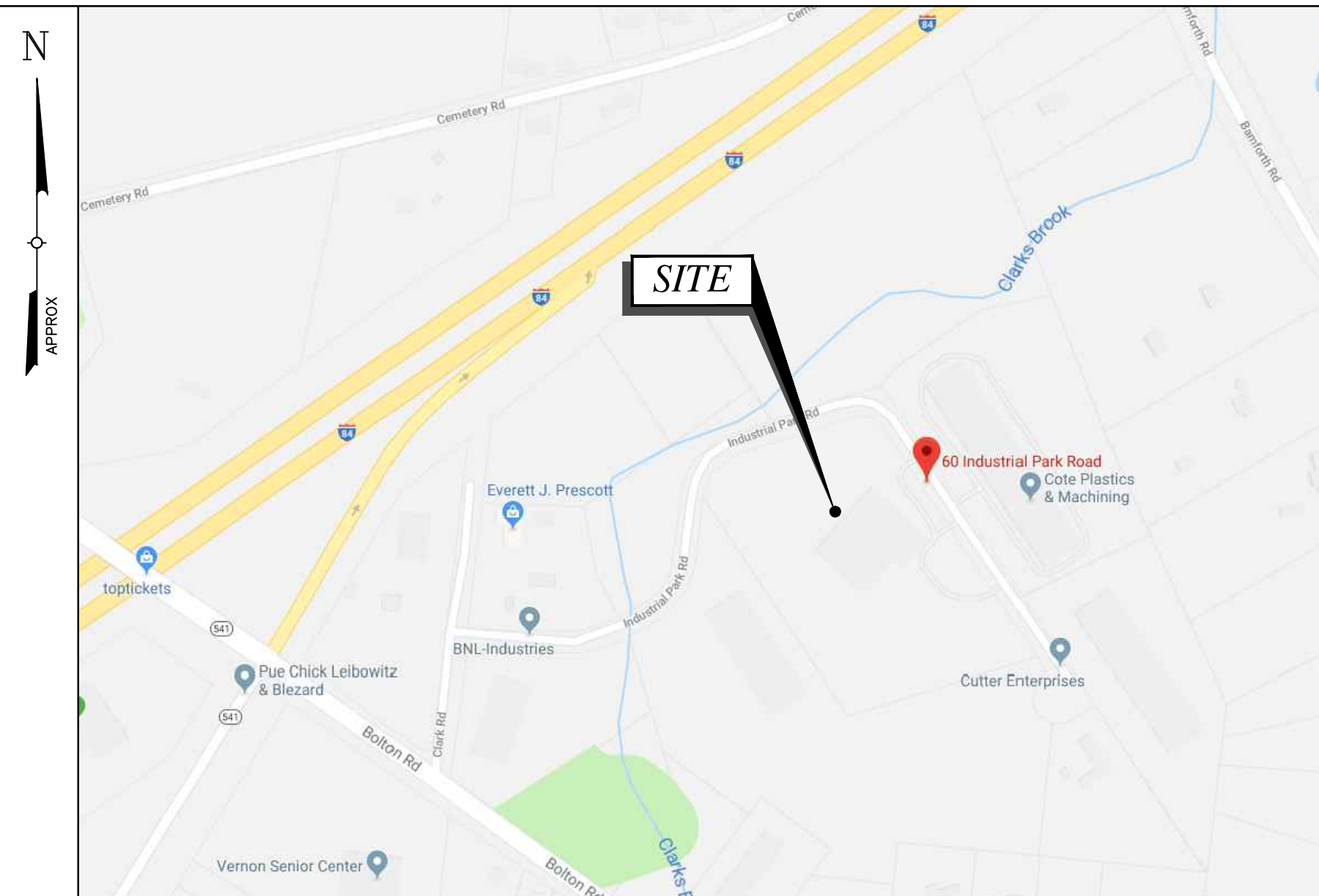
60 INDUSTRIAL PARK ROAD

VERNON, CT 06066

PROJECT INDEX

SITE NUMBER:	CT11140J	PROJECT CLIENT:	NORTHEAST SITE SOLUTIONS, LLC
SITE NAME:	MANCHESTER/ I-84 X63	CONTACT:	SHELDON FREINCLE
SITE ADDRESS:	60 INDUSTRIAL PARK ROAD VERNON, CT 06066	PHONE:	(201) 776-8521
PROPERTY OWNER:	MILLENICOM, LLC	ENGINEER/ STRUCTURAL ENG:	TECTONIC ENGINEERING & SURVEYING CONSULTANTS, PC.
APPLICANT:	T-MOBILE NORTHEAST LLC 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002	CONTACT:	EDWARD IAMICELI
		PHONE:	(845) 567-6656x2811
STRUCTURE TYPE:	MONOPOLE		
LATITUDE (NAD83):	N 41.835626"		
LONGITUDE (NAD83):	W 72.454885"		
GRADE ELEVATION:	382' AMSL (PER GOOGLE EARTH)		
MUNICIPALITY:	VERNON		
ZONING:	INDUSTRIAL		
PARCEL #:	30-0133-0005G		

VICINITY MAP (NTS)



SHEET INDEX

SHEET NO	DESCRIPTION	REVISION	DATE
T-1	TITLE SHEET	0	08/24/20
A-1	SITE PLAN	0	08/24/20
A-2	TOWER ELEVATION	0	08/24/20
A-3	EQUIPMENT PLANS	0	08/24/20
A-4	ANTENNA PLANS & ANTENNA SCHEMATIC	0	08/24/20
A-5	DETAILS, ANTENNA SCHEMATIC & SPECIFICATIONS	0	08/24/20
A-6	NOTES	0	08/24/20
E-1	ELECTRICAL NOTES & ONE-LINE DIAGRAM	0	08/24/20
G-1	GROUNDING DETAILS & NOTES	0	08/24/20

CODE COMPLIANCE

CODE INFORMATION

- STATE OF CONNECTICUT BUILDING CODE, LATEST EDITION
- ANSI/TIA-222-G
- NATIONAL ELECTRIC CODE, LATEST EDITION

DESIGN NOTE

DESIGN BASED ON RFDS DATED 7/1/2020, VERSION 8.

RAN TEMPLATE: 67D5A997DB HYBRID
A&L TEMPLATE: 67D5997DB_2xAIR+10P (U21 MARKET)

STRUCTURAL NOTE

ANTENNA FRAME

REFER TO THE MOUNT ANALYSIS REPORT BY
TECTONIC ENGINEERING & SURVEYING
CONSULTANTS P.C. DATED AUGUST 19, 2020.

TOWER

REFER TO THE STRUCTURAL ANALYSIS REPORT
BY TECTONIC ENGINEERING & SURVEYING
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Know what's below.
Call before you dig.

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P.O. Box 37 (800) 529-6531
Mountainville, NY 10953 www.tectonicingeering.com

Project Contact Info
1279 Route 300
Newburgh, NY 12550 Phone: (845) 567-6656

..T..Mobile..

NORTHEAST, LLC.

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002



APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER	DESIGNED BY
10473.CT11140J	EI

REV.	DATE	DESCRIPTION	DRAWN BY
1	08/24/20	ISSUED FOR CONSTRUCTION	BWY

ISSUED BY	DATE



SITE INFORMATION

MANCHESTER/ I-84 X63
CT11140J
60 INDUSTRIAL PARK RD
VERNON, CT 06066

SHEET TITLE

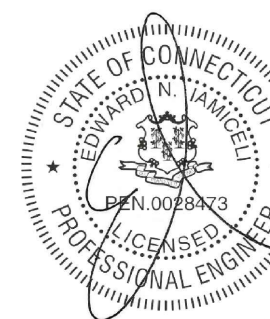
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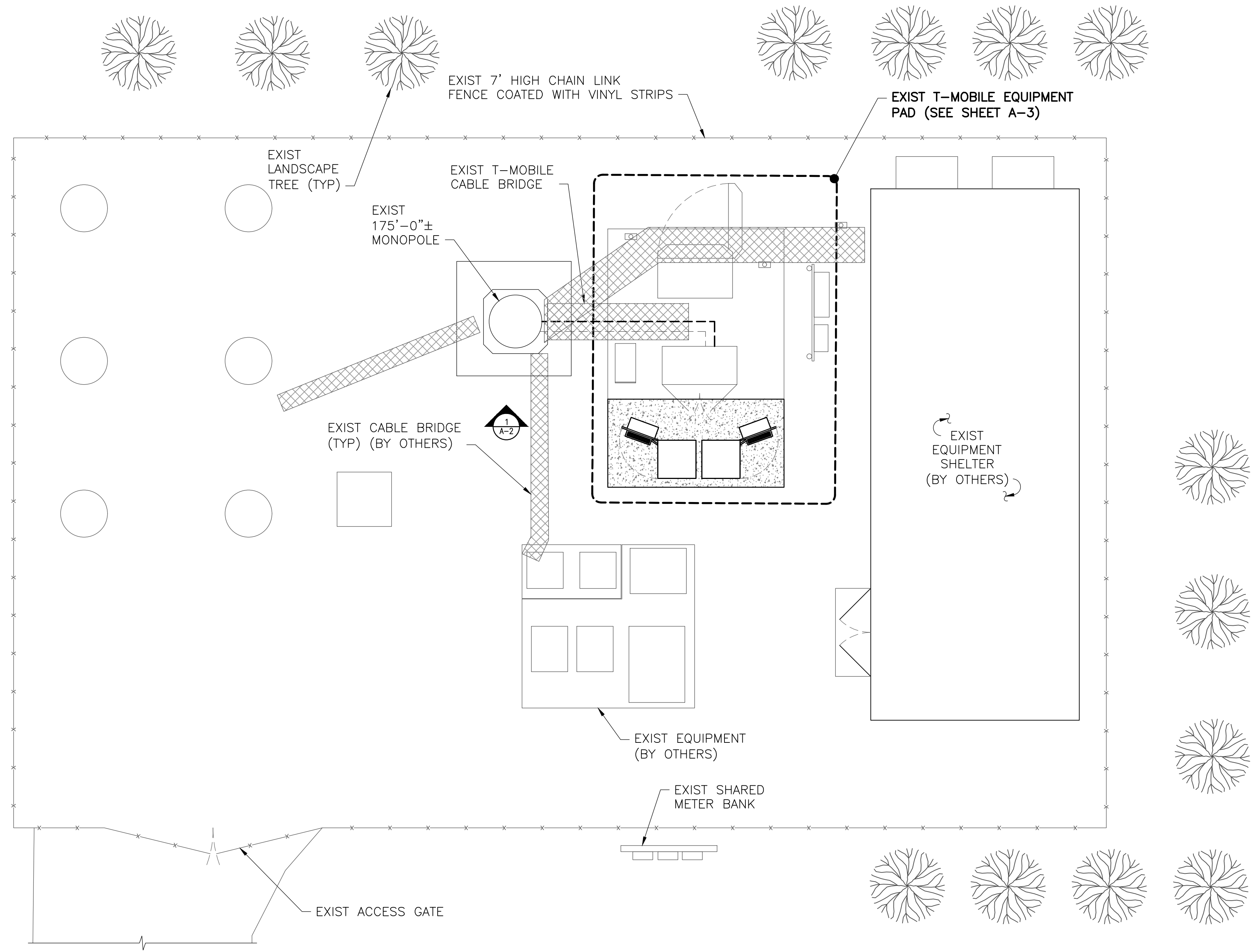
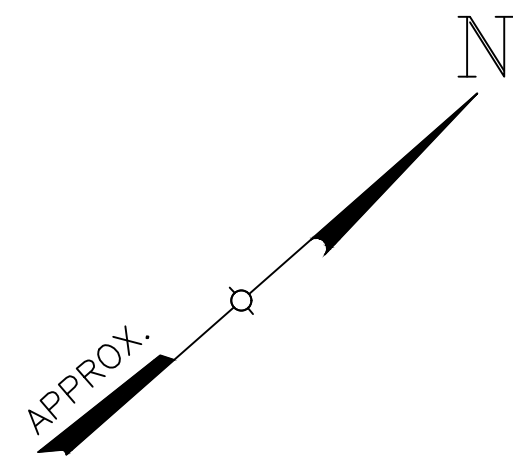
SHEET NUMBER

T-1

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

STRUCTURAL NOTE

ANTENNA FRAME

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TOWER

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..T..Mobile..

NORTHEAST, LLC.

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002



APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER DESIGNED BY
10473.CT11140J EI

REV.	DATE	DESCRIPTION	DRAWN BY
1	08/24/20	ISSUED FOR CONSTRUCTION	BWY

ISSUED BY DATE



SITE INFORMATION

MANCHESTER/ I-84 X63
CT11140J
60 INDUSTRIAL PARK RD
VERNON, CT 06066

SHEET TITLE

SITE PLAN

SHEET NUMBER

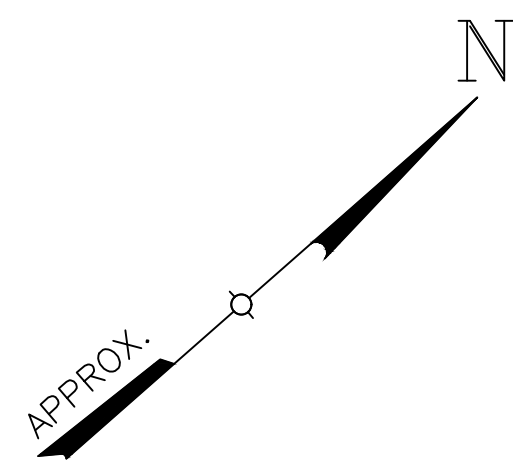
A-1

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RAN SCOPE NOTES

1. ADD (1) ENCLOSURE 6160.
2. ADD (1) BATTERY CABINET B160.
3. ADD (1) IXRE ROUTER TO NEW ENCLOSURE 6160.
4. ADD (1) BB6630 FOR L2500 TO NEW ENCLOSURE 6160.
5. ADD (1) BB6648 FOR N2500 TO NEW ENCLOSURE 6160.
6. ADD (1) PSU 4813 POWER BOOSTER.
7. ADD (3) 6x12 HCS. LENGHT OF NEW HCS WILL MATCH THAT OF EXISTING HCS.
8. REMOVE (6) RUS01 B2 RADIOS FROM CABINET.
11. REMOVE (6) UNCONNECTED COAX LINES.
12. EXISTING (3) 6x12 HCS AND (12) 1-5/8" COAX LINES.

STRUCTURAL NOTE

ANTENNA FRAME

REFER TO THE MOUNT ANALYSIS REPORT BY TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C. DATED AUGUST 19, 2020.

TOWER

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NSS NORTHEAST
SITE SOLUTIONS
Turnkey Wireless Development

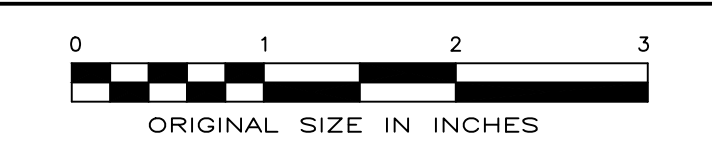
APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER 10473.CT11140J DESIGNED BY EI

REV.	DATE	DESCRIPTION	DRAWN BY
1	08/24/20	ISSUED FOR CONSTRUCTION	BNY

ISSUED BY _____ DATE _____



SITE INFORMATION

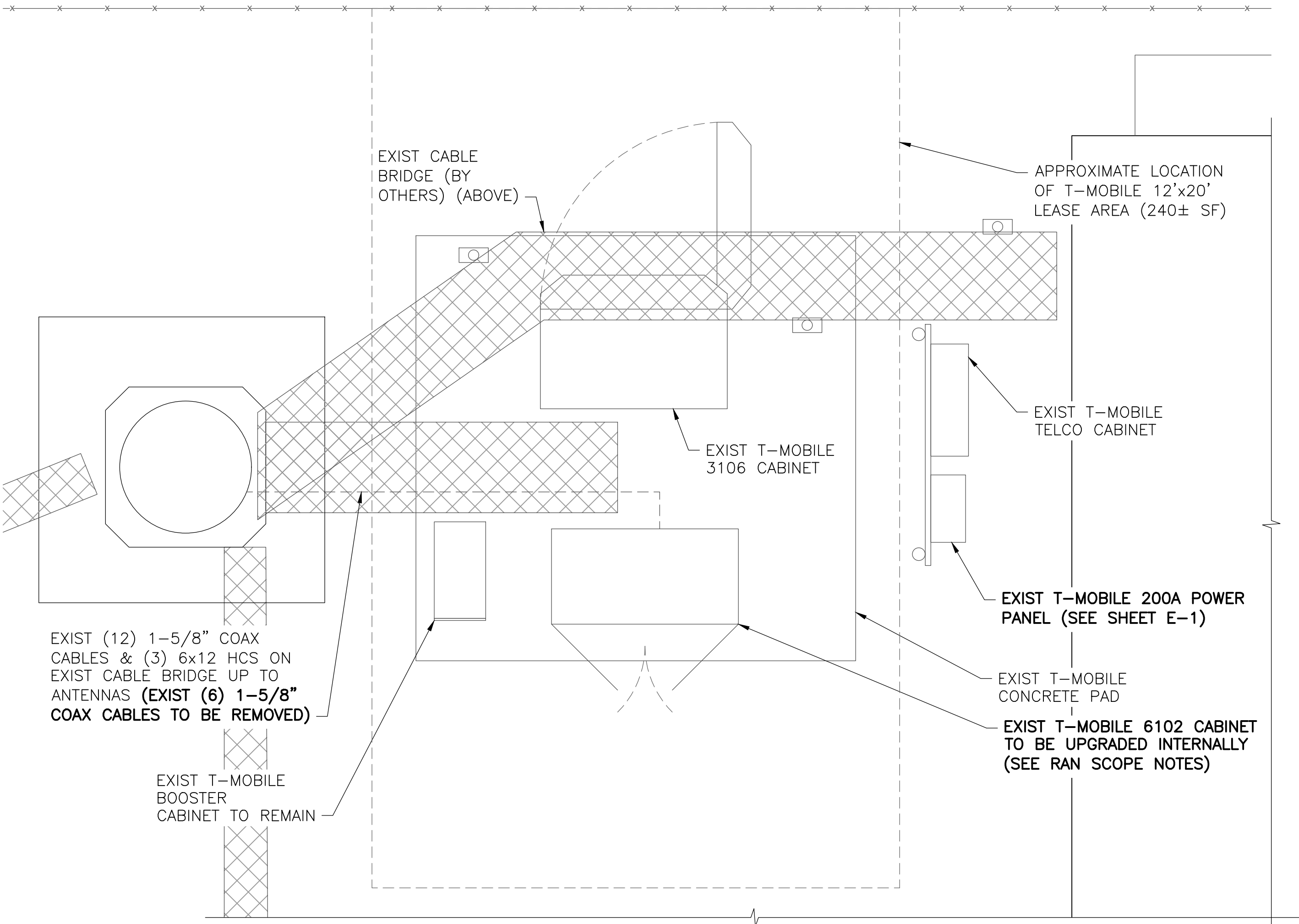
MANCHESTER/ I-84 X63
CT11140J
60 INDUSTRIAL PARK RD
VERNON, CT 06066

SHEET TITLE

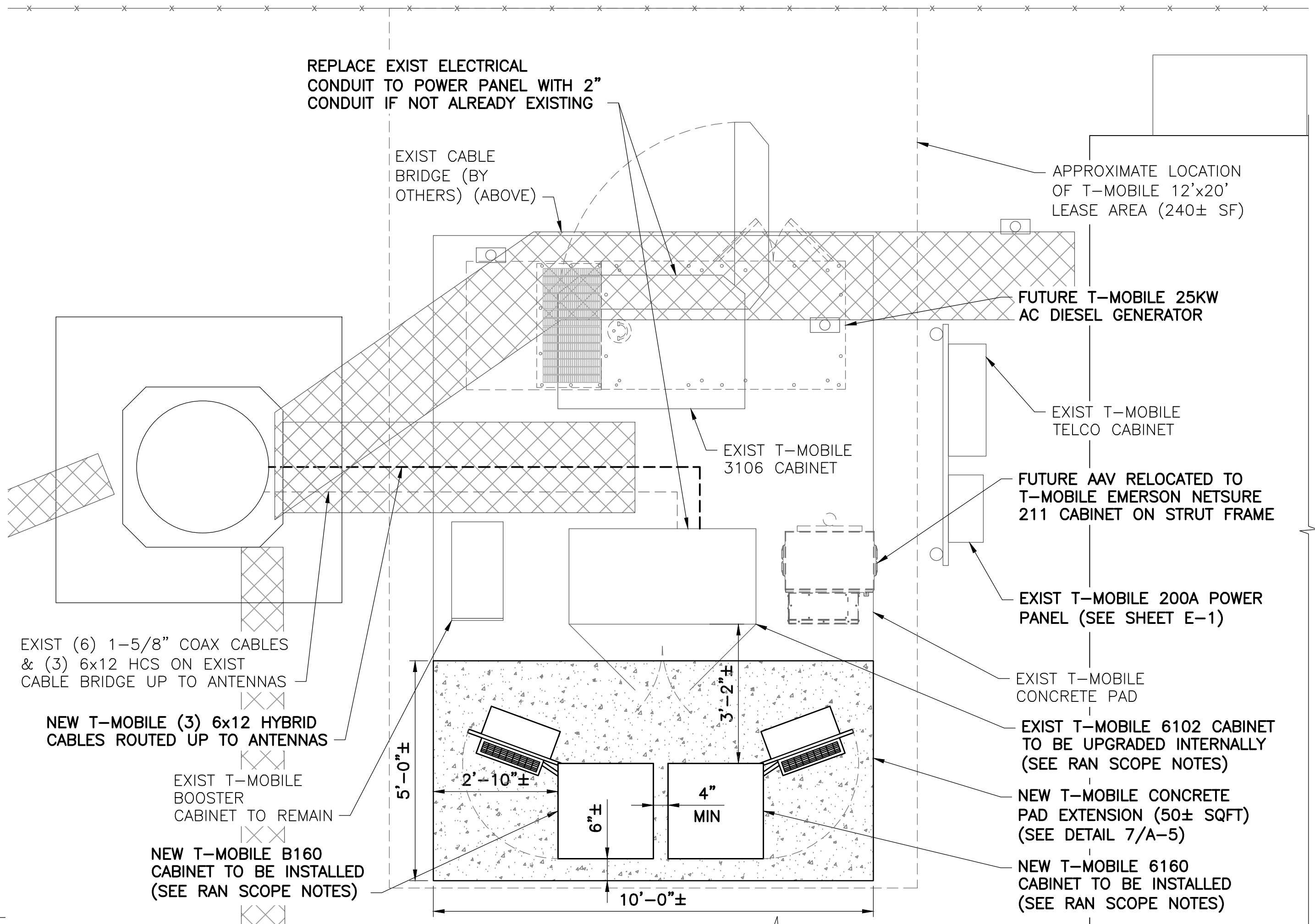
EXISTING AND
PROPOSED
EQUIPMENT PLANS

SHEET NUMBER

A-3



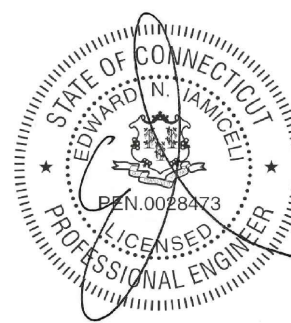
1
A-3
EXIST T-MOBILE EQUIPMENT PLAN
SCALE: 3/4" = 1'-0"

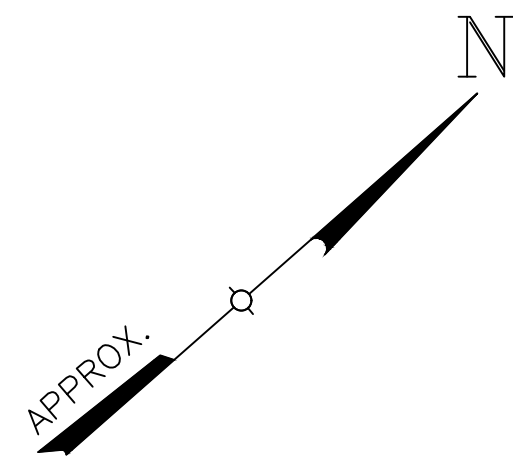


2
A-3
NEW T-MOBILE EQUIPMENT PLAN
SCALE: 3/4" = 1'-0"

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STRUCTURAL NOTE

ANTENNA FRAME

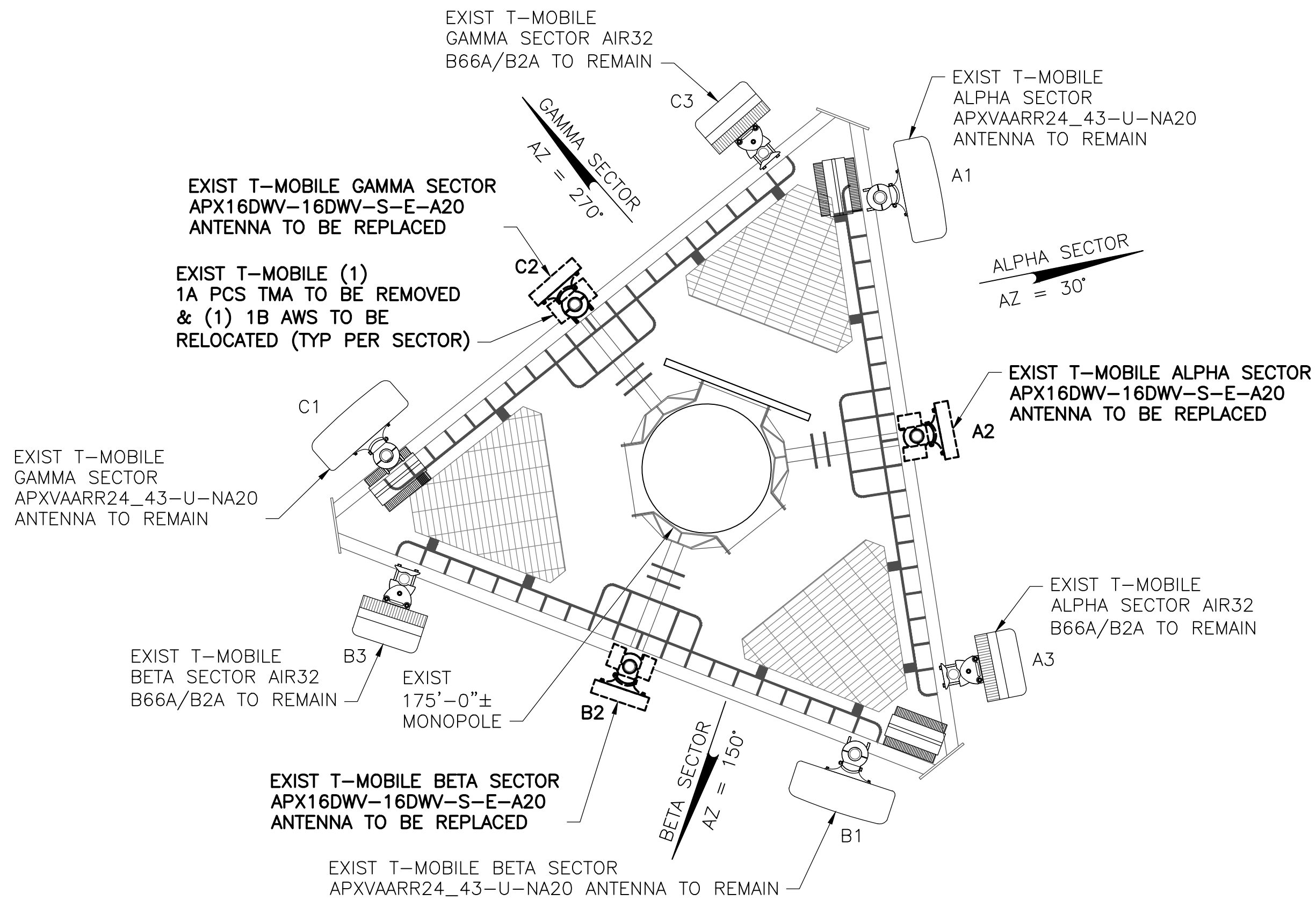
REFER TO THE MOUNT ANALYSIS REPORT BY TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C. DATED AUGUST 19, 2020.

TOWER

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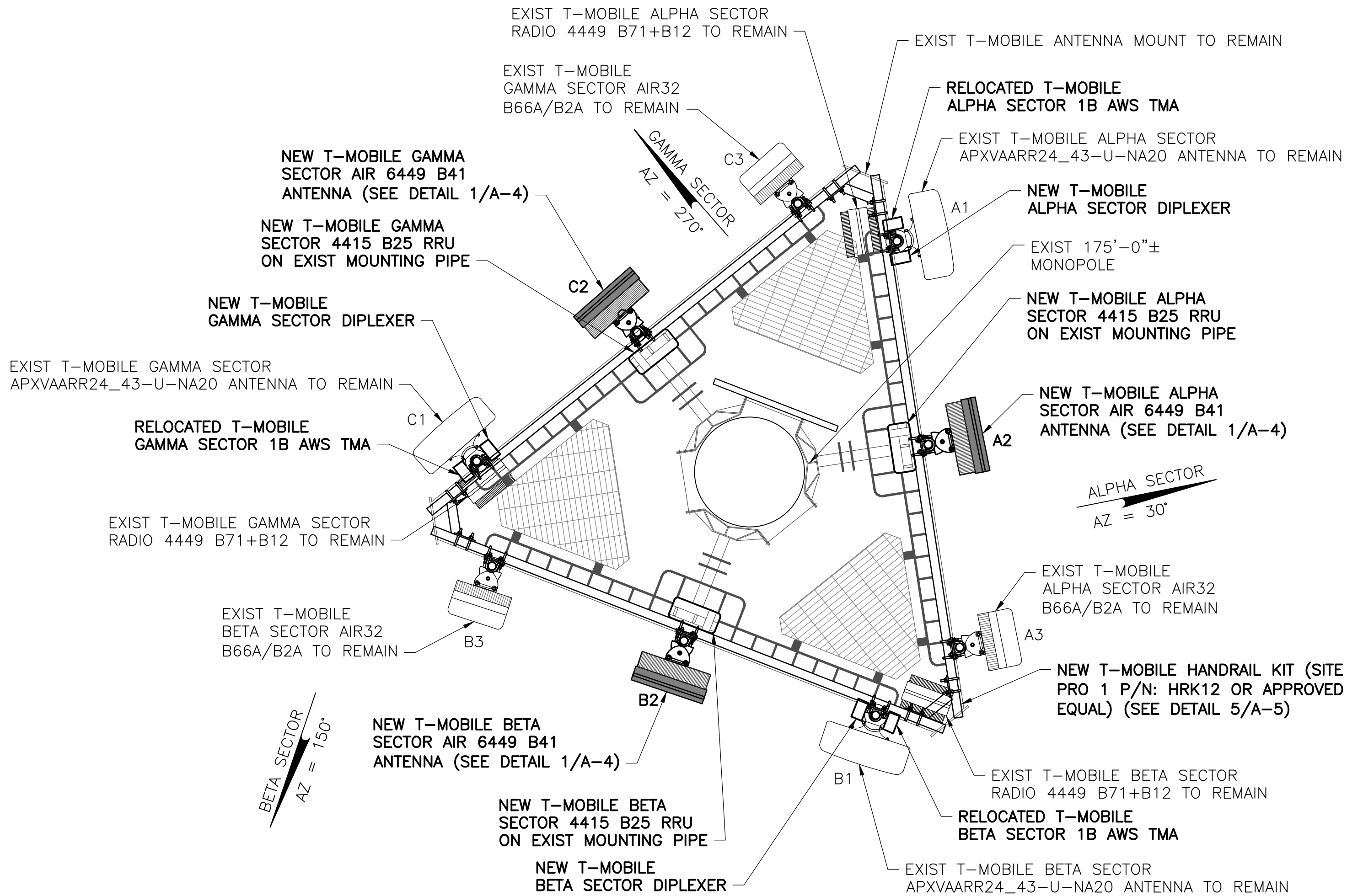
ANTENNA & CABLE SCHEDULE

SECTOR MARK	ANTENNA MODEL	AZIMUTH	ELEC. DOWNTILT	MECH. DOWNTILT	ANTENNA CENTERLINE	SECTOR	STATUS	TMA/RRU	CABLE	JUMPER TYPE	CABLE LENGTH
A-1 LTE/UMTS	RFS APXVAARR24-43-U-NA20	30°	2°	0°	179'-0"±	LEFT ALPHA	EXIST	1/2	EXIST 6x12 HYBRID CABLE & (2) 1-5/8" COAX	FIBER	195'-0"
A-2 LTE	ERICSSON AIR6449 B41	30°	2°	0°	179'-0"±	CENTER ALPHA	REPLACEMENT	0/0	NEW 6x12 HYBRID CABLE	COAX	195'-0"
A-3 LTE/GSM	ERICSSON AIR32 B66A/B2A	30°	2°	0°	179'-0"±	RIGHT ALPHA	EXIST	0/0	EXIST 6x12 HYBRID CABLE	FIBER	195'-0"
B-1 LTE/UMTS	RFS APXVAARR24-43-U-NA20	150°	2°	0°	179'-0"±	LEFT BETA	EXIST	1/2	EXIST 6x12 HYBRID CABLE & (2) 1-5/8" COAX	FIBER	195'-0"
A-2 LTE	ERICSSON AIR6449 B41	150°	2°	0°	179'-0"±	CENTER BETA	REPLACEMENT	0/0	NEW 6x12 HYBRID CABLE	COAX	195'-0"
B-3 LTE/GSM	ERICSSON AIR32 B66A/B2A	150°	2°	0°	179'-0"±	RIGHT BETA	EXIST	0/0	EXIST 6x12 HYBRID CABLE	FIBER	195'-0"
C-1 LTE/UMTS	RFS APXVAARR24-43-U-NA20	270°	2°	0°	179'-0"±	LEFT GAMMA	EXIST	1/2	EXIST 6x12 HYBRID CABLE & (2) 1-5/8" COAX	FIBER	195'-0"
A-2 LTE	ERICSSON AIR6449 B41	270°	2°	0°	179'-0"±	CENTER GAMMA	REPLACEMENT	0/0	NEW 6x12 HYBRID CABLE	COAX	195'-0"
C-3 LTE/GSM	ERICSSON AIR32 B66A/B2A	270°	2°	0°	179'-0"±	RIGHT GAMMA	EXIST	0/0	EXIST 6x12 HYBRID CABLE	FIBER	195'-0"



ALL SECTORS, CENTERLINE ELEVATION 179'-0" AGL

1
A-4
EXIST T-MOBILE ANTENNA PLAN
SCALE: 1/2" = 1'-0"

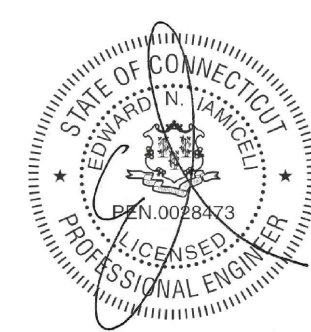


ALL SECTORS, CENTERLINE ELEVATION 179'-0" AGL

2
A-4
NEW T-MOBILE ANTENNA PLAN
SCALE: 1/2" = 1'-0"

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NORTHEAST, LLC.

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002



APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER 10473.CT11140J
DESIGNED BY EI

REV.	DATE	DESCRIPTION	DRAWN BY
1	08/24/20	ISSUED FOR CONSTRUCTION	BNY

ISSUED BY _____ DATE _____



SITE INFORMATION

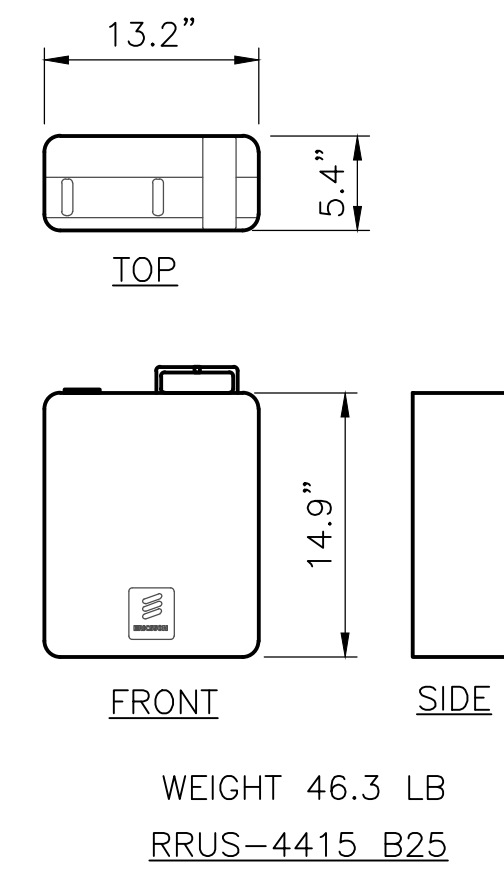
MANCHESTER/ I-84 X63
CT11140J
60 INDUSTRIAL PARK RD
VERNON, CT 06066

SHEET TITLE

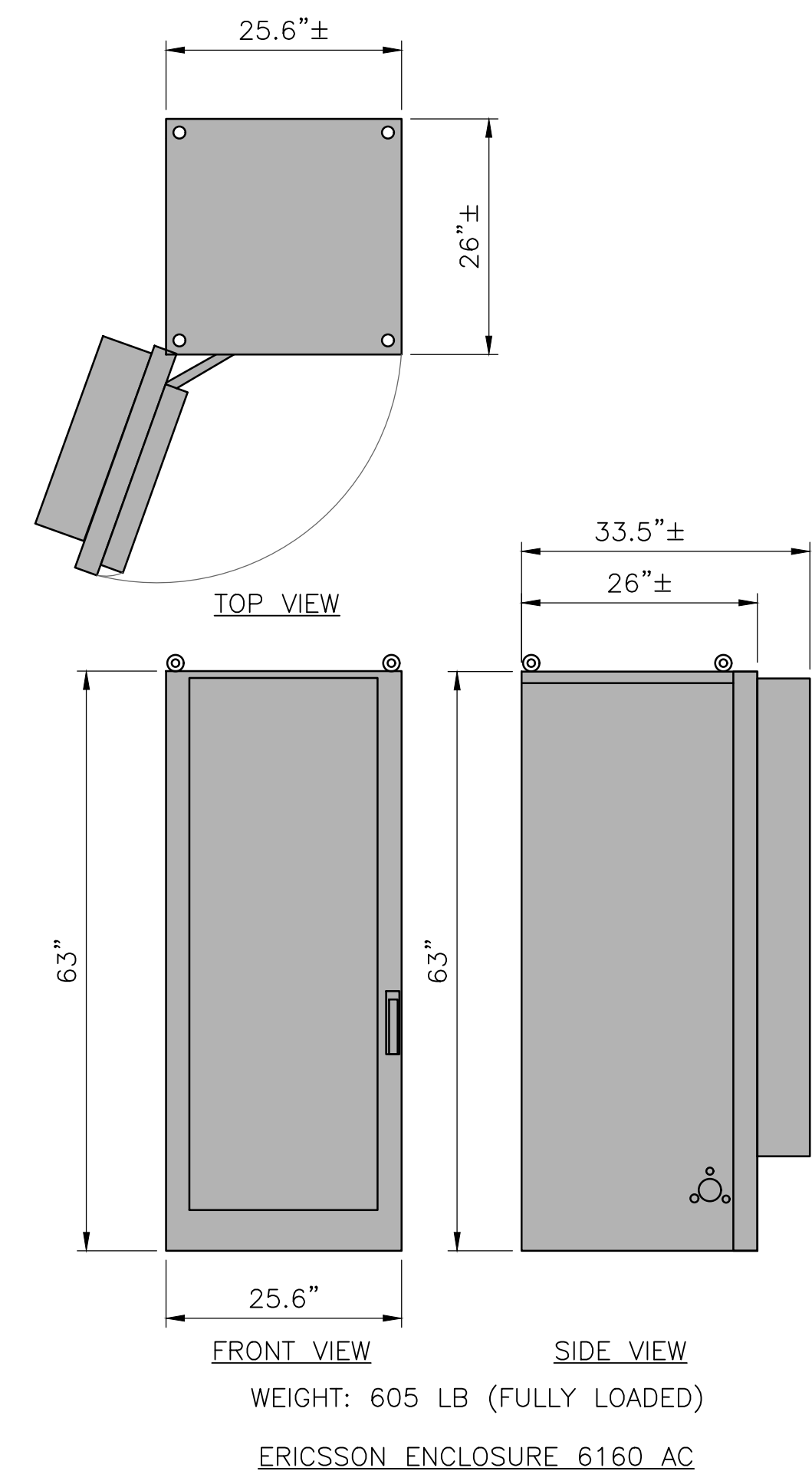
EXIST/NEW T-MOBILE
ANTENNA PLANS &
ANTENNA SCHEDULE

SHEET NUMBER

A-4



3 RADIO DETAIL
A-5 SCALE: 1" = 1'-0"



6 EQUIPMENT CABINET SPECIFICATIONS
A-5 SCALE: NTS

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GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE STATE OF CONNECTICUT BUILDING CODE, LATEST VERSION AND ALL OTHER APPLICABLE CODES AND ORDINANCES.
2. CONTRACTOR SHALL VISIT THE JOB SITE AND FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
3. PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY, UNLESS OTHERWISE NOTED. THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO EFFECT ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
4. DIMENSIONS SHOWN ARE TO FINISH SURFACES, UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS REQUIRED CLEARANCE. THEREFORE, IT IS CRITICAL TO FIELD VERIFY DIMENSIONS. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE AUTHORIZED REPRESENTATIVE OR THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK.
5. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. MINOR MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.
6. CONTRACTOR SHALL RECEIVE CLARIFICATION IN WRITING, AND SHALL RECEIVE IN WRITING AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEMS NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTRACT DOCUMENTS.
7. ONCE THE CONTRACTOR HAS RECEIVED AND ACCEPTED THE "NOTICE TO PROCEED," CONTRACTOR WILL CONTACT THE CONSTRUCTION MANAGER OF RECORD A MINIMUM OF 48 HOURS PRIOR TO WORK START.
8. CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND TO BE IN THE FIELD.
9. CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING THE BEST CONSTRUCTION SKILLS AND ATTENTION. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT, UNLESS OTHERWISE NOTED.
10. ERECTION SHALL BE DONE IN A WORKMANLIKE MANNER BY COMPETENT EXPERIENCED WORKMEN IN ACCORDANCE WITH APPLICABLE CODES AND THE BEST ACCEPTED PRACTICE. ALL MEMBERS SHALL BE LAID PLUMB AND TRUE AS INDICATED ON THE DRAWINGS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK AREA, ADJACENT AREAS, AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL OSHA REQUIREMENTS.
12. CONTRACTOR SHALL COORDINATE HIS WORK AND SCHEDULE HIS ACTIVITIES AND WORKING HOURS IN ACCORDANCE WITH THE REQUIREMENTS OF THE OWNER.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH THE WORK OF OTHERS AS IT MAY RELATE TO RADIO EQUIPMENT, ANTENNAS AND ANY OTHER PORTIONS OF THE WORK.
14. CONTRACTOR SHALL MAINTAIN LIABILITY INSURANCE TO PROTECT THE OWNER.
15. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
16. MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SURFACES, EQUIPMENT, IMPROVEMENTS, AND PIPING. REPAIR ANY DAMAGE THAT OCCURS DURING CONSTRUCTION.
17. REPAIR ALL EXISTING SURFACES DAMAGED DURING CONSTRUCTION SUCH THAT THEY MATCH AND BLEND WITH ADJACENT SURFACES.
18. KEEP CONTRACT AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DEBRIS AND RUBBISH. EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY OF THE OWNER SHALL BE REMOVED. LEAVE PREMISES IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ITEMS UNTIL COMPLETION OF CONSTRUCTION.
19. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.
20. PROVIDE 48 HOURS WRITTEN NOTICE TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
21. ALL BROCHURES, OPERATING AND MAINTENANCE MANUALS, CATALOGS, SHOP DRAWINGS AND OTHER DOCUMENTATION SHALL BE TURNED OVER TO AT COMPLETION OF CONSTRUCTION.
22. COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER DATE OF ACCEPTANCE BY. ANY WORK, MATERIALS OR EQUIPMENT FOUND TO BE DEFECTIVE DURING THAT PERIOD SHALL BE CORRECTED IMMEDIATELY UPON WRITTEN NOTIFICATION AT NO ADDITIONAL COST TO T-MOBILE.

STRUCTURAL NOTES

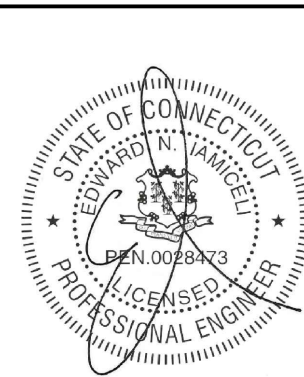
1. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.
2. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS", LATEST EDITION.
3. STRUCTURAL STEEL BEAMS SHALL CONFORM TO ASTM A992 (Fy=50ksi). STRUCTURAL STEEL PLATES AND ANGLES SHALL CONFORM TO ASTM A36.
4. ROUND AND SQUARE HOLLOW STRUCTURAL SECTIONS (HSS) CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE C.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 "PIPE, STEEL, BLACK AND HOT-DIPPED, ZINC-COATED WELDED AND SEAMLESS", TYPE E OR S, GRADE B.
6. CONNECTIONS: WELD OR BOLT CONNECTIONS, AS INDICATED:
 - A) CONNECTIONS NOT DETAILED ON THE DRAWINGS SHALL CONFORM TO THE REQUIREMENTS OF THE CITED AISC SPECIFICATION.
 - B) STRUCTURAL BOLTS SHALL CONFORM TO THE LATEST ASTM A325 "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS".
 - C) WHERE THE REACTION VALUES OF BEAMS, BRACING, STRUTS, ETC., ARE NOT SHOWN ON THE DRAWINGS THE CONNECTIONS SHALL BE DESIGNED TO SUPPORT THE END REACTION DERIVED FROM THE TABLES AND FORMULA OF UNIFORM LOAD CONSTANTS IN PART 2, NINTH EDITION, OF THE AISC MANUAL OF STEEL CONSTRUCTION FOR THE GIVEN MEMBER SIZE, SPAN AND YIELD STRENGTH.
 - D) MINIMUM 3/16" FILLET E70-XX WELD SHALL APPLY UNLESS NOTED.
 - E) MINIMUM 1/2" DIA. A325 BOLTS SHALL APPLY UNLESS NOTED.
 - F) MINIMUM SIZE OF CLIP ANGLES SHALL BE L3x3x3/8" UNLESS NOTED.
 - G) ALL GUSSET PLATES SHALL BE 3/8" THICK UNLESS NOTED.
 - H) ALL HOLES FOR BOLTS SHALL BE 1/16 INCH LARGER THAN THE BOLT DIAMETER WITH AN EDGE DISTANCE OF AT LEAST 1 1/2 TIMES THE BOLT DIAMETER AND A SPACING OF AT LEAST 3 TIMES THE BOLT DIAMETER. ALL BOLTS SHALL BE PROVIDED WITH PALNUTS OR LOCK NUTS.
7. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS AND CONFORM TO ASTM A325 "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS", LATEST EDITION. BOLTS SHALL BE 3/4 INCH DIA. UNLESS OTHERWISE NOTED.
8. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES".
9. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
10. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
11. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
12. ALL STEEL SUPPORTS SHALL BE INSTALLED WITH DOUBLE NUTS AND SHALL BE INSTALLED SNUG TIGHT.
13. SLEEVE ANCHORS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 3, CLASS 3, AS MANUFACTURED BY HILTI FASTENING SYSTEMS OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. MINIMUM EMBEDMENT SHALL BE THREE (3) INCHES.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS 1, HILTI KWIK BOLT II OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. MINIMUM EMBEDMENT SHALL BE FOUR (4) INCHES.
15. EPOXY ANCHORING SYSTEM SHALL BE THE HILTI HY-270 FOR MASONRY CONSTRUCTION WITH HOLLOW BRICK OR BLOCK & THE HILTI HIT HY200 INJECTION ADHESIVE ANCHOR FOR GROUT FILLED CONCRETE, MASONRY UNITS AND CONCRETE. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF 1/2"Ø STAINLESS STEEL ANCHOR ROD W/NUTS & WASHERS, AN INTERNALLY THREADED INSERT, A SCREEN TUBE FOR THE HY-270 ONLY & AN EPOXY ADHESIVE (6" MIN EMBEDMENT). THE INSTALLATION PROCEDURE SHALL BE AS FOLLOWS
 - A. DRILL THE HOLE USING MANUFACTURER RECOMMENDED DRILL BIT UP TO SPECIFIED DEPTH. HAMMERING IS NOT PERMITTED.
 - B. CLEAN THE HOLE USING NYLON BRUSH AND/OR COMPRESSED AIR. THE HOLE SHOULD BE CLEAR OF ANY LOOSE MATERIAL. IF WET, THE MASONRY SHOULD BE ALLOWED TO DRY FULLY BEFORE ANCHOR INSTALLATION.
 - C. INSERT SPECIFIED SCREEN TUBE INTO THE HOLE.
 - D. FILL THE SCREEN TUBE COMPLETELY WITH ADHESIVE, BEGINNING AT THE BOTTOM END.
 - E. INSERT ANCHOR ROD OR INTERNALLY THREADED INSERT INTO THE ADHESIVE-FILLED SCREEN TUBE, TWISTING SLIGHTLY.
 - F. LOAD FASTENER ONLY AFTER MANUFACTURER SPECIFIED CURE TIME HAS ELAPSED.
16. GRATING SHALL BE GALVANIZED WELDED STEEL BAR GRATING TYPE W/BA WITH 1-1/4" BEARING BARS AT 1-3/16" OC. FASTEN TO SUPPORTING MEMBERS WITH SADDLE-TYPE CLIPS AT 2'-0" O.C. AND BAND ALL EXPOSED EDGES.
17. SUBMIT DRAWINGS OF ALL STRUCTURAL AND MISCELLANEOUS STEEL TO THE ENGINEER FOR APPROVAL AND INCORPORATE ALL COMMENTS PRIOR TO FABRICATION.
18. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE ENGINEER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER APPROVAL.
19. ALL WORK SHALL BE INSPECTED BY THE ENGINEER DURING AND AT THE COMPLETION OF CONSTRUCTION.
20. CONTRACTOR TO REMOVE MASTIC ON THE EXISTING WALL/PARAPET AT EVERY STEEL SUPPORT ATTACHMENT AND REPOINT MASONRY AS REQUIRED. A BED OF SILICONE SHALL BE APPLIED BEHIND AND ALL AROUND THE STEEL SUPPORT ATTACHMENT TO MAKE IT WEATHERPROOF.
21. HAMMER DRILLS ARE NOT TO BE USED WHEN DRILLING HOLES FOR SLEEVE OR EXPANSION BOLTS INSTALLED IN MASONRY BLOCKS/BRICKS.
22. ALL HOLES TO BE ADDED IN THE FIELD SHALL BE PUNCHED OR DRILLED. NO HOLE BURNING SHALL BE ALLOWED.
23. NOTES ARE NOT PROJECT SPECIFIC.

SITE NOTES

1. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWING.
2. RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
3. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
4. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
5. THE SUBGRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
6. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES.
7. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF ENGINEER.
8. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK SHALL BE GRADED TO A UNIFORM SLOPE, FERTILIZED, SEEDED, AND COVERED WITH MULCH.
9. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
10. CARE SHALL BE TAKEN TO RETAIN NATURAL GROWTH AND PREVENT DAMAGE TO TREES WITHIN AND OUTSIDE THE LIMITS OF CONSTRUCTION AND SPECIFIED WORK AREAS CAUSED BY EQUIPMENT AND MATERIALS. ANY DAMAGE TO THIS NATURAL GROWTH SHALL BE RESTORED AT THE EXPENSE OF THE CONTRACTOR.
11. ALL AREAS DISTURBED BY THE CONTRACTOR WITHOUT AUTHORIZATION SHALL BE RESTORED BY THE CONTRACTOR.
12. IN THE EVENT THE CONTRACTOR DAMAGES AN EXISTING UTILITY SERVICE CAUSING AN INTERRUPTION IN SAID SERVICE, HE SHALL IMMEDIATELY COMMENCE WORK TO RESTORE SERVICE AND MAY NOT CEASE HIS WORK OPERATION UNTIL SERVICE IS RESTORED.

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NORTHEAST, LLC.

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BLOOMFIELD, CT 06002



NSS NORTHEAST
SITE SOLUTIONS
Turnkey Wireless Development

LANDLORD _____

RF _____

CONSTRUCTION _____

OPERATIONS _____

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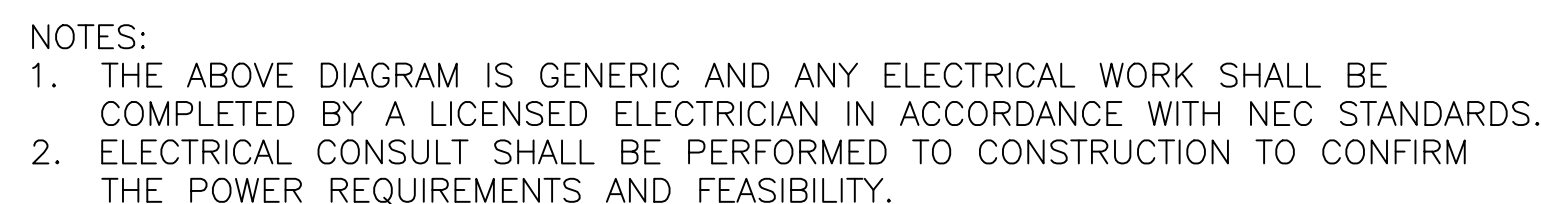
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NOTES

A-6



SCALE: NTS

1. CONTRACTOR SHALL PERFORM ALL VERIFICATION OBSERVATION TESTS, AND EXAMINATION WORK PRIOR TO THE ORDERING OF THE ELECTRICAL EQUIPMENT AND THE ACTUAL CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE ENGINEER LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.
2. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC., FOR A COMPLETE AND PROPERLY OPERATIVE SYSTEM ENERGIZED THROUGHOUT AND AS INDICATED ON DRAWINGS, AS SPECIFIED HEREIN AND/OR AS OTHERWISE REQUIRED.
3. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT. MATERIALS SHALL BE LISTED AND APPROVED BY UNDERWRITER'S LABORATORIES (U.L.) AND SHALL BEAR THE INSPECTION LABEL "J" WHERE SUBJECT TO SUCH APPROVAL. MATERIALS SHALL MEET WITH APPROVAL OF ALL GOVERNING BODIES HAVING JURISDICTION. AND SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, NEMA AND NBFU.
4. CONTRACTOR TO COORDINATE WITH SITE OWNER FOR CONNECTION OF TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL HOOKUP COSTS TO BE PAID BY CONTRACTOR.
5. ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING RATING NOT LESS THAN THE MAXIMUM SHORT CIRCUIT CURRENT TO WHICH THEY MAY BE SUBJECTED, AND A MINIMUM OF 10,000 A.I.C.
6. ALL ELECTRICAL EQUIPMENT SHALL BE LABELED WITH PERMANENT ENGRAVED PLASTIC LABELS.
7. METER SOCKETS AMPERES, VOLTAGE AND NUMBER OF PHASES SHALL BE NOTED AND SHALL BE MANUFACTURED BY SQUARE "D" COMPANY, SANGAMO OR APPROVED EQUAL. METER SOCKET SHALL BE APPROVED BY UTILITY COMPANY PRIOR TO INSTALLATION.
8. WIRE AND CABLE CONDUCTORS SHALL BE COPPER #12 AWG MINIMUM WITH TYPE THHN INSULATION UNLESS SPECIFICALLY NOTED OTHERWISE.
9. ALL CONDUCTORS SHALL BE COPPER.
10. USE T-TAP CONNECTIONS ON ALL MULTI-CIRCUITS WITH COMMON NEUTRAL CONDUCTOR FOR LIGHTING FIXTURES.
11. EACH CONDUCTOR OF EVERY SYSTEM SHALL BE PERMANENTLY TAGGED IN EACH PANEL BOARD, PULLBOX, J-BOX, SWITCH BOX, ETC., IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT (O.S.H.A.)
12. CONDUIT:
 - A. RIGID CONDUIT SHALL BE U.L. LABEL GALVANIZED ZINC COATED WITH ZINC INTERIOR AND SHALL BE USED WHEN INSTALLED IN OR UNDER CONCRETE SLABS, IN CONTACT WITH THE EARTH, UNDER PUBLIC ROADWAYS, IN MASONRY WALLS OR EXPOSED ON BUILDING EXTERIOR.
 - B. INTERMEDIATE METAL CONDUIT SHALL BE U.L. LABEL, FITTINGS SHALL BE THREADED ALUMINUM OR STEEL AND SHALL BE USED FOR ALL EXTERIOR RUNS. THREADLESS COUPLINGS AND CONNECTORS SHALL NOT BE USED.
 - C. ELECTRICAL METALLIC TUBING (EMT) SHALL HAVE U.L. LABEL, FITTINGS SHALL BE NO SET SCREW OR CRIMP TYPE FITTINGS SHALL BE USED. GLAND RING COMPRESSION TYPE. EMT SHALL BE USED ONLY FOR INTERIOR RUNS.
 - D. FLEXIBLE METALLIC CONDUIT SHALL HAVE U.L. LISTED LABEL AND MAY BE USED WHERE PERMITTED BY CODE. FITTINGS SHALL BE "JAKE" OR "SQUEEZE" TYPE, SEAL TIGHT FLEXIBLE CONDUIT. ALL CONDUIT IN EXCESS OF SIX FEET IN LENGTH SHALL HAVE FULL SIZE GROUND WIRE.
 - E. CONDUIT SHALL BE SIZED PER THE NEC AND AS SHOWN.
 - F. CONDUIT RUNS MAY BE SURFACE MOUNTED IN CEILINGS OR WALLS UNLESS INDICATED OTHERWISE. CONDUIT INDICATED SHALL RUN PARALLEL OR AT RIGHT ANGLES TO CEILING, FLOOR OR BEAMS. VERIFY EXACT ROUTING OF ALL EXPOSED CONDUIT WITH OWNER PRIOR TO INSTALLING.
 - G. ALL CONDUIT ONLY (C.O.) RUNS SHALL HAVE A PULL WIRE OR ROPE.
13. COVERPLATES SHALL BE BRUSHED STAINLESS STEEL FOR ALL SWITCHES, RECEPTACLES, TELEPHONE AND BLANKED OUTLETS, AND SHALL HAVE ENGRAVED LETTERING WHERE INDICATED WEATHERPROOF RECEPTACLES SHALL HAVE SIERRA #WPD-8 LIFT COVERPLATES.
14. REFER TO MANUFACTURERS MANUAL FOR RECOMMENDED FUSE AND WIRE SIZES.
15. ALL FINAL CONNECTIONS TO THE EQUIPMENT ARE TO BE OF FLEXIBLE WEATHERPROOF CONDUIT TO MEET APPLICABLE CODES.
16. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES.
17. GROUNDING CONDUCTORS SHALL BE SOLID TINNED COPPER AND ANNEALED #2, UNLESS OTHERWISE NOTED.
18. UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL OF POTENTIAL GROUNDING TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO THE CONSTRUCTION MANAGER. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNDAMAGED CONDITION.
19. PROVIDE CONSTRUCTION MANAGER WITH ONE SET OF COMPLETE ELECTRICAL "AS INSTALLED" DRAWINGS AT THE COMPLETION OF THE JOB, SHOWING ACTUAL DIMENSIONS, ROUTINGS, AND CIRCUITS.
20. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH GAINING APPROVALS AND PAYING ALL FEES ASSESSED BY UTILITY COMPANY FOR ELECTRICAL SERVICE.

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**35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002**



LANDLORD _____

RF _____

CONSTRUCTION _____

OPERATIONS _____

SITE ACQ. _____

REV.	DATE	DESCRIPTION	DRAWN BY
0	08/24/20	ISSUED FOR CONSTRUCTION	BWY

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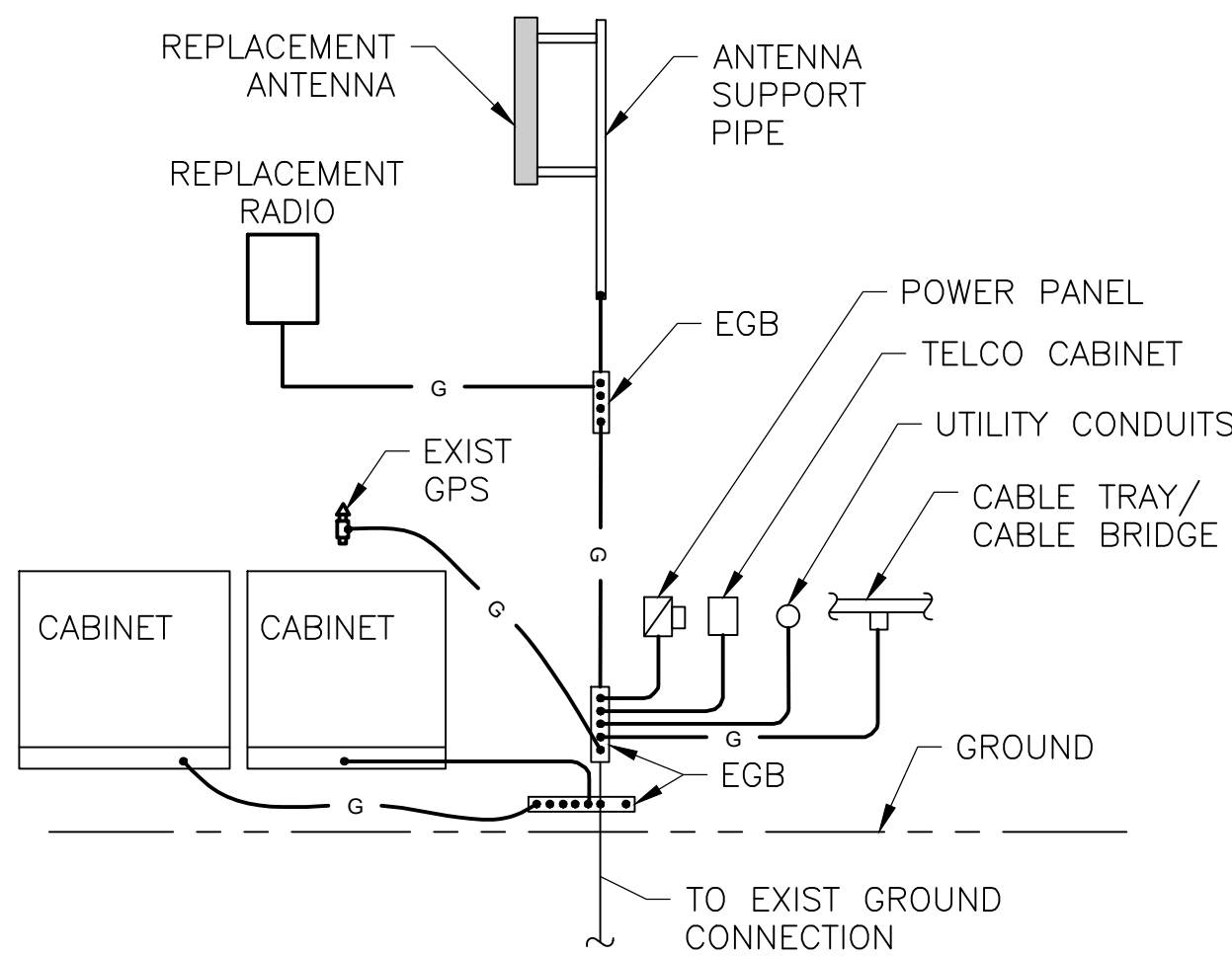
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ORIGINAL SIZE IN INCHES

MANCHESTER/ I-84 X63
CT11140J
60 INDUSTRIAL PARK RD
VERNON, CT 06066

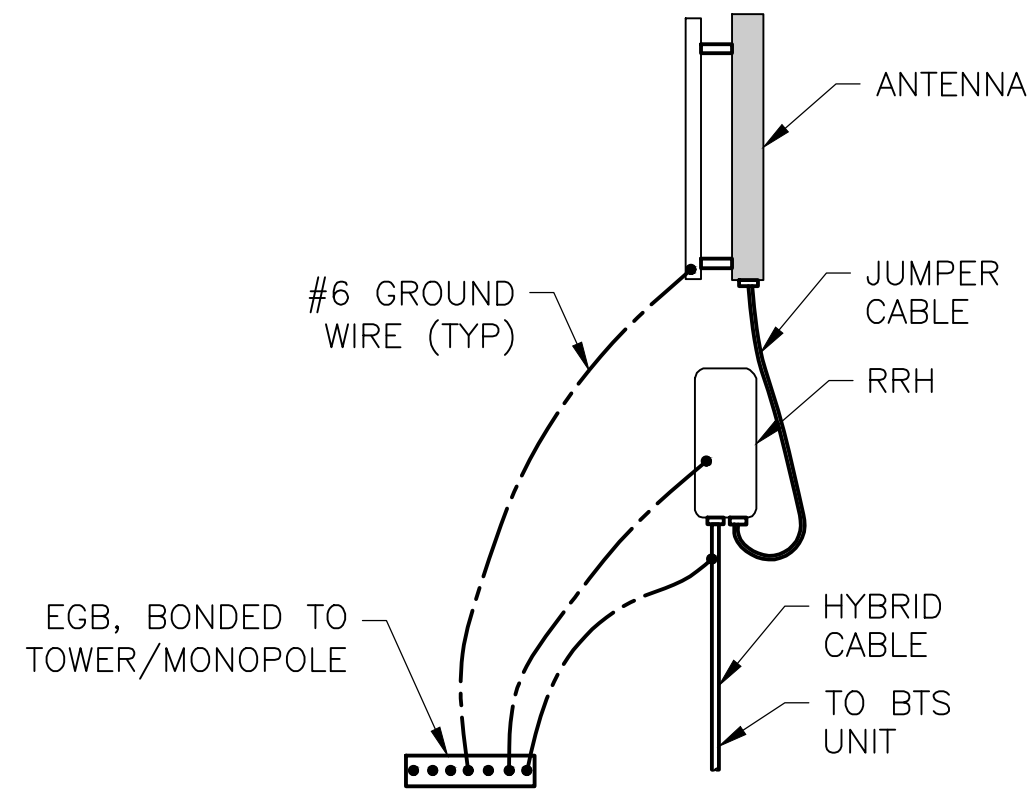
ELECTRICAL NOTES & ONE-LINE DIAGRAM

E-1

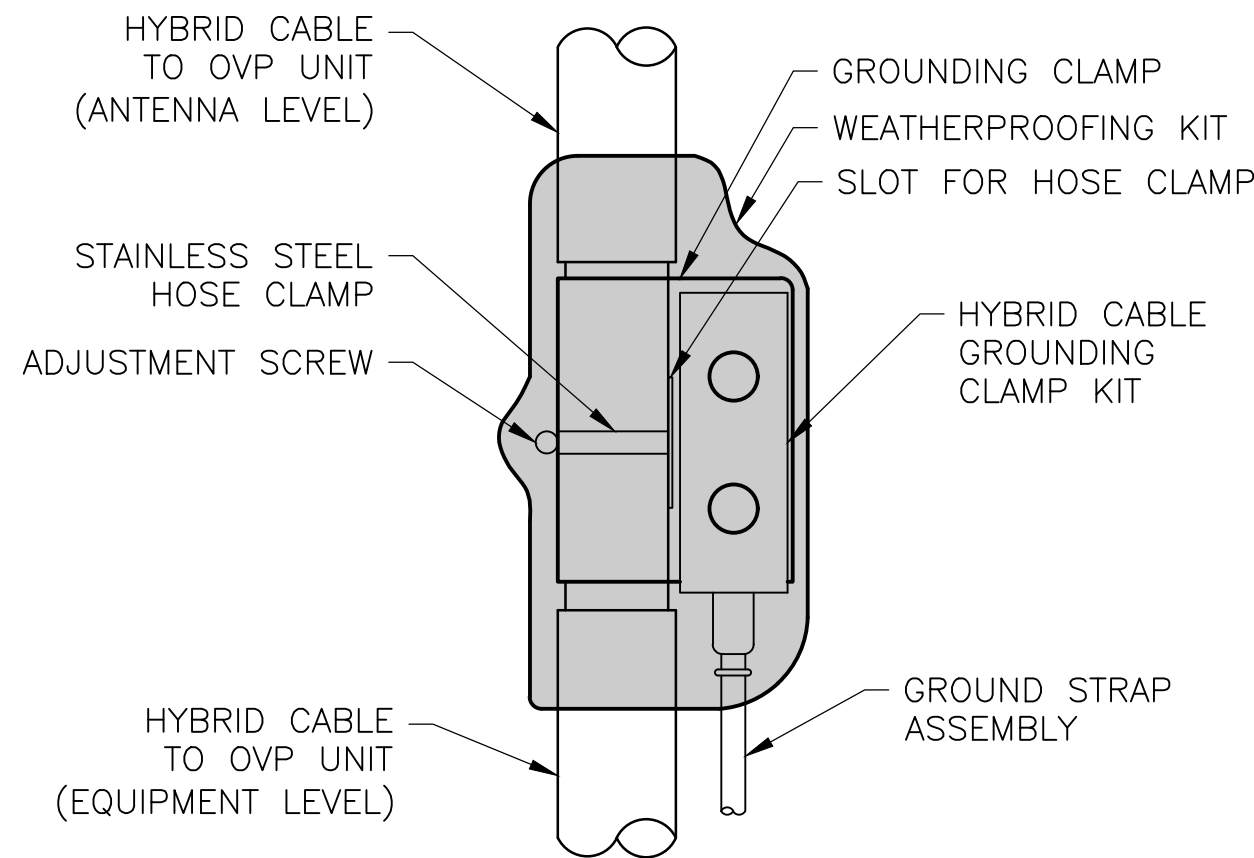


NOTE: CONTRACTOR SHALL CONFIRM ALL EQUIPMENT IS GROUNDED. IF NOT, CONTRACTOR SHALL GROUND EQUIPMENT AS SHOWN AND AS REQUIRED.

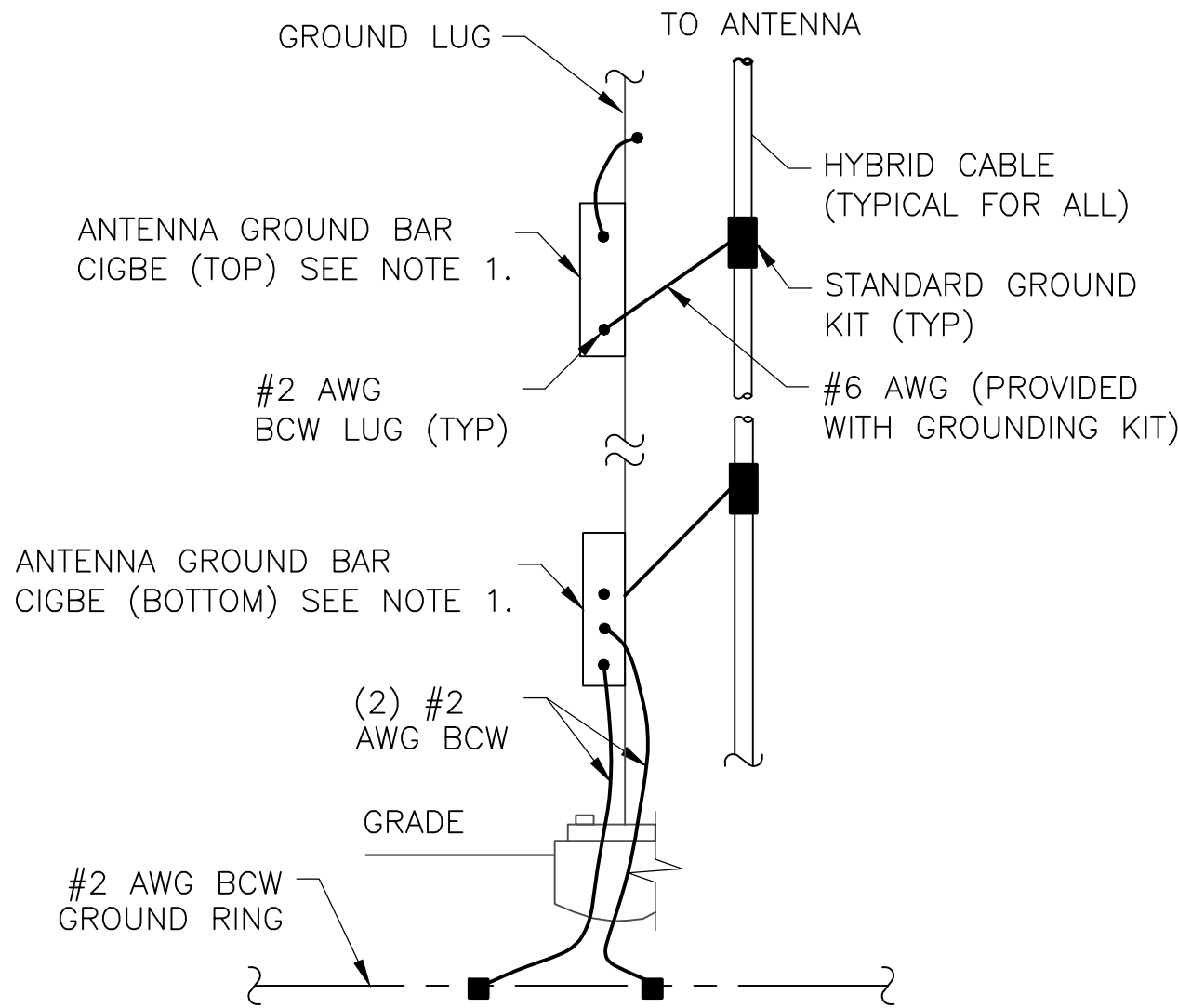
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G-1
GROUNDING RISER DIAGRAM
SCALE: NTS



2
G-1
HYBRID CABLE CONNECTIOND DETAIL
SCALE: NTS



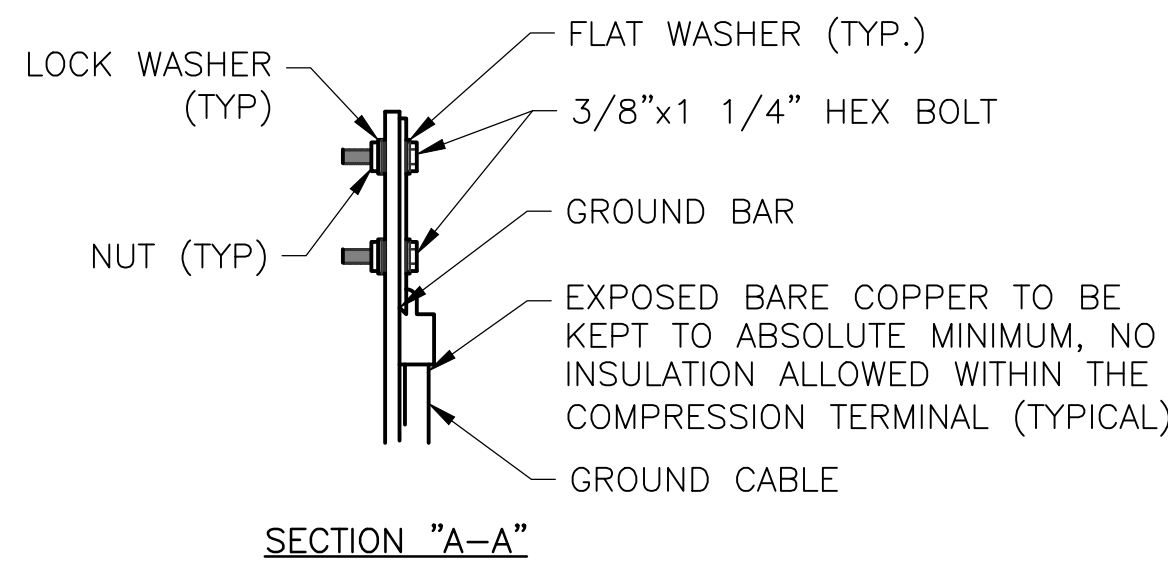
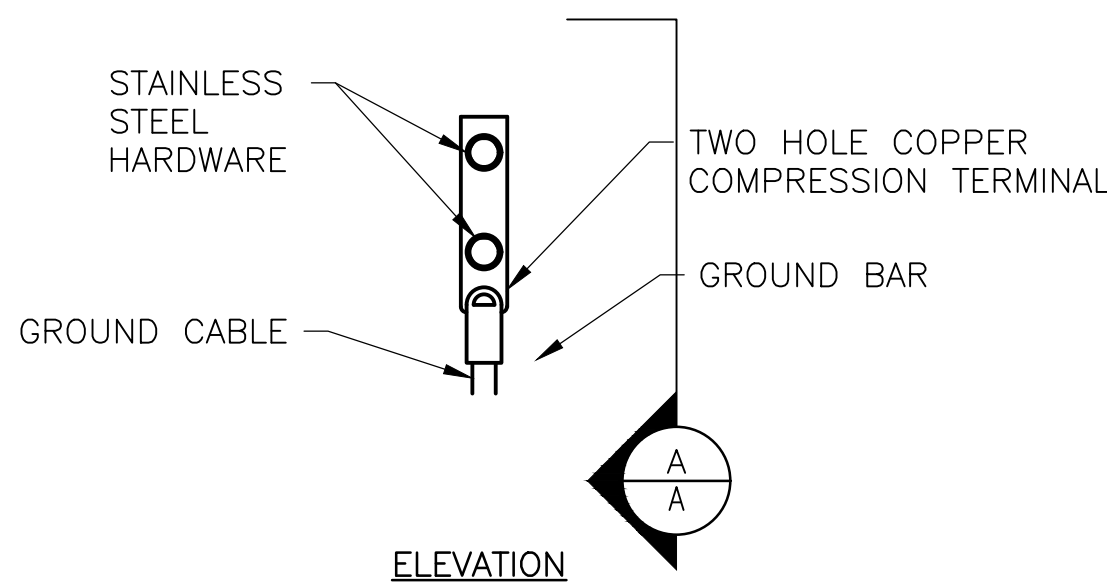
3
G-1
HYBRID CABLE GROUNDING DETAIL
SCALE: NTS



NOTES:

1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER. ANTENNA LOCATION AND CONNECTION ANTENNA LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS UNIT IF REQUIRED.

4
G-1
ANTENNA CABLE GROUNDING
SCALE: NTS



NOTES:

1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.
4. ALL GROUND LUGS MUST NE HEAT SHRUNK AT WIRE/LUG CONNECTION.

5
G-1
GROUND BAR CONNECTION DETAIL
SCALE: NTS

GROUNDING NOTES

1. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES.
2. ALL GROUNDING WORK SHALL BE IN ACCORDANCE WITH T-MOBILE STANDARD PRACTICE.
3. ALL BUS CONNECTORS SHALL BE TWO-HOLE, LONG-BARREL TYPE COMPRESSION LUGS, T&B OR EQUAL, UNLESS OTHERWISE NOTED ON DRAWINGS. ALL LUGS SHALL BE ATTACHED TO BUSES USING BOLTS, NUTS, AND LOCK WASHERS. NO WASHERS ARE ALLOWED BETWEEN THE ITEMS BEING GROUNDED.
4. ALL CONNECTORS SHALL BE CRIMPED USING HYDRAULIC CRIMPING TOOLS, T&B #TBM 8 OR EQUIVALENT.
5. ALL CONNECTIONS SHALL BE MADE TO BARE METAL. ALL PAINTED SURFACES SHALL BE FILED TO ENSURE PROPER CONTACT. NO WASHERS ARE ALLOWED BETWEEN THE ITEMS BEING GROUNDED. ALL CONNECTIONS ARE TO HAVE A NON-OXIDIZING AGENT APPLIED PRIOR TO INSTALLATION.
6. ALL COPPER BUSES SHALL BE CLEANED, POLISHED, AND A NON-OXIDIZING AGENT APPLIED. NO FINGERPRINTS OR DISCOLORED COPPER WILL BE PERMITTED.
7. ALL BENDS SHALL BE AS SHALLOW AS POSSIBLE, WITH NO TURN SHORTER THAN AN 8-INCH NOMINAL RADIUS.
8. GROUNDING CONDUCTORS SHALL BE SOLID TINNED COPPER AND ANNEALED #2. ALL GROUNDING CONDUCTORS SHALL RUN THROUGH PVC SLEEVES WHEREVER CONDUCTORS RUN THROUGH WALLS, FLOORS, OR CEILINGS. IF CONDUCTORS MUST RUN THROUGH EMT, BOTH ENDS OF CONDUIT SHALL BE GROUNDED. SEAL BOTH ENDS OF CONDUIT WITH SILICONE CAULK.
9. GROUNDING SYSTEM RESISTANCE SHALL NOT EXCEED 10 OHMS. IF THE RESISTANCE VALUE IS EXCEEDED, NOTIFY THE PROJECT MANAGER FOR FURTHER INSTRUCTION ON METHODS FOR REDUCING THE RESISTANCE VALUE.
10. ALL ROOF TOP ANTENNA MOUNTS SHALL BE GROUNDED WITH A #2 GROUND WIRE CONNECTED TO THE NEAREST GROUND BUS. ALL CONNECTIONS ARE TO BE CAD-WELDED IF POSSIBLE.
11. UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL OF POTENTIAL GROUNDING TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO THE PROJECT MANAGER.
12. GROUNDING CONNECTION TO TRAVEL IN A DOWNWARD DIRECTION.
13. ALL EXPOSED #2 WIRE MUST BE TINN NOT BTW.
14. TECTONIC TAKES NO RESPONSIBILITY OR LIABILITY FOR THE GROUNDING SYSTEM AS SHOWN ON THIS SITE. THIS IS A STANDARD GROUNDING SYSTEM.

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering & Surveying Consultants P.C.
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P.O. Box 37 (800) 529-6531
Mountainville, NY 10953 www.tectonicing.com
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Mobile
NORTHEAST, LLC.

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

NSS NORTHEAST
SITE SOLUTIONS
Turnkey Wireless Development

APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER DESIGNED BY
10473.CT11140J EI

REV.	DATE	DESCRIPTION	DRAWN BY
1	08/24/20	ISSUED FOR CONSTRUCTION	BNY

ISSUED BY DATE

0 1 2 3
ORIGINAL SIZE IN INCHES

SITE INFORMATION

MANCHESTER/ I-84 X63
CT11140J
60 INDUSTRIAL PARK RD
VERNON, CT 06066

SHEET TITLE

GROUNDING DETAILS
& NOTES

SHEET NUMBER

G-1

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Exhibit D

Structural Analysis Report – Rev 1

Tower Owner: Millenicom, LLC
Carrier: T-Mobile Northeast LLC

Site ID: CT11140J
Site Name: Manchester / I-84 X63
Site Data: 60 Industrial Park Rd, Vernon, Tolland County, Connecticut 06066
Latitude 41° 50' 08.25", Longitude -72° 27' 17.59"
175 ft Monopole Tower

Tectonic Project Number: 10473.CT11140J – Rev 1

Tectonic Engineering & Surveying Consultants P.C. is pleased to submit this **“Structural Analysis Report”** to determine the structural integrity of the above mentioned tower.

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

Structure: **Sufficient Capacity – 79%**
Foundation: **Sufficient Capacity – 74%**

This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a maximum topographic factor, Kzt, of 1.0 and Structure Class 2 were used in this analysis.

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

We at Tectonic appreciate the opportunity of providing our continuing professional services to you and T-Mobile. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: John-Fritz Julien / Ian Marinaccio

Respectfully submitted by:
Tectonic Engineering & Surveying Consultants P.C.

Edward N. Iamiceli, P.E.
Managing Director - Structural

Project Contact Info

1279 Route 300 | Newburgh, NY 12550
845.567.6656 Tel | 845.567.8703 Fax

tectonicengineering.com
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tnxTower Output

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Additional Calculations

1) INTRODUCTION

This tower is a 175 ft Monopole tower mapped by HighTower Solutions, Inc.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-G
Risk Category:	II
Wind Speed:	97 mph
Exposure Category:	B
Topographic Factor:	1.0
Ice Thickness:	1.0 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Carrier Designation	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
178.6	T-Mobile	3	commscope	SDX1926Q-43	3	6x12 hybrid	-
		3	ericsson	AIR 6449 B41			
		3	ericsson	RRUS 4415 B25			
		1	sitepro1	HRK12 Top Rail			

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Carrier Designation	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
178.6	T-Mobile	1	tower mounts	10'6" Low Profile Platform	3	6x12 hybrid	1
		3	rfs	APXVARR24_43-C-NA20			
		3	ericsson	AIR 32 B66Aa B2a	6	1-5/8	
		3	ericsson	RADIO 4449 B12/B71			
		3	-	Twin Style TMA	-	-	3
		3	rfs	APX16DWVS-16DWVS	6	1-5/8	2
		3	-	Twin Style TMA			
168.7	AT&T	3	tower mounts	12' Sector Frames	6	1-5/8 ½	1
		3	cci antennas	HPA-65R-BUU-H6			
		3	ericsson	RRUS 11 B12			
		3	ericsson	RRUS 32			
		3	ericsson	RRUS 32 B2	2	Inner Duct	
		3	ericsson	RRUS 4478 B14			
		3	kathrein	800 10121			
		3	quintel technology	QS66512-2			
		2	raycap	DC6-48-60-18-8F			

Mounting Level (ft)	Carrier Designation	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
157.7	Verizon Wireless	3	samsung telecommunication	CBRS RRH-RT4401	6	1-5/8 Fiber Cable	1
		3	ace technology	XXDWMM			
		3	commscope	LNK-6513DS-AIM			
		6	commscope	NHH-65B-R2B			
		1	gps	GPS_A			
		1	rfs celwave	DB-B1-6C-12AB-0Z			
		3	samsung telecommunications	B2/B66 RRH-BR049			
		3	samsung telecommunications	B5/B13 RRH-BR04C			
		1	tower mounts	14' Low Profile Platform			
144.7	Unknown	12	pipe mounts	2" STD Pipe (2.375 OD)x6'-0"	-	-	1
		1	tower mounts	14' Low Profile Platform			

Notes:

- 1) Existing equipment
- 2) Existing equipment to be removed, not considered in analysis
- 3) Existing equipment to be relocated

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Dated
STRUCTURAL ANALYSIS REPORT	Hudson Design Group LLC	06/04/19
TOWER AND MOUNT MAPPING REPORT	Hightower Solutions, INC	06/07/19
STRUCTURAL ANALYSIS REPORT, Rev 2	Tectonic	08/14/19
RFDS	T-Mobile	07/06/20
FIELDS NOTES	Tectonic	07/17/20
STRUCTURAL ANALYSIS REPORT	Hudson Design Group LLC	06/26/20
STRUCTURAL ANALYSIS REPORT	Tectonic	07/30/20

3.1) Analysis Method

tnxTower (version 8.0.5.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built and maintained in accordance with the manufacturer's specifications.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2.
- 3) The flange plate have been designed to resist the full moment capacity of the pole shaft and connection bolts.
- 4) The weight and wind area of certain appurtenances have been estimated.
- 5) Existing Verizon Wireless load configuration is based solely on previous analysis by Hudson Design Group LLC, referenced above.

- 6) The foundation information and soil properties are based solely on the previous analysis by Hudson Design Group, referenced above.

This analysis is solely for the supporting tower structure and it may be affected if any assumptions are not valid or have been made in error. Tectonic should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	175 - 160	Pole	P24x3/8	1	-7.77	1052.07	24.4	Pass
L2	160 - 140	Pole	P30x3/8	2	-17.52	1311.06	49.8	Pass
L3	140 - 120	Pole	P36x3/8	3	-22.01	1490.10	63.8	Pass
L4	120 - 100	Pole	P42x3/8	4	-27.12	1668.87	70.8	Pass
L5	100 - 80	Pole	P48x3/8	5	-32.82	1847.49	74.4	Pass
L6	80 - 60	Pole	P54x3/8	6	-39.11	2026.00	76.2	Pass
L7	60 - 40	Pole	P60x3/8	7	-45.99	2204.43	77.1	Pass
L8	40 - 20	Pole	P60x1/2	8	-54.78	3125.69	68.1	Pass
L9	20 - 0	Pole	P60x5/8	9	-65.18	4139.15	62.8	Pass
							Summary	
						Pole (L7)	77.1	Pass
						Rating =	77.1	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Bolts	160	23.3	Pass
1	Flange Bolts	140	37.8	Pass
1	Flange Bolts	120	58.3	Pass
1	Flange Bolts	100	66.1	Pass
1	Flange Bolts	80	79.1	Pass
1	Flange Bolts	60	69.3	Pass
1	Flange Bolts	40	46.8	Pass
1	Flange Bolts	20	55.4	Pass
1	Anchor Rods	0	70.5	Pass
1	Base Plate	0	67.7	Pass
1	Base Foundation	0	73.7	Pass
1	Base Foundation Soil Interaction	0	46.5	Pass

Structure Rating (max from all components) =	79.1%
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Note:

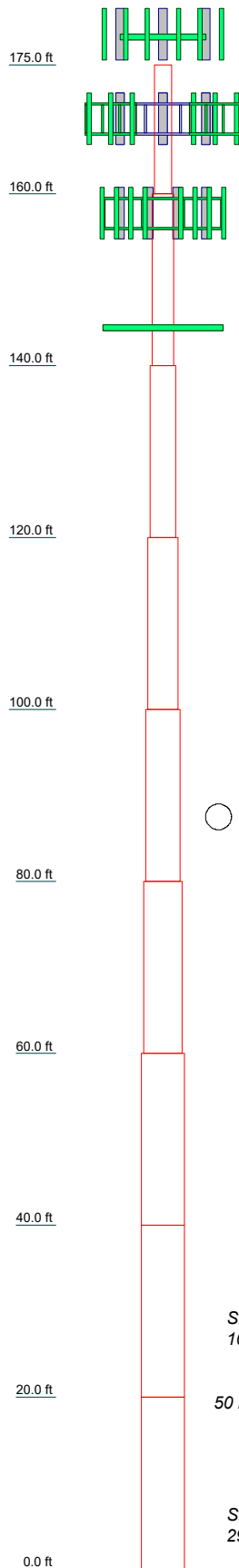
- 1) See additional documentation in "Appendix B – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Results / Conclusion

The tower and its foundation have sufficient capacity to support the proposed T- Mobile load configuration. No modification is required at this time.

APPENDIX A
TNXTOWER OUTPUT

Section		9	8	7	6	5	4	3	2	1
Size		P60x5/8	P60x1/2	P60x3/8	P54x3/8	P48x3/8	P42x3/8	P36x3/8	P30x3/8	P24x3/8
Length (ft)		20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	15.00
Grade		A53-B-42								
Weight (K)	37.2	7.9	6.4	4.8	4.3	3.8	3.3	2.9	2.4	1.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
AIR 32 B66Aa B2a w/ Mount Pipe	178.583	RRUS 11 B12	168.71
AIR 32 B66Aa B2a w/ Mount Pipe	178.583	RRUS 11 B12	168.71
AIR 32 B66Aa B2a w/ Mount Pipe	178.583	RRUS 11 B12	168.71
APXVARR24_43-C-NA20 w/ Mount Pipe	178.583	RRUS 32	168.71
APXVARR24_43-C-NA20 w/ Mount Pipe	178.583	RRUS 32	168.71
APXVARR24_43-C-NA20 w/ Mount Pipe	178.583	RRUS 32	168.71
APXVARR24_43-C-NA20 w/ Mount Pipe	178.583	RRUS 4478 B14	168.71
RADIO 4449 B12/B71	178.583	RRUS 4478 B14	168.71
RADIO 4449 B12/B71	178.583	RRUS 4478 B14	168.71
RADIO 4449 B12/B71	178.583	RRUS 4478 B14	168.71
Twin Style TMA	178.583	(3) 12' Sector Frames	168.71
Twin Style TMA	178.583	GPS_A	157.71
Twin Style TMA	178.583	DB-B1-6C-12AB-0Z	157.71
AIR 6449 B41 w/ Mount Pipe	178.583	B2/B66 RRH-BR049	157.71
AIR 6449 B41 w/ Mount Pipe	178.583	B2/B66 RRH-BR049	157.71
AIR 6449 B41 w/ Mount Pipe	178.583	B2/B66 RRH-BR049	157.71
RRUS 4415 B25	178.583	B5/B13 RRH-BR04C	157.71
RRUS 4415 B25	178.583	B5/B13 RRH-BR04C	157.71
RRUS 4415 B25	178.583	B5/B13 RRH-BR04C	157.71
SDX1926Q-43	178.583	(2) NHH-65B-R2B_TIA w/ Mount Pipe	157.71
SDX1926Q-43	178.583	(2) NHH-65B-R2B_TIA w/ Mount Pipe	157.71
SDX1926Q-43	178.583	(2) NHH-65B-R2B_TIA w/ Mount Pipe	157.71
HRK112e SitePro1 Top Rail Kit	178.583	LNx-6513DS-A1M_TIA w/ Mount Pipe	157.71
10'6" Low Profile Platform	178.583	LNx-6513DS-A1M_TIA w/ Mount Pipe	157.71
DC6-48-60-18-8F	168.71	LNx-6513DS-A1M_TIA w/ Mount Pipe	157.71
DC6-48-60-18-8F	168.71	LNx-6513DS-A1M_TIA w/ Mount Pipe	157.71
800 10121_TIA w/ Mount Pipe	168.71	XXDWMM w/ Mount Pipe	157.71
800 10121_TIA w/ Mount Pipe	168.71	XXDWMM w/ Mount Pipe	157.71
800 10121_TIA w/ Mount Pipe	168.71	XXDWMM w/ Mount Pipe	157.71
QS66512-2_TIA w/ Mount Pipe	168.71	CBRS RRH-RT4401-48A	157.71
QS66512-2_TIA w/ Mount Pipe	168.71	CBRS RRH-RT4401-48A	157.71
QS66512-2_TIA w/ Mount Pipe	168.71	CBRS RRH-RT4401-48A	157.71
HPA-65R-BUU-H6_TIA w/ Mount Pipe	168.71	Sitepro1 PRK-1245L	157.71
HPA-65R-BUU-H6_TIA w/ Mount Pipe	168.71	Sitepro1 HRK-14	157.71
HPA-65R-BUU-H6_TIA w/ Mount Pipe	168.71	(2) L2.5x2.5 Reinforcement	157.71
RRUS 32 B2	168.71	(2) L2.5x2.5 Reinforcement	157.71
RRUS 32 B2	168.71	(2) L2.5x2.5 Reinforcement	157.71
RRUS 32 B2	168.71	14' Low Profile Platform	157.71
RRUS 32 B2	168.71	14' Low Profile Platform	157.71
RRUS 32 B2	168.71	14' Low Profile Platform	144.71
RRUS 32 B2	168.71	(4) 2" STD Pipe (2.375 OD)x6'-0"	144.71
RRUS 32 B2	168.71	(4) 2" STD Pipe (2.375 OD)x6'-0"	144.71
RRUS 32 B2	168.71	(4) 2" STD Pipe (2.375 OD)x6'-0"	144.71

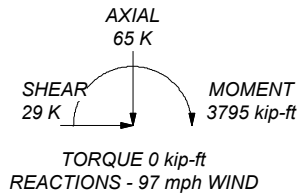
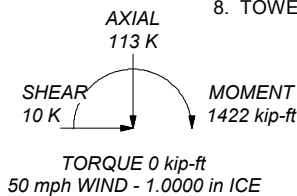
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi			

TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 77.1%

ALL REACTIONS
ARE FACTORED



Tower Input Data

The tower is a monopole.

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

The following design criteria apply:

- 1) Tower is located in Tolland County, Connecticut.
- 2) Basic wind speed of 97 mph.
- 3) Structure Class II.
- 4) Exposure Category B.
- 5) Topographic Category 1.
- 6) Crest Height 0.00 ft.
- 7) Nominal ice thickness of 1.0000 in.
- 8) Ice thickness is considered to increase with height.
- 9) Ice density of 56 pcf.
- 10) A wind speed of 50 mph is used in combination with ice.
- 11) Temperature drop of 50 °F.
- 12) Deflections calculated using a wind speed of 60 mph.
- 13) A non-linear (P-delta) analysis was used.
- 14) Pressures are calculated at each section.
- 15) Stress ratio used in pole design is 1.
- 16) 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	Retention 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

Pole Section Geometry

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L1	175.00-160.00	15.00	P24x3/8	A53-B-42 (42 ksi)	
L2	160.00-140.00	20.00	P30x3/8	A53-B-42 (42 ksi)	
L3	140.00-120.00	20.00	P36x3/8	A53-B-42 (42 ksi)	
L4	120.00-100.00	20.00	P42x3/8	A53-B-42	

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L5	100.00-80.00	20.00	P48x3/8	(42 ksi) A53-B-42	
L6	80.00-60.00	20.00	P54x3/8	(42 ksi) A53-B-42	
L7	60.00-40.00	20.00	P60x3/8	(42 ksi) A53-B-42	
L8	40.00-20.00	20.00	P60x1/2	(42 ksi) A53-B-42	
L9	20.00-0.00	20.00	P60x5/8	(42 ksi) A53-B-42	

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 175.00-160.00				1	1	1			
L2 160.00-140.00				1	1	1			
L3 140.00-120.00				1	1	1			
L4 120.00-100.00				1	1	1			
L5 100.00-80.00				1	1	1			
L6 80.00-60.00				1	1	1			
L7 60.00-40.00				1	1	1			
L8 40.00-20.00				1	1	1			
L9 20.00-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
*										
**										
Climbing Ladder	C	No	Surface Ar (CaAa)	175.00 - 12.00	1	1	0.000 0.000	1.0000		7.90
Safety Line 3/8	C	No	Surface Ar (CaAa)	175.00 - 11.17	1	1	0.000 0.000	0.3750		0.22

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C _A A _A ft ² /ft	Weight plf
LDF7-50A(1-5/8")	C	No	No	Inside Pole	175.00 - 2.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
HCS 6X12 4AWG(1-5/8)	C	No	No	Inside Pole	175.00 - 2.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
HCS 6X12 4AWG(1-5/8)	C	No	No	Inside Pole	175.00 - 2.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	2.40 2.40 2.40
**									
LDF4P-50A(1/2")	C	No	No	Inside Pole	168.71 - 8.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.15 0.15 0.15
Inner Duct	C	No	No	Inside Pole	168.71 - 8.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.22 1.22 1.22
LDF7-50A(1-5/8")	C	No	No	Inside Pole	168.71 - 8.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.82 0.82 0.82
**									
LDF7-50A(1-5/8")	C	No	No	Inside Pole	157.71 - 8.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.82 0.82 0.82
AVA6-50(1-1/4")	C	No	No	Inside Pole	157.71 - 8.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.45 0.45 0.45
*									

Feed Line/Linear Appurtenances Section Areas

Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	175.00-160.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.063	0.000	0.48
L2	160.00-140.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.750	0.000	0.81
L3	140.00-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.750	0.000	0.82
L4	120.00-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.750	0.000	0.82
L5	100.00-80.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.750	0.000	0.82
L6	80.00-60.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.750	0.000	0.82
L7	60.00-40.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.750	0.000	0.82
L8	40.00-20.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.750	0.000	0.82
L9	20.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.131	0.000	0.57

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²	Weight K
L1	175.00-160.00	A	2.353	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	16.179	0.000	0.74
L2	160.00-140.00	A	2.327	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	21.366	0.000	1.15
L3	140.00-120.00	A	2.294	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	21.101	0.000	1.15
L4	120.00-100.00	A	2.256	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	20.797	0.000	1.14
L5	100.00-80.00	A	2.211	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	20.439	0.000	1.13
L6	80.00-60.00	A	2.156	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	20.000	0.000	1.12
L7	60.00-40.00	A	2.085	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	19.429	0.000	1.10
L8	40.00-20.00	A	1.981	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	18.598	0.000	1.08
L9	20.00-0.00	A	1.775	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	7.107	0.000	0.66

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
L1	175.00-160.00	0.0000	1.2763	0.0000	3.3738
L2	160.00-140.00	0.0000	1.2944	0.0000	3.6176
L3	140.00-120.00	0.0000	1.3069	0.0000	3.7865
L4	120.00-100.00	0.0000	1.3160	0.0000	3.9016
L5	100.00-80.00	0.0000	1.3230	0.0000	3.9730
L6	80.00-60.00	0.0000	1.3285	0.0000	4.0041
L7	60.00-40.00	0.0000	1.3329	0.0000	3.9910
L8	40.00-20.00	0.0000	1.3329	0.0000	3.8529
L9	20.00-0.00	0.0000	0.5627	0.0000	1.6070

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

Shielding Factor K_a

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	16	Climbing Ladder	160.00 - 175.00	1.0000	1.0000
L1	17	Safety Line 3/8	160.00 - 175.00	1.0000	1.0000
L2	16	Climbing Ladder	140.00 - 160.00	1.0000	1.0000
L2	17	Safety Line 3/8	140.00 - 160.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L3	16	Climbing Ladder	120.00 - 140.00	1.0000	1.0000
L3	17	Safety Line 3/8	120.00 - 140.00	1.0000	1.0000
L4	16	Climbing Ladder	100.00 - 120.00	1.0000	1.0000
L4	17	Safety Line 3/8	100.00 - 120.00	1.0000	1.0000
L5	16	Climbing Ladder	80.00 - 100.00	1.0000	1.0000
L5	17	Safety Line 3/8	80.00 - 100.00	1.0000	1.0000
L6	16	Climbing Ladder	60.00 - 80.00	1.0000	1.0000
L6	17	Safety Line 3/8	60.00 - 80.00	1.0000	1.0000
L7	16	Climbing Ladder	40.00 - 60.00	1.0000	1.0000
L7	17	Safety Line 3/8	40.00 - 60.00	1.0000	1.0000
L8	16	Climbing Ladder	20.00 - 40.00	1.0000	1.0000
L8	17	Safety Line 3/8	20.00 - 40.00	1.0000	1.0000
L9	16	Climbing Ladder	12.00 - 20.00	1.0000	1.0000
L9	17	Safety Line 3/8	11.17 - 20.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
AIR 32 B66Aa B2a w/ Mount Pipe	A	From Leg	4.00	0.0000	178.58	No Ice	6.81	6.14	0.15
			0.00			1/2" Ice	7.30	6.99	0.22
			0.00			1" Ice	7.76	7.73	0.28
AIR 32 B66Aa B2a w/ Mount Pipe	B	From Leg	4.00	0.0000	178.58	No Ice	6.81	6.14	0.15
			0.00			1/2" Ice	7.30	6.99	0.22
			0.00			1" Ice	7.76	7.73	0.28
AIR 32 B66Aa B2a w/ Mount Pipe	C	From Leg	4.00	0.0000	178.58	No Ice	6.81	6.14	0.15
			0.00			1/2" Ice	7.30	6.99	0.22
			0.00			1" Ice	7.76	7.73	0.28
APXVARR24_43-C-NA20 w/ Mount Pipe	A	From Leg	4.00	0.0000	178.58	No Ice	17.15	10.64	0.14
			0.00			1/2" Ice	17.77	12.07	0.26
			0.00			1" Ice	18.40	13.35	0.39
APXVARR24_43-C-NA20 w/ Mount Pipe	B	From Leg	4.00	0.0000	178.58	No Ice	17.15	10.64	0.14
			0.00			1/2" Ice	17.77	12.07	0.26
			0.00			1" Ice	18.40	13.35	0.39
APXVARR24_43-C-NA20 w/ Mount Pipe	C	From Leg	4.00	0.0000	178.58	No Ice	17.15	10.64	0.14
			0.00			1/2" Ice	17.77	12.07	0.26
			0.00			1" Ice	18.40	13.35	0.39

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
RADIO 4449 B12/B71	A	From Leg	4.00 0.00 0.00	0.0000	178.58	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.16 1.30 1.45	0.07 0.09 0.11
RADIO 4449 B12/B71	B	From Leg	4.00 0.00 0.00	0.0000	178.58	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.16 1.30 1.45	0.07 0.09 0.11
RADIO 4449 B12/B71	C	From Leg	4.00 0.00 0.00	0.0000	178.58	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.16 1.30 1.45	0.07 0.09 0.11
Twin Style TMA	A	From Leg	4.00 0.00 0.00	0.0000	178.58	No Ice 1/2" Ice 1" Ice	1.05 1.18 1.32	0.55 0.65 0.75	0.02 0.03 0.04
Twin Style TMA	B	From Leg	4.00 0.00 0.00	0.0000	178.58	No Ice 1/2" Ice 1" Ice	1.05 1.18 1.32	0.55 0.65 0.75	0.02 0.03 0.04
Twin Style TMA	C	From Leg	4.00 0.00 0.00	0.0000	178.58	No Ice 1/2" Ice 1" Ice	1.05 1.18 1.32	0.55 0.65 0.75	0.02 0.03 0.04
AIR 6449 B41 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	178.58	No Ice 1/2" Ice 1" Ice	6.90 7.74 8.49	4.32 5.37 6.28	0.13 0.19 0.26
AIR 6449 B41 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	178.58	No Ice 1/2" Ice 1" Ice	6.90 7.74 8.49	4.32 5.37 6.28	0.13 0.19 0.26
AIR 6449 B41 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	178.58	No Ice 1/2" Ice 1" Ice	6.90 7.74 8.49	4.32 5.37 6.28	0.13 0.19 0.26
RRUS 4415 B25	A	From Leg	4.00 0.00 0.00	0.0000	178.58	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	0.04 0.06 0.07
RRUS 4415 B25	B	From Leg	4.00 0.00 0.00	0.0000	178.58	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	0.04 0.06 0.07
RRUS 4415 B25	C	From Leg	4.00 0.00 0.00	0.0000	178.58	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	0.04 0.06 0.07
SDX1926Q-43	A	From Leg	4.00 0.00 0.00	0.0000	178.58	No Ice 1/2" Ice 1" Ice	0.24 0.31 0.38	0.10 0.14 0.19	0.01 0.01 0.01
SDX1926Q-43	B	From Leg	4.00 0.00 0.00	0.0000	178.58	No Ice 1/2" Ice 1" Ice	0.24 0.31 0.38	0.10 0.14 0.19	0.01 0.01 0.01
SDX1926Q-43	C	From Leg	4.00 0.00 0.00	0.0000	178.58	No Ice 1/2" Ice 1" Ice	0.24 0.31 0.38	0.10 0.14 0.19	0.01 0.01 0.01
HRK12 SitePro1 Top Rail Kit	C	From Leg	0.00 0.00 3.00	0.0000	178.58	No Ice 1/2" Ice 1" Ice	4.56 6.39 8.18	4.56 6.39 8.18	0.25 0.31 0.40
10'6" Low Profile Platform	C	None		0.0000	178.58	No Ice	14.66	14.66	1.25

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
						1/2" Ice	18.87	18.87	1.48
						1" Ice	23.08	23.08	1.71

DC6-48-60-18-8F	B	From Leg	4.00 0.00 0.00	0.0000	168.71	No Ice	0.92	0.92	0.02
						1/2" Ice	1.46	1.46	0.04
						1" Ice	1.64	1.64	0.06
DC6-48-60-18-8F	C	From Leg	4.00 0.00 0.00	0.0000	168.71	No Ice	0.92	0.92	0.02
						1/2" Ice	1.46	1.46	0.04
						1" Ice	1.64	1.64	0.06
800 10121_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	168.71	No Ice	5.40	4.61	0.07
						1/2" Ice	5.82	5.36	0.12
						1" Ice	6.25	6.06	0.17
800 10121_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	168.71	No Ice	5.40	4.61	0.07
						1/2" Ice	5.82	5.36	0.12
						1" Ice	6.25	6.06	0.17
800 10121_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	168.71	No Ice	5.40	4.61	0.07
						1/2" Ice	5.82	5.36	0.12
						1" Ice	6.25	6.06	0.17
QS66512-2_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	168.71	No Ice	8.37	8.46	0.14
						1/2" Ice	8.93	9.66	0.21
						1" Ice	9.46	10.55	0.30
QS66512-2_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	168.71	No Ice	8.37	8.46	0.14
						1/2" Ice	8.93	9.66	0.21
						1" Ice	9.46	10.55	0.30
QS66512-2_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	168.71	No Ice	8.37	8.46	0.14
						1/2" Ice	8.93	9.66	0.21
						1" Ice	9.46	10.55	0.30
HPA-65R-BUU-H6_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	168.71	No Ice	9.72	7.15	0.07
						1/2" Ice	10.30	8.34	0.15
						1" Ice	10.84	9.24	0.23
HPA-65R-BUU-H6_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	168.71	No Ice	9.72	7.15	0.07
						1/2" Ice	10.30	8.34	0.15
						1" Ice	10.84	9.24	0.23
HPA-65R-BUU-H6_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	168.71	No Ice	9.72	7.15	0.07
						1/2" Ice	10.30	8.34	0.15
						1" Ice	10.84	9.24	0.23
RRUS 32 B2	A	From Leg	4.00 0.00 0.00	0.0000	168.71	No Ice	2.71	1.66	0.05
						1/2" Ice	2.93	1.85	0.07
						1" Ice	3.16	2.04	0.10
RRUS 32 B2	B	From Leg	4.00 0.00 0.00	0.0000	168.71	No Ice	2.71	1.66	0.05
						1/2" Ice	2.93	1.85	0.07
						1" Ice	3.16	2.04	0.10
RRUS 32 B2	C	From Leg	4.00 0.00 0.00	0.0000	168.71	No Ice	2.71	1.66	0.05
						1/2" Ice	2.93	1.85	0.07
						1" Ice	3.16	2.04	0.10
RRUS 11 B12	A	From Leg	4.00 0.00 0.00	0.0000	168.71	No Ice	2.83	1.18	0.05
						1/2" Ice	3.04	1.33	0.07
						1" Ice	3.26	1.48	0.10
RRUS 11 B12	B	From Leg	4.00	0.0000	168.71	No Ice	2.83	1.18	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			0.00			1/2"	3.04	1.33	0.07
			0.00			Ice	3.26	1.48	0.10
RRUS 11 B12	C	From Leg	4.00	0.0000	168.71	1" Ice	2.83	1.18	0.05
			0.00			No Ice	3.04	1.33	0.07
			0.00			1/2"	3.26	1.48	0.10
			0.00			Ice			
RRUS 32	A	From Leg	4.00	0.0000	168.71	1" Ice	2.73	1.67	0.05
			0.00			No Ice	2.95	1.86	0.07
			0.00			1/2"	3.18	2.05	0.10
			0.00			Ice			
RRUS 32	B	From Leg	4.00	0.0000	168.71	1" Ice	2.73	1.67	0.05
			0.00			No Ice	2.95	1.86	0.07
			0.00			1/2"	3.18	2.05	0.10
			0.00			Ice			
RRUS 32	A	From Leg	4.00	0.0000	168.71	1" Ice	2.73	1.67	0.05
			0.00			No Ice	2.95	1.86	0.07
			0.00			1/2"	3.18	2.05	0.10
			0.00			Ice			
RRUS 4478 B14	B	From Leg	4.00	0.0000	168.71	1" Ice	1.84	1.06	0.06
			0.00			No Ice	2.01	1.20	0.08
			0.00			1/2"	2.19	1.34	0.09
			0.00			Ice			
RRUS 4478 B14	C	From Leg	4.00	0.0000	168.71	1" Ice	1.84	1.06	0.06
			0.00			No Ice	2.01	1.20	0.08
			0.00			1/2"	2.19	1.34	0.09
			0.00			Ice			
RRUS 4478 B14	C	From Leg	4.00	0.0000	168.71	1" Ice	1.84	1.06	0.06
			0.00			No Ice	2.01	1.20	0.08
			0.00			1/2"	2.19	1.34	0.09
			0.00			Ice			
(3) 12' Sector Frames	C	None		0.0000	168.71	1" Ice	25.48	25.48	0.49
						No Ice	36.14	36.14	1.00
						1/2"	46.80	46.80	0.50
						Ice			
						1" Ice			

GPS_A	C	From Leg	4.00	0.0000	157.71	No Ice	0.26	0.26	0.00
			0.00			1/2"	0.32	0.32	0.00
			0.00			Ice	0.39	0.39	0.01
						1" Ice			
DB-B1-6C-12AB-0Z	B	From Leg	4.00	0.0000	157.71	No Ice	3.36	2.19	0.02
			0.00			1/2"	3.60	2.39	0.05
			0.00			Ice	3.84	2.61	0.08
						1" Ice			
B2/B66 RRH-BR049	A	From Leg	4.00	0.0000	157.71	No Ice	1.88	1.25	0.08
			0.00			1/2"	2.05	1.39	0.10
			0.00			Ice	2.22	1.54	0.12
						1" Ice			
B2/B66 RRH-BR049	B	From Leg	4.00	0.0000	157.71	No Ice	1.88	1.25	0.08
			0.00			1/2"	2.05	1.39	0.10
			0.00			Ice	2.22	1.54	0.12
						1" Ice			
B2/B66 RRH-BR049	C	From Leg	4.00	0.0000	157.71	No Ice	1.88	1.25	0.08
			0.00			1/2"	2.05	1.39	0.10
			0.00			Ice	2.22	1.54	0.12
						1" Ice			
B5/B13 RRH-BR04C	A	From Leg	4.00	0.0000	157.71	No Ice	1.88	1.01	0.07
			0.00			1/2"	2.05	1.14	0.09
			0.00			Ice	2.22	1.28	0.11
						1" Ice			
B5/B13 RRH-BR04C	B	From Leg	4.00	0.0000	157.71	No Ice	1.88	1.01	0.07
			0.00			1/2"	2.05	1.14	0.09
			0.00			Ice	2.22	1.28	0.11
						1" Ice			
B5/B13 RRH-BR04C	C	From Leg	4.00	0.0000	157.71	No Ice	1.88	1.01	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			0.00			1/2"	2.05	1.14	0.09
			0.00			Ice	2.22	1.28	0.11
(2) NHH-65B-R2B_TIA w/ Mount Pipe	A	From Leg	4.00	0.0000	157.71	1" Ice	8.32	7.00	0.07
			0.00			No Ice	8.88	8.19	0.14
			0.00			1/2"	9.40	9.08	0.21
			0.00			Ice			
(2) NHH-65B-R2B_TIA w/ Mount Pipe	B	From Leg	4.00	0.0000	157.71	1" Ice	8.32	7.00	0.07
			0.00			No Ice	8.88	8.19	0.14
			0.00			1/2"	9.40	9.08	0.21
			0.00			Ice			
(2) NHH-65B-R2B_TIA w/ Mount Pipe	C	From Leg	4.00	0.0000	157.71	1" Ice	8.32	7.00	0.07
			0.00			No Ice	8.88	8.19	0.14
			0.00			1/2"	9.40	9.08	0.21
			0.00			Ice			
LNx-6513DS-A1M_TIA w/ Mount Pipe	A	From Leg	4.00	0.0000	157.71	1" Ice	6.11	5.18	0.06
			0.00			No Ice	6.54	5.95	0.11
			0.00			1/2"	6.98	6.64	0.17
			0.00			Ice			
LNx-6513DS-A1M_TIA w/ Mount Pipe	B	From Leg	4.00	0.0000	157.71	1" Ice	6.11	5.18	0.06
			0.00			No Ice	6.54	5.95	0.11
			0.00			1/2"	6.98	6.64	0.17
			0.00			Ice			
LNx-6513DS-A1M_TIA w/ Mount Pipe	C	From Leg	4.00	0.0000	157.71	1" Ice	6.11	5.18	0.06
			0.00			No Ice	6.54	5.95	0.11
			0.00			1/2"	6.98	6.64	0.17
			0.00			Ice			
XXDWMM w/ Mount Pipe	A	From Leg	4.00	0.0000	157.71	1" Ice	4.21	2.63	0.04
			0.00			No Ice	4.70	3.37	0.08
			0.00			1/2"	5.15	3.99	0.12
			0.00			Ice			
XXDWMM w/ Mount Pipe	B	From Leg	4.00	0.0000	157.71	1" Ice	4.21	2.63	0.04
			0.00			No Ice	4.70	3.37	0.08
			0.00			1/2"	5.15	3.99	0.12
			0.00			Ice			
XXDWMM w/ Mount Pipe	C	From Leg	4.00	0.0000	157.71	1" Ice	4.21	2.63	0.04
			0.00			No Ice	4.70	3.37	0.08
			0.00			1/2"	5.15	3.99	0.12
			0.00			Ice			
CBRS RRH-RT4401-48A	A	From Leg	4.00	0.0000	157.71	1" Ice	1.54	0.75	0.02
			0.00			No Ice	1.70	0.87	0.04
			0.00			1/2"	1.86	0.99	0.05
			0.00			Ice			
CBRS RRH-RT4401-48A	B	From Leg	4.00	0.0000	157.71	1" Ice	1.54	0.75	0.02
			0.00			No Ice	1.70	0.87	0.04
			0.00			1/2"	1.86	0.99	0.05
			0.00			Ice			
CBRS RRH-RT4401-48A	C	From Leg	4.00	0.0000	157.71	1" Ice	1.54	0.75	0.02
			0.00			No Ice	1.70	0.87	0.04
			0.00			1/2"	1.86	0.99	0.05
			0.00			Ice			
Sitepro1 PRK-1245L	C	None		0.0000	157.71	1" Ice	11.84	11.84	0.28
						No Ice	16.96	16.96	0.30
						1/2"	22.08	22.08	0.32
						Ice			
Sitepro1 HRK-14	C	None		0.0000	157.71	1" Ice	6.00	6.00	0.26
						No Ice	8.50	8.50	0.34
						1/2"	11.00	11.00	0.42
						Ice			
(2) L2.5x2.5 Reinforcement	A	From Leg	4.00	0.0000	157.71	1" Ice	4.17	4.17	0.03
			0.00			No Ice	5.31	5.31	0.05
			0.00			1/2"	6.46	6.46	0.09
			0.00			Ice			
(2) L2.5x2.5 Reinforcement	B	From Leg	4.00	0.0000	157.71	1" Ice	4.17	4.17	0.03
			0.00			No Ice	5.31	5.31	0.05
			0.00			1/2"			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
			0.00			Ice	6.46	6.46	0.09
(2) L2.5x2.5 Reinforcement	C	From Leg	4.00	0.0000	157.71	1" Ice	4.17	4.17	0.03
			0.00			No Ice	5.31	5.31	0.05
			0.00			1/2"	6.46	6.46	0.09
14' Low Profile Platform	C	None		0.0000	157.71	Ice			
						1" Ice	18.85	18.85	1.50
						No Ice	24.30	24.30	1.80
						1/2"	29.75	29.75	2.09
						Ice			
						1" Ice			

14' Low Profile Platform	C	None		0.0000	144.71	No Ice	18.85	18.85	1.50
						1/2"	24.30	24.30	1.80
						Ice	29.75	29.75	2.09
						1" Ice			
(4) 2" STD Pipe (2.375 OD)x6'-0"	A	From Leg	4.00	0.0000	144.71	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice			
(4) 2" STD Pipe (2.375 OD)x6'-0"	B	From Leg	4.00	0.0000	144.71	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice			
(4) 2" STD Pipe (2.375 OD)x6'-0"	C	From Leg	4.00	0.0000	144.71	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice			

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

Comb. No.	Description
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	175 - 160	Pole	Max Tension	26	0.00	0.00	0.00
			Max. Compression	26	-22.50	0.66	-1.46
			Max. Mx	20	-7.77	146.87	-0.47
			Max. My	14	-7.77	0.25	-147.21
			Max. Vy	20	-10.96	146.87	-0.47
			Max. Vx	14	10.98	0.25	-147.21
			Max. Torque	12			-0.23
L2	160 - 140	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.53	-0.07	-2.94
			Max. Mx	20	-17.52	457.76	-0.37
			Max. My	14	-17.52	-0.26	-458.47
			Max. Vy	20	-17.92	457.76	-0.37
			Max. Vx	14	17.91	-0.26	-458.47
			Max. Torque	19			0.41
L3	140 - 120	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.42	-0.08	-3.95
			Max. Mx	20	-22.02	832.18	-0.22
			Max. My	14	-22.02	-0.74	-833.09
			Max. Vy	20	-19.51	832.18	-0.22
			Max. Vx	14	19.50	-0.74	-833.09
			Max. Torque	19			0.41
L4	120 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.17	-0.08	-5.05
			Max. Mx	20	-27.12	1239.45	-0.11
			Max. My	14	-27.12	-1.22	-1240.61
			Max. Vy	20	-21.21	1239.45	-0.11
			Max. Vx	14	21.20	-1.22	-1240.61
			Max. Torque	19			0.41
L5	100 - 80	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.76	-0.08	-6.21
			Max. Mx	20	-32.82	1681.39	-0.06
			Max. My	14	-32.82	-1.70	-1682.85
			Max. Vy	20	-22.98	1681.39	-0.06
			Max. Vx	14	22.97	-1.70	-1682.85
			Max. Torque	19			0.41
L6	80 - 60	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-78.16	-0.08	-7.34
			Max. Mx	20	-39.11	2159.01	-0.05

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L7	60 - 40	Pole	Max. My	14	-39.11	-2.18	-2160.81
			Max. Vy	20	-24.78	2159.01	-0.05
			Max. Vx	14	24.77	-2.18	-2160.81
			Max. Torque	19			0.41
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.33	-0.08	-8.55
			Max. Mx	20	-45.99	2672.09	-0.09
			Max. My	14	-45.99	-2.65	-2674.27
			Max. Vy	20	-26.53	2672.09	-0.09
			Max. Vx	14	26.52	-2.65	-2674.27
L8	40 - 20	Pole	Max. Torque	19			0.41
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-100.20	-0.08	-9.70
			Max. Mx	20	-54.78	3216.96	-0.13
			Max. My	14	-54.78	-3.12	-3219.53
			Max. Vy	20	-27.95	3216.96	-0.13
			Max. Vx	14	27.95	-3.12	-3219.53
			Max. Torque	19			0.41
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-113.18	-0.08	-10.13
L9	20 - 0	Pole	Max. Mx	20	-65.18	3789.31	0.13
			Max. My	14	-65.18	-3.58	-3791.97
			Max. Vy	20	-29.27	3789.31	0.13
			Max. Vx	14	29.27	-3.58	-3791.97
			Max. Torque	19			0.41
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-113.18	-0.08	-10.13
			Max. Mx	20	-65.18	3789.31	0.13
			Max. My	14	-65.18	-3.58	-3791.97
			Max. Vy	20	-29.27	3789.31	0.13

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	113.18	-0.00	-0.00
	Max. H _x	20	65.18	29.26	0.02
	Max. H _z	2	65.18	0.02	29.25
	Max. M _x	2	3784.65	0.02	29.25
	Max. M _z	8	3788.89	-29.26	-0.02
	Max. Torsion	19	0.41	25.33	-14.61
	Min. Vert	5	48.89	-14.61	25.32
	Min. H _x	9	48.89	-29.26	-0.02
	Min. H _z	14	65.18	-0.02	-29.25
	Min. M _x	14	-3791.97	-0.02	-29.25
	Min. M _z	20	-3789.31	29.26	0.02
	Min. Torsion	7	-0.40	-25.33	14.61

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	54.32	0.00	0.00	2.92	0.17	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	65.18	-0.02	-29.25	-3784.65	4.02	0.20
0.9 Dead+1.6 Wind 0 deg - No Ice	48.89	-0.02	-29.25	-3749.65	3.92	0.21
1.2 Dead+1.6 Wind 30 deg - No Ice	65.18	14.61	-25.32	-3275.23	-1891.05	0.35
0.9 Dead+1.6 Wind 30 deg - No Ice	48.89	14.61	-25.32	-3245.06	-1873.17	0.35
1.2 Dead+1.6 Wind 60 deg - No Ice	65.18	25.33	-14.61	-1887.21	-3279.35	0.40
0.9 Dead+1.6 Wind 60 deg - No Ice	48.89	25.33	-14.61	-1870.22	-3248.29	0.40

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
No Ice						
1.2 Dead+1.6 Wind 90 deg - No Ice	65.18	29.26	0.02	7.46	-3788.89	0.35
0.9 Dead+1.6 Wind 90 deg - No Ice	48.89	29.26	0.02	6.47	-3752.99	0.35
1.2 Dead+1.6 Wind 120 deg - No Ice	65.18	25.35	14.65	1901.11	-3283.14	0.20
0.9 Dead+1.6 Wind 120 deg - No Ice	48.89	25.35	14.65	1882.15	-3252.04	0.20
1.2 Dead+1.6 Wind 150 deg - No Ice	65.18	14.65	25.35	3286.34	-1897.62	0.00
0.9 Dead+1.6 Wind 150 deg - No Ice	48.89	14.65	25.35	3254.24	-1879.67	-0.00
1.2 Dead+1.6 Wind 180 deg - No Ice	65.18	0.02	29.25	3791.97	-3.58	-0.20
0.9 Dead+1.6 Wind 180 deg - No Ice	48.89	0.02	29.25	3755.08	-3.60	-0.20
1.2 Dead+1.6 Wind 210 deg - No Ice	65.18	-14.61	25.32	3282.55	1891.49	-0.35
0.9 Dead+1.6 Wind 210 deg - No Ice	48.89	-14.61	25.32	3250.49	1873.49	-0.35
1.2 Dead+1.6 Wind 240 deg - No Ice	65.18	-25.33	14.61	1894.54	3279.79	-0.40
0.9 Dead+1.6 Wind 240 deg - No Ice	48.89	-25.33	14.61	1875.65	3248.61	-0.41
1.2 Dead+1.6 Wind 270 deg - No Ice	65.18	-29.26	-0.02	-0.13	3789.31	-0.35
0.9 Dead+1.6 Wind 270 deg - No Ice	48.89	-29.26	-0.02	-1.04	3753.31	-0.35
1.2 Dead+1.6 Wind 300 deg - No Ice	65.18	-25.35	-14.65	-1893.78	3283.58	-0.20
0.9 Dead+1.6 Wind 300 deg - No Ice	48.89	-25.35	-14.65	-1876.72	3252.36	-0.20
1.2 Dead+1.6 Wind 330 deg - No Ice	65.18	-14.65	-25.35	-3279.01	1898.06	0.00
0.9 Dead+1.6 Wind 330 deg - No Ice	48.89	-14.65	-25.35	-3248.81	1879.99	0.00
1.2 Dead+1.0 Ice+1.0 Temp	113.18	0.00	0.00	10.13	-0.08	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	113.18	-0.00	-10.48	-1401.41	0.65	-0.02
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	113.18	5.24	-9.07	-1211.89	-705.46	0.05
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	113.18	9.07	-5.24	-694.84	-1222.57	0.12
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	113.18	10.48	0.00	11.18	-1412.11	0.15
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	113.18	9.08	5.24	717.01	-1223.30	0.14
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	113.18	5.24	9.08	1233.51	-706.73	0.09
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	113.18	0.00	10.48	1422.29	-0.82	0.02
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	113.18	-5.24	9.07	1232.77	705.29	-0.05
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	113.18	-9.07	5.24	715.73	1222.40	-0.11
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	113.18	-10.48	-0.00	9.71	1411.94	-0.15
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	113.18	-9.08	-5.24	-696.12	1223.14	-0.14
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	113.18	-5.24	-9.08	-1212.62	706.57	-0.09
Dead+Wind 0 deg - Service	54.32	-0.00	-6.26	-802.85	0.99	0.04
Dead+Wind 30 deg - Service	54.32	3.13	-5.42	-694.48	-402.15	0.08
Dead+Wind 60 deg - Service	54.32	5.42	-3.13	-399.21	-697.48	0.09
Dead+Wind 90 deg - Service	54.32	6.26	0.00	3.84	-805.87	0.07
Dead+Wind 120 deg - Service	54.32	5.42	3.13	406.68	-698.29	0.04
Dead+Wind 150 deg -	54.32	3.13	5.42	701.35	-403.55	-0.00

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
Service						
Dead+Wind 180 deg -	54.32	0.00	6.26	808.92	-0.63	-0.04
Service						
Dead+Wind 210 deg -	54.32	-3.13	5.42	700.55	402.51	-0.08
Service						
Dead+Wind 240 deg -	54.32	-5.42	3.13	405.28	697.84	-0.09
Service						
Dead+Wind 270 deg -	54.32	-6.26	-0.00	2.23	806.23	-0.07
Service						
Dead+Wind 300 deg -	54.32	-5.42	-3.13	-400.61	698.64	-0.04
Service						
Dead+Wind 330 deg -	54.32	-3.13	-5.42	-695.29	403.90	0.00
Service						

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-54.32	0.00	0.00	54.32	0.00	0.000%
2	-0.02	-65.18	-29.25	0.02	65.18	29.25	0.000%
3	-0.02	-48.89	-29.25	0.02	48.89	29.25	0.000%
4	14.61	-65.18	-25.32	-14.61	65.18	25.32	0.000%
5	14.61	-48.89	-25.32	-14.61	48.89	25.32	0.000%
6	25.33	-65.18	-14.61	-25.33	65.18	14.61	0.000%
7	25.33	-48.89	-14.61	-25.33	48.89	14.61	0.000%
8	29.26	-65.18	0.02	-29.26	65.18	-0.02	0.000%
9	29.26	-48.89	0.02	-29.26	48.89	-0.02	0.000%
10	25.35	-65.18	14.65	-25.35	65.18	-14.65	0.000%
11	25.35	-48.89	14.65	-25.35	48.89	-14.65	0.000%
12	14.65	-65.18	25.35	-14.65	65.18	-25.35	0.000%
13	14.65	-48.89	25.35	-14.65	48.89	-25.35	0.000%
14	0.02	-65.18	29.25	-0.02	65.18	-29.25	0.000%
15	0.02	-48.89	29.25	-0.02	48.89	-29.25	0.000%
16	-14.61	-65.18	25.32	14.61	65.18	-25.32	0.000%
17	-14.61	-48.89	25.32	14.61	48.89	-25.32	0.000%
18	-25.33	-65.18	14.61	25.33	65.18	-14.61	0.000%
19	-25.33	-48.89	14.61	25.33	48.89	-14.61	0.000%
20	-29.26	-65.18	-0.02	29.26	65.18	0.02	0.000%
21	-29.26	-48.89	-0.02	29.26	48.89	0.02	0.000%
22	-25.35	-65.18	-14.65	25.35	65.18	14.65	0.000%
23	-25.35	-48.89	-14.65	25.35	48.89	14.65	0.000%
24	-14.65	-65.18	-25.35	14.65	65.18	25.35	0.000%
25	-14.65	-48.89	-25.35	14.65	48.89	25.35	0.000%
26	0.00	-113.18	0.00	-0.00	113.18	-0.00	0.000%
27	-0.00	-113.18	-10.48	0.00	113.18	10.48	0.000%
28	5.24	-113.18	-9.07	-5.24	113.18	9.07	0.000%
29	9.07	-113.18	-5.24	-9.07	113.18	5.24	0.000%
30	10.48	-113.18	0.00	-10.48	113.18	-0.00	0.000%
31	9.08	-113.18	5.24	-9.08	113.18	-5.24	0.000%
32	5.24	-113.18	9.08	-5.24	113.18	-9.08	0.000%
33	0.00	-113.18	10.48	-0.00	113.18	-10.48	0.000%
34	-5.24	-113.18	9.07	5.24	113.18	-9.07	0.000%
35	-9.07	-113.18	5.24	9.07	113.18	-5.24	0.000%
36	-10.48	-113.18	-0.00	10.48	113.18	0.00	0.000%
37	-9.08	-113.18	-5.24	9.08	113.18	5.24	0.000%
38	-5.24	-113.18	-9.08	5.24	113.18	9.08	0.000%
39	-0.00	-54.32	-6.26	0.00	54.32	6.26	0.000%
40	3.13	-54.32	-5.42	-3.13	54.32	5.42	0.000%
41	5.42	-54.32	-3.13	-5.42	54.32	3.13	0.000%
42	6.26	-54.32	0.00	-6.26	54.32	-0.00	0.000%
43	5.42	-54.32	3.13	-5.42	54.32	-3.13	0.000%
44	3.13	-54.32	5.42	-3.13	54.32	-5.42	0.000%
45	0.00	-54.32	6.26	-0.00	54.32	-6.26	0.000%
46	-3.13	-54.32	5.42	3.13	54.32	-5.42	0.000%
47	-5.42	-54.32	3.13	5.42	54.32	-3.13	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
48	-6.26	-54.32	-0.00	6.26	54.32	0.00	0.000%
49	-5.42	-54.32	-3.13	5.42	54.32	3.13	0.000%
50	-3.13	-54.32	-5.42	3.13	54.32	5.42	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00085298
3	Yes	4	0.00000001	0.00044075
4	Yes	6	0.00000001	0.00007257
5	Yes	5	0.00000001	0.00076115
6	Yes	6	0.00000001	0.00007139
7	Yes	5	0.00000001	0.00074845
8	Yes	5	0.00000001	0.00004918
9	Yes	4	0.00000001	0.00059629
10	Yes	6	0.00000001	0.00007307
11	Yes	5	0.00000001	0.00076528
12	Yes	6	0.00000001	0.00007272
13	Yes	5	0.00000001	0.00076173
14	Yes	4	0.00000001	0.00090353
15	Yes	4	0.00000001	0.00048473
16	Yes	6	0.00000001	0.00007185
17	Yes	5	0.00000001	0.00075230
18	Yes	6	0.00000001	0.00007303
19	Yes	5	0.00000001	0.00076504
20	Yes	4	0.00000001	0.00096424
21	Yes	4	0.00000001	0.00052375
22	Yes	6	0.00000001	0.00007212
23	Yes	5	0.00000001	0.00075610
24	Yes	6	0.00000001	0.00007247
25	Yes	5	0.00000001	0.00075963
26	Yes	4	0.00000001	0.00017487
27	Yes	6	0.00000001	0.00023551
28	Yes	6	0.00000001	0.00028660
29	Yes	6	0.00000001	0.00028624
30	Yes	6	0.00000001	0.00023799
31	Yes	6	0.00000001	0.00029307
32	Yes	6	0.00000001	0.00029250
33	Yes	6	0.00000001	0.00024022
34	Yes	6	0.00000001	0.00029210
35	Yes	6	0.00000001	0.00029252
36	Yes	6	0.00000001	0.00023795
37	Yes	6	0.00000001	0.00028660
38	Yes	6	0.00000001	0.00028710
39	Yes	4	0.00000001	0.00015173
40	Yes	4	0.00000001	0.00044856
41	Yes	4	0.00000001	0.00043025
42	Yes	4	0.00000001	0.00015421
43	Yes	4	0.00000001	0.00045523
44	Yes	4	0.00000001	0.00044937
45	Yes	4	0.00000001	0.00015327
46	Yes	4	0.00000001	0.00043998
47	Yes	4	0.00000001	0.00045868
48	Yes	4	0.00000001	0.00015408
49	Yes	4	0.00000001	0.00043788
50	Yes	4	0.00000001	0.00044352

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	175 - 160	15.549	44	0.8397	0.0004
L2	160 - 140	12.951	44	0.8049	0.0004
L3	140 - 120	9.740	44	0.7116	0.0003
L4	120 - 100	6.982	44	0.5944	0.0002
L5	100 - 80	4.723	44	0.4765	0.0001
L6	80 - 60	2.948	44	0.3653	0.0001
L7	60 - 40	1.623	44	0.2629	0.0000
L8	40 - 20	0.711	44	0.1691	0.0000
L9	20 - 0	0.178	44	0.0828	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
178.58	AIR 32 B66Aa B2a w/ Mount Pipe	44	15.549	0.8397	0.0004	47615
168.71	DC6-48-60-18-8F	44	14.450	0.8275	0.0004	37850
157.71	GPS_A	44	12.565	0.7970	0.0004	14974
144.71	14' Low Profile Platform	44	10.460	0.7373	0.0003	11057

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	175 - 160	72.953	12	3.9387	0.0020
L2	160 - 140	60.772	12	3.7780	0.0020
L3	140 - 120	45.715	12	3.3417	0.0013
L4	120 - 100	32.768	12	2.7919	0.0008
L5	100 - 80	22.165	12	2.2375	0.0005
L6	80 - 60	13.834	12	1.7153	0.0004
L7	60 - 40	7.616	12	1.2341	0.0002
L8	40 - 20	3.337	12	0.7937	0.0001
L9	20 - 0	0.835	12	0.3883	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
178.58	AIR 32 B66Aa B2a w/ Mount Pipe	12	72.953	3.9387	0.0020	10367
168.71	DC6-48-60-18-8F	12	67.800	3.8829	0.0020	8240
157.71	GPS_A	12	58.962	3.7410	0.0019	3251
144.71	14' Low Profile Platform	12	49.092	3.4621	0.0014	2380

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L1	175 - 160 (1)	P24x3/8	15.00	0.00	0.0	27.8325	-7.77	1052.07	0.007
L2	160 - 140 (2)	P30x3/8	20.00	0.00	0.0	34.9011	-17.52	1311.06	0.013
L3	140 - 120 (3)	P36x3/8	20.00	0.00	0.0	41.9697	-22.01	1490.10	0.015
L4	120 - 100 (4)	P42x3/8	20.00	0.00	0.0	49.0383	-27.12	1668.87	0.016
L5	100 - 80 (5)	P48x3/8	20.00	0.00	0.0	56.1069	-32.82	1847.49	0.018
L6	80 - 60 (6)	P54x3/8	20.00	0.00	0.0	63.1755	-39.11	2026.00	0.019
L7	60 - 40 (7)	P60x3/8	20.00	0.00	0.0	70.2440	-45.99	2204.43	0.021
L8	40 - 20 (8)	P60x1/2	20.00	0.00	0.0	93.4624	-54.78	3125.69	0.018
L9	20 - 0 (9)	P60x5/8	20.00	0.00	0.0	116.5830	-65.18	4139.15	0.016

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{rx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{rx}}$	M _{uy} kip-ft	φM _{ry} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ry}}$
L1	175 - 160 (1)	P24x3/8	147.22	623.72	0.236	0.00	623.72	0.000
L2	160 - 140 (2)	P30x3/8	458.65	947.86	0.484	0.00	947.86	0.000
L3	140 - 120 (3)	P36x3/8	833.67	1338.81	0.623	0.00	1338.81	0.000
L4	120 - 100 (4)	P42x3/8	1241.58	1796.56	0.691	0.00	1796.56	0.000
L5	100 - 80 (5)	P48x3/8	1684.22	2321.11	0.726	0.00	2321.11	0.000
L6	80 - 60 (6)	P54x3/8	2162.56	2912.46	0.743	0.00	2912.46	0.000
L7	60 - 40 (7)	P60x3/8	2676.40	3570.61	0.750	0.00	3570.61	0.000
L8	40 - 20 (8)	P60x1/2	3222.02	4860.41	0.663	0.00	4860.41	0.000
L9	20 - 0 (9)	P60x5/8	3794.86	6198.18	0.612	0.00	6198.18	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V _u K	φV _n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T _u kip-ft	φT _n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	175 - 160 (1)	P24x3/8	10.97	526.03	0.021	0.04	1019.71	0.000
L2	160 - 140 (2)	P30x3/8	17.93	655.53	0.027	0.00	1598.37	0.000
L3	140 - 120 (3)	P36x3/8	19.52	745.05	0.026	0.00	2189.07	0.000
L4	120 - 100 (4)	P42x3/8	21.22	834.44	0.025	0.00	2868.84	0.000
L5	100 - 80 (5)	P48x3/8	22.99	923.75	0.025	0.00	3637.70	0.000
L6	80 - 60 (6)	P54x3/8	24.79	1013.00	0.024	0.00	4495.63	0.000
L7	60 - 40 (7)	P60x3/8	26.54	1102.21	0.024	0.00	5442.62	0.000
L8	40 - 20 (8)	P60x1/2	27.97	1562.84	0.018	0.00	7685.07	0.000
L9	20 - 0 (9)	P60x5/8	29.29	2069.58	0.014	0.00	10134.58	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	175 - 160 (1)	0.007	0.236	0.000	0.021	0.000	0.244	1.000	4.8.2
L2	160 - 140 (2)	0.013	0.484	0.000	0.027	0.000	0.498	1.000	4.8.2
L3	140 - 120 (3)	0.015	0.623	0.000	0.026	0.000	0.638	1.000	4.8.2
L4	120 - 100 (4)	0.016	0.691	0.000	0.025	0.000	0.708	1.000	4.8.2
L5	100 - 80 (5)	0.018	0.726	0.000	0.025	0.000	0.744	1.000	4.8.2
L6	80 - 60 (6)	0.019	0.743	0.000	0.024	0.000	0.762	1.000	4.8.2
L7	60 - 40 (7)	0.021	0.750	0.000	0.024	0.000	0.771	1.000	4.8.2
L8	40 - 20 (8)	0.018	0.663	0.000	0.018	0.000	0.681	1.000	4.8.2
L9	20 - 0 (9)	0.016	0.612	0.000	0.014	0.000	0.628	1.000	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	175 - 160	Pole	P24x3/8	1	-7.77	1052.07	24.4	Pass
L2	160 - 140	Pole	P30x3/8	2	-17.52	1311.06	49.8	Pass
L3	140 - 120	Pole	P36x3/8	3	-22.01	1490.10	63.8	Pass
L4	120 - 100	Pole	P42x3/8	4	-27.12	1668.87	70.8	Pass
L5	100 - 80	Pole	P48x3/8	5	-32.82	1847.49	74.4	Pass
L6	80 - 60	Pole	P54x3/8	6	-39.11	2026.00	76.2	Pass
L7	60 - 40	Pole	P60x3/8	7	-45.99	2204.43	77.1	Pass
L8	40 - 20	Pole	P60x1/2	8	-54.78	3125.69	68.1	Pass
L9	20 - 0	Pole	P60x5/8	9	-65.18	4139.15	62.8	Pass
							Summary	
							Pole (L7)	77.1
							RATING =	77.1
								Pass

APPENDIX B

ADDITIONAL CALCULATIONS

Monopole Flange Plate Connection

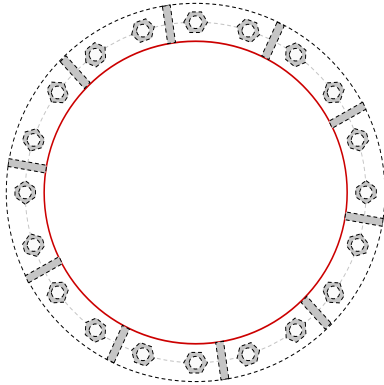
Elevation = 160 ft.

Site Name	Manchester/ I-84 X63
Work Order #	10473.CT11140J - Rev 1

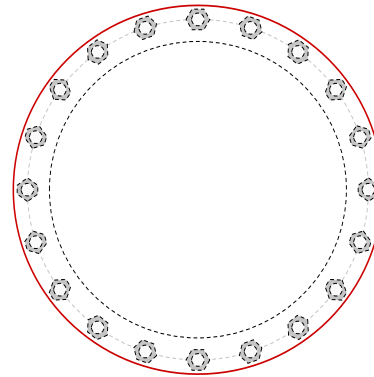
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Applied Loads	
Moment (kip-ft)	147.22
Axial Force (kips)	7.77
Shear Force (kips)	10.97

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(20) 1" $\varnothing$ bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 27" BC

Top Plate Data

30" OD x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

(10) 5"H x 3"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.5" fillet
vert. weld: 0.375" fillet

Top Pole Data

24" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Plate Data

23.5" ID x 1" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Stiffener Data

N/A

Bottom Pole Data

30" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	12.69
Allowable (kips)	54.53
Stress Rating:	23.3% Pass

Monopole Flange Plate Connection

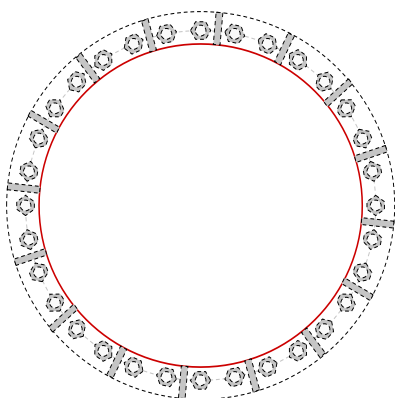
Elevation = 140 ft.

Site Name	Manchester/ I-84 X63
Work Order #	10473.CT11140J - Rev 1

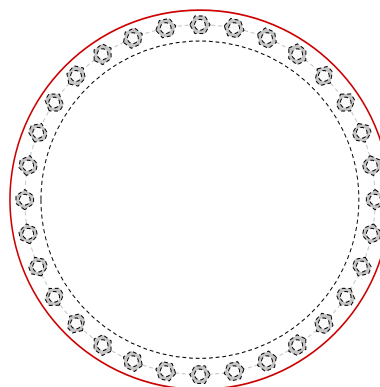
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Applied Loads	
Moment (kip-ft)	458.65
Axial Force (kips)	17.52
Shear Force (kips)	17.93

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(32) 1" $\varnothing$ bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 32.5" BC

Top Plate Data

36" OD x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

(16) 5"H x 3"W x 0.625"T, Notch: 0.5"

plate: Fy= 36 ksi ; weld: Fy= 70 ksi

horiz. weld: 0.5" fillet

vert. weld: 0.375" fillet

Top Pole Data

30" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Plate Data

29.5" ID x 1" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Stiffener Data

N/A

Bottom Pole Data

36" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	20.61
Allowable (kips)	54.53
Stress Rating:	37.8% Pass

Monopole Flange Plate Connection

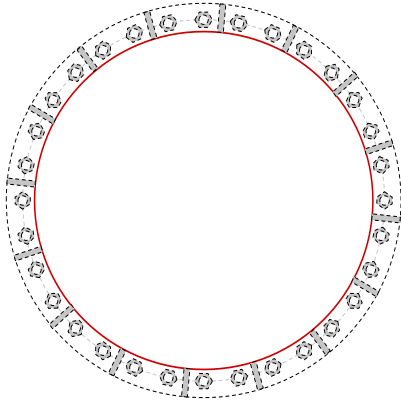
Elevation = 120 ft.

Site Name	Manchester/ I-84 X63
Work Order #	10473.CT11140J - Rev 1

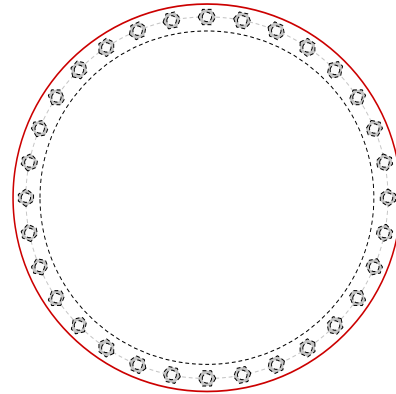
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Applied Loads	
Moment (kip-ft)	833.67
Axial Force (kips)	22.01
Shear Force (kips)	19.52

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(32) 1" $\varnothing$ bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 38.5" BC

Top Plate Data

42" OD x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

(16) 5"H x 3"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.5" fillet
vert. weld: 0.375" fillet

Top Pole Data

36" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Plate Data

35.5" ID x 1" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Stiffener Data

N/A

Bottom Pole Data

42" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	31.78
Allowable (kips)	54.53
Stress Rating:	58.3% Pass

Monopole Flange Plate Connection

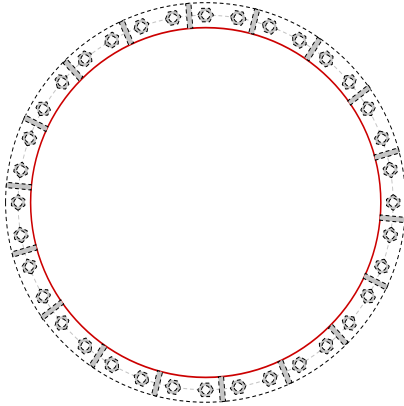
Elevation = 100 ft.

Site Name	Manchester/ I-84 X63
Work Order #	10473.CT11140J - Rev 1

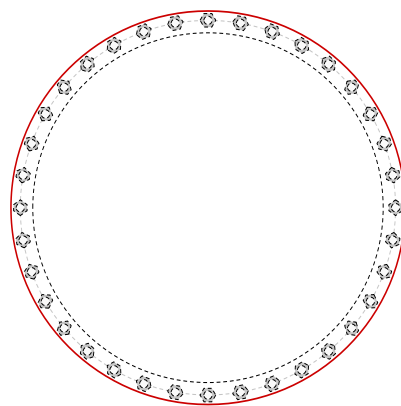
TIA-222 Revision	G
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Applied Loads	
Moment (kip-ft)	1241.59
Axial Force (kips)	27.12
Shear Force (kips)	21.22

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(36) 1" $\varnothing$ bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 45" BC

Top Plate Data

48" OD x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

(18) 5"H x 3"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.5" fillet
vert. weld: 0.375" fillet

Top Pole Data

42" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Plate Data

42" ID x 1" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Stiffener Data

N/A

Bottom Pole Data

48" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	36.03
Allowable (kips)	54.53
Stress Rating:	66.1% Pass

Monopole Flange Plate Connection

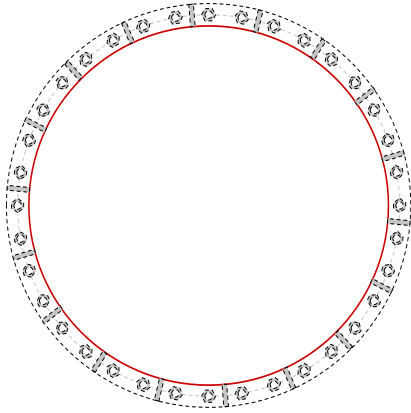
Elevation = 80 ft.

Site Name	Manchester/ I-84 X63
Work Order #	10473.CT11140J - Rev 1

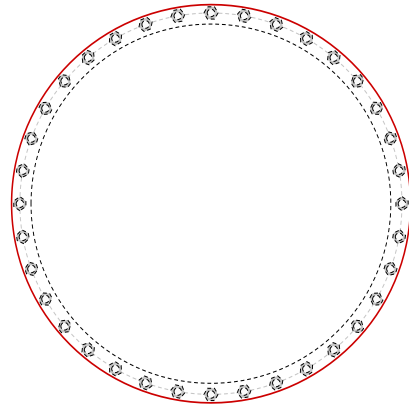
TIA-222 Revision	G
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Applied Loads	
Moment (kip-ft)	1684.22
Axial Force (kips)	32.82
Shear Force (kips)	22.99

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(36) 1" $\emptyset$ bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 51" BC

Top Plate Data

54" OD x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

(18) 5"H x 3"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.5" fillet
vert. weld: 0.375" fillet

Top Pole Data

48" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Plate Data

48" ID x 1" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Stiffener Data

N/A

Bottom Pole Data

54" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	43.11
Allowable (kips)	54.53
Stress Rating:	79.1% Pass

Monopole Flange Plate Connection

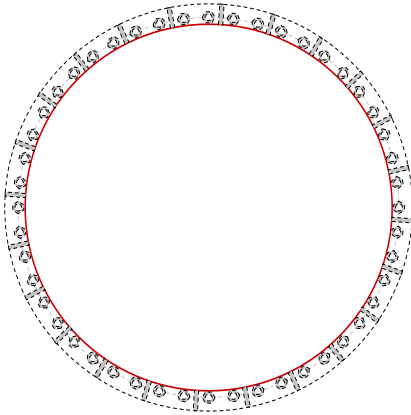
Elevation = 60 ft.

Site Name	Manchester/ I-84 X63
Work Order #	10473.CT11140J - Rev 1

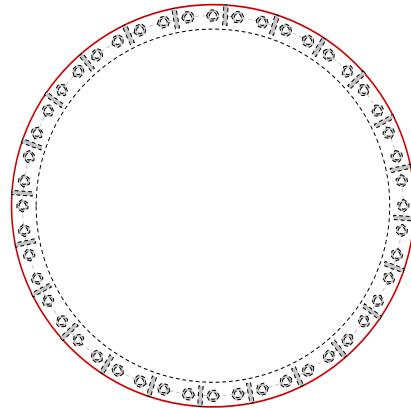
TIA-222 Revision	G
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Applied Loads	
Moment (kip-ft)	2162.56
Axial Force (kips)	39.11
Shear Force (kips)	24.79

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(48) 1" $\emptyset$ bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 56" BC

Top Plate Data

60" OD x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

(24) 5"H x 3"W x 0.625"T, Notch: 0.5"

plate: Fy= 36 ksi ; weld: Fy= 70 ksi

horiz. weld: 0.5" fillet

vert. weld: 0.375" fillet

Top Pole Data

54" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Plate Data

52" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Stiffener Data

(24) 5"H x 3"W x 0.625"T, Notch: 0.5"

plate: Fy= 36 ksi ; weld: Fy= 70 ksi

horiz. weld: 0.5" fillet

vert. weld: 0.375" fillet

Bottom Pole Data

60" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	37.80
Allowable (kips)	54.53
Stress Rating:	69.3% Pass

Monopole Flange Plate Connection

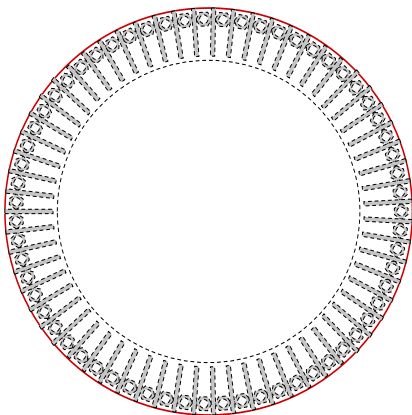
Elevation = 40 ft.

Site Name	Manchester/ I-84 X63
Work Order #	10473.CT11140J - Rev 1

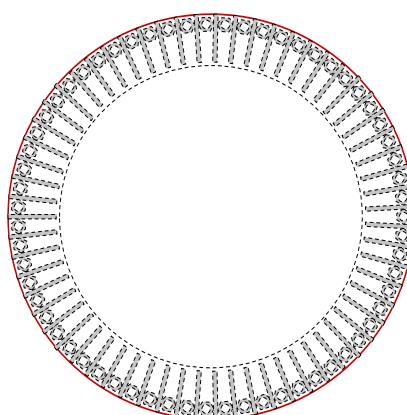
TIA-222 Revision	G
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Applied Loads	
Moment (kip-ft)	2676.40
Axial Force (kips)	45.99
Shear Force (kips)	26.54

Top Plate - Internal



Bottom Plate - Internal



Connection Properties

Bolt Data

(63) 1-1/4" $\varnothing$ bolts (A325 N; Fy=81 ksi, Fu=105 ksi) on 56" BC

Top Plate Data

44" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

(63) 10"H x 7"W x 0.625"T, Notch: 0.5"

plate: Fy= 36 ksi ; weld: Fy= 70 ksi

horiz. weld: 0.5" fillet

vert. weld: 0.375" fillet

Top Pole Data

60" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Plate Data

44" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Stiffener Data

(63) 10"H x 7"W x 0.625"T, Notch: 0.5"

plate: Fy= 36 ksi ; weld: Fy= 70 ksi

horiz. weld: 0.5" fillet

vert. weld: 0.375" fillet

Bottom Pole Data

60" x 0.5" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	35.68
Allowable (kips)	76.31
Stress Rating:	46.8% Pass

Monopole Flange Plate Connection

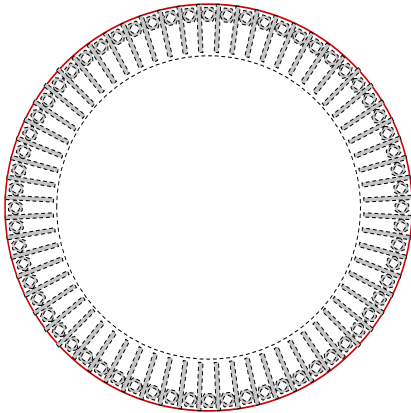
Elevation = 20 ft.

Site Name	Manchester/ I-84 X63
Work Order #	10473.CT11140J - Rev 1

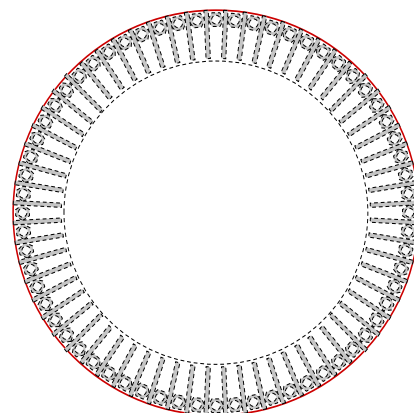
TIA-222 Revision	G
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Applied Loads	
Moment (kip-ft)	3222.02
Axial Force (kips)	54.78
Shear Force (kips)	27.97

Top Plate - Internal



Bottom Plate - Internal



Connection Properties

Bolt Data

(64) 1-1/4" ϕ bolts (A325 N; Fy=81 ksi, Fu=105 ksi) on 56" BC

Top Plate Data

44" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

(64) 10"H x 7"W x 0.625"T, Notch: 0.5"

plate: Fy= 36 ksi ; weld: Fy= 70 ksi

horiz. weld: 0.5" fillet

vert. weld: 0.375" fillet

Top Pole Data

60" x 0.5" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Plate Data

44" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Stiffener Data

(64) 10"H x 7"W x 0.625"T, Notch: 0.5"

plate: Fy= 36 ksi ; weld: Fy= 70 ksi

horiz. weld: 0.5" fillet

vert. weld: 0.375" fillet

Bottom Pole Data

60" x 0.625" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

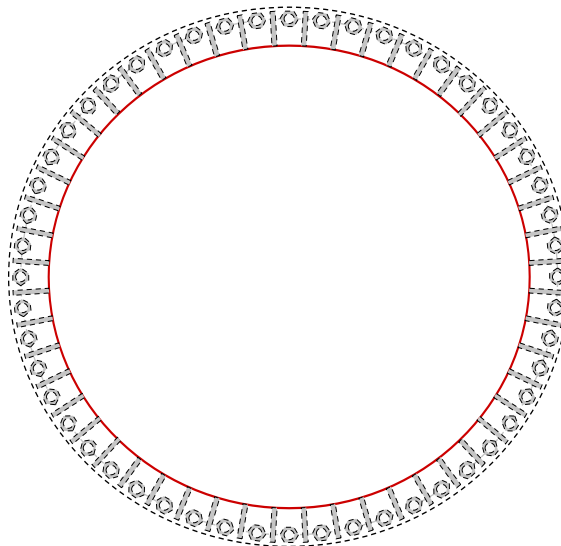
Max Load (kips)	42.29
Allowable (kips)	76.30
Stress Rating:	55.4% Pass

Monopole Base Plate Connection

Site Info	
Work Order #	10473.CT11140J - Rev 1
Site Name	Manchester/ I-84 X63

Analysis Considerations	
TIA-222 Revision	G
Grout Considered:	No
l_{ar} (in)	3.5
Eta Factor, η	0.5

Applied Loads	
Moment (kip-ft)	3794.86
Axial Force (kips)	65.18
Shear Force (kips)	29.29



Connection Properties		Analysis Results	
Anchor Rod Data		Anchor Rod Summary <i>(units of kips, kip-in)</i>	
(52) 1-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 66.96" BC		$Pu_c = 53.56$	$\phi Pn_t = 77.52$ Stress Rating
Base Plate Data		$Vu = 0.56$	$\phi Vn = n/a$ 70.5%
70" OD x 1.25" Plate (A36; $F_y=36$ ksi, $F_u=58$ ksi)		$Mu = n/a$	$\phi Mn = n/a$ Pass
Stiffener Data		Base Plate Summary	
(52) 8"H x 4.5"W x 0.625"T, Notch: 0.5"		Max Stress (ksi):	4.76 (Shear)
plate: $F_y = 36$ ksi ; weld: $F_y = 70$ ksi		Allowable Stress (ksi):	19.44
horiz. weld: 0.5" fillet		Stress Rating:	24.5% Pass
vert. weld: 0.375" fillet		Stiffener Summary	
Pole Data		Horizontal Weld:	39.0% Pass
60" x 0.625" round pole (A53-B-42; $F_y=42$ ksi, $F_u=63$ ksi)		Vertical Weld:	33.4% Pass
		Plate Flexure+Shear:	30.1% Pass
		Plate Tension+Shear:	48.0% Pass
		Plate Compression:	67.7% Pass
		Pole Summary	
		Punching Shear:	13.0% Pass

Pier and Pad Foundation

Site Name: Manchester/ I-84 X63
Work Order: 10473.CT11140J - Rev 1

TIA-222 Revision: G
Tower Type: Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp} :	65	kips
Base Shear, V_{u_comp} :	29	kips
Moment, M_u :	3795	ft-kips
Tower Height, H :	175	ft
BP Dist. Above Fdn, bp_{dist} :	3.5	in

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, d_{pier} :	7	ft
Ext. Above Grade, E :	0.5	ft
Pier Rebar Size, S_c :	9	
Pier Rebar Quantity, mc :	34	
Pier Tie/Spiral Size, S_t :	4	
Pier Tie/Spiral Quantity, mt :	12	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

Pad Properties		
Depth, D :	10	ft
Pad Width, W :	20	ft
Pad Thickness, T :	3	ft
Pad Rebar Size (Bottom), S_p :	8	
Pad Rebar Quantity (Bottom), mp :	23	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, F_y :	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 Gross Bearing, Q_{ult} :	10.000	ksf
Cohesion, C_u :	34.000	ksf
Friction Angle, ϕ :		degrees
SPT Blow Count, N_{blows} :		
Base Friction, μ :	0.3	
Neglected Depth, N :	3.50	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	N/A	ft

Foundation Analysis Checks				
	Capacity	Demand	Rating	Check
Lateral (Sliding) (kips)	4484.66	29.00	0.6%	Pass
Bearing Pressure (ksf)	7.50	3.49	46.5%	Pass
Overturning (kip*ft)	12954.13	4107.96	31.7%	Pass
Pier Flexure (Comp.) (kip*ft)	5447.29	4012.50	73.7%	Pass
Pier Compression (kip)	18370.97	116.95	0.6%	Pass
Pad Flexure (kip*ft)	2502.77	1786.86	71.4%	Pass
Pad Shear - 1-way (kips)	621.12	350.18	56.4%	Pass
Pad Shear - 2-way (Comp) (ksi)	0.164	0.000	0.0%	Pass

Soil Rating:	46.5%
Structural Rating:	73.7%

*Foundation information and soil properties based solely on the previous analysis report by Hudson Design Group

<--Toggle between Gross and Net

CONNECTICUT DESIGN CRITERIA - STATE

Revision:

CT is NOT a Home Rule State; Tab added only for Design Criteria

(APPENDIX N) MUNICIPALITY - SPECIFIC STRUCTURAL DESIGN PARAMETERS									
Municipality	Ground Snow Load	Wind Design Parameters							
		MCE Spectral Accelerations (%g)		Ultimate Design Wind Speeds, V_{ult} (mph)			Nominal Design Wind Speeds, V_{asd} (mph)		
		S_s	S_1	Risk Cat. I	Risk Cat. II	Risk Cat III-IV	Risk Cat. I	Risk Cat. II	Risk Cat. III-IV
Andover	30	0.176	0.063	120	130	140	93	101	108
Ansonia	30	0.195	0.064	115	125	135	89	97	105
Ashford	35	0.173	0.063	120	130	140	93	101	108
Avon	35	0.181	0.064	110	120	130	85	93	101
Barkhamsted	40	0.177	0.065	110	120	125	85	93	97
Beacon Falls	30	0.192	0.064	115	125	135	89	97	105
Berlin	30	0.183	0.063	115	125	135	89	97	105
Bethany	30	0.189	0.063	115	125	135	89	97	105
Bethel	30	0.215	0.066	110	120	125	85	93	97
Bethlehem	35	0.190	0.065	110	120	125	85	93	97
Bloomfield	35	0.180	0.064	115	125	130	89	97	101
Bolton	30	0.177	0.063	115	125	135	89	97	105
Bozrah	30	0.170	0.061	120	135	145	93	105	112
Branford	30	0.180	0.061	120	130	140	93	101	108
Bridgeport	30	0.209	0.064	115	125	135	89	97	105
Bridgewater	35	0.201	0.066	110	120	125	85	93	97
Bristol	35	0.185	0.064	110	120	130	85	93	101
Brookfield	35	0.208	0.066	110	120	125	85	93	97
Brooklyn	35	0.171	0.062	120	130	140	93	101	108
Burlington	35	0.182	0.064	110	120	130	85	93	101
Canaan	40	0.173	0.065	105	115	120	81	89	93
Canterbury	35	0.171	0.061	120	130	140	93	101	108
Canton	35	0.180	0.064	110	120	130	85	93	101
Chaplin	35	0.173	0.062	120	130	140	93	101	108
Cheshire	30	0.186	0.063	115	125	135	89	97	105
Chester	30	0.172	0.060	120	130	140	93	101	108
Clinton	30	0.169	0.059	120	135	140	93	105	108
Colchester	30	0.174	0.061	120	130	140	93	101	108
Colebrook	40	0.174	0.065	105	115	125	81	89	97
Columbia	30	0.175	0.062	120	130	140	93	101	108
Cornwall	40	0.180	0.065	105	115	120	81	89	93
Coventry	30	0.176	0.063	120	130	140	93	101	108
Cromwell	30	0.181	0.063	115	125	135	89	97	105
Danbury	30	0.217	0.067	110	120	125	85	93	97
Darien	30	0.242	0.068	110	120	130	85	93	101
Deep River	30	0.170	0.060	120	130	140	93	101	108
Derby	30	0.195	0.064	115	125	135	89	97	105
Durham	30	0.179	0.062	115	130	140	89	101	108
Eastford	40	0.172	0.063	120	130	140	93	101	108
East Granby	35	0.177	0.065	110	120	130	85	93	101
East Haddam	30	0.172	0.061	120	130	140	93	101	108
East Hampton	30	0.177	0.062	120	130	140	93	101	108

New Milford	35	0.198	0.066	105	115	125	81	89	97
Newtown	30	0.208	0.066	110	120	130	85	93	101
Norfolk	40	0.175	0.065	105	115	125	81	89	97
North Branford	30	0.179	0.061	120	130	140	93	101	108
North Canaan	40	0.173	0.065	105	115	120	81	89	93
North Haven	30	0.184	0.062	115	125	135	89	97	105
North Stonington	30	0.163	0.059	125	135	145	97	105	112
Norwalk	30	0.232	0.067	110	120	130	85	93	101
Norwich	30	0.168	0.060	125	135	145	97	105	112
Old Lyme	30	0.164	0.059	125	135	145	97	105	112
Old Saybrook	30	0.164	0.059	125	135	145	97	105	112
Orange	30	0.192	0.063	115	125	135	89	97	105
Oxford	30	0.196	0.064	110	125	130	85	97	101
Plainfield	35	0.170	0.061	125	135	145	97	105	112
Plainville	35	0.184	0.064	115	125	135	89	97	105
Plymouth	35	0.186	0.064	110	120	130	85	93	101
Pomfret	40	0.172	0.063	120	130	140	93	101	108
Portland	30	0.180	0.063	115	130	135	89	101	105
Preston	30	0.167	0.060	125	135	145	97	105	112
Prospect	30	0.188	0.064	115	125	135	89	97	105
Putnam	40	0.172	0.063	120	130	140	93	101	108
Redding	30	0.220	0.067	110	120	130	85	93	101
Ridgefield	30	0.230	0.068	110	120	125	85	93	97
Rocky Hill	30	0.181	0.063	115	125	135	89	97	105
Roxbury	35	0.197	0.065	110	120	125	85	93	97
Salem	30	0.170	0.060	120	135	140	93	105	108
Salisbury	40	0.173	0.065	105	115	120	81	89	93
Scotland	30	0.172	0.061	120	130	140	93	101	108
Seymour	30	0.194	0.064	115	125	135	89	97	105
Sharon	40	0.179	0.065	105	115	120	81	89	93
Shelton	30	0.199	0.064	115	125	135	89	97	105
Sherman	35	0.202	0.066	105	115	120	81	89	93
Simsbury	35	0.179	0.064	110	120	130	85	93	101
Somers	35	0.174	0.064	115	125	135	89	97	105
Southbury	35	0.198	0.065	110	120	130	85	93	101
Southington	30	0.185	0.064	115	125	135	89	97	105
South Windsor	30	0.178	0.064	115	125	135	89	97	105
Sprague	30	0.171	0.061	120	130	140	93	101	108
Stafford	35	0.173	0.064	115	125	135	89	97	105
Stamford	30	0.249	0.069	110	120	130	85	93	101
Sterling	35	0.170	0.061	125	135	145	97	105	112
Stonington	30	0.159	0.058	125	140	150	97	108	116
Stratford	30	0.201	0.064	115	125	135	89	97	105
Suffield	35	0.176	0.065	110	120	130	85	93	101
Thomaston	35	0.186	0.064	110	120	130	85	93	101
Thompson	40	0.172	0.063	120	130	140	93	101	108
Tolland	35	0.175	0.064	115	125	135	89	97	105
Torrington	40	0.182	0.065	110	120	125	85	93	97
Trumbull	30	0.207	0.065	115	125	135	89	97	105
Union	40	0.172	0.064	115	125	135	89	97	105
Vernon	30	0.177	0.064	115	125	135	89	97	105
Voluntown	30	0.168	0.060	125	135	145	97	105	112
Wallingford	30	0.183	0.063	115	125	135	89	97	105

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph

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

Date Accessed: Mon Jul 20 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.

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

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

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

Exhibit E

Date: **July 30, 2020**

Mount Analysis Report

Tower Owner: Millenicom, LLC
Carrier: T-Mobile Northeast LLC

Site ID: CT11140J
Site Name: Manchester / I-84 X63
Site Data: 60 Industrial Park Rd, Vernon, Tolland County, CT 06066
Latitude 41° 50' 08.25", Longitude -72° 27' 17.59"
10.5 ft Platform Mount

Tectonic Project Number: 10473.CT11140J

Tectonic Engineering & Surveying Consultants P.C. is pleased to submit this **"Mount Analysis Report"** to determine the structural integrity of the above mentioned mount.

The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Platform Mount: **Sufficient Capacity – 67%**

This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a maximum topographic factor, Kzt, of 1.0 and Structure Class 2 were used in this analysis.

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

We at Tectonic appreciate the opportunity of providing our continuing professional services to you and T-Mobile. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: John-Fritz Julien / Ian Marinaccio

Respectfully submitted by:
Tectonic Engineering & Surveying Consultants P.C.



Edward N. Iamiceli, P.E.
Managing Director - Structural



Project Contact Info

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845.567.6656 Tel | 845.567.8703 Fax

tectonicengineering.com
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1) INTRODUCTION

The existing mount is a 10.5 ft low profile platform mapped by HighTower Solutions, Inc.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-G
Risk Category:	II
Wind Speed:	97 mph
Exposure Category:	B
Topographic Factor:	1.0
Ice Thickness:	1.0 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Loading Information

Mounting Level (ft)	Carrier Designation	Number of Antennas	Antenna Manufacturer	Antenna Model	Proposed Mount Type	Note
178.6	T-Mobile	3	commscope	SDX1926Q-43	Platform Mount w/ SitePro1 HRK12	1
		3	ericsson	AIR 6449 B41		
		3	ericsson	RRUS 4415 B25		

Note:

- 1) Proposed equipment to be installed on the existing platform mount.

Table 2 - Existing Equipment Loading Information

Mounting Level (ft)	Carrier Designation	Number of Antennas	Antenna Manufacturer	Antenna Model	Existing Mount Type	Note
178.6	T-Mobile	3	-	Twin Style TMA	Platform Mount	1
		3	rfs	APXVARR24_43-C-NA20		
		3	ericsson	AIR 32 B66Aa B2a		
		3	ericsson	RADIO 4449 B12/B71		
		3	rfs	APX16DWVS-16DWVS	-	2
		3	-	Twin Style TMA		

Notes:

- 1) Existing equipment.
2) Existing equipment to be removed, not considered in analysis.

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Dated
MANUFACTURER DRAWINGS	SitePro1	03/09/15
TOWER AND MOUNT MAPPING REPORT	Hightower Solutions, Inc.	06/07/19
RFDS	T-Mobile	07/06/20

3.1) Analysis Method

A tool internally developed, using Microsoft Excel, was used to calculate wind loading on all appurtenances and mount members. This information was then used in conjunction with another program, RISA-3D, which is a commercially available analysis software package, used to check the supporting building framing and calculate member stresses for various loading cases. The selected output from the analysis is included in Appendices B and C.

3.2) Assumptions

- 1) The antenna mounting system was properly fabricated, installed, and maintained in good condition in accordance with its original design, TIA Standards, and/or manufacturer's specifications.
- 2) The configuration of antennas, mounts, and other appurtenances are as specified in Tables 1 and 2.
- 3) 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.
- 4) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM 500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

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

4) ANALYSIS RESULTS

Table 4 - Mount Component Stresses vs. Capacity (Platform Mount)

Notes	Component	Mount Centerline (ft)	% Capacity	Pass / Fail
1	Face Horizontal	178.6	34	Pass
	Grating Support		33	Pass
	Mount Pipe		67	Pass
	Standoff Horizontal		25	Pass
	(P) HRK12 Top Rail		52	Pass
	Connection to Collar Mount		35	Pass
Structure Rating (max from all components) =				67%

Note:

- 1) See additional documentation in "Appendix C - Analysis Output" for calculations supporting the % capacity consumed.

4.1) Results/Conclusions

The existing antenna mount is adequate to support the proposed antenna and equipment installation as detailed in the following report. **A top rail kit shall be installed and attached to the existing antenna pipes, part number HRK12 as manufactured by SitePro1.**

This structural analysis only includes evaluation of the antenna platform mount and not the monopole tower. The monopole is to be analyzed under a separate structural analysis by Tectonic Engineering & Surveying Consultants, P.C.

Contractor shall field verify existing conditions and recommendations as noted on the construction drawings and notify the design engineer of any discrepancies prior to construction. Any further changes to the antenna and/or appurtenance configuration should be reviewed with respect to their effect on structural loads prior to implementation.

APPENDIX A
SOFTWARE INPUT CALCULATIONS

WIND AND ICE LOADS PER TIA-222-G

W.O.	10473.CT11140J
Project Name	Manchester/ I-84 X63
Location	60 Industrial Park Rd, Vernon, CT 06066
County	Tolland

Tower Type	MP	Monopole
Structure Class	2	Substantial hazard
Exposure Category	B	Suburban/wooded/obstructed
Topo Category	1	Flat or rolling terrain
Height of crest	0	ft

Basic Wind Speed (3-sec gust):		
Without ice	97	mph*
With ice	50	mph
Service	60	mph
Ice thickness	1.00	in

*Nominal converted from 125 mph ultimate risk cat. 2

Importance Factor	
Wind only	1.00
Wind with ice	1.00
Ice thickness	1.00
Supporting Data:	
K_e	0.90
K_t	N/A
f	N/A
z_g	1200
α	7
$K_{z,min}$	0.7
K_d	0.95
G_h	1.00

Height	z (ft)	178.58
	K_h	N/A
	K_{zt}	1.00
	K_z	1.17
	K_{iz}	1.18
Wind Pressure, q_z (psf)	No Ice	26.69
	With Ice	7.09
	Service	10.21
(tiz)	Ice Thk	2.37
Appurtenances ($q_z G_h$)	No Ice	26.69
	With Ice	7.09
	Service	10.21

Appurtenance Information

Effective Projected Area for Appurtenance $(EPA)_A = \text{Max}((EPA)_N, (EPA)_T)$

$(EPA)_T = \sum (C_{sA})_N$

Reduction Factor = 0.9

Wind Only Load Combinations

Antenna Configuration	(E) or (P)	Qty per Sector	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna (C _A) _T	Antenna (C _A) _N	Side Face (A _s) _T (ft²)	Wind ward Side Face (C _{sA}) _T (ft²)	Face Normal (A _s) _N (ft²)	Windward face Normal (C _{sA}) _N	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)	Antenna Weight (lb)	Total Weight (lb)	
AIR 6449 B41	P	1	178.58	2.76	20.50	8.30	Flat	1.27	1.20	1.91	2.17	4.71	5.09	136	58	103.0	103.0	
RRUS 4415 B25	P	1	178.58	1.24	13.20	5.40	Flat	1.21	1.20	0.56	0.61	1.37	1.48	39	16	46.3	46.3	
SDX1926Q-43	P	1	178.58	0.35	6.93	2.91	Flat	1.20	1.20	0.08	0.09	0.20	0.22	6	2	6.2	6.2	
TMA	E	1	178.58	1.32	14.00	3.10	Flat	1.32	1.20	0.34	0.40	1.54	1.66	44	11	33.0	33.0	
RRU 4449 B71+B12	E	1	178.58	1.25	13.20	10.40	Flat	1.20	1.20	1.08	1.17	1.38	1.49	40	31	75.0	75.0	
AIR-32 B2A/B66A	E	1	178.58	4.72	12.90	8.70	Flat	1.38	1.28	3.42	4.24	5.07	5.86	156	113	132.2	132.2	
APX/VAARR24_43-U-NA20	E	1	178.58	7.99	24.00	8.70	Flat	1.53	1.27	5.79	8.00	15.98	18.22	486	213	153.3	153.3	
										Σ (C _{sA}) _T	16.69	Σ (C _{sA}) _N	34.00					549

Wind with Ice Load Combinations

Wind with Ice Load Combinations																	
Ice Thk= 2.37 in																	
Antenna Configuration	(E) or (P)	Qty per Sector	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna (Ca)T	Antenna (Ca)N	Side Face (As)T (ft²)	Windward Side Face (CsaA)T (ft²)	Face Normal (As)N (ft²)	Windward Face Normal (CsAa)N (ft²)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)	Ice Area for Weight (ft²)	Ice Weight Alone (lbs)
AIR 6449 B41	P	1	178.58	3.15	25.24	13.04	Cylindrical	0.7	0.7	3.43	2.16	6.63	4.18	30	15	13.2	146.3
RRUS 4415 B25	P	1	178.58	1.64	17.94	10.14	Cylindrical	0.7	0.7	1.38	0.87	2.45	1.54	11	6	3.8	42.5
SDX1926Q-43	P	1	178.58	0.74	11.66	7.65	Cylindrical	0.7	0.7	0.47	0.30	0.72	0.45	3	2	0.6	6.3
TMA	E	1	178.58	1.71	18.74	7.84	Cylindrical	0.7	0.7	1.12	0.70	2.67	1.68	12	5	3.8	41.5
RRU 4449 B71+B12	E	1	178.58	1.64	17.94	15.14	Cylindrical	0.7	0.7	2.07	1.31	2.46	1.55	11	9	4.9	54.3
AIR-32 B2A/B66A	E	1	178.58	5.11	17.64	13.44	Cylindrical	0.72	0.72	5.72	3.72	7.51	4.88	35	26	17.0	187.6
APX/AARR24_43-U-NA20	E	1	178.58	8.39	28.74	13.44	Cylindrical	0.72	0.72	9.39	6.10	20.08	13.05	93	43	43.6	481.3
									Σ(CsaA)T		15.16	Σ(CsaA)N		27.34	960		

Maintenance Load Combinations

Antenna Configuration	(E) or (P)	Qty per Sector	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna $(C_A)_T$	Antenna $(C_A)_N$	Side Face $(A_s)_T$ (ft ²)	Windward Side Face $(C_{sA})_T$ (ft ²)	Face Normal $(A_s)_N$ (ft ²)	Windward Face Normal $(C_{sA})_N$ (ft ²)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)
AIR 6449 B41	P	1	178.58	2.76	20.50	8.30	Flat	1.27	1.20	1.91	2.17	4.71	5.09	52	22
RRUS 4415 B25	P	1	178.58	1.24	13.20	5.40	Flat	1.21	1.20	0.56	0.61	1.37	1.48	15	6
SDX1926Q-43	P	1	178.58	0.35	6.93	2.91	Flat	1.20	1.20	0.08	0.09	0.20	0.22	2	1
TMA	E	1	178.58	1.32	14.00	3.10	Flat	1.32	1.20	0.34	0.40	1.54	1.66	17	4
RRU 4449 B71+B12	E	1	178.58	1.25	13.20	10.40	Flat	1.20	1.20	1.08	1.17	1.38	1.49	15	12
AIR-32 B2A/B66A	E	1	178.58	4.72	12.90	8.70	Flat	1.38	1.28	3.42	4.24	5.07	5.86	60	43
APX/VAARR24_43-U-NA20	E	1	178.58	7.99	24.00	8.70	Flat	1.53	1.27	5.79	8.00	15.98	18.22	186	82

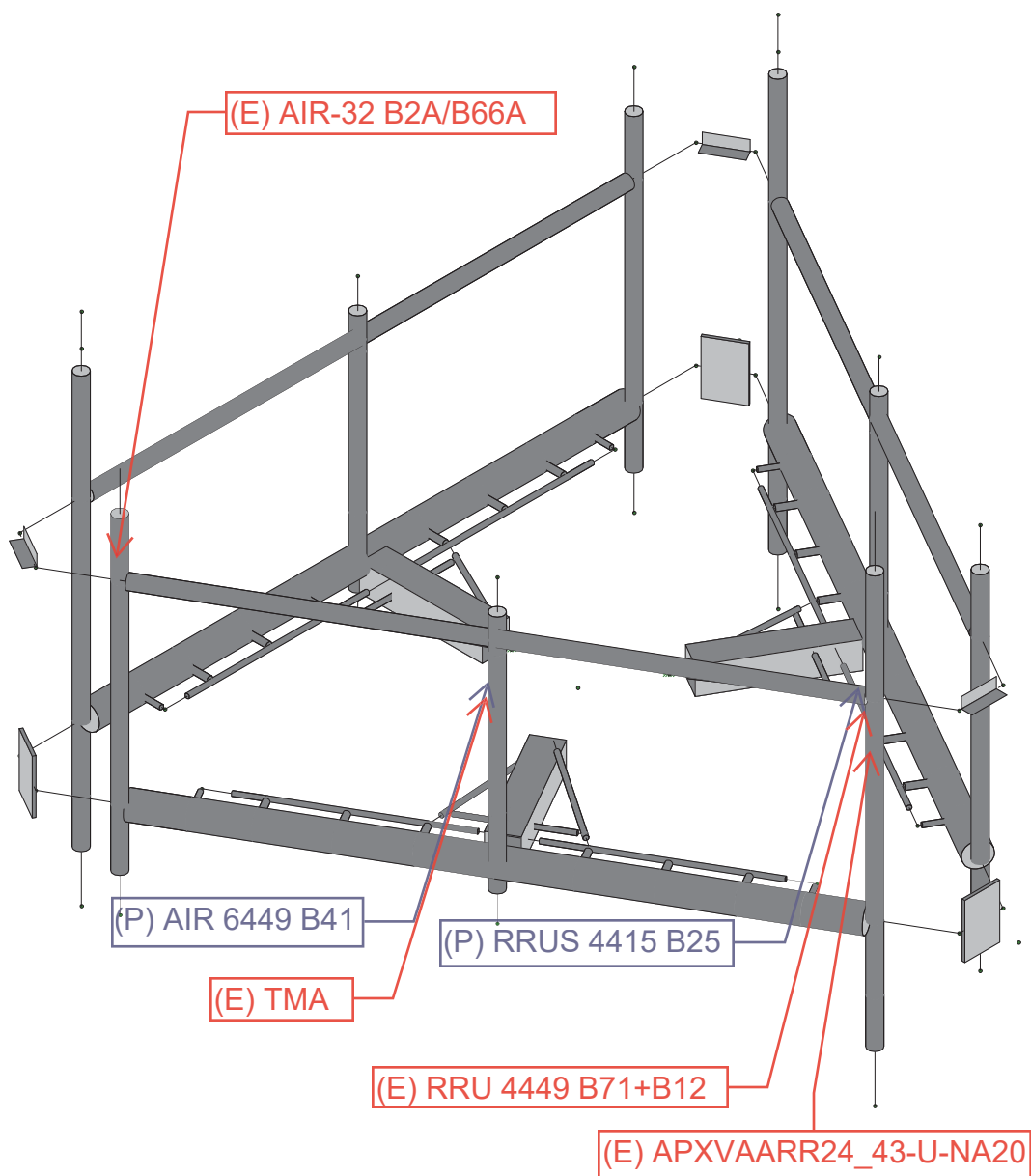
Existing Low-Profile Platform

Mount Center Line= 178.58 ft

Member lengths and widths based on mapping report by Hightower Solutions, dated 6/7/19.

Member Lengths and Masses Based on Mapping Report of Engineering Corporation, dated 07/11/10.										Reduction Factor = 0.9			
Mount Part	Quantity	Length (ft)	Projected Width (in)	Depth (in)	Flat or Cylindrical ?	Drag Factor	Projected Area (ft^2)	Wind Force (lbs/ft)	Ice Weight Area (ft^2)	Ice Weight (lbs/ft)	Projected Area with Ice (ft^2)	Wind Force Ice (lbs/ft)	Service Force (lbs/ft)
4.5" OD Pipe - Face Horizontal	3	10.50	4.50	4.50	Cylindrical	1.2	14.18	10.8	37.09	13.0	29.09	5.9	4.1
1" Solid Rod - Grating Support	3	0.50	1.00	1.00	Cylindrical	1.2	0.15	2.4	0.39	2.9	0.86	3.7	0.9
2.38" OD Pipe - MountPipe	9	6.00	2.38	2.38	Cylindrical	1.2	12.85	5.7	33.63	6.9	38.43	4.5	2.2
(P) 2.38" OD Pipe - HRK12 Top Rail	3	12.00	2.38	2.38	Cylindrical	1.2	8.57	5.7	22.42	6.9	25.62	4.5	2.2
HSS 5x5 x3/8 - Standoff	3	2.50	5.00	5.00	Flat	2	6.25	20.0	12.50	18.4	12.17	10.4	7.7
.75" Solid Rod - Grating Support	6	2.50	0.75	0.75	Cylindrical	1.2	1.13	1.8	2.94	2.2	8.23	3.5	0.7
(P) L2x2 - Corner Angle	3	1.00	2.00	2.00	Flat	2	1.00	8.0	2.00	7.4	3.37	7.2	3.1
PL 1/2 x10	3	0.86	10.00	0.50	Flat	2	4.30	40.0	4.52	19.3	6.34	15.7	15.3

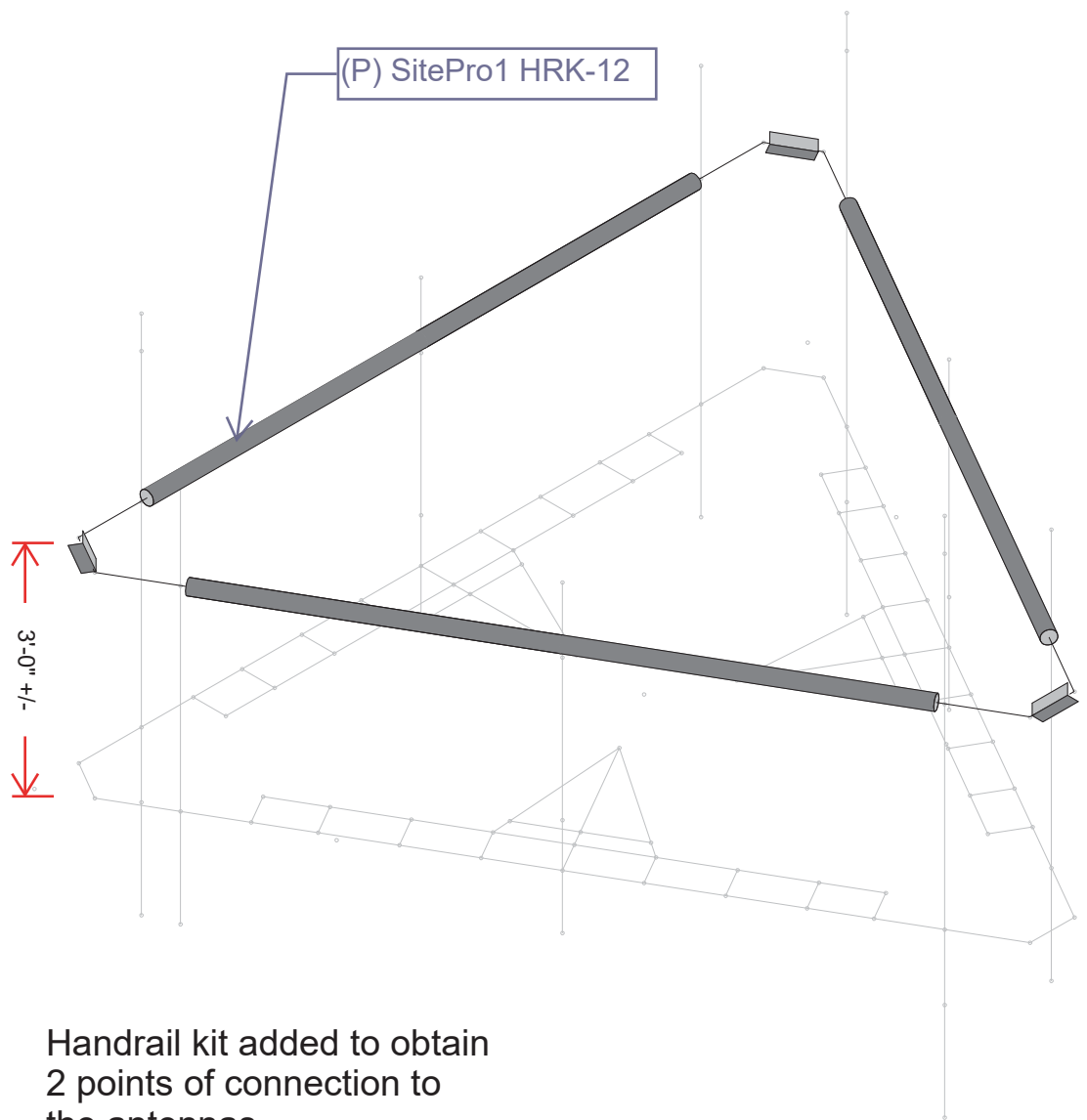
APPENDIX B
WIRE FRAME AND RENDERED MODELS



(P) PROPOSED
(E) EXISTING

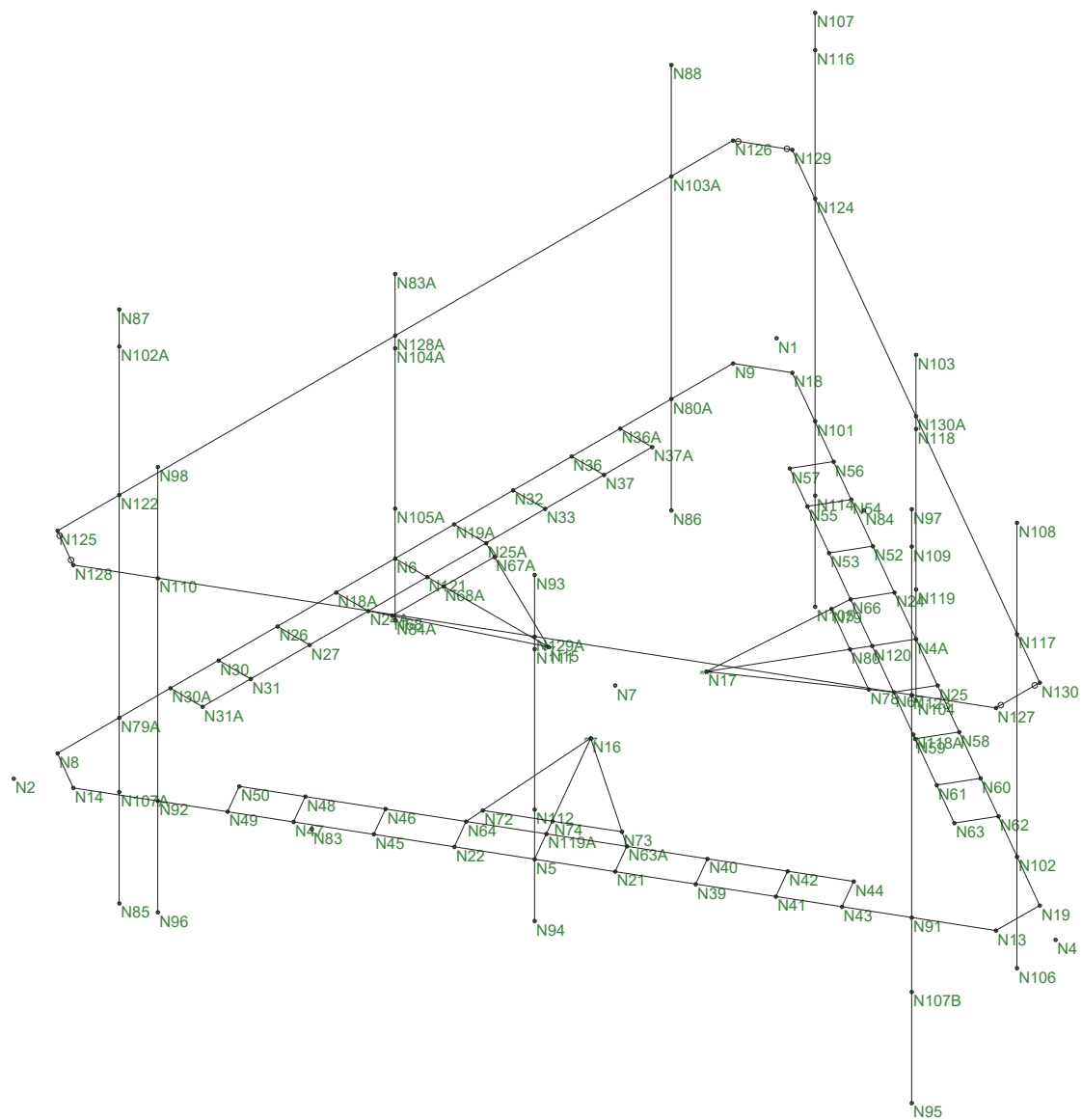
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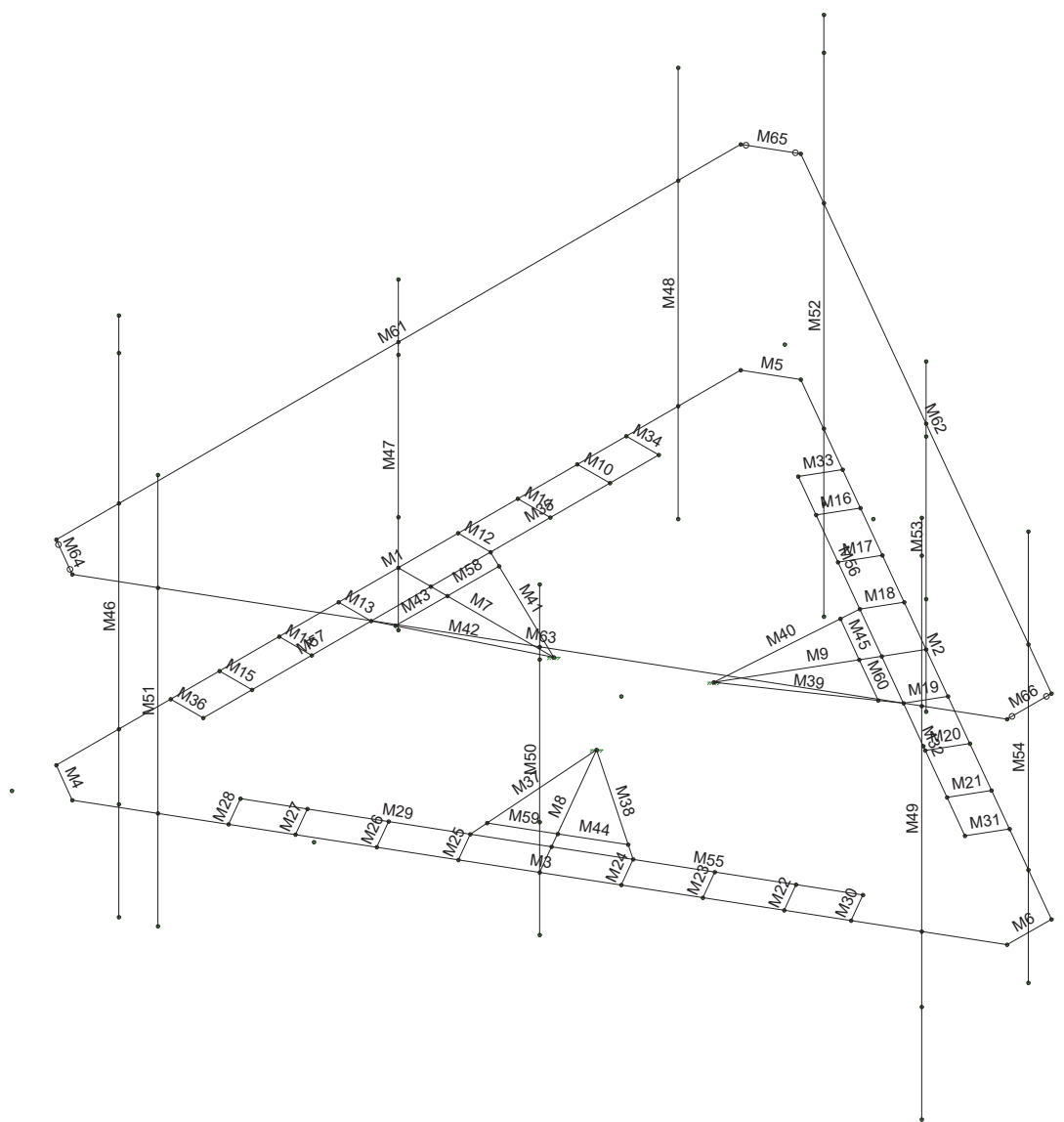
- 1) LISTED APPURTENANCES ABOVE ARE TYPICAL FOR ALL SECTORS.
- 2) RADIOS ARE LOCATED BEHIND THE ANTENNAS.

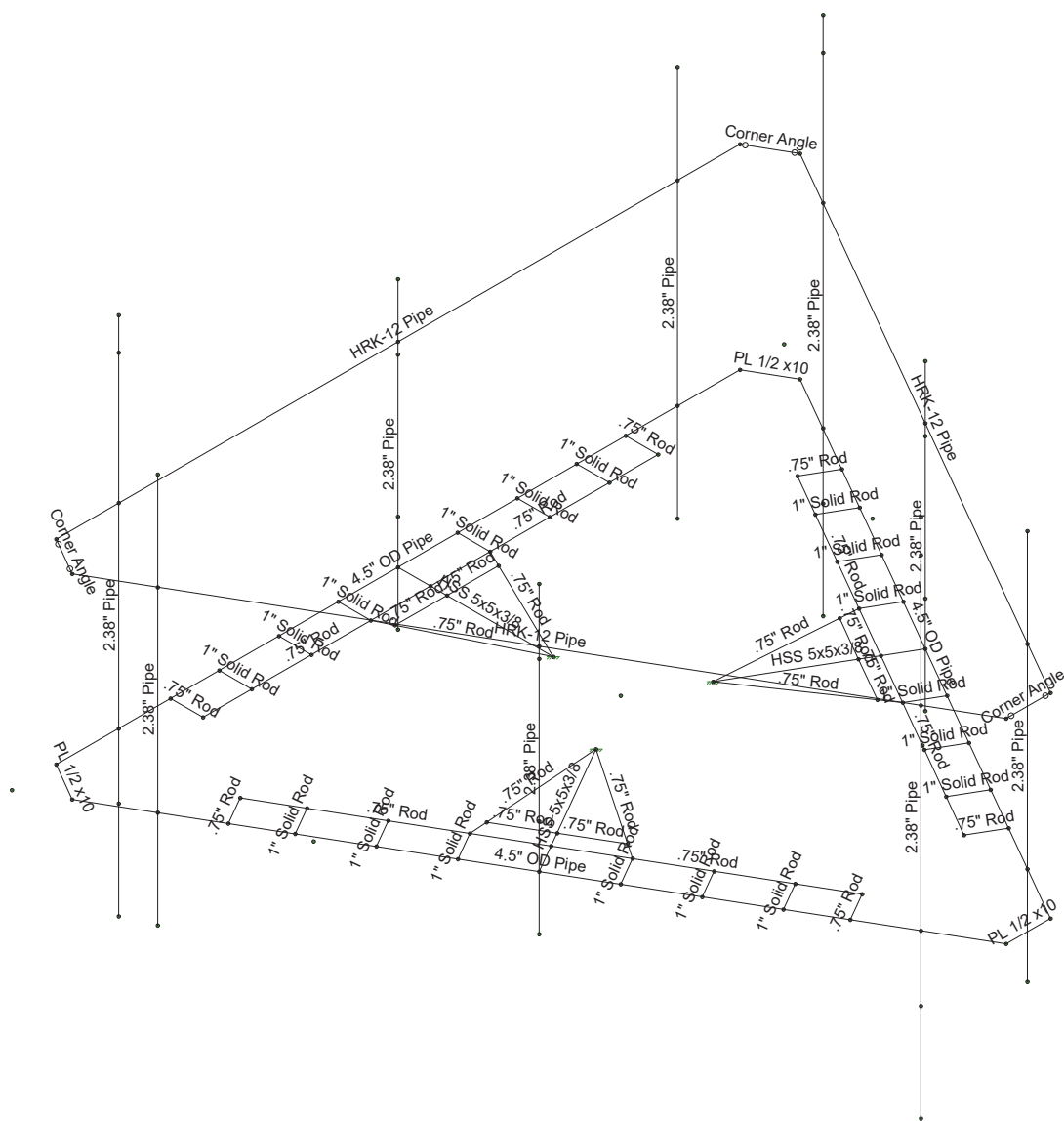


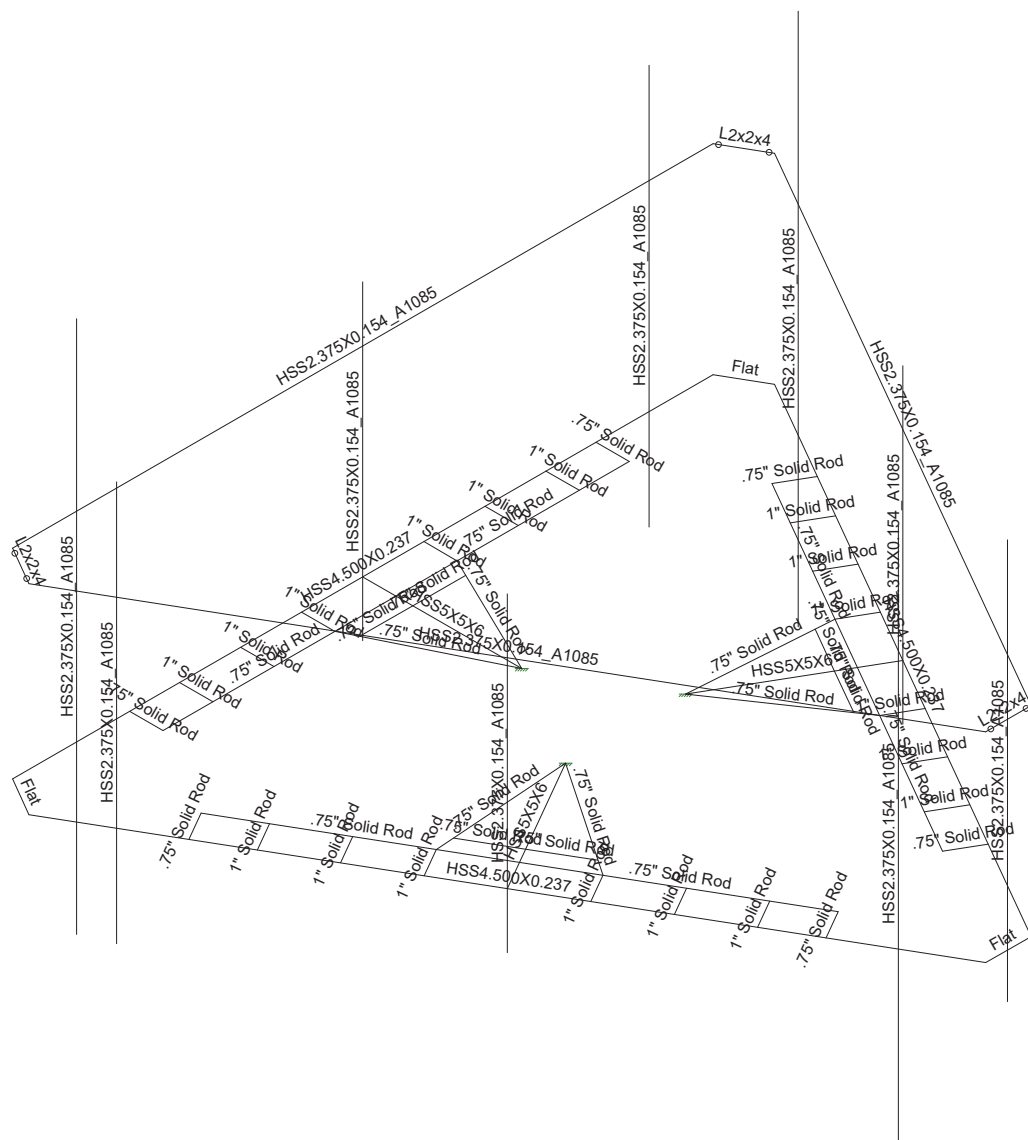
Handrail kit added to obtain
2 points of connection to
the antennas

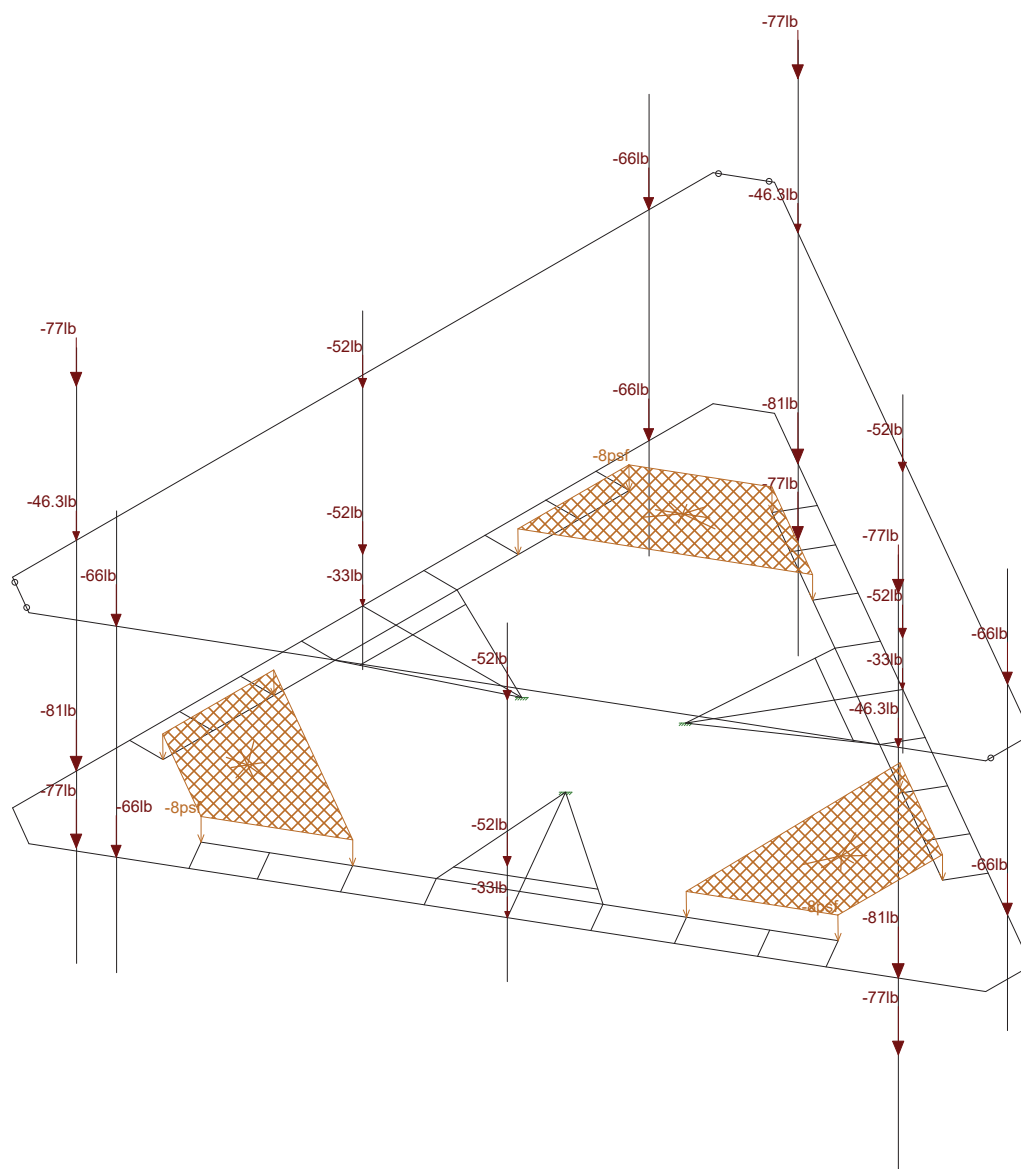
NOTE:
1) EXISTING AND PROPOSED ANTENNAS
AND MOUNTING PIPES ARE TO BE
VERTICALLY CENTERED ON THE
PLATFORM AND PROPOSED TOP RAIL

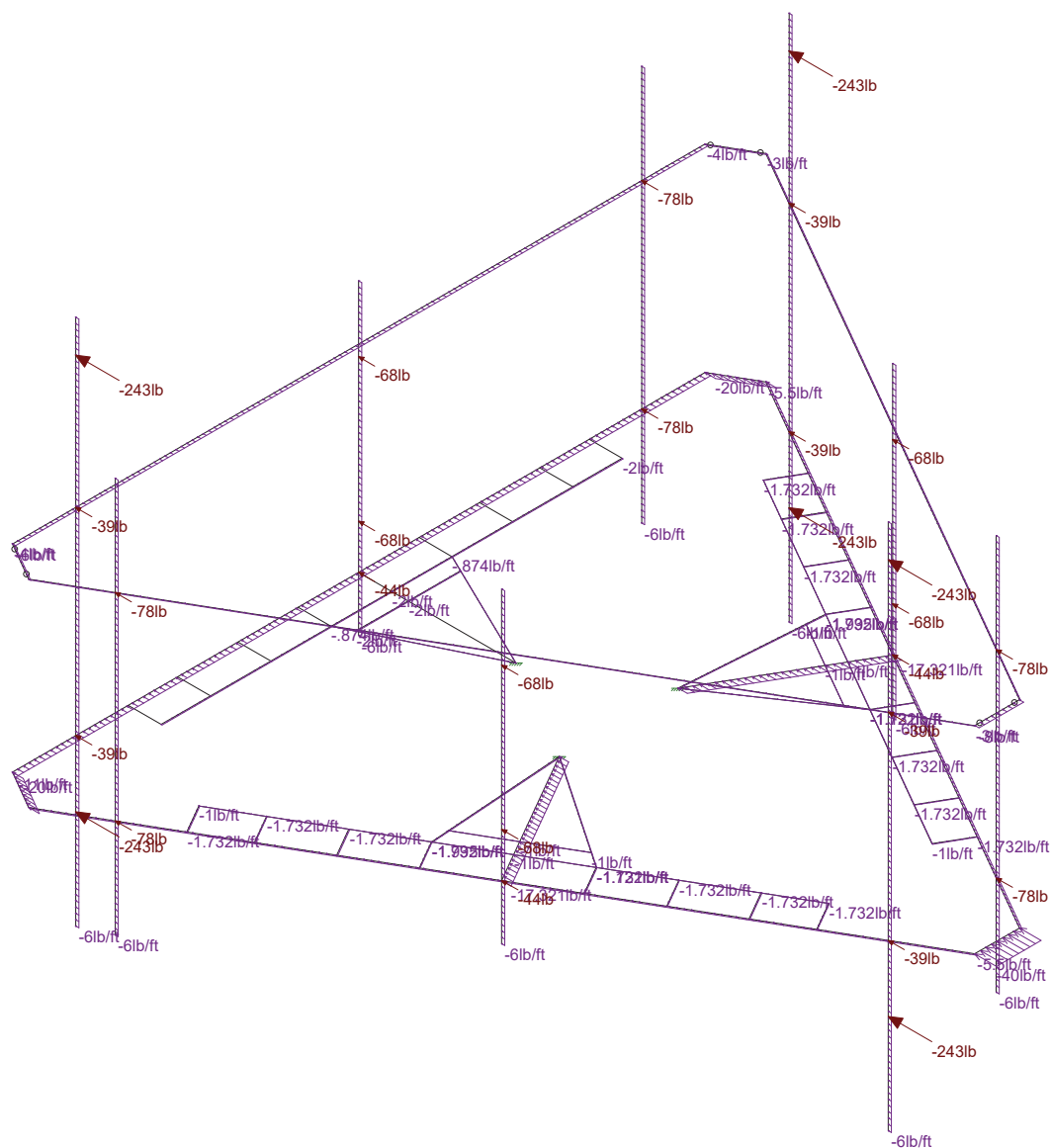


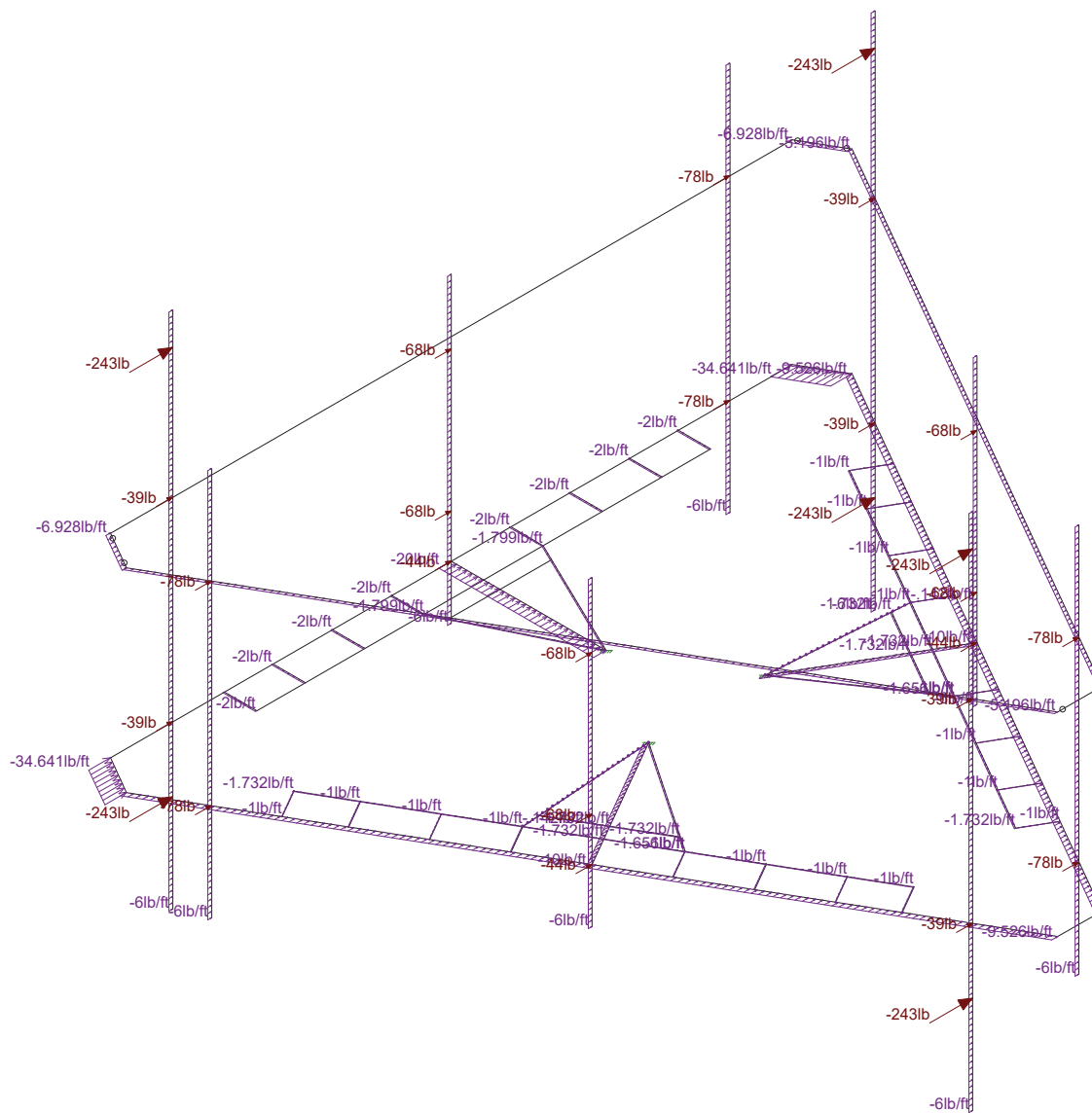


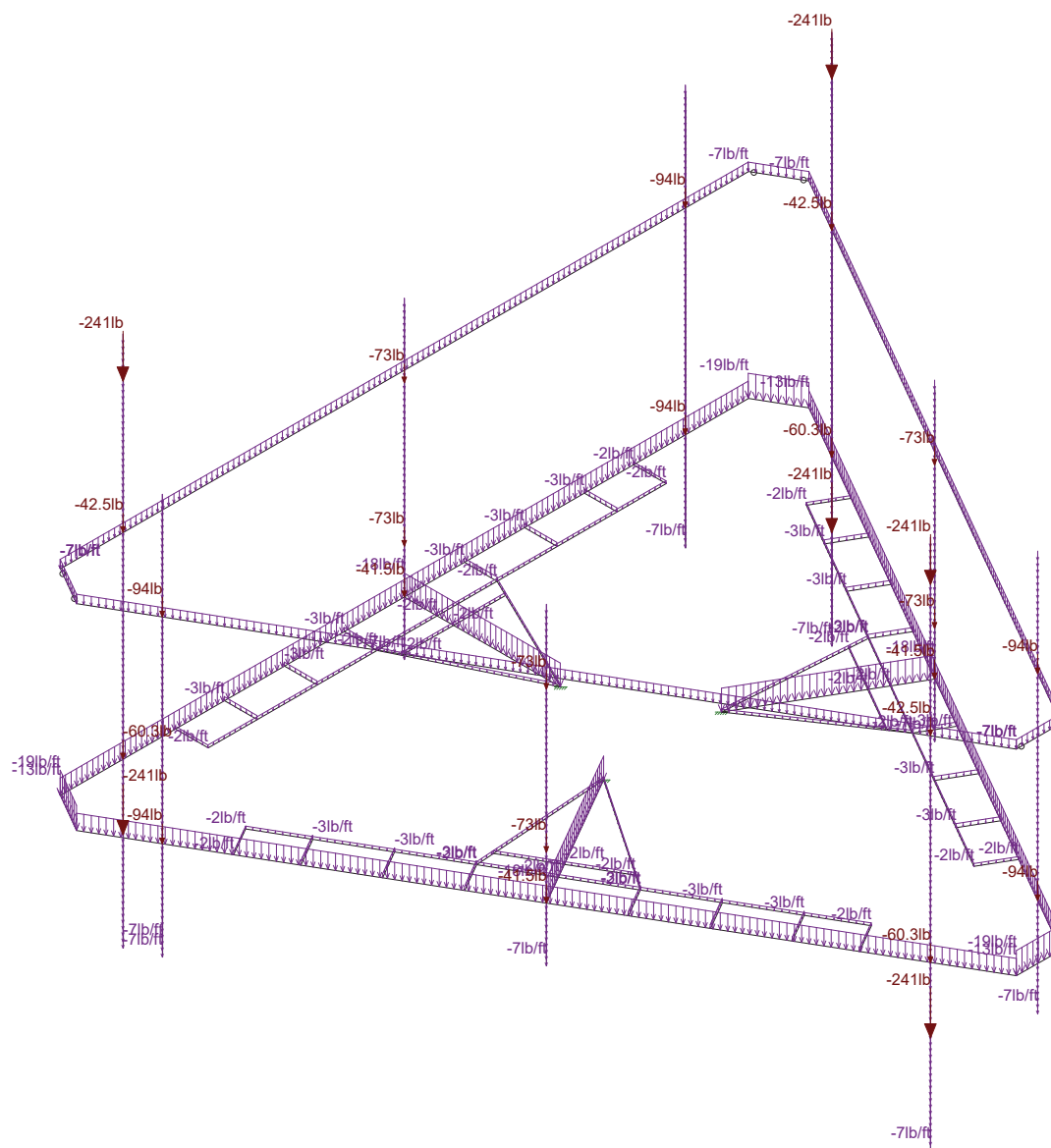


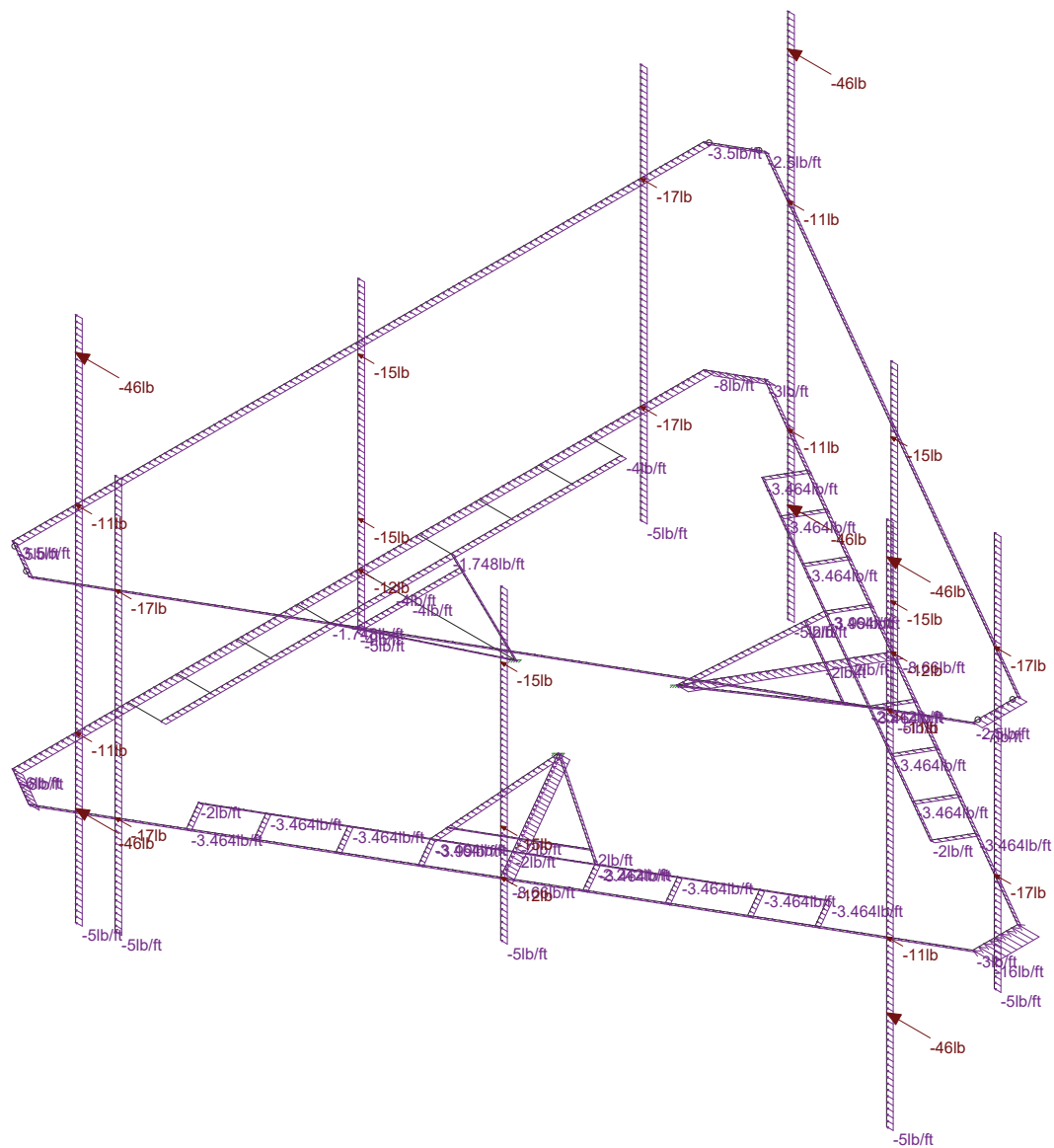


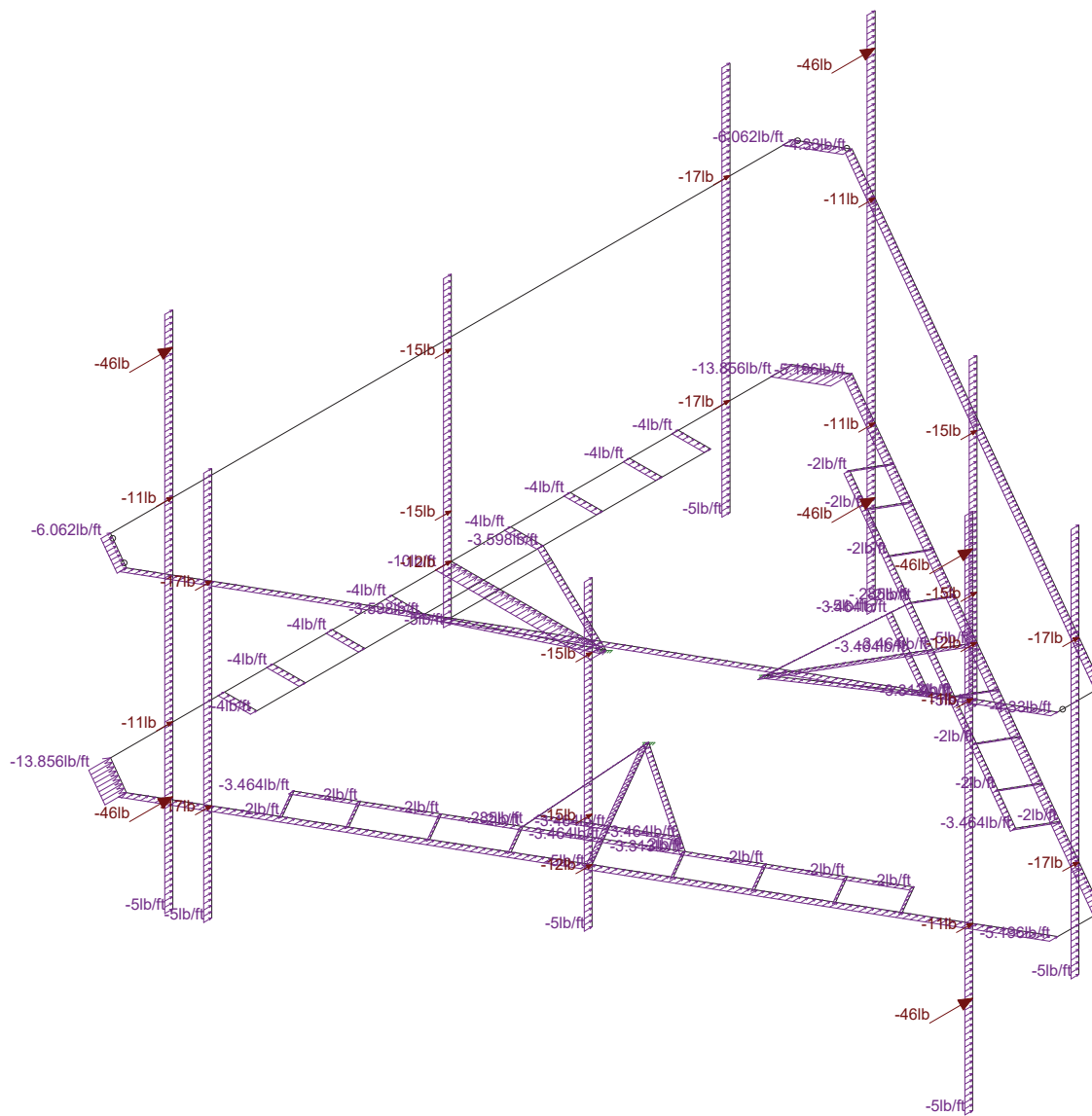


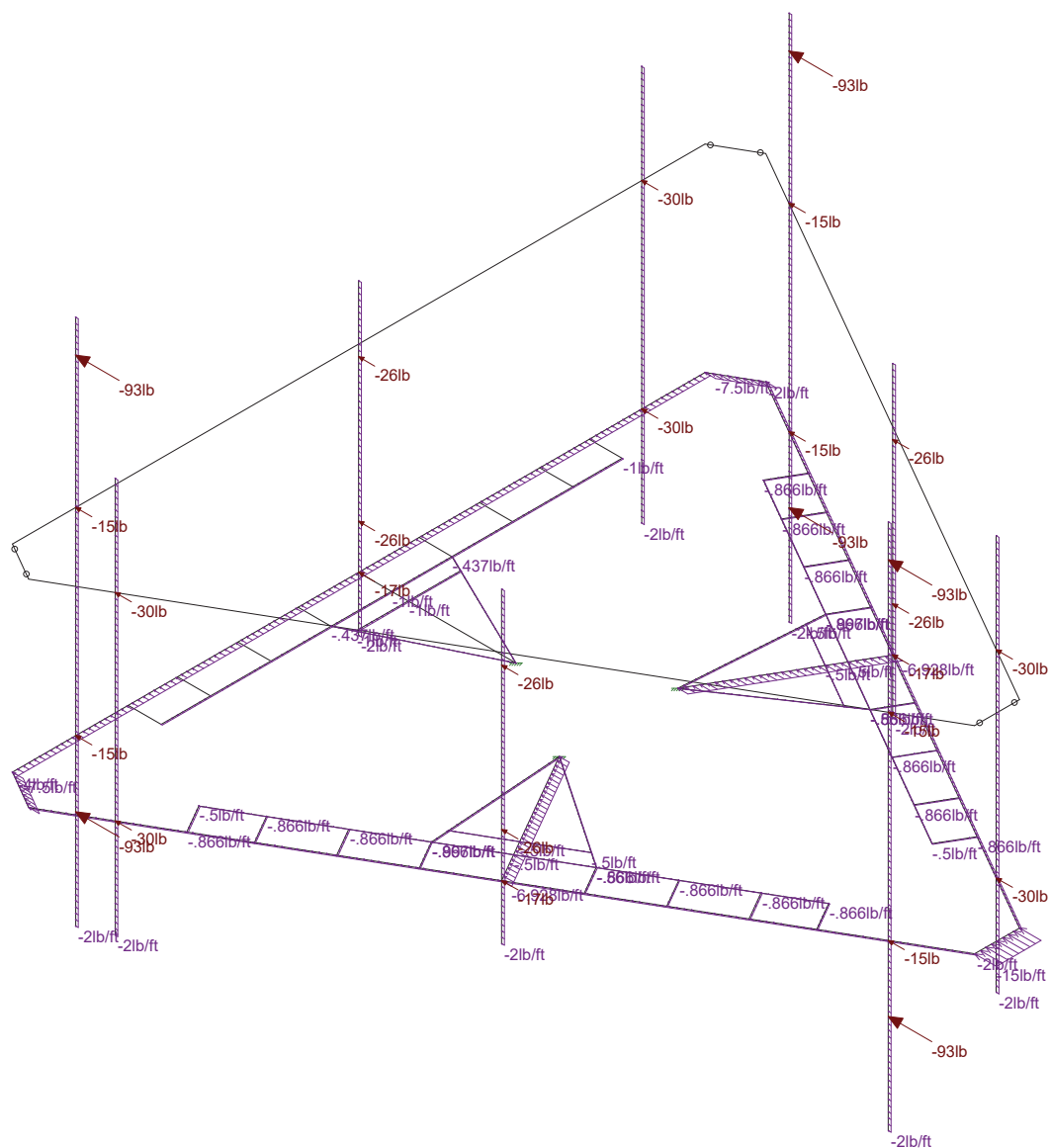


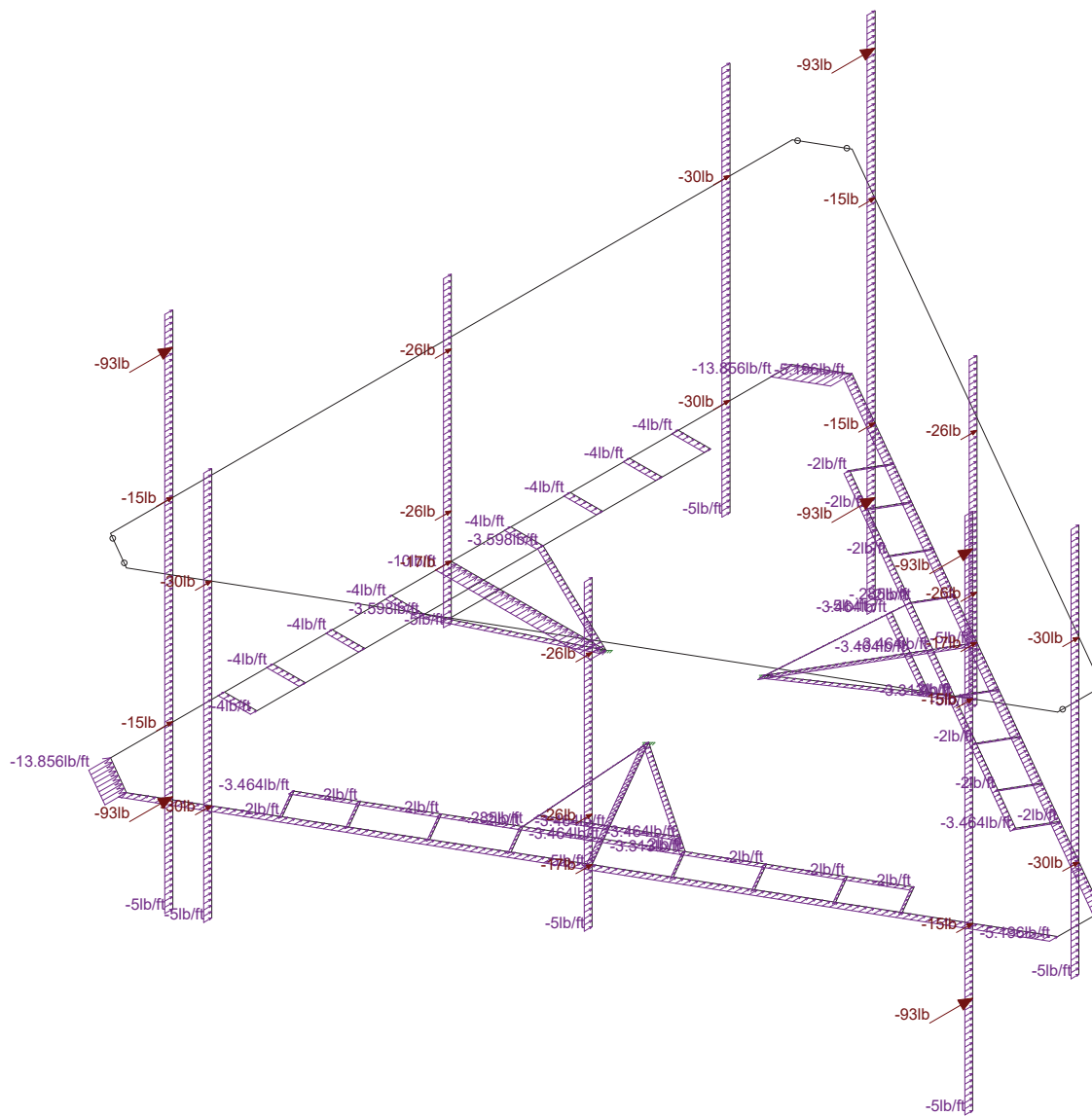




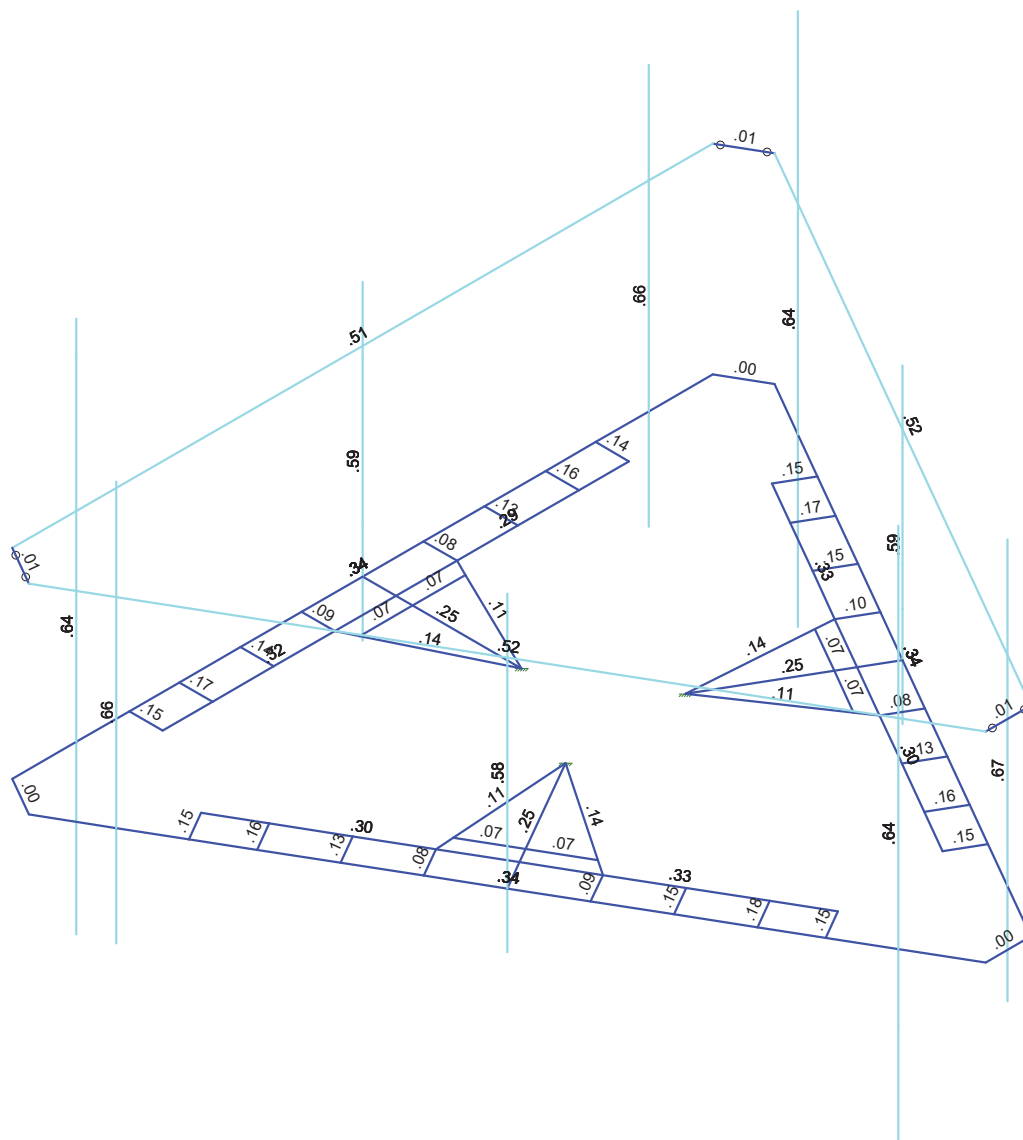








APPENDIX C
SOFTWARE ANALYSIS OUTPUT



Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1...	Density[k/f...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	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

Basic Load Cases

BLC Description		Category	X Grav...	Y Grav...	Z Gravity	Joint	Point	Distrib...	Area(Memb...	Surface(...
1	DL	DL		-1.05		30			3	
2	WLX	WL+X				27		66		
3	WLZ	WL+Z				27		66		
4	DL (ICE)	SL				30		66		
5	WLX (ICE)	WL+X				27		66		
6	WLZ (ICE)	WL+Z				27		66		
7	WLX (SER)	WL+X				27		60		
8	WLZ (SER)	WL+Z				27		60		
9	BLC 1 Transient Area Loa...	None						12		

Load Combinations

[illegible]

Load Combinations (Continued)

	Description	So...	P...	SRSS	BLCFa...	B...	Factor	BLC	Factor	B...	Fact...	B...	Fa...	B...	Fa...
32	1.2D+1.0(WLX+WLZ, Service) - 120 Deg	Yes	Y		1	1.2		7	-.5	8	.87				
33	1.2D+1.0(WLX+WLZ, Service) - 150 Deg	Yes	Y		1	1.2		7	-.87	8	.5				
34	1.2D+1.0(WLX+WLZ, Service) - 180 Deg	Yes	Y		1	1.2		7	-1	8					
35	1.2D+1.0(WLX+WLZ, Service) - 210 Deg	Yes	Y		1	1.2		7	-.87	8	-.5				
36	1.2D+1.0(WLX+WLZ, Service) - 240 Deg	Yes	Y		1	1.2		7	-.5	8	-.87				
37	1.2D+1.0(WLX+WLZ, Service) - 270 Deg	Yes	Y		1	1.2		7		8	-1				
38	1.2D+1.0(WLX+WLZ, Service) - 300 Deg	Yes	Y		1	1.2		7	.5	8	-.87				
39	1.2D+1.0(WLX+WLZ, Service) - 330 Deg	Yes	Y		1	1.2		7	.87	8	-.5				

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Desig...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	4.5" OD Pipe	HSS4.500X0.237	None	None	A53 Gr.B	Typical	2.96	6.79	6.79	13.6
2	.75" Rod	.75" Solid Rod	None	None	A36 Gr.36	Typical	.442	.016	.016	.031
3	1" Solid Rod	1" Solid Rod	None	None	A36 Gr.36	Typical	.785	.049	.049	.098
4	2.38" Pipe	HSS2.375X0.154 A1085	None	None	A53 Gr.B	Typical	1.075	.669	.669	1.339
5	HRK-12 Pipe	HSS2.375X0.154 A1085	None	None	A53 Gr.B	Typical	1.075	.669	.669	1.339
6	HSS 5x5x3/8	HSS5X5X6	None	None	A500 Gr.B ...	Typical	6.18	21.7	21.7	36.1
7	PL 1/2 x10	Flat	None	None	A36 Gr.36	Typical	200	1666	.6666	.4577
8	Corner Angle	L2x2x4	None	None	A36 Gr.36	Typical	.944	.346	.346	.021

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N15	max	1375.499	2	3201.9	15	2349.051	5	1597.491	5	3667.1	5	-407.685	8
2		min	-1389.784	8	848.494	8	-2345.553	11	-1679.947	11	-3667.633	11	-7821.885	15
3	N16	max	2271.72	2	3199.06	23	1604.553	5	-516.944	4	3913.248	13	4485.297	9
4		min	-2261.757	8	855.346	4	-1594.669	12	-6669.539	23	-3913.866	7	-529.933	3
5	N17	max	2122.079	2	3200.628	19	1763.3	4	6859.303	18	3913.194	9	3846.402	7
6		min	-2117.757	8	856.878	12	-1773.494	10	145.634	11	-3913.927	3	-19.024	13
7	Totals:	max	5769.298	2	9145.083	26	5692.646	5						
8		min	-5769.298	8	4950.452	2	-5692.646	11						

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

	Member	Shape	Code Ch...	Loc[ft]	LC	Shear C...	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt ...	phi*Mn y-y [l...	phi*M.....	Eqn
1	M54	HSS2.375X0.154...	.667	1.5	4	.137	1.5		10	22119.031	33875.34	2003.614	2003.....	H1-1b
2	M51	HSS2.375X0.154...	.664	1.5	8	.141	1.5		2	22119.031	33875.34	2003.614	2003.....	H1-1b
3	M48	HSS2.375X0.154...	.658	1.5	12	.138	1.5		6	22119.031	33875.34	2003.614	2003.....	H1-1b
4	M52	HSS2.375X0.154...	.640	2.5	12	.084	5.5		2	15877.633	33875.34	2003.614	2003.....	H1-1b
5	M46	HSS2.375X0.154...	.639	2.5	8	.081	5.5		10	15877.633	33875.34	2003.614	2003.....	H1-1b
6	M49	HSS2.375X0.154...	.636	2.5	4	.080	5.5		6	15877.633	33875.34	2003.614	2003.....	H1-1b
7	M53	HSS2.375X0.154...	.590	.874	11	.094	.874		8	26195.017	33875.34	2003.614	2003.....	H1-1b
8	M47	HSS2.375X0.154...	.587	.874	7	.094	.874		4	26195.017	33875.34	2003.614	2003.....	H1-1b
9	M50	HSS2.375X0.154...	.579	.874	3	.095	.874		12	26195.017	33875.34	2003.614	2003.....	H1-1b
10	M62	HSS2.375X0.154...	.521	.985	9	.141	5.255		12	9509.274	33875.34	2003.614	2003.....	H1-1b
11	M63	HSS2.375X0.154...	.520	.985	13	.141	5.255		4	9509.274	33875.34	2003.614	2003.....	H1-1b
12	M61	HSS2.375X0.154...	.512	.985	5	.140	5.254		8	9509.274	33875.34	2003.614	2003.....	H1-1b
13	M3	HSS4.500X0.237	.344	5.255	22	.120	10.5...		2	65388.266	93240	10578.75	1057...	H1-1b
14	M1	HSS4.500X0.237	.344	5.254	26	.120	10.5...		6	65388.266	93240	10578.75	1057...	H1-1b
15	M2	HSS4.500X0.237	.343	5.255	18	.121	10.5...		10	65388.266	93240	10578.75	1057...	H1-1b
16	M56	.75" Solid Rod	.327	.947	10	.013	0		5	1991.43	14313.8...	178.929	178.9...	H1-1a
17	M55	.75" Solid Rod	.327	.947	2	.013	0		9	1991.43	14313.8...	178.929	178.9...	H1-1a
18	M57	.75" Solid Rod	.317	.947	6	.013	0		13	1991.43	14313.8...	178.929	178.9...	H1-1a
19	M29	.75" Solid Rod	.298	2.551	6	.010	.729		12	1991.43	14313.8...	178.929	178.9...	H1-1a

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

	Member	Shape	Code	Ch...	Loc[ft]	LC	Shear C...	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt ...	phi*Mn y-y [l...	phi*M.....	Egn
20	M32	.75" Solid Rod	.298	2.551	2	.010	.729			2	1991.43	14313.8...	178.929	178.9...	H1-1a
21	M35	.75" Solid Rod	.288	2.551	10	.010	.729			4	1991.43	14313.8...	178.929	178.9...	H1-1a
22	M9	HSS5X5X6	.254	2.385	4	.087	2.385	z		3	251868.097	255852	36570	36570	H1-1b
23	M8	HSS5X5X6	.252	2.385	8	.087	2.385	z		7	251868.097	255852	36570	36570	H1-1b
24	M7	HSS5X5X6	.248	2.385	12	.084	2.385	z		11	251868.097	255852	36570	36570	H1-1b
25	M22	1" Solid Rod	.175	.5	2	.023	0			2	24686.84	25446.8...	424.112	424.1...	H1-1b
26	M16	1" Solid Rod	.174	.5	10	.024	0			10	24686.84	25446.8...	424.112	424.1...	H1-1b
27	M15	1" Solid Rod	.170	0	6	.024	.5			6	24686.84	25446.8...	424.112	424.1...	H1-1b
28	M21	1" Solid Rod	.162	.5	2	.021	0			2	24686.84	25446.8...	424.112	424.1...	H1-1b
29	M27	1" Solid Rod	.161	.5	6	.019	0			6	24686.84	25446.8...	424.112	424.1...	H1-1b
30	M10	1" Solid Rod	.157	0	10	.018	.5			10	24686.84	25446.8...	424.112	424.1...	H1-1b
31	M30	.75" Solid Rod	.152	.5	2	.018	0			8	13562.687	14313.8...	178.929	178.9...	H1-1b
32	M33	.75" Solid Rod	.151	.5	10	.018	0			4	13562.687	14313.8...	178.929	178.9...	H1-1b
33	M17	1" Solid Rod	.148	.5	10	.022	0			11	24686.84	25446.8...	424.112	424.1...	H1-1b
34	M23	1" Solid Rod	.148	.5	2	.022	0			3	24686.84	25446.8...	424.112	424.1...	H1-1b
35	M31	.75" Solid Rod	.148	0	2	.018	.5			8	13562.687	14313.8...	178.929	178.9...	H1-1b
36	M36	.75" Solid Rod	.147	.5	6	.017	0			12	13562.687	14313.8...	178.929	178.9...	H1-1b
37	M28	.75" Solid Rod	.146	0	6	.018	.5			12	13562.687	14313.8...	178.929	178.9...	H1-1b
38	M14	1" Solid Rod	.145	0	6	.021	.5			7	24686.84	25446.8...	424.112	424.1...	H1-1b
39	M42	.75" Solid Rod	.143	.262	7	.029	.262			12	5547.1	14313.8...	178.929	178.9...	H1-...
40	M38	.75" Solid Rod	.142	.262	3	.029	.262			8	5547.1	14313.8...	178.929	178.9...	H1-...
41	M34	.75" Solid Rod	.142	0	10	.018	.5			4	13562.687	14313.8...	178.929	178.9...	H1-1b
42	M40	.75" Solid Rod	.140	.262	11	.029	.262			4	5547.1	14313.8...	178.929	178.9...	H1-...
43	M26	1" Solid Rod	.132	.5	6	.018	0			5	24686.84	25446.8...	424.112	424.1...	H1-1b
44	M20	1" Solid Rod	.132	.5	2	.018	0			13	24686.84	25446.8...	424.112	424.1...	H1-1b
45	M11	1" Solid Rod	.129	0	10	.018	.5			9	24686.84	25446.8...	424.112	424.1...	H1-1b
46	M41	.75" Solid Rod	.112	.262	9	.029	.262			5	5547.1	14313.8...	178.929	178.9...	H1-...
47	M39	.75" Solid Rod	.111	.262	13	.029	.262			9	5547.1	14313.8...	178.929	178.9...	H1-...
48	M37	.75" Solid Rod	.109	.262	5	.029	.262			13	5547.1	14313.8...	178.929	178.9...	H1-...
49	M18	1" Solid Rod	.095	.5	10	.018	0			5	24686.84	25446.8...	424.112	424.1...	H1-1b
50	M24	1" Solid Rod	.095	.5	2	.018	0			9	24686.84	25446.8...	424.112	424.1...	H1-1b
51	M13	1" Solid Rod	.093	0	6	.018	.5			13	24686.84	25446.8...	424.112	424.1...	H1-1b
52	M25	1" Solid Rod	.082	.5	6	.013	0			11	24686.84	25446.8...	424.112	424.1...	H1-1b
53	M19	1" Solid Rod	.082	.5	2	.013	0			7	24686.84	25446.8...	424.112	424.1...	H1-1b
54	M12	1" Solid Rod	.080	0	10	.012	.5			3	24686.84	25446.8...	424.112	424.1...	H1-1b
55	M45	.75" Solid Rod	.067	.794	4	.013	.794			4	12496.123	14313.8...	178.929	178.9...	H1-1b
56	M44	.75" Solid Rod	.067	.794	8	.013	.794			8	12496.123	14313.8...	178.929	178.9...	H1-1b
57	M59	.75" Solid Rod	.067	0	12	.010	0			12	12496.123	14313.8...	178.929	178.9...	H1-1b
58	M60	.75" Solid Rod	.066	0	8	.010	0			8	12496.123	14313.8...	178.929	178.9...	H1-1b
59	M43	.75" Solid Rod	.066	.794	12	.013	.794			12	12496.123	14313.8...	178.929	178.9...	H1-1b
60	M58	.75" Solid Rod	.065	0	4	.010	0			4	12496.123	14313.8...	178.929	178.9...	H1-1b
61	M65	L2x2x4	.012	.325	5	.229	.678	z		12	29882.161	30585.6	690.934	1576.....	H2-1
62	M64	L2x2x4	.012	.381	2	.226	0	y		8	29882.161	30585.6	690.934	1576.....	H2-1
63	M66	L2x2x4	.012	.339	9	.225	.678	z		4	29882.161	30585.6	690.934	1576.....	H2-1
64	M6	Flat	.001	0	9	.751	.678	y		5	6.47729e+6	6.48e+6	1.35e+6	2.7e+6...	H1-1b
65	M5	Flat	.001	.678	5	.757	0	y		13	6.47729e+6	6.48e+6	1.35e+6	2.7e+6...	H1-1b
66	M4	Flat	.001	0	13	.758	.678	y		9	6.47729e+6	6.48e+6	1.35e+6	2.7e+6...	H1-1b

THE MAXIMUM MEMBER STRESS IS AT 67% OF ITS CAPACITY AND IS ADEQUATE TO SUPPORT THE PROPOSED UPGRADE.

Design connection per AISC Steel Manual, 14th edition [LRFD].

Connection Details

Bolts		
Quantity =	4	
Diameter =	0.75	
Vertical Spacing =	6.75	in (assumed)
Horizontal Spacing =	6.75	in (assumed)
Grade =	A325	
F_{nt} =	90	ksi
F_{nv} =	54	ksi

Loading Details

Node N15		
Shear, Z =	2.349	k
Shear, Y =	3.201	k
Tension, X =	1.39	k
Mz =	7.821	k-ft
My =	3.667	k-ft
Mx =	1.68	k-ft
	[Table J3.2]	
	[Table J3.2]	

1 - Tensile Capacity

$\phi R_{nt} = F_{nt} A_b$	[Eqn. J3-1]	
ϕ =	0.75	
F_{nt} =	90	ksi
A_b =	0.442	in ²
ϕR_{nt} =	29.84	k
T_{max} =	10.56	k
$R_{nt} > T_{max}$	35%	OK

2 - Shear Capacity

$\phi R_{nv} = F_{nv} A_b$	[Eqn. J3-1]	
ϕ =	0.75	
F_{nv} =	54	ksi
A_b =	0.442	in ²
ϕR_{nv} =	17.90	k
V_{max} =	3.10	k
$R_{nv} > V_{max}$	17%	OK

3 - Combined Tension and Shear Capacity

$\phi R'_{nt} = F'_{nt} A_b$	[Eqn. J3-2]	
$F'_{nt} = 1.3F_{nt} - \frac{F_{nt}}{\phi F_{nv}} f_{rv} \leq F_{nt}$	[Eqn. J3-3a]	
ϕ =	0.75	
F'_{nt} =	90	ksi
A_b =	0.442	in ²
$\phi R'_{nt}$ =	29.84	k
T_{max} =	10.56	k
$R'_{nt} > T_{max}$	35%	OK

CONNECTICUT DESIGN CRITERIA - STATE

Revision:

CT is NOT a Home Rule State; Tab added only for Design Criteria

(APPENDIX N) MUNICIPALITY - SPECIFIC STRUCTURAL DESIGN PARAMETERS									
Municipality	Ground Snow Load	Wind Design Parameters							
		MCE Spectral Accelerations (%g)		Ultimate Design Wind Speeds, V_{ult} (mph)			Nominal Design Wind Speeds, V_{asd} (mph)		
		S_s	S_1	Risk Cat. I	Risk Cat. II	Risk Cat III-IV	Risk Cat. I	Risk Cat. II	Risk Cat. III-IV
Andover	30	0.176	0.063	120	130	140	93	101	108
Ansonia	30	0.195	0.064	115	125	135	89	97	105
Ashford	35	0.173	0.063	120	130	140	93	101	108
Avon	35	0.181	0.064	110	120	130	85	93	101
Barkhamsted	40	0.177	0.065	110	120	125	85	93	97
Beacon Falls	30	0.192	0.064	115	125	135	89	97	105
Berlin	30	0.183	0.063	115	125	135	89	97	105
Bethany	30	0.189	0.063	115	125	135	89	97	105
Bethel	30	0.215	0.066	110	120	125	85	93	97
Bethlehem	35	0.190	0.065	110	120	125	85	93	97
Bloomfield	35	0.180	0.064	115	125	130	89	97	101
Bolton	30	0.177	0.063	115	125	135	89	97	105
Bozrah	30	0.170	0.061	120	135	145	93	105	112
Branford	30	0.180	0.061	120	130	140	93	101	108
Bridgeport	30	0.209	0.064	115	125	135	89	97	105
Bridgewater	35	0.201	0.066	110	120	125	85	93	97
Bristol	35	0.185	0.064	110	120	130	85	93	101
Brookfield	35	0.208	0.066	110	120	125	85	93	97
Brooklyn	35	0.171	0.062	120	130	140	93	101	108
Burlington	35	0.182	0.064	110	120	130	85	93	101
Canaan	40	0.173	0.065	105	115	120	81	89	93
Canterbury	35	0.171	0.061	120	130	140	93	101	108
Canton	35	0.180	0.064	110	120	130	85	93	101
Chaplin	35	0.173	0.062	120	130	140	93	101	108
Cheshire	30	0.186	0.063	115	125	135	89	97	105
Chester	30	0.172	0.060	120	130	140	93	101	108
Clinton	30	0.169	0.059	120	135	140	93	105	108
Colchester	30	0.174	0.061	120	130	140	93	101	108
Colebrook	40	0.174	0.065	105	115	125	81	89	97
Columbia	30	0.175	0.062	120	130	140	93	101	108
Cornwall	40	0.180	0.065	105	115	120	81	89	93
Coventry	30	0.176	0.063	120	130	140	93	101	108
Cromwell	30	0.181	0.063	115	125	135	89	97	105
Danbury	30	0.217	0.067	110	120	125	85	93	97
Darien	30	0.242	0.068	110	120	130	85	93	101
Deep River	30	0.170	0.060	120	130	140	93	101	108
Derby	30	0.195	0.064	115	125	135	89	97	105
Durham	30	0.179	0.062	115	130	140	89	101	108
Eastford	40	0.172	0.063	120	130	140	93	101	108
East Granby	35	0.177	0.065	110	120	130	85	93	101
East Haddam	30	0.172	0.061	120	130	140	93	101	108
East Hampton	30	0.177	0.062	120	130	140	93	101	108

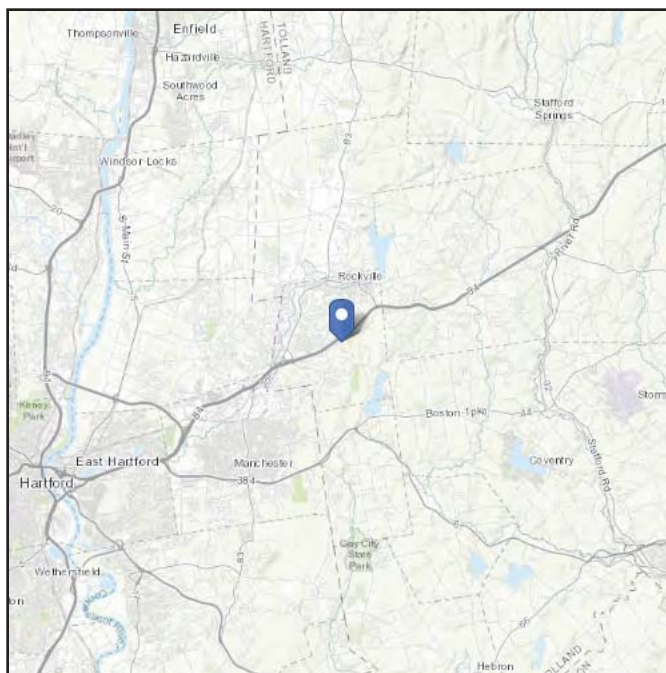
New Milford	35	0.198	0.066	105	115	125	81	89	97
Newtown	30	0.208	0.066	110	120	130	85	93	101
Norfolk	40	0.175	0.065	105	115	125	81	89	97
North Branford	30	0.179	0.061	120	130	140	93	101	108
North Canaan	40	0.173	0.065	105	115	120	81	89	93
North Haven	30	0.184	0.062	115	125	135	89	97	105
North Stonington	30	0.163	0.059	125	135	145	97	105	112
Norwalk	30	0.232	0.067	110	120	130	85	93	101
Norwich	30	0.168	0.060	125	135	145	97	105	112
Old Lyme	30	0.164	0.059	125	135	145	97	105	112
Old Saybrook	30	0.164	0.059	125	135	145	97	105	112
Orange	30	0.192	0.063	115	125	135	89	97	105
Oxford	30	0.196	0.064	110	125	130	85	97	101
Plainfield	35	0.170	0.061	125	135	145	97	105	112
Plainville	35	0.184	0.064	115	125	135	89	97	105
Plymouth	35	0.186	0.064	110	120	130	85	93	101
Pomfret	40	0.172	0.063	120	130	140	93	101	108
Portland	30	0.180	0.063	115	130	135	89	101	105
Preston	30	0.167	0.060	125	135	145	97	105	112
Prospect	30	0.188	0.064	115	125	135	89	97	105
Putnam	40	0.172	0.063	120	130	140	93	101	108
Redding	30	0.220	0.067	110	120	130	85	93	101
Ridgefield	30	0.230	0.068	110	120	125	85	93	97
Rocky Hill	30	0.181	0.063	115	125	135	89	97	105
Roxbury	35	0.197	0.065	110	120	125	85	93	97
Salem	30	0.170	0.060	120	135	140	93	105	108
Salisbury	40	0.173	0.065	105	115	120	81	89	93
Scotland	30	0.172	0.061	120	130	140	93	101	108
Seymour	30	0.194	0.064	115	125	135	89	97	105
Sharon	40	0.179	0.065	105	115	120	81	89	93
Shelton	30	0.199	0.064	115	125	135	89	97	105
Sherman	35	0.202	0.066	105	115	120	81	89	93
Simsbury	35	0.179	0.064	110	120	130	85	93	101
Somers	35	0.174	0.064	115	125	135	89	97	105
Southbury	35	0.198	0.065	110	120	130	85	93	101
Southington	30	0.185	0.064	115	125	135	89	97	105
South Windsor	30	0.178	0.064	115	125	135	89	97	105
Sprague	30	0.171	0.061	120	130	140	93	101	108
Stafford	35	0.173	0.064	115	125	135	89	97	105
Stamford	30	0.249	0.069	110	120	130	85	93	101
Sterling	35	0.170	0.061	125	135	145	97	105	112
Stonington	30	0.159	0.058	125	140	150	97	108	116
Stratford	30	0.201	0.064	115	125	135	89	97	105
Suffield	35	0.176	0.065	110	120	130	85	93	101
Thomaston	35	0.186	0.064	110	120	130	85	93	101
Thompson	40	0.172	0.063	120	130	140	93	101	108
Tolland	35	0.175	0.064	115	125	135	89	97	105
Torrington	40	0.182	0.065	110	120	125	85	93	97
Trumbull	30	0.207	0.065	115	125	135	89	97	105
Union	40	0.172	0.064	115	125	135	89	97	105
Vernon	30	0.177	0.064	115	125	135	89	97	105
Voluntown	30	0.168	0.060	125	135	145	97	105	112
Wallingford	30	0.183	0.063	115	125	135	89	97	105

ASCE 7 Hazards Report

Address:
No Address at This
Location

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

Elevation: 372.89 ft (NAVD 88)
Latitude: 41.835626
Longitude: -72.454885



Wind

Results:

Wind Speed:	124 Vmph
10-year MRI	77 Vmph
25-year MRI	87 Vmph
50-year MRI	94 Vmph
100-year MRI	101 Vmph

* Ultimate 3 sec gust wind speed of 124 mph
converted to basic wind speed of 96 mph

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

Date Accessed: Mon Jul 20 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 need not be protected against wind-borne debris.

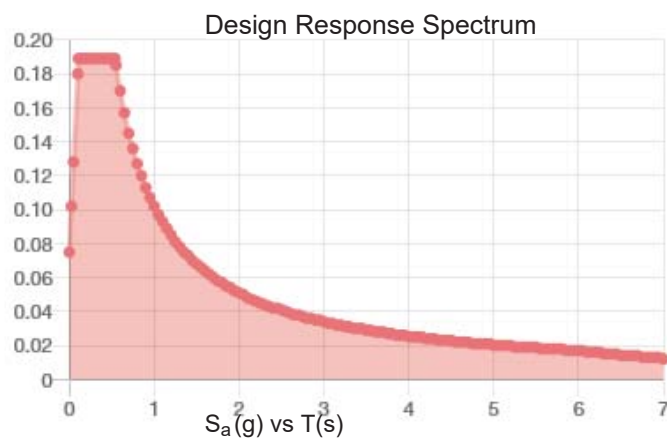
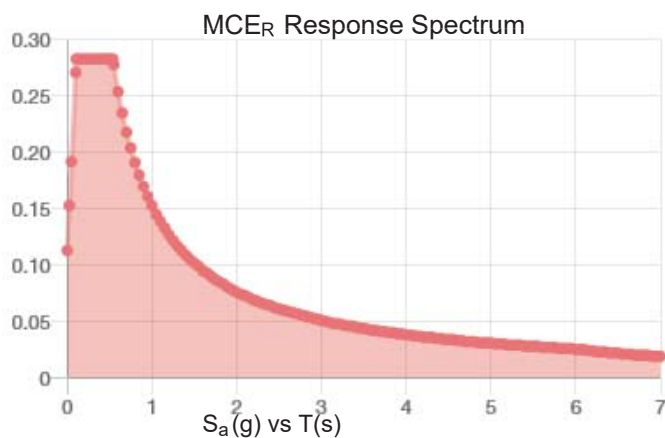
Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

Site Soil Class: D - Stiff Soil

Results:

S_S :	0.177	S_{DS} :	0.189
S_1 :	0.064	S_{D1} :	0.102
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.088
S_{MS} :	0.283	PGA_M :	0.141
S_{M1} :	0.153	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B



Data Accessed:

Mon Jul 20 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.

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph

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

Date Accessed: Mon Jul 20 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.

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

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

Exhibit F



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

T-Mobile Existing Facility

Site ID: CT111401

Manchester/ I-84 X63
60 Industrial Park Road
Vernon, Connecticut 06066

August 7, 2020

EBI Project Number: 6220003718

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	12.21%

August 7, 2020

T-Mobile

Attn: Jason Overbey, RF Manager

35 Griffin Road South

Bloomfield, Connecticut 06002

Emissions Analysis for Site: CT11140J - Manchester/ I-84 X63

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **60 Industrial Park Road in Vernon, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ 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 ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately $400 \mu\text{W}/\text{cm}^2$ and $467 \mu\text{W}/\text{cm}^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is $1000 \mu\text{W}/\text{cm}^2$. 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 60 Industrial Park Road in Vernon, 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) 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.



- 6) 2 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 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) 2 LTE channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 9) 2 NR channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 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 RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector A, the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector B, the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 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 178.6 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:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd
Height (AGL):	178.6	Height (AGL):	178.6	Height (AGL):	178.6
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):	11,055.53	ERP (W):	11,055.53	ERP (W):	11,055.53
Antenna A1 MPE %:	1.88%	Antenna B1 MPE %:	1.88%	Antenna C1 MPE %:	1.88%
Antenna #:	2	Antenna #:	2	Antenna #:	2
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):	178.6	Height (AGL):	178.6	Height (AGL):	178.6
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts
ERP (W):	25,651.93	ERP (W):	25,651.93	ERP (W):	25,651.93
Antenna A2 MPE %:	2.89%	Antenna B2 MPE %:	2.89%	Antenna C2 MPE %:	2.89%
Antenna #:	3	Antenna #:	3	Antenna #:	3
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):	178.6	Height (AGL):	178.6	Height (AGL):	178.6
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 A3 MPE %:	1.45%	Antenna B3 MPE %:	1.45%	Antenna C3 MPE %:	1.45%



Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	6.22%
AT&T	2.53%
Nextel	0.3%
Verizon	3.16%
Site Total MPE % :	12.21%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	6.22%
T-Mobile Sector B Total:	6.22%
T-Mobile Sector C Total:	6.22%
Site Total MPE % :	12.21%

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 ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 600 MHz LTE	2	591.73	178.6	1.33	600 MHz LTE	400	0.33%
T-Mobile 600 MHz NR	1	1577.94	178.6	1.78	600 MHz NR	400	0.44%
T-Mobile 700 MHz LTE	2	648.82	178.6	1.46	700 MHz LTE	467	0.31%
T-Mobile 1900 MHz LTE	2	2203.69	178.6	4.97	1900 MHz LTE	1000	0.50%
T-Mobile 2100 MHz UMTS	2	1294.56	178.6	2.92	2100 MHz UMTS	1000	0.29%
T-Mobile 2500 MHz LTE	2	6412.98	178.6	14.46	2500 MHz LTE	1000	1.45%
T-Mobile 2500 MHz NR	2	6412.98	178.6	14.46	2500 MHz NR	1000	1.45%
T-Mobile 1900 MHz GSM	4	1028.30	178.6	4.64	1900 MHz GSM	1000	0.46%
T-Mobile 1900 MHz LTE	2	2056.61	178.6	4.64	1900 MHz LTE	1000	0.46%
T-Mobile 2100 MHz LTE	2	2307.55	178.6	5.20	2100 MHz LTE	1000	0.52%
						Total:	6.22%

• 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:	6.22%
Sector B:	6.22%
Sector C:	6.22%
T-Mobile Maximum MPE % (Sector A):	6.22%
Site Total:	12.21%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **12.21%** 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

To: amarchese@vernon-ct.gov; dchampagne@vernon-ct.gov
Cc: Sheldon Freinkle (sheldon@northeastsitesolutions.com); victoria@northeastsitesolutions.com
Subject: 60 INDUSTRIAL PARK ROAD VERNON CT 06076 T-MOBILE EM APPLICATION (CT11140J ANCHOR)
Attachments: 60 INDUSTRIAL PARK ROAD VERNON CT 06076 T-MOBILE EM APPLICATION (CT11140J ANCHOR).pdf

Good morning

On behalf of our client, (T-Mobile), I am forwarding copies of T-Mobile's Exempt Modification Request to

collocate on a wireless telecommunications facility located at 60 Industrial Park Road in Vernon, CT

Hard copies will be sent as well for your records.

Please do not hesitate to contact me with any questions regarding T-Mobile's Exempt Modification Request.

Thank you very much

Deborah Chase

Senior Project Coordinator & Analyst

Mobile: 860-490-8839



🌱 Save a tree. Refuse. Reduce. Reuse. Recycle.

Deborah Chase

From: Deborah Chase
Sent: Wednesday, August 26, 2020 10:06 AM
To: 'KThorne@DJVRealEstateLLC.com'
Subject: 60 INDUSTRIAL PARK ROAD VERNON CT 06076 T-MOBILE EM APPLICATION (CT11140J-ANCHOR)
Attachments: 60 INDUSTRIAL PARK ROAD VERNON CT 06076 T-MOBILE EM APPLICATION (CT11140J ANCHOR).pdf

Good morning

On behalf of our client, (T-Mobile), I am forwarding copies of T-Mobile's Exempt Modification Request to collocate on a wireless telecommunications facility located at 60 Industrial Park Road in Vernon, CT

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Please do not hesitate to contact me with any questions regarding T-Mobile's Exempt Modification Request.

Thank you very much

Deborah Chase

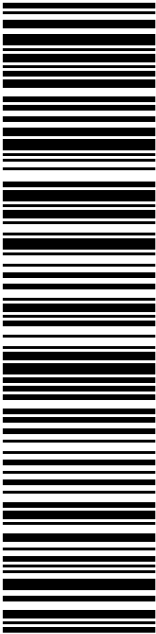
Senior Project Coordinator & Analyst

Mobile: 860-490-8839



🌳 Save a tree. Refuse. Reduce. Reuse. Recycle.

Exhibit H

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P		usps.com US POSTAGE Flat Rate Env \$7.75	
08/26/2020		9405 5036 9930 0005 0651 26 0077 5000 0010 6066 Mailed from 01566 062S00000001307	
PRIORITY MAIL 2-DAY™			
DEBORAH CHASE NORTHEAST SITE SOLUTIONS, LLC 420 MAIN ST STE 2 STURBRIDGE MA 01566-1359		Expected Delivery Date: 08/29/20 Re#: 140JANCH 0006	
Carrier -- Leave if No Response			
C025			
SHIP TO: DANIEL A CHAMPAGNE MAYOR-TOWN OF VERNON 14 PARK PL # 3 VERNON CT 06066-3291			
USPS TRACKING #			
			
9405 5036 9930 0005 0651 26			
Electronic Rate Approved #038555749			



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Instructions

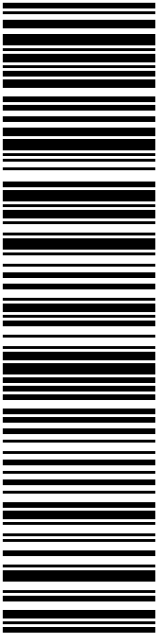
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- Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
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USPS TRACKING # : 9405 5036 9930 0005 0651 26	
Trans. #: 503872103 Print Date: 08/25/2020 Ship Date: 08/26/2020 Expected Delivery Date: 08/29/2020	Priority Mail® Postage: \$7.75 Total: \$7.75
From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS, LLC 420 MAIN ST STE 2 STURBRIDGE MA 01566-1359	
To: DANIEL A CHAMPAGNE MAYOR-TOWN OF VERNON 14 PARK PL # 3 VERNON CT 06066-3291	
Re#: 140JANCH	
* 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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P	usps.com US POSTAGE Flat Rate Env \$7.75 9405 5036 9930 0005 0651 33 0077 5000 0010 6066 08/26/2020 Mailed from 01566 062S00000001309
PRIORITY MAIL 2-DAY™	
DEBORAH CHASE NORTHEAST SITE SOLUTIONS, LLC 420 MAIN ST STE 2 STURBRIDGE MA 01566-1359 Expected Delivery Date: 08/29/20 Re#: 140JANCH 0006	
Carrier -- Leave if No Response C025	
SHIP TO: ANDREW MARCHESE ZONING ENFORCEMENT OFFICER-TOWN OF 55 W MAIN ST VERNON CT 06066-3504	
USPS TRACKING #  9405 5036 9930 0005 0651 33	
Electronic Rate Approved #038555749	



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9405 5036 9930 0005 0651 33

Trans. #: 503872103
 Print Date: 08/25/2020
 Ship Date: 08/26/2020
 Expected
 Delivery Date: 08/29/2020

Priority Mail® Postage: **\$7.75**
 Total: **\$7.75**

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

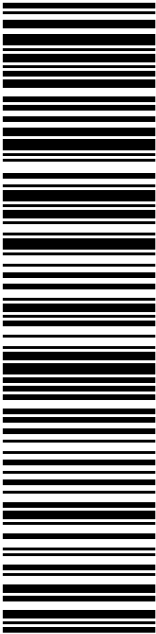
Re#: 140JANCH

To: ANDREW MARCHESE
 ZONING ENFORCEMENT OFFICER-TOWN OF VERNON
 55 W MAIN ST
 VERNON CT 06066-3504

* 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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P		usps.com US POSTAGE Flat Rate Env \$7.75	9405 5036 9930 0005 0651 40 0077 5000 0010 6074
08/26/2020		Mailed from 01566 062S0000001307	
PRIORITY MAIL 2-DAY™			
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Expected Delivery Date: 08/29/20 Re#: 140JANCH 0006			
Carrier -- Leave if No Response			
C004			
SHIP TO: KAREN THORNE DJV REAL ESTATE LLC 75 GERBER RD E SOUTH WINDSOR CT 06074-3202			
USPS TRACKING #			
			
9405 5036 9930 0005 0651 40			
Electronic Rate Approved #038555749			



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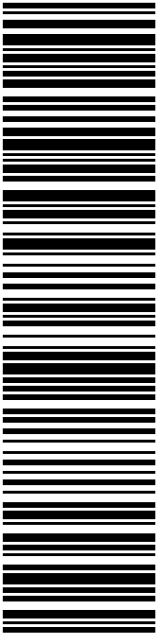
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USPS TRACKING # : 9405 5036 9930 0005 0651 40	
Trans. #: 503872103 Print Date: 08/25/2020 Ship Date: 08/26/2020 Expected Delivery Date: 08/29/2020	Priority Mail® Postage: \$7.75 Total: \$7.75
From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS, LLC 420 MAIN ST STE 2 STURBRIDGE MA 01566-1359	
Re#: 140JANCH	
To: KAREN THORNE DJV REAL ESTATE LLC 75 GERBER RD E SOUTH WINDSOR CT 06074-3202	
* 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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P		usps.com US POSTAGE Flat Rate Env	
08/26/2020		Mailed from 01566 062S0000000312	
PRIORITY MAIL 2-DAY™			
DEBORAH CHASE NORTHEAST SITE SOLUTIONS, LLC 420 MAIN ST STE 2 STURBRIDGE MA 01566-1359		Expected Delivery Date: 08/29/20 Re#: 140JANCH 0006	
Carrier -- Leave if No Response			
B025			
SHIP TO: MARCUS COMMUNICATTIONS MILLENICOM LLC PO BOX 1498 MANCHESTER CT 06045-1498			
USPS TRACKING #			
			
9405 5036 9930 0005 0651 57			
Electronic Rate Approved #038555749			



Cut on dotted line.

Instructions

- Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
- Place your label so it does not wrap around the edge of the package.
- 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.
- 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.
- Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0005 0651 57

Trans. #: 503872103
Print Date: 08/25/2020
Ship Date: 08/26/2020
Expected Delivery Date: 08/29/2020

Priority Mail® Postage: **\$7.75**
Total: **\$7.75**

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

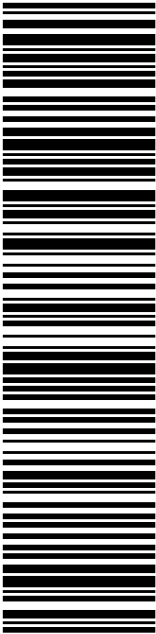
Re#: 140JANCH

To: MARCUS COMMUNICATTIONS
MILLENICOM LLC
PO BOX 1498
MANCHESTER CT 06045-1498

* 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.



Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com

 UNITED STATES POSTAL SERVICE®		Click-N-Ship®	
P		usps.com US POSTAGE Flat Rate Env	
08/26/2020		Mailed from 01566 062S0000000309	
PRIORITY MAIL 2-DAY™			
DEBORAH CHASE NORTHEAST SITE SOLUTIONS, LLC 420 MAIN ST STE 2 STURBRIDGE MA 01566-1359		Expected Delivery Date: 08/29/20 Re#: 140JANCH 0006	
Carrier -- Leave if No Response			
C006			
SHIP TO: LISA A MATTHEWS CT SITING COUNCIL 10 FRANKLIN SQ NEW BRITAIN CT 06051-2655			
USPS TRACKING #			
			
9405 5036 9930 0005 5701 01			
Electronic Rate Approved #038555749			



Cut on dotted line.

Instructions

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- Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # : 9405 5036 9930 0005 5701 01	
Trans. #: 503905797 Print Date: 08/26/2020 Ship Date: 08/26/2020 Expected Delivery Date: 08/29/2020	Priority Mail® Postage: \$7.75 Total: \$7.75
From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS, LLC 420 MAIN ST STE 2 STURBRIDGE MA 01566-1359	
To: LISA A MATTHEWS CT SITING COUNCIL 10 FRANKLIN SQ NEW BRITAIN CT 06051-2655	
Re#: 140JANCH	
* 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.	



Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com