



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

July 25, 2021

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

RE: Exempt Modification Application
319 New Britain Ave, Farmington CT 06032
Latitude: 41.74971000
Longitude: -72.87251100
T-Mobile Site#: CTHA149A-NHP-Anchor-L600-L1900

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 160-foot level of the existing 190-foot monopole located at 319 New Britain Ave, Farmington CT. The 190-foot monopole and property are owned by the Town of Farmington. T-Mobile now intends to replace nine (9) existing antennas with three (3) new 600/700 MHz antenna, three (3) new 1900/2100 MHz antenna, and three (3) new 2500 MHz antenna. The new antennas would be installed at the 160-foot level of the monopole. T-Mobile is also proposing mount modifications. As shown on the enclosed mount analysis.

Planned Modifications

Remove:

- (6) Coax
- (1) Hybrid Line

Remove and Replace:

- (3) AIR21 B2A B4P 1900 MHZ Antenna (Remove) - (3) AIR32 B2A B66A 1900/2100 MHz Antenna (Replace)
- (3) AIR21 B2P B4A 2100 MHz Antenna (Remove) - (3) AIR 6449 B41 Antenna 2500 MHz (Replace)
- (3) LNX6515 Antenna (Remove) - (3) APXVAARR24 Antenna 600/700/1900/2100 MHz (Replace)
- (1) 12.5' Platform Mount (Remove) - (1) HRK12 Top Rail Kit (Replace)
- (3) RRUS11 B12 (Remove) - (3) Radio 4449 B71+B85 (Replace)

Install New:

- (3) Hybrid Line
- (3) Radio 4415 B25
- (3) Diplexers



Existing to Remain:

- (6) Coax
- (3) Twin TMA

Ground:

- (1) P6230 DC Power Cabinet
- (1) GENERAC RD 25 KW AC DIESEL GENERATOR – 240-gallon double walled self-contained tank with fuel sensor. Requires two (2) 12-minute run cycles by-weekly.
- 4'x10' Concrete pad

This facility was approved by the CT Siting Council Petition No.423 on August 16, 1999. 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 to The Honorable C.J. Thomas, Chairman Town Council and Kathleen A. Blonski –Town Manager for the Town of Farmington.

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@northeastitesolutions.com



NSS **NORTHEAST**
SITE SOLUTIONS
Turnkey Wireless Development

Attachments

cc:

The Honorable C.J. Thomas, Chairman Town Council (via email only to thomascj@farmington-ct.org)

Town of Farmington- also as property and tower owner

1 Monteith Drive

Farmington CT 06032

Kathleen A. Blonski –Town Manager (via email only to blonskik@farmington-ct.org)

Town of Farmington

1 Monteith Drive

Farmington CT 06032

Exhibit A

Petition No. 423
Omnipoint Communications Inc.
Staff Report
August 16, 1999

On July 9, 1999, Connecticut Siting Council (Council) member Pamela B. Katz and Council staff Joel M. Rinebold and Paul M. Aresta met Omnipoint Communications Inc (Omnipoint) representatives J. Brendan Sharkey, Chetan Dhaduk, and Joe Rollins for a site inspection of a proposed modification to a Connecticut Light and Power (CL&P) high-voltage electric transmission line support structure located approximately 90 feet east of Maple Ridge Road in Farmington, Connecticut. Omnipoint is petitioning the Council for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need (Certificate) is required for the proposed modification to a CL&P high-voltage electric transmission line support structure.

Omnipoint proposes to replace a 65-foot H-frame transmission line structure with a new laminated wood structure. CL&P has requested the replacement of the H-frame structure in anticipation of its having to make similar replacements to handle increased weight loads in the future. Omnipoint proposes to construct one of the poles of the new H-frame structure 15 feet taller than is existing for a total height of 80 feet above ground level (AGL). Omnipoint proposes to install two approximately five-foot by four-inch PCS antennas in a cluster configuration onto the proposed laminated wood pole with a centerline at 77.5 feet AGL. In addition, Omnipoint would install an equipment cabinet at the base of the proposed new structure enclosed by a 6-foot high chain link fence, 10-foot by 15-foot in area. Access to the proposed equipment would be from Maple Ridge Road along an 8-foot wide footpath within the existing easement.

The proposed equipment and utility routing would be located within the existing CL&P transmission line easement. The proposed site is zoned Industrial CR Zone. Land uses surrounding the area include residential homes to the north and south, commercial retail to the east and northeast, and a limited access highway to the west. The closest residences are located approximately 250 feet north and south of the proposed structure. The surrounding properties currently have an obscured view of the transmission line support structure due to dense overgrowth and mature trees. Omnipoint has agreed to maintain the existing mature vegetation within the easement. The associated equipment compound would be obscured from the view of adjacent properties.

Omnipoint contends that although one pole of the H-frame transmission line support structure would be 15 feet taller than the existing pole, the new structure would remain in scale with the existing structure and the surrounding landscape and would not materially affect the view from surrounding properties. Omnipoint further contends there would be no damage to existing scenic, historical or recreational values; the proposed PCS equipment would not meet or exceed the ANSI Standard for worst case radio-frequency power density levels at the base of the proposed structure; and therefore, the proposed modification would not result in a substantial adverse environmental effect.

Exhibit B



319-321 New Britain Ave, Unionville

319 New Britain Ave
Unionville, CT 06085

Directions Save Nearby Send to your phone Share

At this place

- Burlington Emergency Med Services**
No reviews
City government office
- Farmington Community Center**
No reviews
Community center

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2017.



Information on the Property Records for the Municipality of Farmington was last updated on 2/8/2021.

Parcel Information

Location:	319 NEW BRITAIN AV UNIT 321	Property Use:	Public Use	Primary Use:	Governmental Building
Unique ID:	13200319321	Map Block Lot:	0035 1-8	Acres:	13.20
490 Acres:	0.00	Zone:	CR	Volume / Page:	0571/0159
Developers Map / Lot:		Census:	4603-00		

Value Information

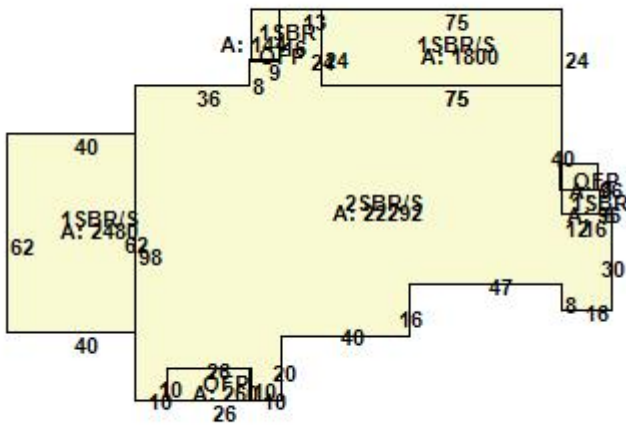
	Appraised Value	Assessed Value
Land	1,278,240	894,770
Buildings	17,520,375	12,264,260
Detached Outbuildings	45,322	31,730
Total	18,843,937	13,190,760

Owner's Information

Owner's Data

FAMINGTON TOWN OF
 NEW POLICE/COMMUNITY CENTER
 1 MONTEITH DR
 FARMINGTON, CT 06032

Building 1



Category:	Public Use	Use:	Jail - Police Station	GLA:	26,812
Stories:	2.00	Construction:	Fire Proof	Year Built:	2001

Heating:	FHA	Fuel:	Natural Gas	Cooling Percent:	100
Siding:	Brick	Roof Material:	Slate	Beds/Units:	0

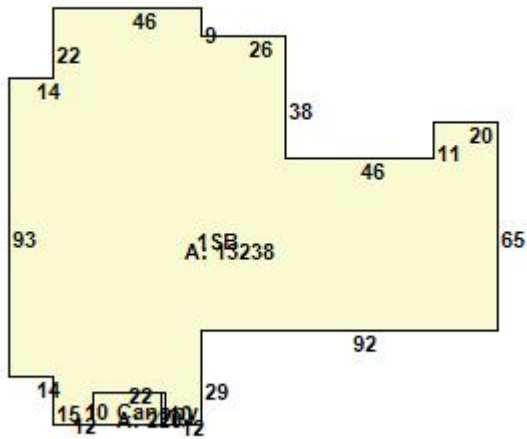
Special Features

Elevator, Comm Elec Pass	1
Wet Sprinklers	26887

Attached Components

Type:	Year Built:	Area:
Open Frame Porch	2002	260
Open Frame Porch	2002	144
Open Frame Porch	2002	96

Building 2



Category:	Public Use	Use:	Community Recreation Center	GLA:	13,238
Stories:	1.00	Construction:	Fire Proof	Year Built:	2001
Heating:	FHA	Fuel:	Natural Gas	Cooling Percent:	100
Siding:	Brick	Roof Material:	Arch Shingles	Beds/Units:	0

Special Features

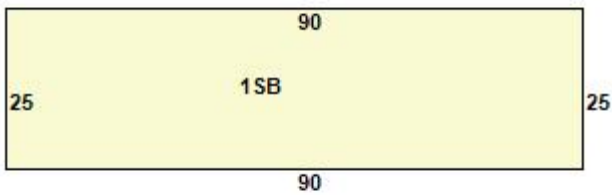
Wet Sprinklers	13238
----------------	-------

Attached Components

Type:	Year Built:	Area:
Commercial Canopy	2001	220

Building 3

Photo Not Available



Category:	Industrial	Use:	Utility Building	GLA:	2,250
Stories:	1.00	Construction:	Fire Proof	Year Built:	2002
Heating:	FHA	Fuel:	Natural Gas	Cooling Percent:	0
Siding:	Brick	Roof Material:	Arch Shingles	Beds/Units:	0

Special Features

Wet Sprinklers

2250

Attached Components

Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
Commercial Canopy	2001	0.00	0.00	626
Steel Overhead Door	2001	0.00	0.00	2
Steel Overhead Door	2001	0.00	0.00	2
Paving	2001	0.00	0.00	30,000
Frame Shed	2016	0.00	0.00	336

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
FAMINGTON TOWN OF	0571	0159			No	\$0

Information Published With Permission From The Assessor

Exhibit C

..T..Mobile..

NORTHEAST, LLC.

PROJECT: ANCHOR - L600

SITE I.D. NUMBER:

CTHA149A

SITE NAME:

FARMINGTON PD MP

SITE ADDRESS:

319 NEW BRITAIN AVENUE
FARMINGTON, CT 06032

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering & Surveying Consultants P.C.
70 Pleasant Hill Road Phone: (845) 534-5959
P.O. Box 37 (800) 529-6531
Mountainville, NY 10953 www.tectonicengineering.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 10473.CTHA149A DESIGNED BY EI

REV.	DATE	DESCRIPTION	DRAWN BY
1	2/25/2021	ISSUED FOR CONSTRUCTION	BWY
2	7/13/2021	REVISED STRUCTURAL	BWY

ISSUED BY _____ DATE _____



SITE INFORMATION
FARMINGTON PD MP
CTHA149A
319 NEW BRITAIN AVENUE
FARMINGTON, CT 06032

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

PROJECT INDEX

SITE NUMBER: CTHA149A	PROJECT CLIENT: NORTHEAST SITE SOLUTIONS, LLC
SITE NAME: FARMINGTON PD MP	CONTACT: SHELDON FREINCLE (201) 776-8521
SITE ADDRESS: 319 NEW BRITAIN AVENUE FARMINGTON, CT 06032	ENGINEER/STRUCTURAL ENG: TECTONIC ENGINEERING & SURVEYING CONSULTANTS, PC.
PROPERTY OWNER: TOWN OF FARMINGTON	CONTACT: EDWARD IAMICELI (845) 567-6656x2811
APPLICANT: T-MOBILE NORTHEAST LLC 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002	
STRUCTURE TYPE: MONOPOLE	
LATTITUDE (NAD83): N 41° 44' 59.35"	
LONGITUDE (NAD83): W 72° 52' 21.75"	
GRADE ELEVATION: 195' AMSL (PER GOOGLE EARTH)	
MUNICIPALITY: TOWN OF FARMINGTON	
ZONING: CR	
PARCEL #: 035-1-8	

VICINITY MAP (NTS)



SHEET INDEX

SHEET NO	DESCRIPTION	REVISION	DATE
T-1	TITLE SHEET	1	7/13/2021
A-1	SITE PLAN	1	7/13/2021
A-2	ELEVATION	1	7/13/2021
A-3	EXIST & NEW T-MOBILE EQUIPMENT PLANS	1	7/13/2021
A-4	EXIST & NEW T-MOBILE ANTENNA PLANS & ANTENNA SCHEDULE	1	7/13/2021
A-5	DTLS & ANTENNA SCHEMATIC	1	7/13/2021
A-6	NOTES	1	7/13/2021
E-1	ELECTRICAL NOTES & ONE-LINE DIAGRAM	1	7/13/2021
G-1	GROUNDING DTLS & NOTES	1	7/13/2021

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 10/06/2020, VERSION 6.
RAN TEMPLATE: 67D5A997DB INDOOR
A&L TEMPLATE: 67D5997DB_2xAIR+10P (U21 MARKET)

STRUCTURAL NOTE

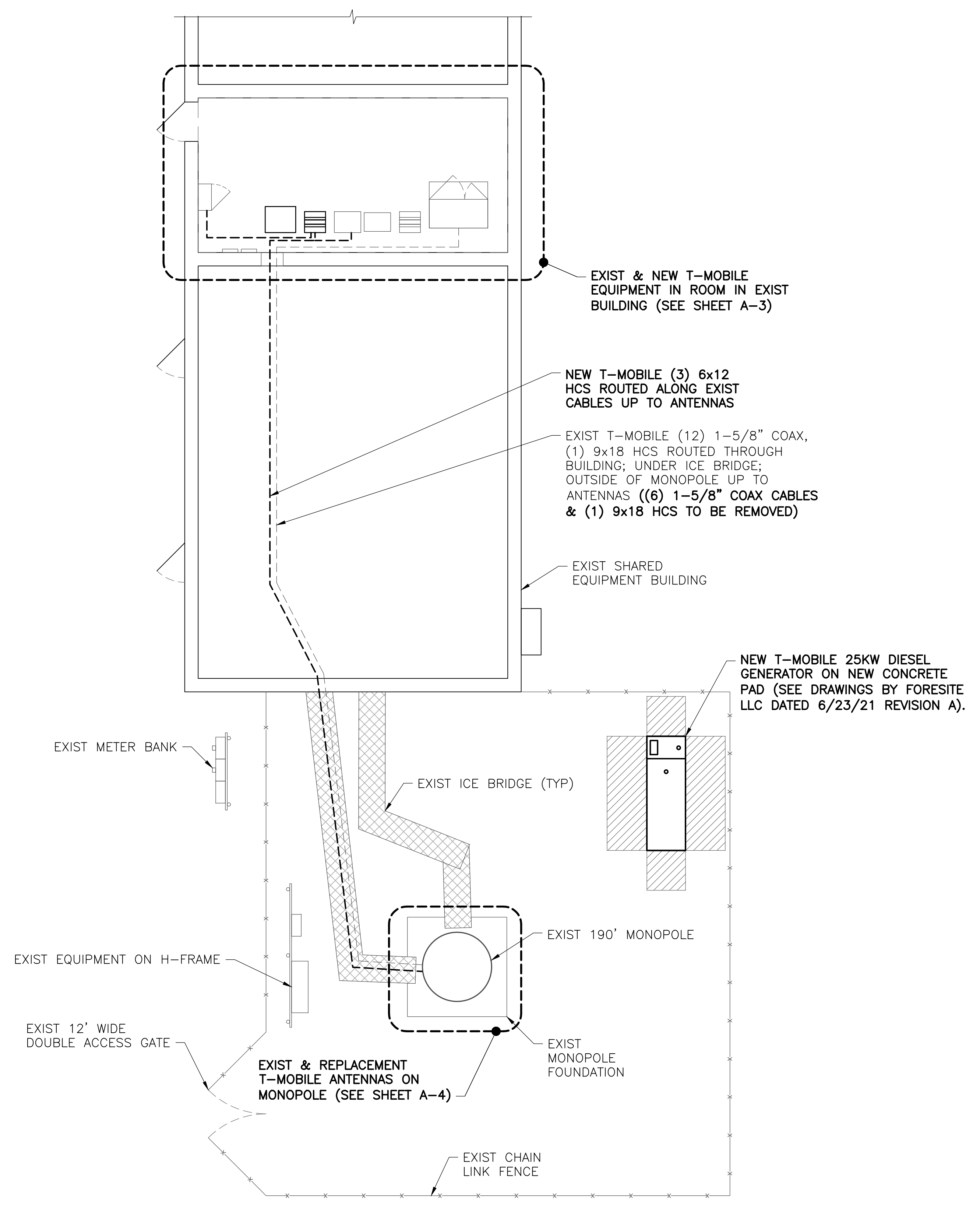
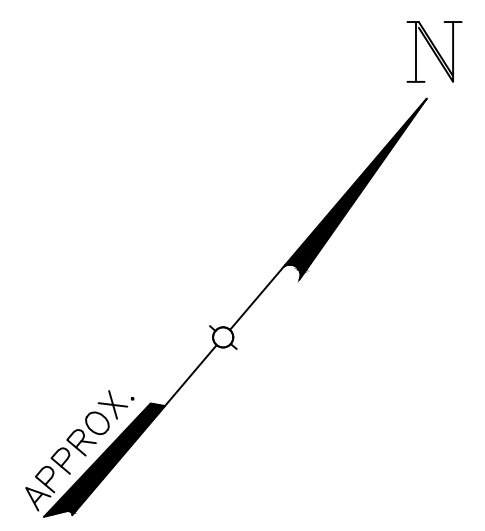
ANTENNA MOUNTS
REFER TO THE MOUNT ANALYSIS REPORT BY TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C. DATED DECEMBER 9, 2020.

TOWER
REFER TO THE STRUCTURAL ANALYSIS REPORT BY TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C. DATED JULY 9, 2021.

COPIES OF THIS DOCUMENT WITHOUT A FACSIMILE OF THE SIGNATURE & AN ORIGINAL EMBOSSED SEAL OR ORIGINAL STAMP IN BLUE OR BLACK INK OF THE PROFESSIONAL ENGINEER OR LAND SURVEYOR SHALL NOT BE CONSIDERED VALID COPIES.

THIS DOCUMENT IS PREPARED SPECIFICALLY FOR THE CLIENT AND PROJECT DESIGNATED HEREON. MODIFICATION, ALTERATION, REVISION, DUPLICATION, OR USE WITHOUT THE CONSENT OF TECTONIC IS STRICTLY PROHIBITED. COPYRIGHT 2020 TECTONIC. ALL RIGHTS RESERVED.

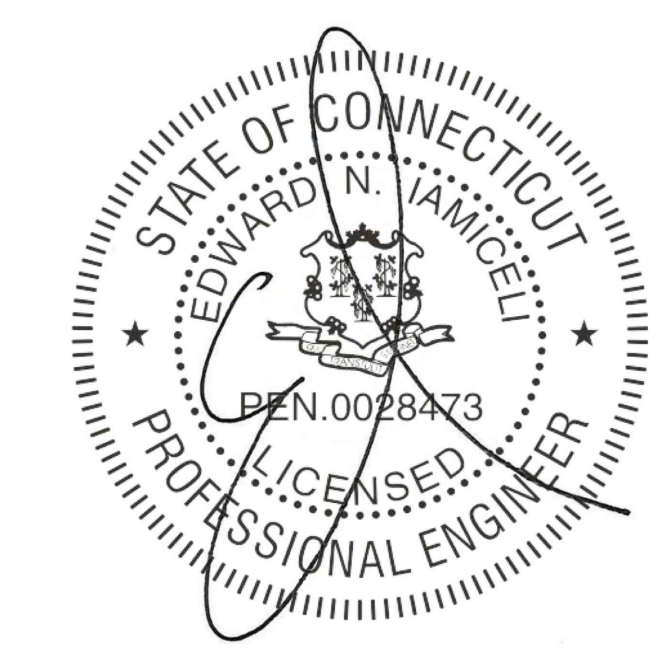




1 SITE PLAN
A-1 SCALE: 3/32" = 1'-0"

COPIES OF THIS DOCUMENT WITHOUT A FACSIMILE OF THE SIGNATURE & AN ORIGINAL EMBOSSED SEAL OR ORIGINAL STAMP IN BLUE OR BLACK INK OF THE PROFESSIONAL ENGINEER OR LAND SURVEYOR SHALL NOT BE CONSIDERED VALID COPIES.

THIS DOCUMENT IS PREPARED SPECIFICALLY FOR THE CLIENT AND PROJECT DESIGNATED HEREON. MODIFICATION, ALTERATION, REVISION, DUPLICATION, OR USE WITHOUT THE CONSENT OF TECTONIC IS STRICTLY PROHIBITED. COPYRIGHT 2020 TECTONIC. ALL RIGHTS RESERVED.



Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering & Surveying Consultants P.C.
70 Pleasant Hill Road Phone: (845) 534-5959
P.O. Box 37 (800) 529-6531
Mountainville, NY 10953 www.tectonicengineering.com
Project Contact Info
1279 Route 300
Newburgh, NY 12550 Phone: (845) 567-6656

Mobile
NORTHEAST, LLC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002



APPROVALS

LANDLORD _____

RF _____

CONSTRUCTION _____

OPERATIONS _____

SITE ACQ. _____

PROJECT NUMBER	DESIGNED BY
10473.CTHA149A	EI

REV.	DATE	DESCRIPTION	DRAWN BY
△	2/25/2021	ISSUED FOR CONSTRUCTION	BWY
△	7/13/2021	REVISED STRUCTURAL	BWY

ISSUED BY _____ DATE _____



SITE INFORMATION

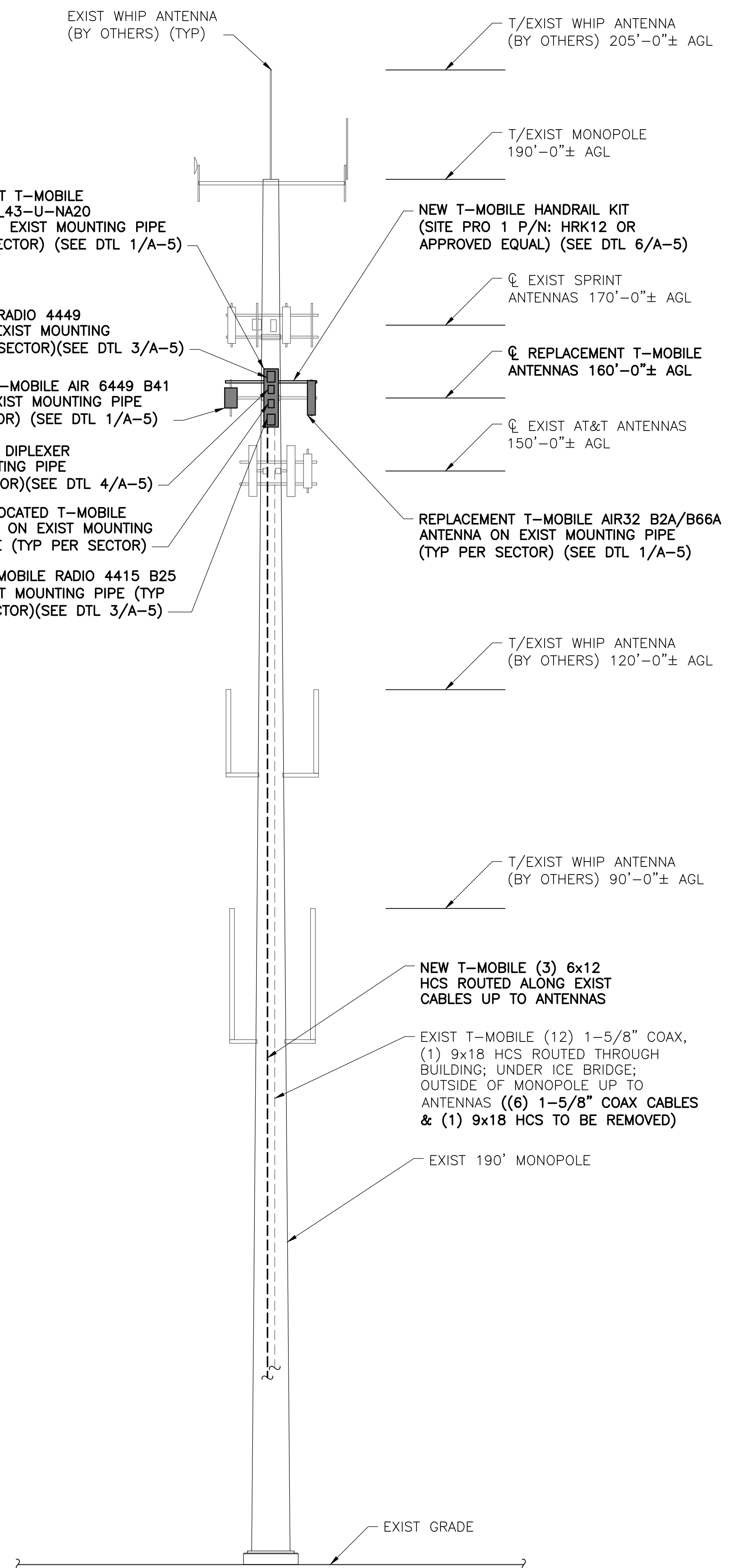
FARMINGTON PD MP
CTHA149A
319 NEW BRITAIN AVENUE
FARMINGTON, CT 06032

SHEET TITLE

SITE PLAN

SHEET NUMBER

A-1



EXIST WHIP ANTENNA (BY OTHERS) (TYP)

REPLACEMENT T-MOBILE APXVAALL24_43-U-NA20 ANTENNA ON EXIST MOUNTING PIPE (TYP PER SECTOR) (SEE DTL 1/A-5)

NEW T-MOBILE RADIO 4449 B71+B85 ON EXIST MOUNTING PIPE (TYP PER SECTOR)(SEE DTL 3/A-5)

REPLACEMENT T-MOBILE AIR 6449 B41 ANTENNA ON EXIST MOUNTING PIPE (TYP PER SECTOR) (SEE DTL 1/A-5)

NEW T-MOBILE DIPLEXER ON EXIST MOUNTING PIPE (TYP PER SECTOR)(SEE DTL 4/A-5)

RELOCATED T-MOBILE TMA ON EXIST MOUNTING PIPE (TYP PER SECTOR)

NEW T-MOBILE RADIO 4415 B25 ON EXIST MOUNTING PIPE (TYP PER SECTOR)(SEE DTL 3/A-5)

T/EXIST WHIP ANTENNA (BY OTHERS) 205'-0"± AGL

T/EXIST MONOPOLE 190'-0"± AGL

NEW T-MOBILE HANDRAIL KIT (SITE PRO 1 P/N: HRK12 OR APPROVED EQUAL) (SEE DTL 6/A-5)

EXIST SPRINT ANTENNAS 170'-0"± AGL

REPLACEMENT T-MOBILE ANTENNAS 160'-0"± AGL

EXIST AT&T ANTENNAS 150'-0"± AGL

REPLACEMENT T-MOBILE AIR32 B2A/B66A ANTENNA ON EXIST MOUNTING PIPE (TYP PER SECTOR) (SEE DTL 1/A-5)

T/EXIST WHIP ANTENNA (BY OTHERS) 120'-0"± AGL

T/EXIST WHIP ANTENNA (BY OTHERS) 90'-0"± AGL

NEW T-MOBILE (3) 6x12 HCS ROUTED ALONG EXIST CABLES UP TO ANTENNAS

EXIST T-MOBILE (12) 1-5/8" COAX, (1) 9x18 HCS ROUTED THROUGH BUILDING; UNDER ICE BRIDGE; OUTSIDE OF MONOPOLE UP TO ANTENNAS ((6) 1-5/8" COAX CABLES & (1) 9x18 HCS TO BE REMOVED)

EXIST 190' MONOPOLE

EXIST GRADE

NOTE: NOT ALL SITE FEATURES SHOWN FOR CLARITY.

1
A-2
ELEVATION
SCALE: 1/8" = 1'-0"

STRUCTURAL NOTE

ANTENNA MOUNTS

REFER TO THE MOUNT ANALYSIS REPORT BY TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C. DATED DECEMBER 9, 2020.

TOWER

REFER TO THE STRUCTURAL ANALYSIS REPORT BY TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C. DATED JULY 9, 2021.

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
 Tectonic Engineering & Surveying Consultants P.C.
 70 Pleasant Hill Road Phone: (845) 534-5959
 P.O. Box 37 (800) 529-6531
 Mountainville, NY 10953 www.tectonicengineering.com
 Project Contact Info
 1279 Route 300
 Newburgh, NY 12550 Phone: (845) 567-6656

Mobile
 NORTEAST, LLC.
 35 GRIFFIN ROAD SOUTH
 BLOOMFIELD, CT 06002

NSS NORTEAST
 SITE SOLUTIONS
 Turnkey Wireless Development

APPROVALS

LANDLORD _____

RF _____

CONSTRUCTION _____

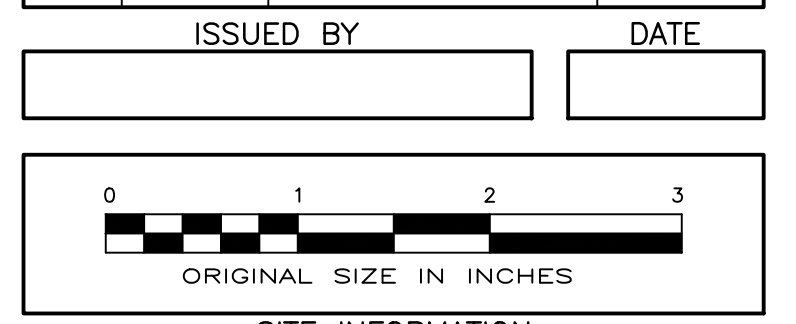
OPERATIONS _____

SITE ACQ. _____

PROJECT NUMBER 10473.CTHA149A DESIGNED BY EI

REV.	DATE	DESCRIPTION	DRAWN BY
△	2/25/2021	ISSUED FOR CONSTRUCTION	BWY
△	7/13/2021	REVISED STRUCTURAL	BWY

ISSUED BY _____ DATE _____



SITE INFORMATION

FARMINGTON PD MP
 CTHA149A
 319 NEW BRITAIN AVENUE
 FARMINGTON, CT 06032

SHEET TITLE

ELEVATION

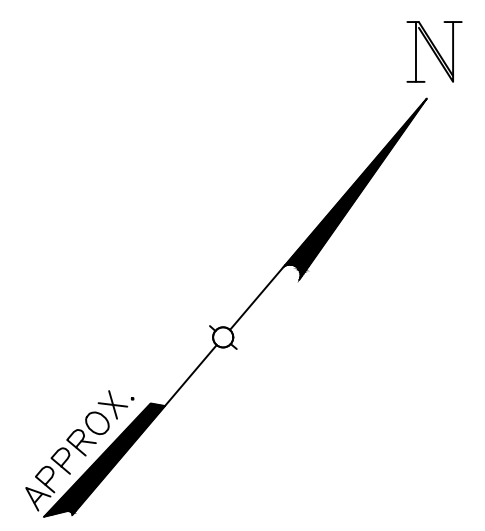
SHEET NUMBER

A-2

COPIES OF THIS DOCUMENT WITHOUT A FACSIMILE OF THE SIGNATURE & AN ORIGINAL EMBOSSED SEAL OR ORIGINAL STAMP IN BLUE OR BLACK INK OF THE PROFESSIONAL ENGINEER OR LAND SURVEYOR SHALL NOT BE CONSIDERED VALID COPIES.

THIS DOCUMENT IS PREPARED SPECIFICALLY FOR THE CLIENT AND PROJECT DESIGNATED HEREON. MODIFICATION, ALTERATION, REVISION, DUPLICATION, OR USE WITHOUT THE CONSENT OF TECTONIC IS STRICTLY PROHIBITED. COPYRIGHT 2020 TECTONIC. ALL RIGHTS RESERVED.





STRUCTURAL NOTE

ANTENNA MOUNTS
 REFER TO THE MOUNT ANALYSIS REPORT BY TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C. DATED DECEMBER 9, 2020.

TOWER
 REFER TO THE STRUCTURAL ANALYSIS REPORT BY TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C. DATED JULY 9, 2021.

RAN SCOPE NOTES

1. ADD (1) BB6630 FOR L600, L700, AND N600 (MMBB-MIXED MODE BASEBAND) TO EXISTING RBS3206 BASE STATION CABINET.
2. ADD (1) 19" RACK.
3. ADD (1) POWER 6230 CABINET.
4. ADD (1) BB6630 TO NEW 19" RACK.
5. ADD (1) BB6648 TO NEW 19" RACK.
6. ADD (1) PSU 4813 POWER BOOSTER
7. EXISTING: (12) 1-5/8" COAX, (1) 9x18 HCS
8. REMOVE (6) 1-5/8" COAX FOR NEW TOTAL OF (6) 1-5/8" COAX.
9. REMOVE 9x18 HCS
10. ADD (3) 6x12 HCS AS FOLLOWS: (1) FOR AIR32 DUAL BAND, TERMINATING AT THE RBS 3206; (1) FOR RADIO 4415 (FIBER PAIRS), TERMINATING AT THE RBS 3206; (1) FOR THE AIR 6449 AND RADIO 4415 (DC), TERMINATING AT THE NEW 19" RACK (CONNECT DC FOR THE AIR 6449 TO THE PSU4813 VOLTAGE BOOSTER).

Tectonic
 PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
 Tectonic Engineering & Surveying Consultants P.C.
 70 Pleasant Hill Road Phone: (845) 534-5959
 P.O. Box 37 (800) 529-6531
 Mountainville, NY 10953 www.tectonicengineering.com
 Project Contact Info
 1279 Route 300
 Newburgh, NY 12550 Phone: (845) 567-6656

Mobile
 NORTEAST, LLC.
 35 GRIFFIN ROAD SOUTH
 BLOOMFIELD, CT 06002

NSS NORTEAST
 SITE SOLUTIONS
 Turnkey Wireless Development

APPROVALS

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

PROJECT NUMBER 10473.CTHA149A DESIGNED BY EI

REV.	DATE	DESCRIPTION	DRAWN BY
△	2/25/2021	ISSUED FOR CONSTRUCTION	BWY
△	7/13/2021	REVISED STRUCTURAL	BWY

ISSUED BY	DATE

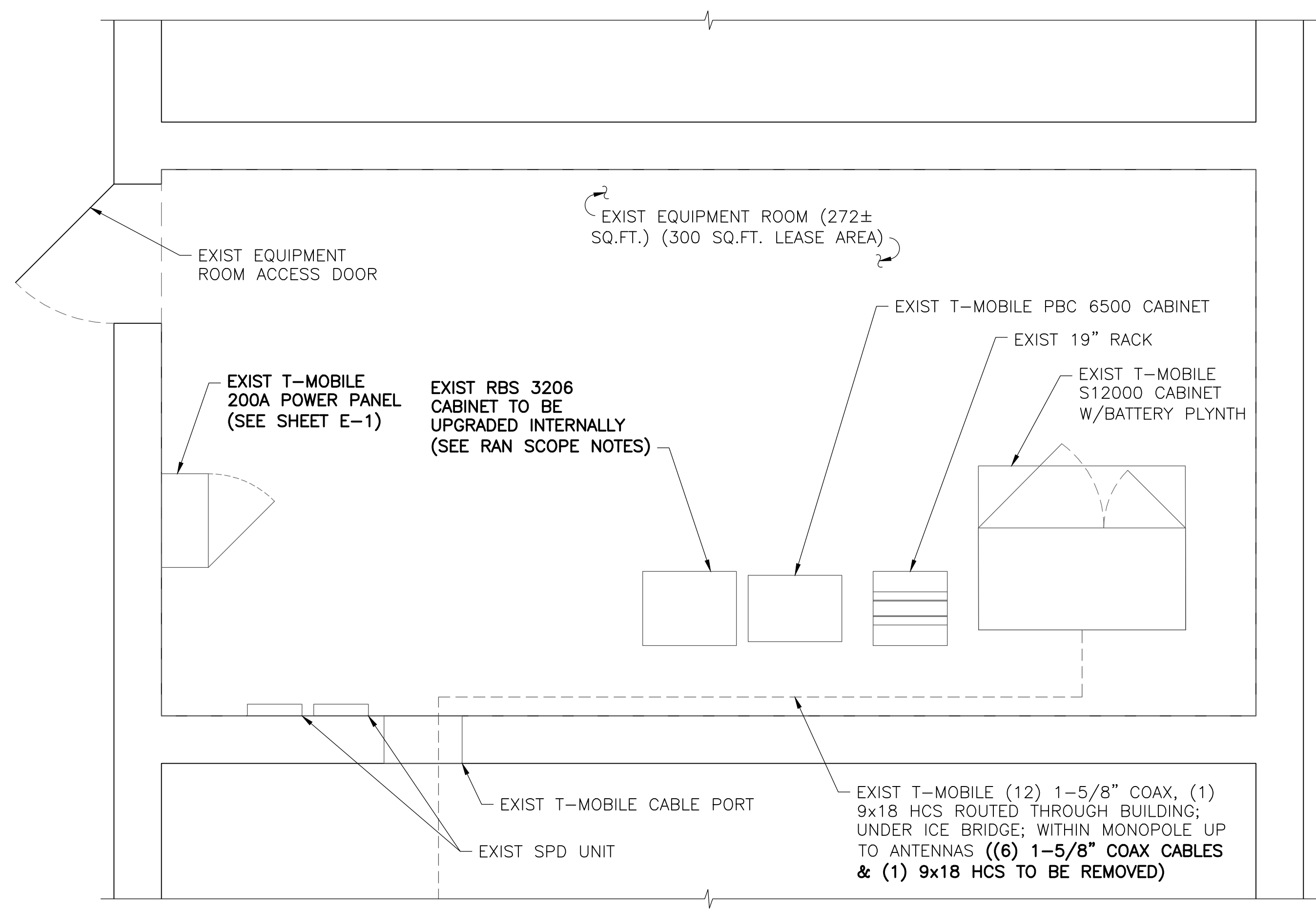
0 1 2 3
 ORIGINAL SIZE IN INCHES
SITE INFORMATION

FARMINGTON PD MP
 CTHA149A
 319 NEW BRITAIN AVENUE
 FARMINGTON, CT 06032

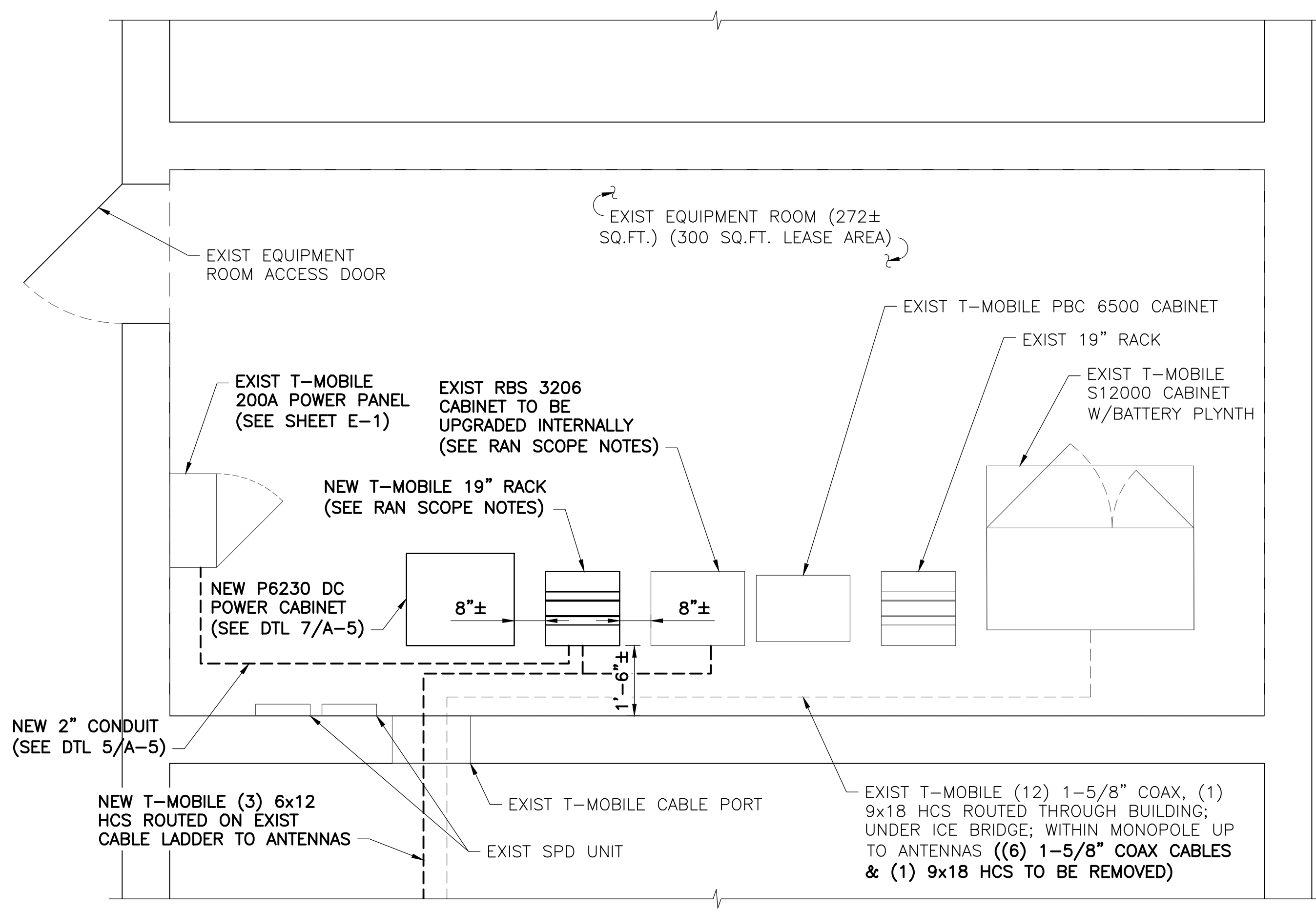
SHEET TITLE
 EXIST & NEW
 T-MOBILE
 EQUIPMENT PLANS

SHEET NUMBER

A-3



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



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

COPIES OF THIS DOCUMENT WITHOUT A FACSIMILE OF THE SIGNATURE & AN ORIGINAL EMBOSSED SEAL OR ORIGINAL STAMP IN BLUE OR BLACK INK OF THE PROFESSIONAL ENGINEER OR LAND SURVEYOR SHALL NOT BE CONSIDERED VALID COPIES.

THIS DOCUMENT IS PREPARED SPECIFICALLY FOR THE CLIENT AND PROJECT DESIGNATED HEREON. MODIFICATION, ALTERATION, REVISION, DUPLICATION, OR USE WITHOUT THE CONSENT OF TECTONIC IS STRICTLY PROHIBITED. COPYRIGHT 2020 TECTONIC. ALL RIGHTS RESERVED.





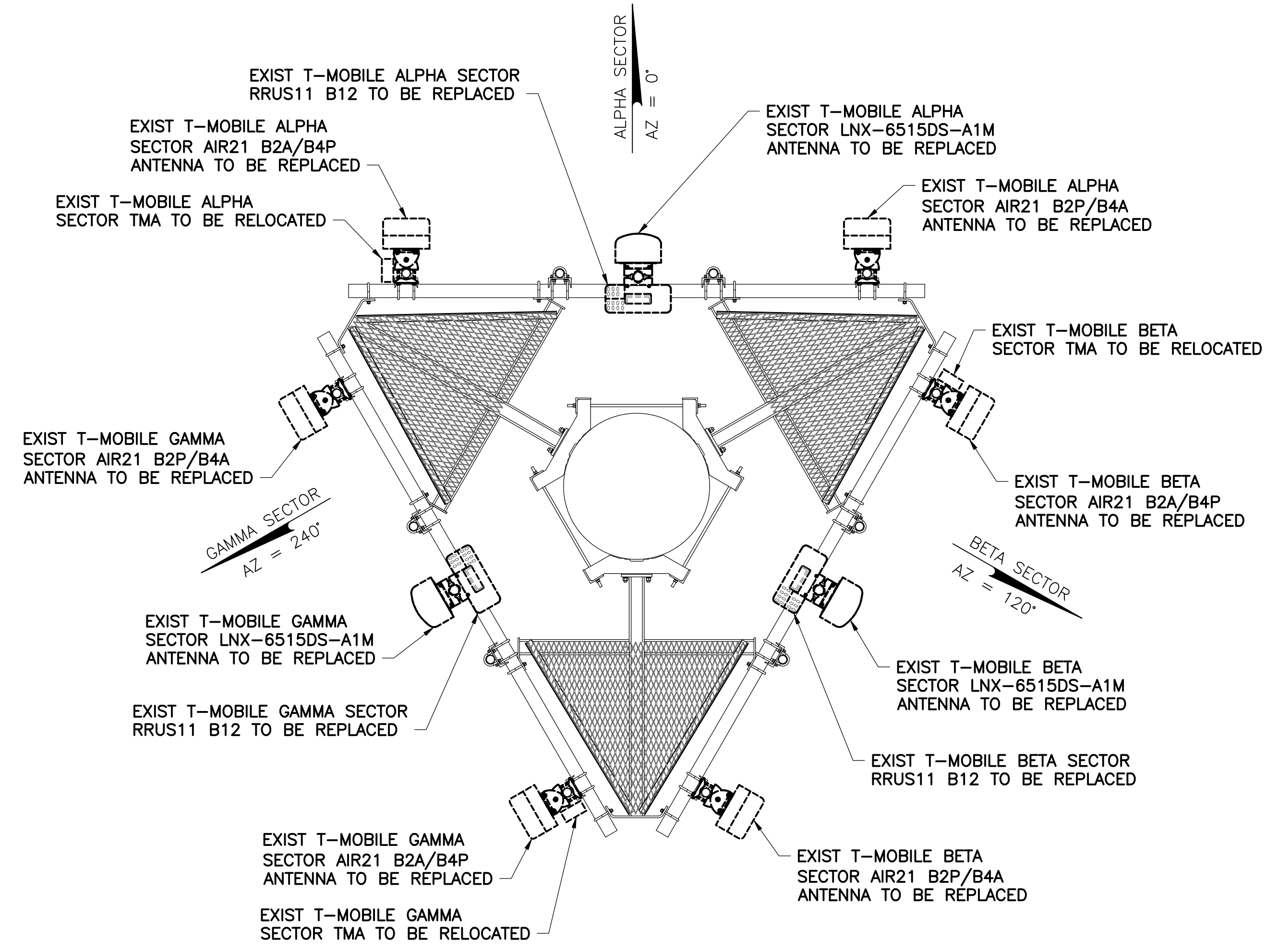
STRUCTURAL NOTE

ANTENNA MOUNTS
REFER TO THE MOUNT ANALYSIS REPORT BY TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C. DATED DECEMBER 9, 2020.

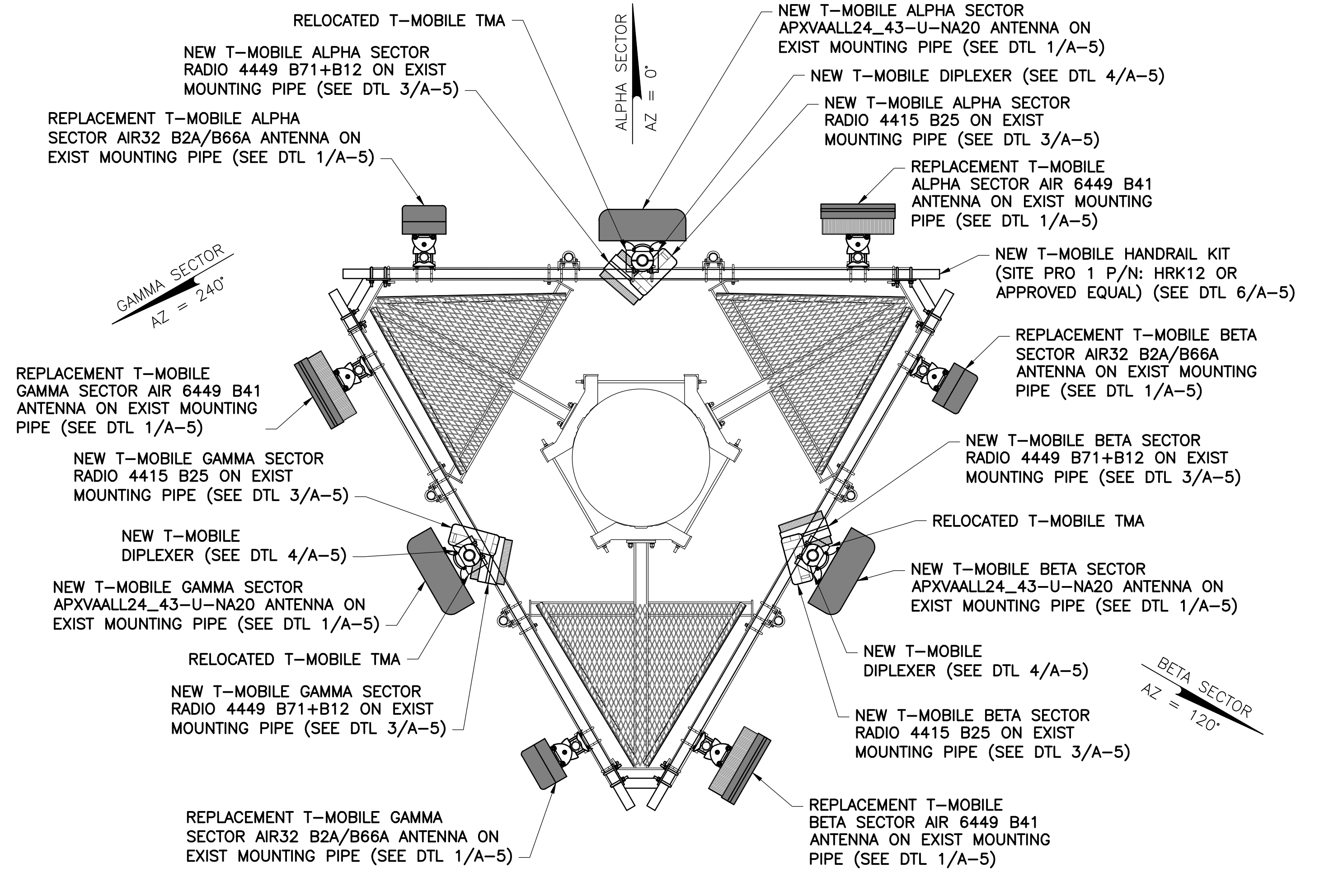
TOWER
REFER TO THE STRUCTURAL ANALYSIS REPORT BY TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C. DATED JULY 9, 2021.

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/GSM	ERICSSON AIR32 B2A/B66A	0°	2°	0°	160'-0"±	LEFT ALPHA	REPLACEMENT	0/0	(1) NEW 6x12 HYBRID CABLE	FIBER	250' - 0"
A-2 LTE/UMTS	RFS APXVAALL24-43-U-NA20	0°	2°/4°	0°	160'-0"±	CENTER ALPHA	REPLACEMENT	1/2	SHARED 6x12 HYBRID CABLE & (2) EXIST 1-5/8" COAX	1/2 COAX	250' - 0"
A-3 LTE	ERICSSON AIR6449 B41	0°	2°	0°	160'-0"±	RIGHT ALPHA	REPLACEMENT	0/0	SHARED 6x12 HYBRID CABLE	FIBER	250' - 0"
B-1 LTE/GSM	ERICSSON AIR32 B2A/B66A	120°	2°	0°	160'-0"±	LEFT BETA	REPLACEMENT	0/0	(1) NEW 6x12 HYBRID CABLE	FIBER	250' - 0"
B-2 LTE/UMTS	RFS APXVAALL24-43-U-NA20	120°	2°/4°	0°	160'-0"±	CENTER BETA	REPLACEMENT	1/2	SHARED 6x12 HYBRID CABLE & (2) EXIST 1-5/8" COAX	1/2 COAX	250' - 0"
B-3 LTE	ERICSSON AIR6449 B41	120°	2°	0°	160'-0"±	RIGHT BETA	REPLACEMENT	0/0	SHARED 6x12 HYBRID CABLE	FIBER	250' - 0"
C-1 LTE/GSM	ERICSSON AIR32 B2A/B66A	240°	2°	0°	160'-0"±	LEFT GAMMA	REPLACEMENT	0/0	(1) NEW 6x12 HYBRID CABLE	FIBER	250' - 0"
C-2 LTE/UMTS	RFS APXVAALL24-43-U-NA20	240°	2°/4°	0°	160'-0"±	CENTER GAMMA	REPLACEMENT	1/2	SHARED 6x12 HYBRID CABLE & (2) EXIST 1-5/8" COAX	1/2 COAX	250' - 0"
C-3 LTE	ERICSSON AIR6449 B41	240°	2°	0°	160'-0"±	RIGHT GAMMA	REPLACEMENT	0/0	SHARED 6x12 HYBRID CABLE	FIBER	250' - 0"



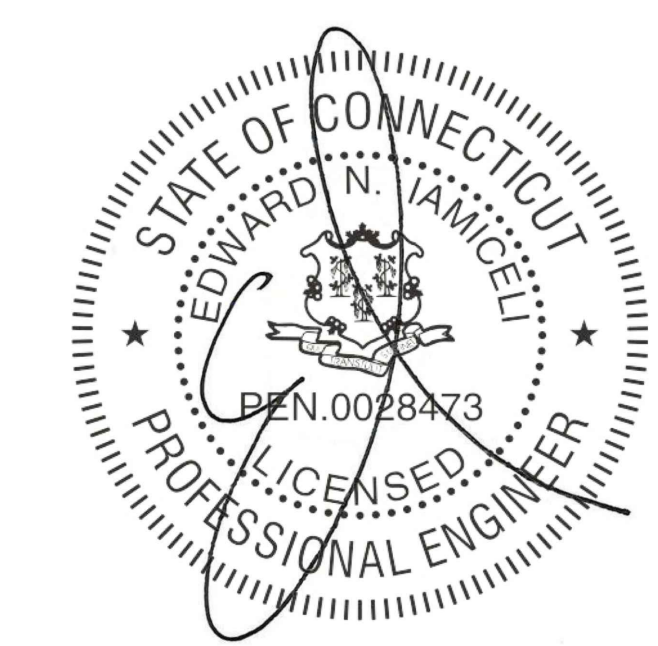
1
A-4
SCALE: 1/2" = 1'-0"



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

COPIES OF THIS DOCUMENT WITHOUT A FACSIMILE OF THE SIGNATURE & AN ORIGINAL EMBOSSED SEAL OR ORIGINAL STAMP IN BLUE OR BLACK INK OF THE PROFESSIONAL ENGINEER OR LAND SURVEYOR SHALL NOT BE CONSIDERED VALID COPIES.

THIS DOCUMENT IS PREPARED SPECIFICALLY FOR THE CLIENT AND PROJECT DESIGNATED HEREON. MODIFICATION, ALTERATION, REVISION, DUPLICATION, OR USE WITHOUT THE CONSENT OF TECTONIC IS STRICTLY PROHIBITED. COPYRIGHT 2020 TECTONIC. ALL RIGHTS RESERVED.



Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering & Surveying Consultants P.C.
70 Pleasant Hill Road
P.O. Box 37
Mountainville, NY 10953
www.tectonicengineering.com
Phone: (845) 534-5959
(800) 529-6531
Project Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656

Mobile
NORTHEAST, LLC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

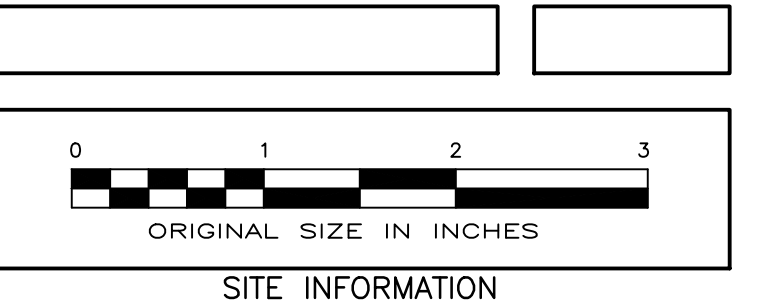
APPROVALS

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

PROJECT NUMBER 10473.CTHA149A
DESIGNED BY EI

REV.	DATE	DESCRIPTION	DRAWN BY
1	2/25/2021	ISSUED FOR CONSTRUCTION	BWY
2	7/13/2021	REVISED STRUCTURAL	BWY

ISSUED BY _____ DATE _____



SITE INFORMATION

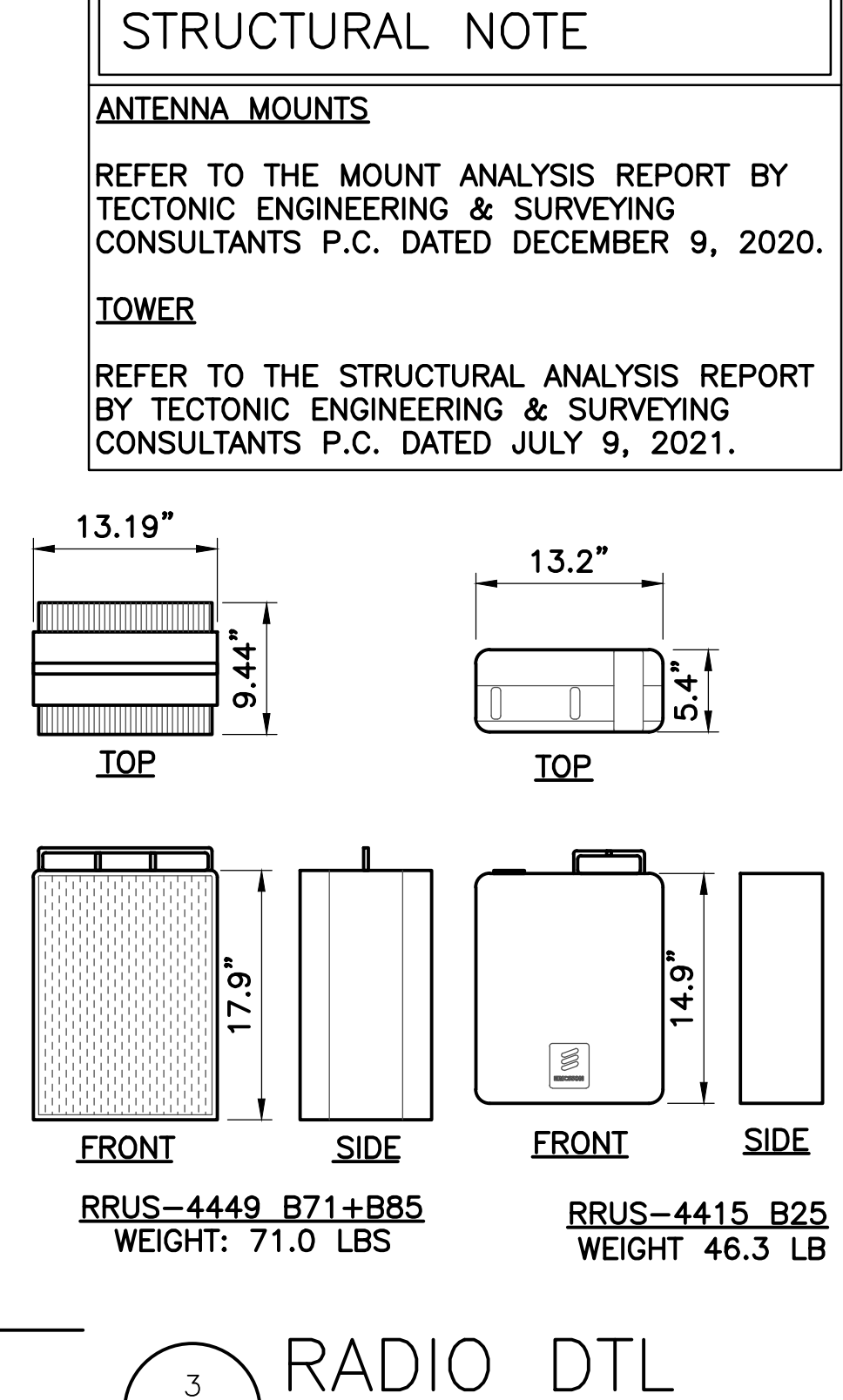
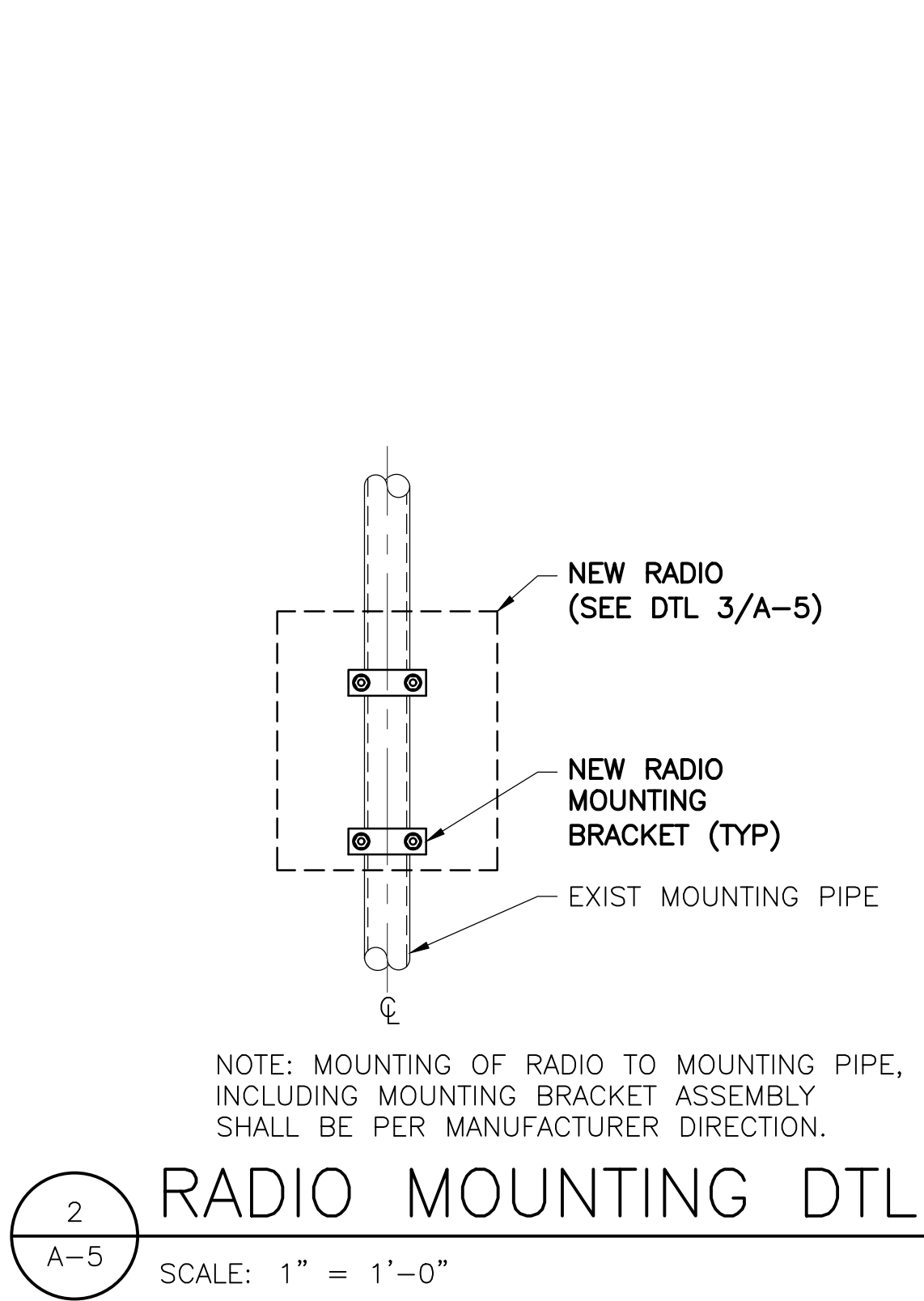
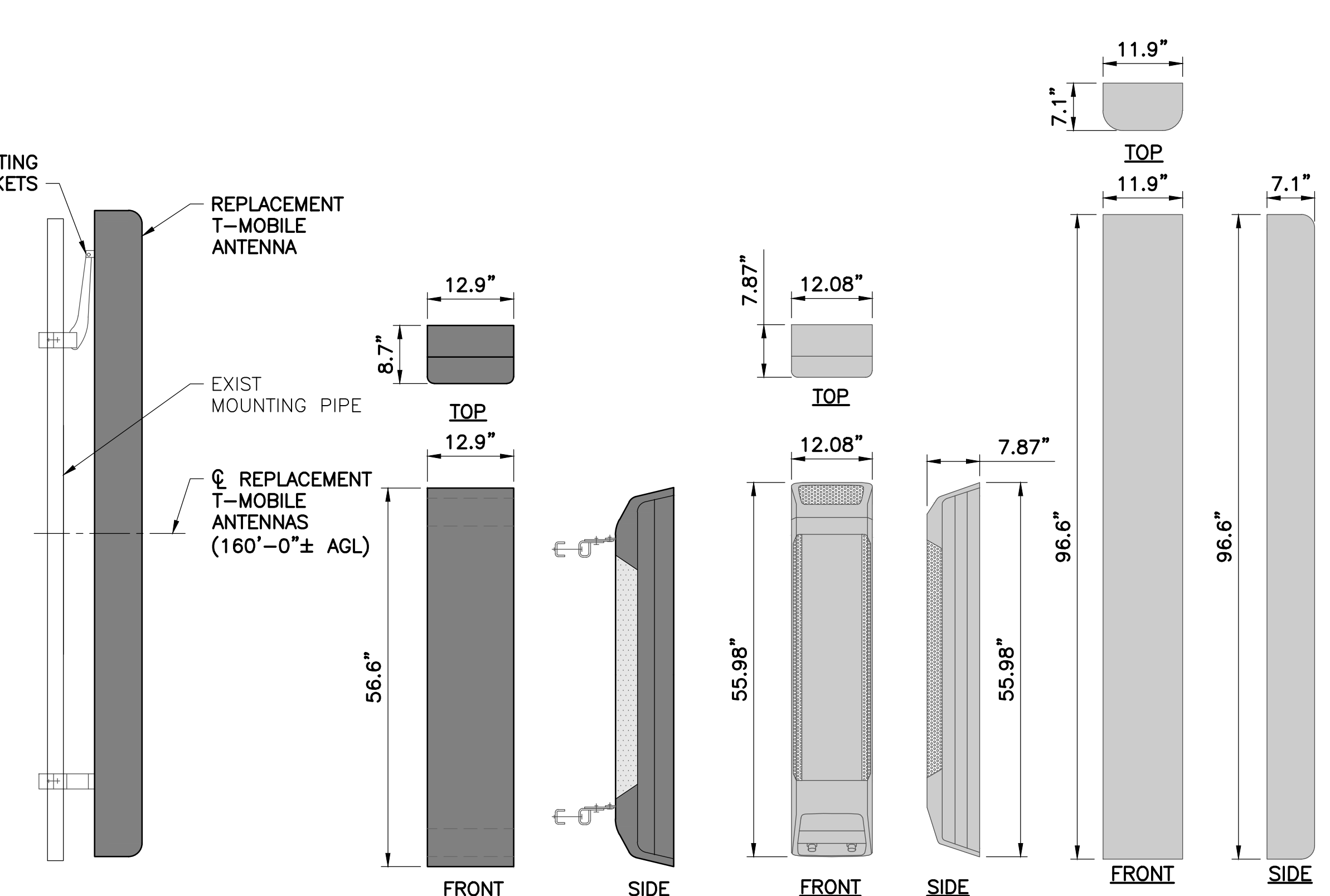
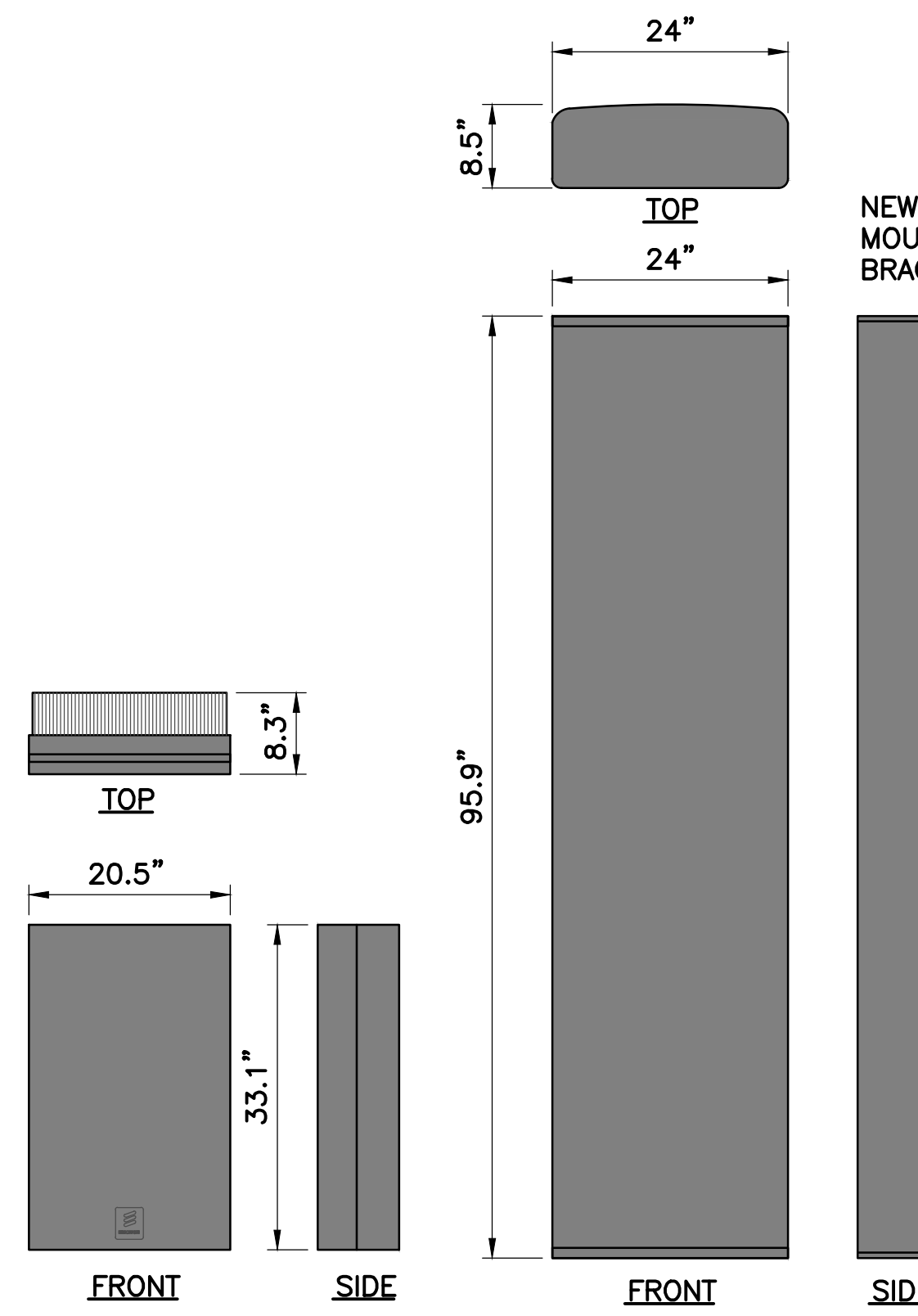
FARMINGTON PD MP
CTHA149A
319 NEW BRITAIN AVENUE
FARMINGTON, CT 06032

SHEET TITLE

EXIST/NEW T-MOBILE ANTENNA PLANS & ANTENNA SCHEDULE

SHEET NUMBER

A-4



STRUCTURAL NOTE
ANTENNA MOUNTS
 REFER TO THE MOUNT ANALYSIS REPORT BY TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C. DATED DECEMBER 9, 2020.
TOWER
 REFER TO THE STRUCTURAL ANALYSIS REPORT BY TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C. DATED JULY 9, 2021.

AIR6449_B41
 WEIGHT: 103 LBS
 PROPOSED

RFS-APXVAALL24_43_U_NA20
 WEIGHT: 122.8 LBS
 PROPOSED

AIR32_DUAL_BAND (DB) B66Aq/B2q
 WEIGHT: 132.2 LBS
 PROPOSED

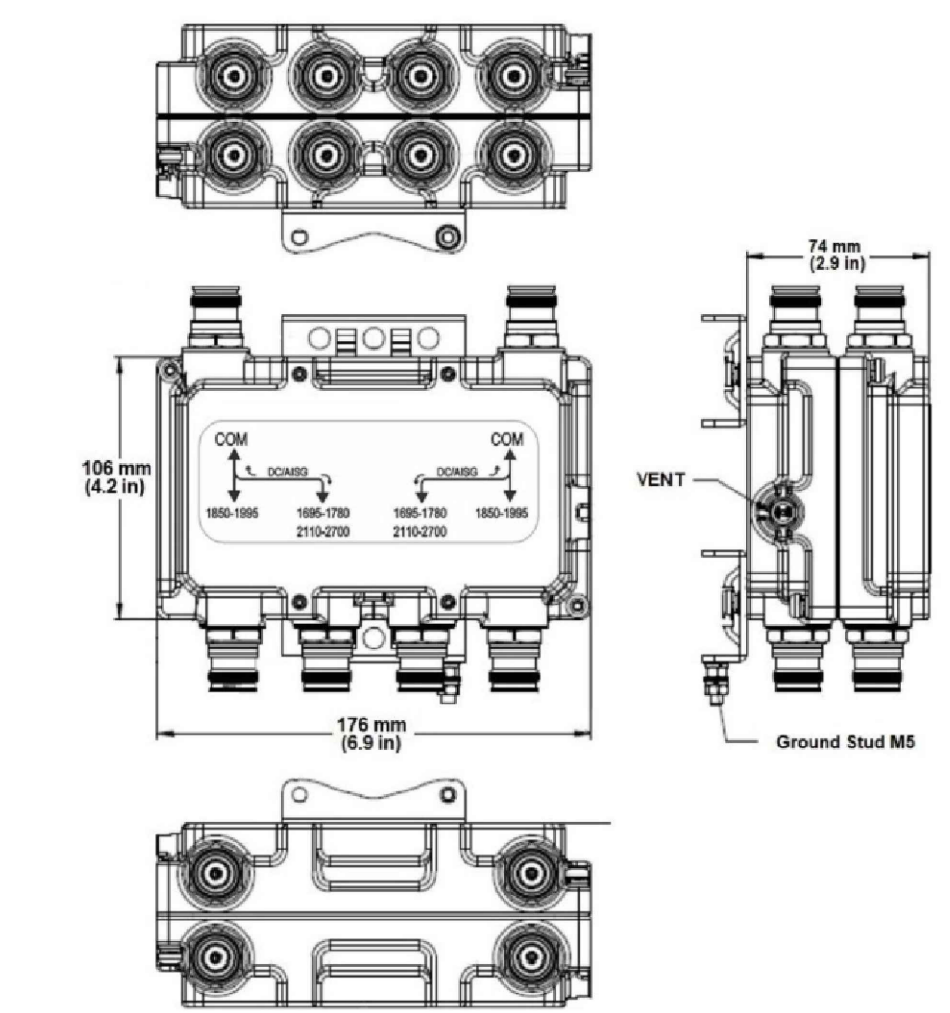
AIR 21_B2A/B4P ANTENNA
 WEIGHT: 83 LBS
AIR 21_B2P/B4A ANTENNA
 WEIGHT: 83 LBS
 TO BE REMOVED

LNX-6515DS-A1M ANTENNA
 WEIGHT: 43.7 LBS
 TO BE REMOVED

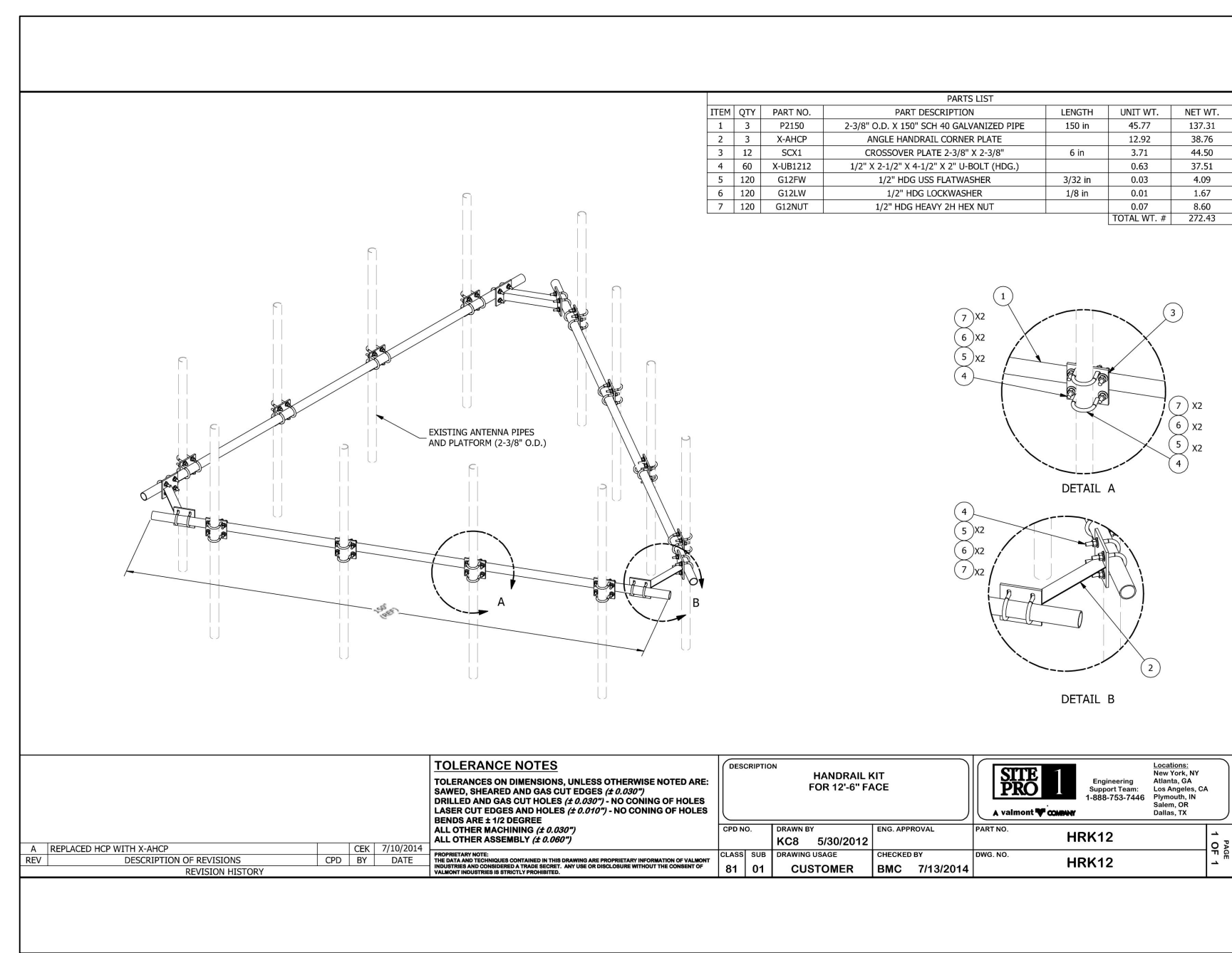
2 RADIO MOUNTING DTL
 A-5 SCALE: 1" = 1'-0"

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

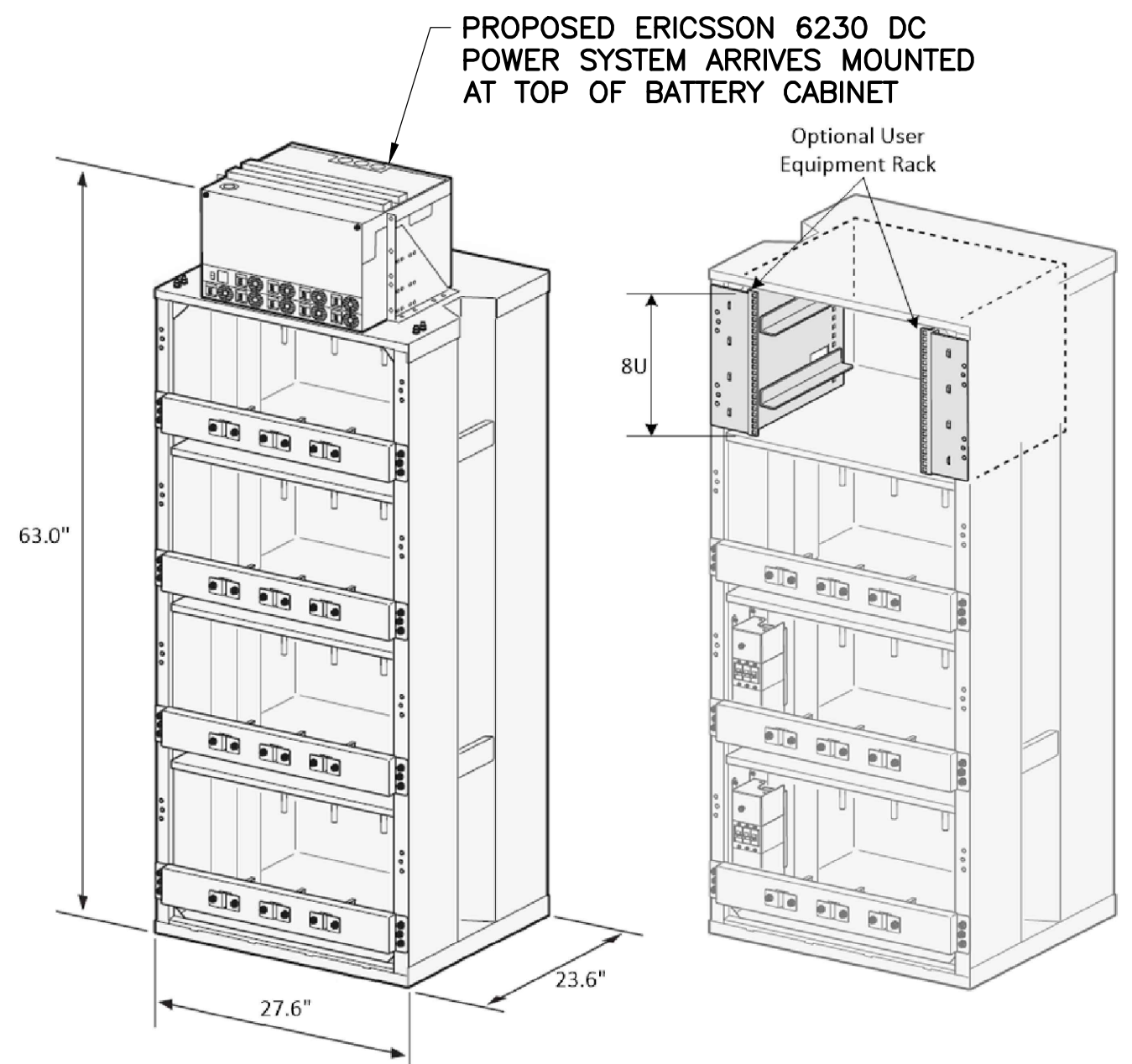
1 ANTENNA DTLs
 A-5 SCALE: 3/4" = 1'-0"



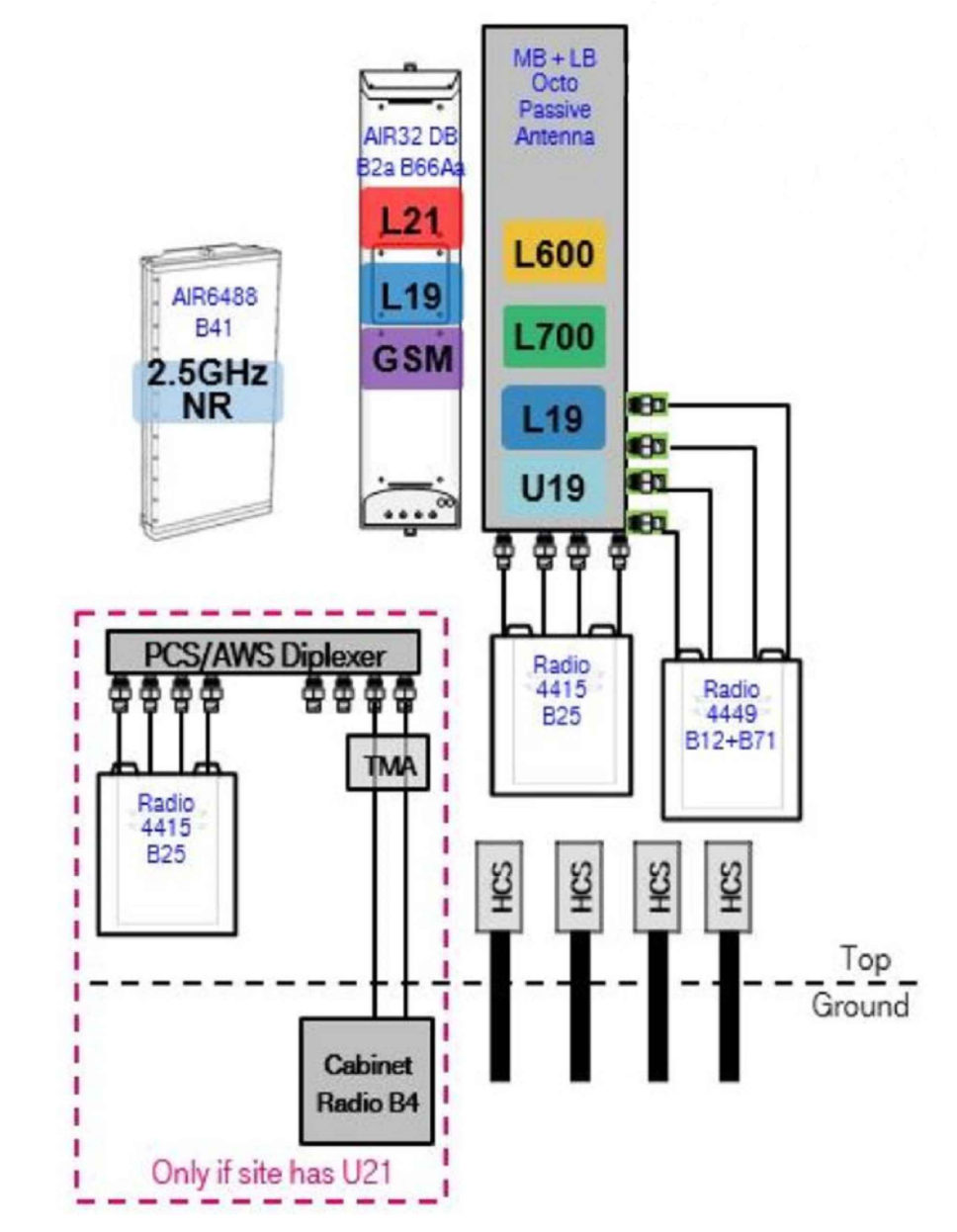
4 DIPLEXER DTL
 A-5 SCALE: NTS



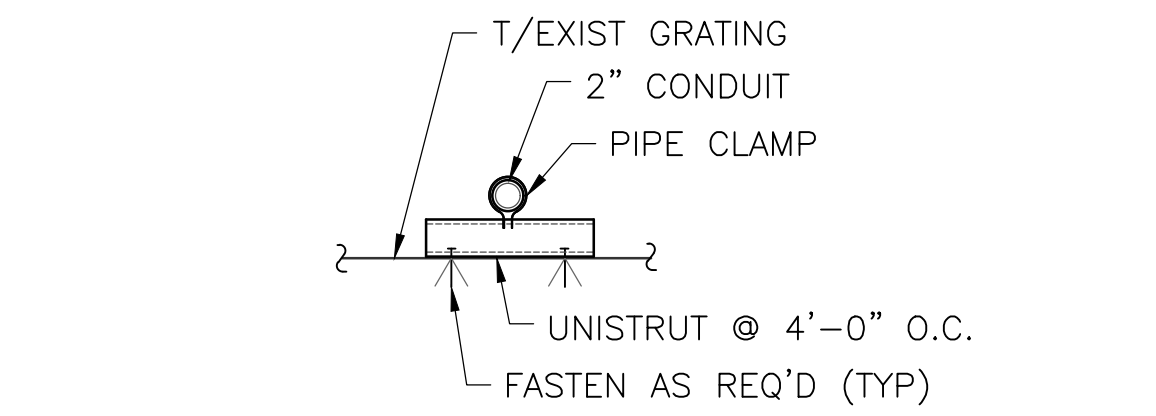
6 HANDRAIL KIT DTL
 A-5 SCALE: NTS



7 6230 CABINET DTL
 A-5 SCALE: NTS

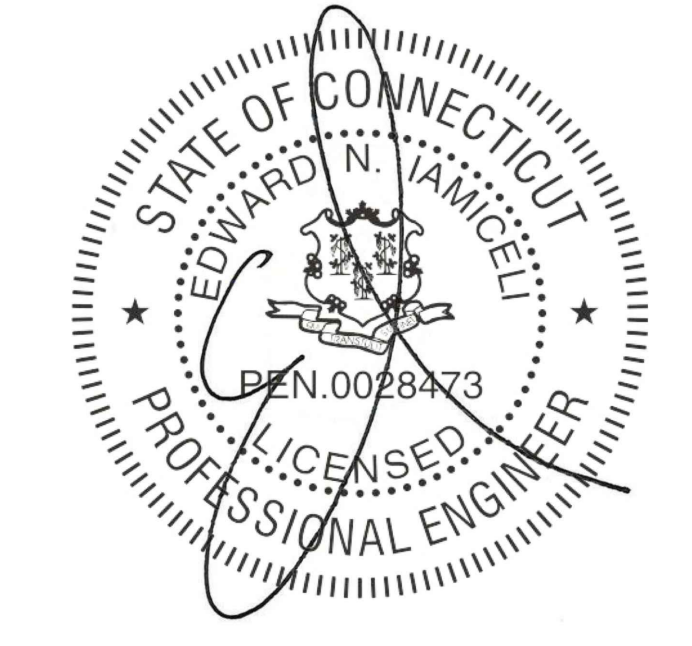


8 ANTENNA SCHEMATIC
 A-5 SCALE: NTS



5 CONDUIT ROUTING DTL
 A-5 SCALE: 1-1/2" = 1'-0"

COPIES OF THIS DOCUMENT WITHOUT A FACSIMILE OF THE SIGNATURE & AN ORIGINAL EMBOSSED SEAL OR ORIGINAL STAMP IN BLUE OR BLACK INK OF THE PROFESSIONAL ENGINEER OR LAND SURVEYOR SHALL NOT BE CONSIDERED VALID COPIES.
 THIS DOCUMENT IS PREPARED SPECIFICALLY FOR THE CLIENT AND PROJECT DESIGNATED HEREON. MODIFICATION, ALTERATION, REVISION, DUPLICATION, OR USE WITHOUT THE CONSENT OF TECTONIC IS STRICTLY PROHIBITED. COPYRIGHT 2020 TECTONIC. ALL RIGHTS RESERVED.



Tectonic
 PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
 Tectonic Engineering & Surveying Consultants P.C.
 70 Pleasant Hill Road Phone: (845) 534-5959
 P.O. Box 37 (800) 529-6531
 Mountainville, NY 10953 www.tectonicing.com
 Project Contact Info
 1279 Route 300
 Newburgh, NY 12550 Phone: (845) 567-6656

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 10473.CTHA149A
 DESIGNED BY EI

REV.	DATE	DESCRIPTION	DRAWN BY
1	2/25/2021	ISSUED FOR CONSTRUCTION	BWY
2	7/13/2021	REVISED STRUCTURAL	BWY

ISSUED BY _____ DATE _____

0 1 2 3
 ORIGINAL SIZE IN INCHES

SITE INFORMATION
 FARMINGTON PD MP
 CTHA149A
 319 NEW BRITAIN AVENUE
 FARMINGTON, CT 06032

SHEET TITLE
 DTLS & ANTENNA SCHEMATIC

SHEET NUMBER
 A-5

GENERAL NOTES

- ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE STATE OF CONNECTICUT BUILDING CODE, LATEST VERSION AND ALL OTHER APPLICABLE CODES AND ORDINANCES.
- 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.
- 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.
- 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.
- DTLS 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.
- 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.
- 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.
- CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND TO BE IN THE FIELD.
- 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.
- 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.
- 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.
- CONTRACTOR SHALL COORDINATE HIS WORK AND SCHEDULE HIS ACTIVITIES AND WORKING HOURS IN ACCORDANCE WITH THE REQUIREMENTS OF THE OWNER.
- 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.
- CONTRACTOR SHALL MAINTAIN LIABILITY INSURANCE TO PROTECT THE OWNER.
- INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
- MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SURFACES, EQUIPMENT, IMPROVEMENTS, AND PIPING. REPAIR ANY DAMAGE THAT OCCURS DURING CONSTRUCTION.
- REPAIR ALL EXISTING SURFACES DAMAGED DURING CONSTRUCTION SUCH THAT THEY MATCH AND BLEND WITH ADJACENT SURFACES.
- 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.
- 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.
- PROVIDE 48 HOURS WRITTEN NOTICE TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
- ALL BROCHURES, OPERATING AND MAINTENANCE MANUALS, CATALOGS, SHOP DRAWINGS AND OTHER DOCUMENTATION SHALL BE TURNED OVER TO AT COMPLETION OF CONSTRUCTION.
- 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

- 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.
- 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.
- STRUCTURAL STEEL BEAMS SHALL CONFORM TO ASTM A992 (Fy=50ksi). STRUCTURAL STEEL PLATES AND ANGLES SHALL CONFORM TO ASTM A36.
- ROUND AND SQUARE HOLLOW STRUCTURAL SECTIONS (HSS) CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE C.
- 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.
- CONNECTIONS: WELD OR BOLT CONNECTIONS, AS INDICATED:
 - CONNECTIONS NOT DTLED ON THE DRAWINGS SHALL CONFORM TO THE REQUIREMENTS OF THE CITED AISC SPECIFICATION.
 - STRUCTURAL BOLTS SHALL CONFORM TO THE LATEST ASTM A325 "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS".
 - 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.
 - MINIMUM 3/16" FILLET E70-XX WELD SHALL APPLY UNLESS NOTED.
 - MINIMUM 1/2" DIA. A325 BOLTS SHALL APPLY UNLESS NOTED.
 - MINIMUM SIZE OF CLIP ANGLES SHALL BE L3x3x3/8" UNLESS NOTED.
 - ALL GUSSET PLATES SHALL BE 3/8" THICK UNLESS NOTED.
 - 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.
 - 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.
 - 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".
 - 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.
 - DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
 - 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.
- ALL STEEL SUPPORTS SHALL BE INSTALLED WITH DOUBLE NUTS AND SHALL BE INSTALLED SNUG TIGHT.
- 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.
- 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.
- 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
 - DRILL THE HOLE USING MANUFACTURER RECOMMENDED DRILL BIT UP TO SPECIFIED DEPTH. HAMMERING IS NOT PERMITTED.
 - 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.
 - INSERT SPECIFIED SCREEN TUBE INTO THE HOLE.
 - FILL THE SCREEN TUBE COMPLETELY WITH ADHESIVE, BEGINNING AT THE BOTTOM END.
 - INSERT ANCHOR ROD OR INTERNALLY THREADED INSERT INTO THE ADHESIVE-FILLED SCREEN TUBE, TWISTING SLIGHTLY.
 - LOAD FASTENER ONLY AFTER MANUFACTURER SPECIFIED CURE TIME HAS ELAPSED.
- 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.
- SUBMIT DRAWINGS OF ALL STRUCTURAL AND MISCELLANEOUS STEEL TO THE ENGINEER FOR APPROVAL AND INCORPORATE ALL COMMENTS PRIOR TO FABRICATION.
- 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.
- ALL WORK SHALL BE INSPECTED BY THE ENGINEER DURING AND AT THE COMPLETION OF CONSTRUCTION.
- 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.
- HAMMER DRILLS ARE NOT TO BE USED WHEN DRILLING HOLES FOR SLEEVE OR EXPANSION BOLTS INSTALLED IN MASONRY BLOCKS/BRICKS.
- ALL HOLES TO BE ADDED IN THE FIELD SHALL BE PUNCHED OR DRILLED. NO HOLE BURNING SHALL BE ALLOWED.
- NOTES ARE NOT PROJECT SPECIFIC.

Tectonic
 PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
 Tectonic Engineering & Surveying Consultants P.C.
 70 Pleasant Hill Road Phone: (845) 534-5959
 P.O. Box 37 (800) 529-6531
 Mountaintown, NY 10953 www.tectonicengineering.com
 Project Contact Info
 1279 Route 300
 Newburgh, NY 12550 Phone: (845) 567-6656

Mobile
 NORTEAST, LLC.
 35 GRIFFIN ROAD SOUTH
 BLOOMFIELD, CT 06002

NSS NORTEAST
 SITE SOLUTIONS
 Turnkey Wireless Development

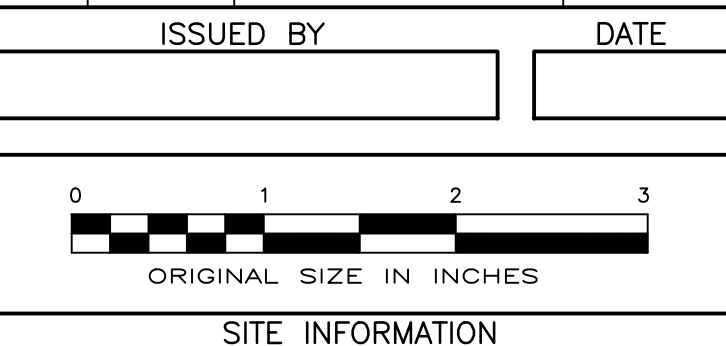
APPROVALS

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

PROJECT NUMBER	DESIGNED BY
10473.CTHA149A	EI

REV.	DATE	DESCRIPTION	DRAWN BY
△	2/25/2021	ISSUED FOR CONSTRUCTION	BWY
△	7/13/2021	REVISED STRUCTURAL	BWY

ISSUED BY _____ DATE _____



SITE INFORMATION

FARMINGTON PD MP
 CTHA149A
 319 NEW BRITAIN AVENUE
 FARMINGTON, CT 06032

SHEET TITLE

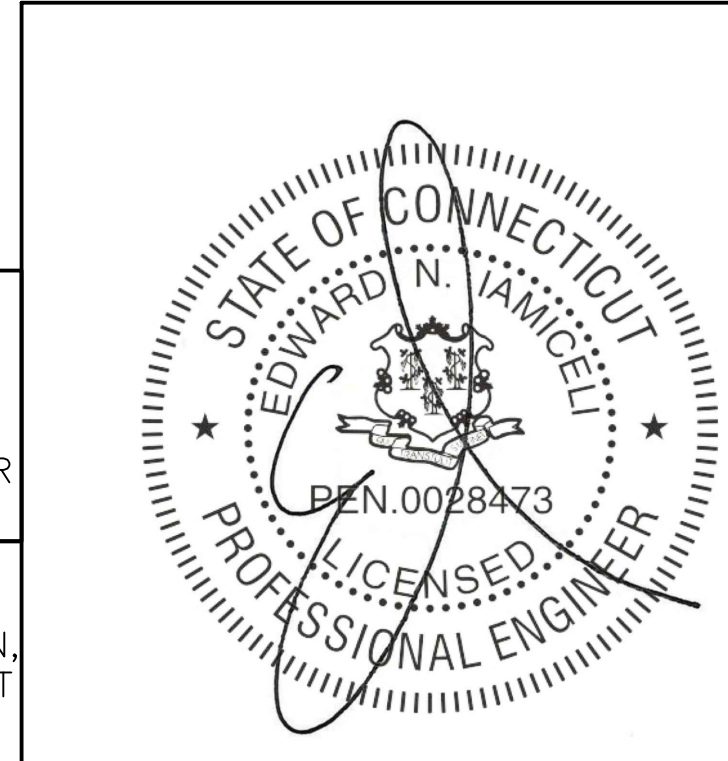
NOTES

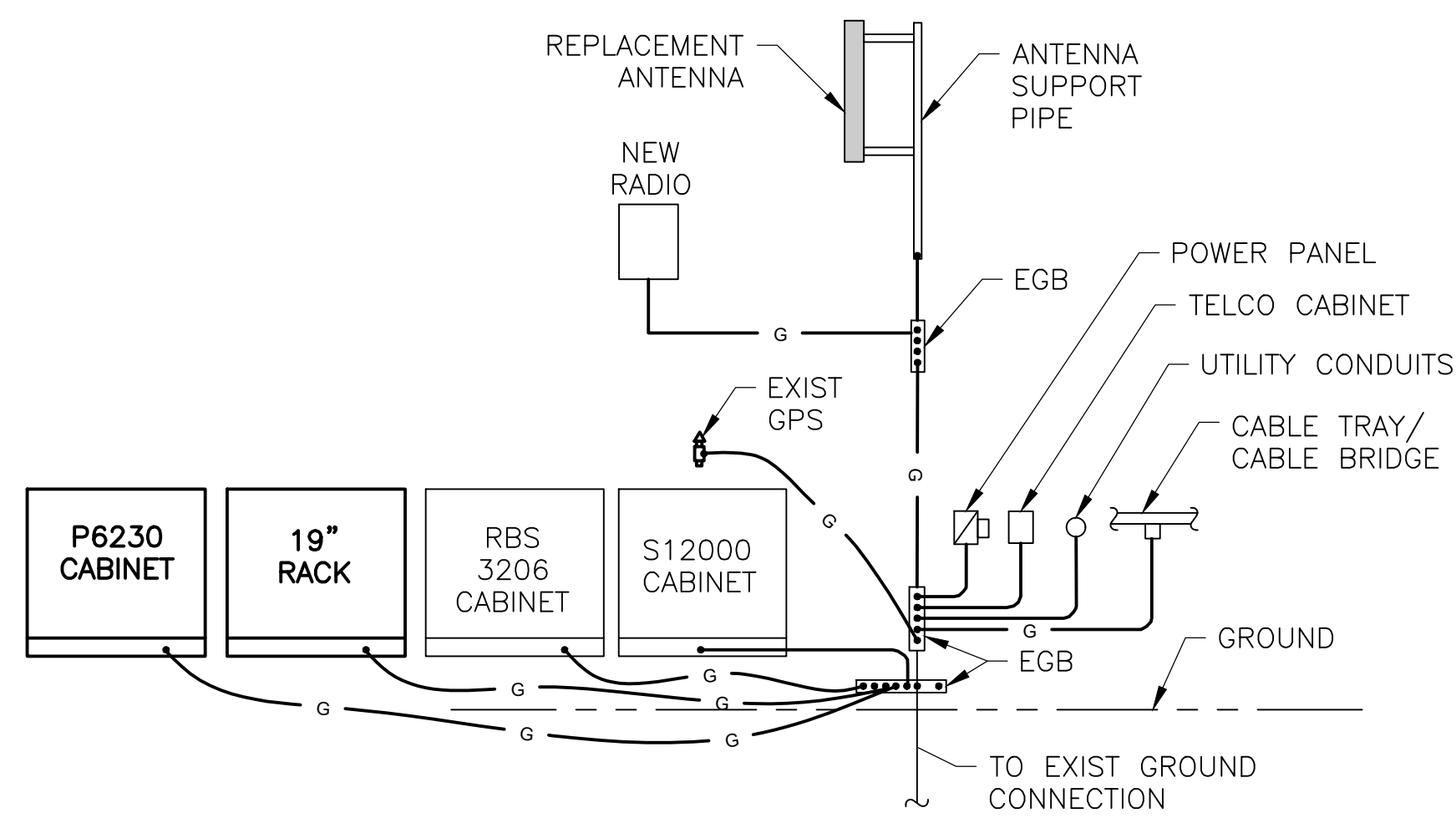
SHEET NUMBER

A-6

COPIES OF THIS DOCUMENT WITHOUT A FACSIMILE OF THE SIGNATURE & AN ORIGINAL EMBOSSED SEAL OR ORIGINAL STAMP IN BLUE OR BLACK INK OF THE PROFESSIONAL ENGINEER OR LAND SURVEYOR SHALL NOT BE CONSIDERED VALID COPIES.

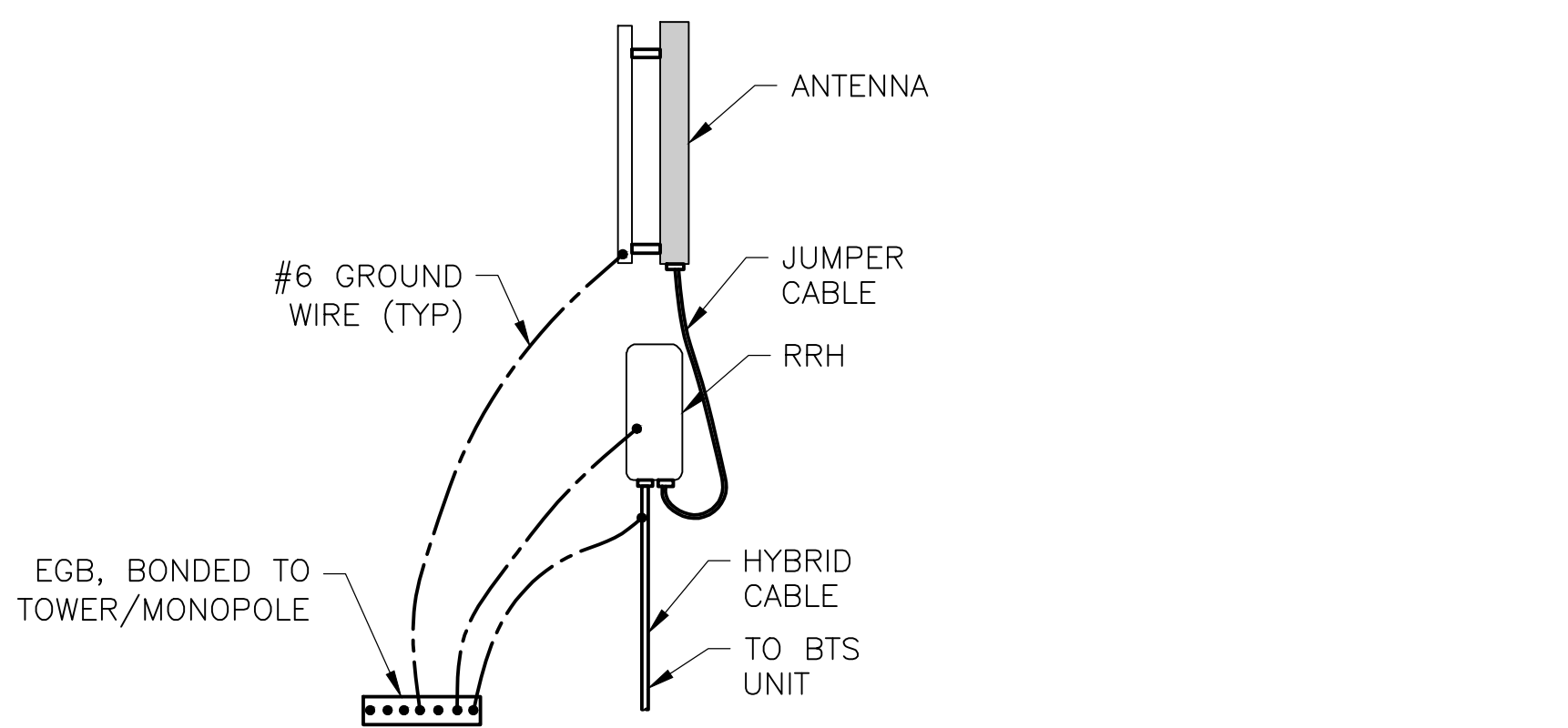
THIS DOCUMENT IS PREPARED SPECIFICALLY FOR THE CLIENT AND PROJECT DESIGNATED HEREON. MODIFICATION, ALTERATION, REVISION, DUPLICATION, OR USE WITHOUT THE CONSENT OF TECTONIC IS STRICTLY PROHIBITED. COPYRIGHT 2020 TECTONIC. ALL RIGHTS RESERVED.



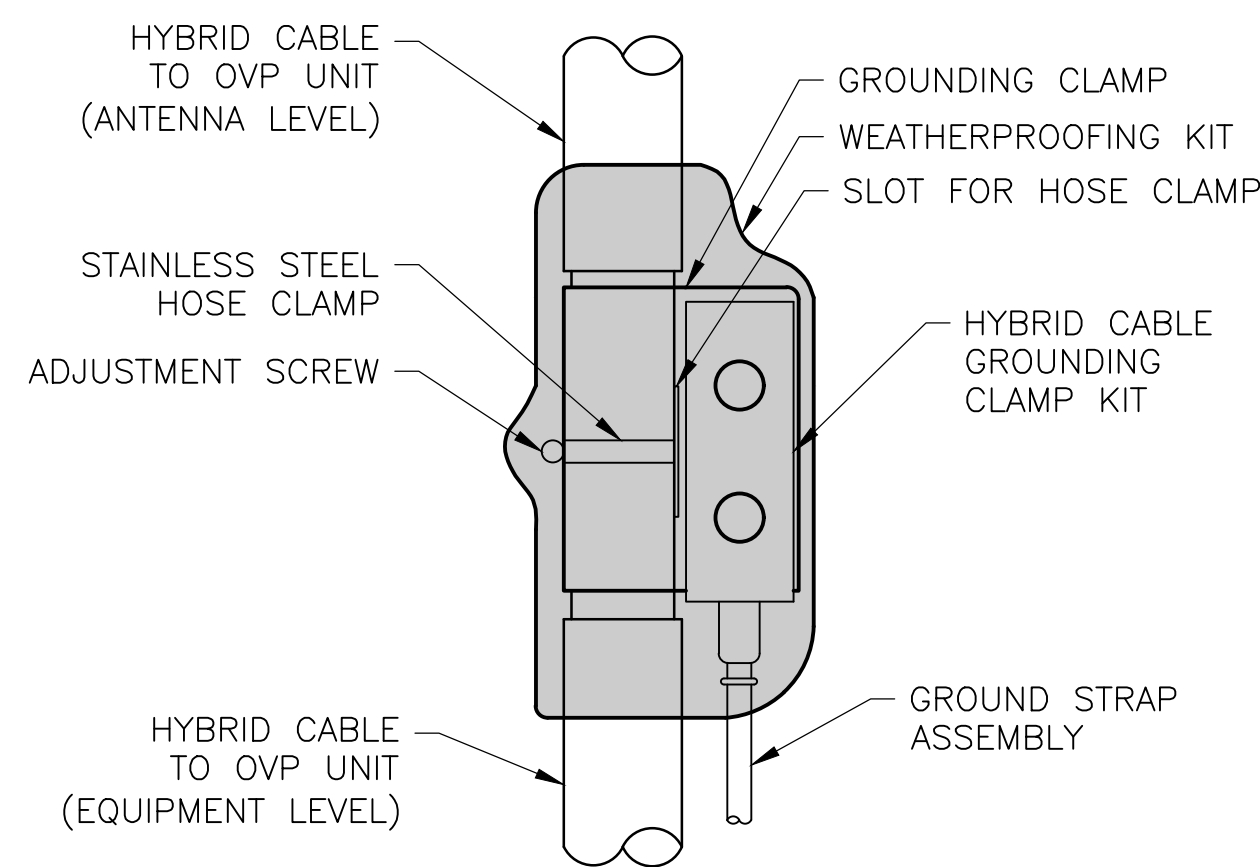


NOTE: CONTRACTOR SHALL CONFIRM ALL EQUIPMENT IS GROUNDED. IF NOT, CONTRACTOR SHALL GROUND EQUIPMENT AS SHOWN AND AS REQUIRED.

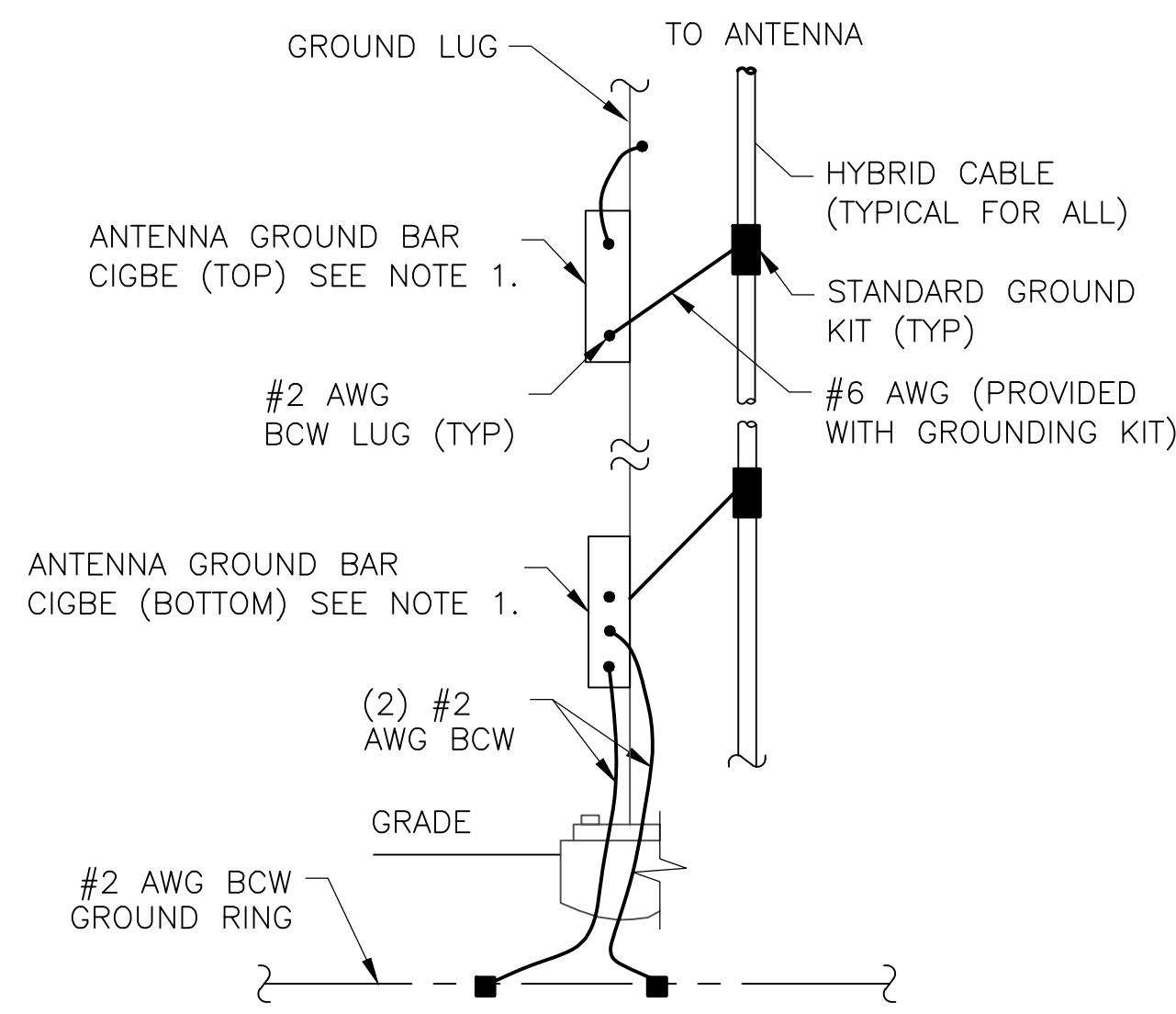
1 GROUNDING RISER DIAGRAM
SCALE: NTS



2 HYBRID CABLE CONNECTION DTL
SCALE: NTS

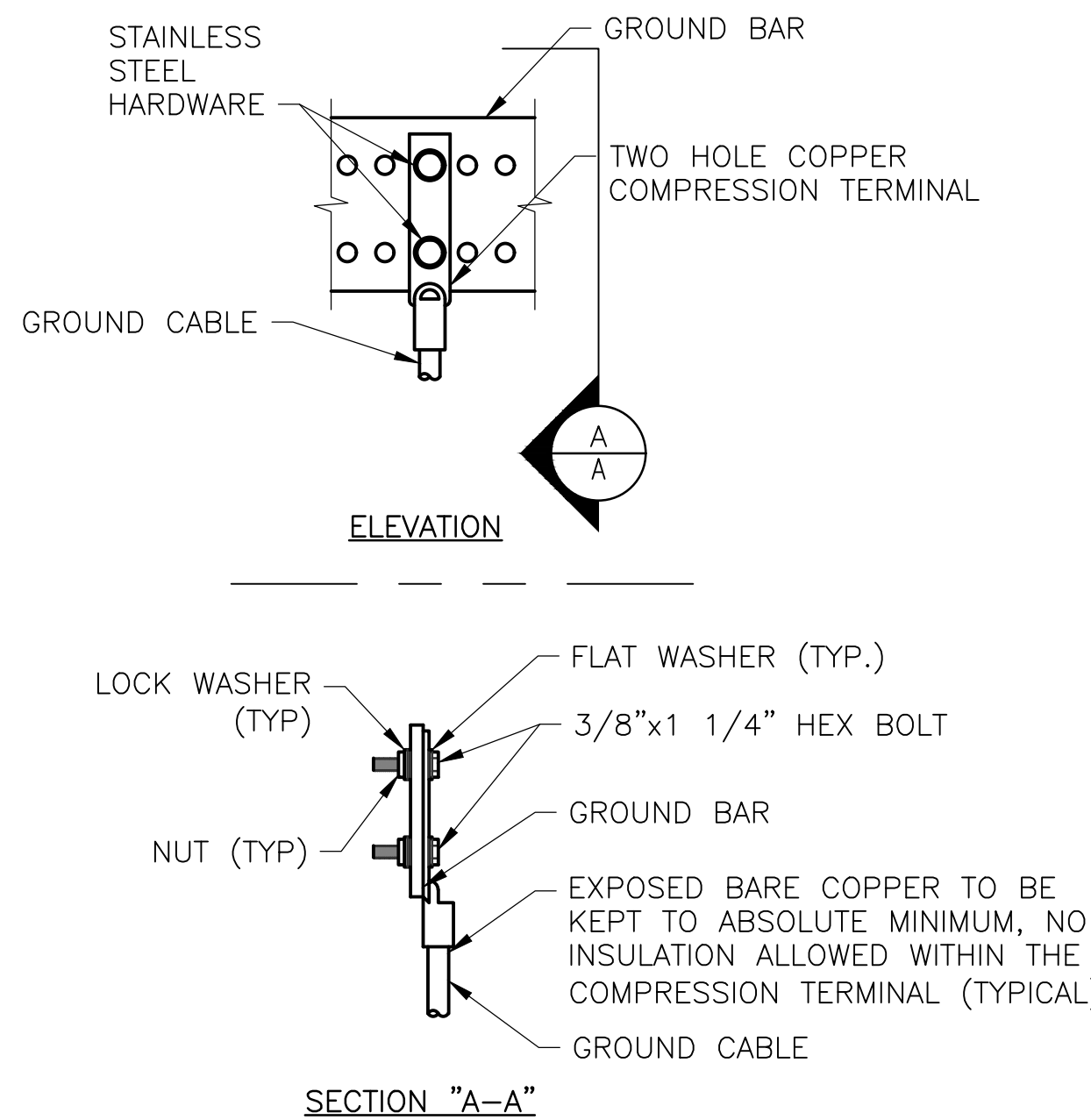


3 HYBRID CABLE GROUNDING DTL
SCALE: NTS



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 ANTENNA CABLE GROUNDING
SCALE: NTS

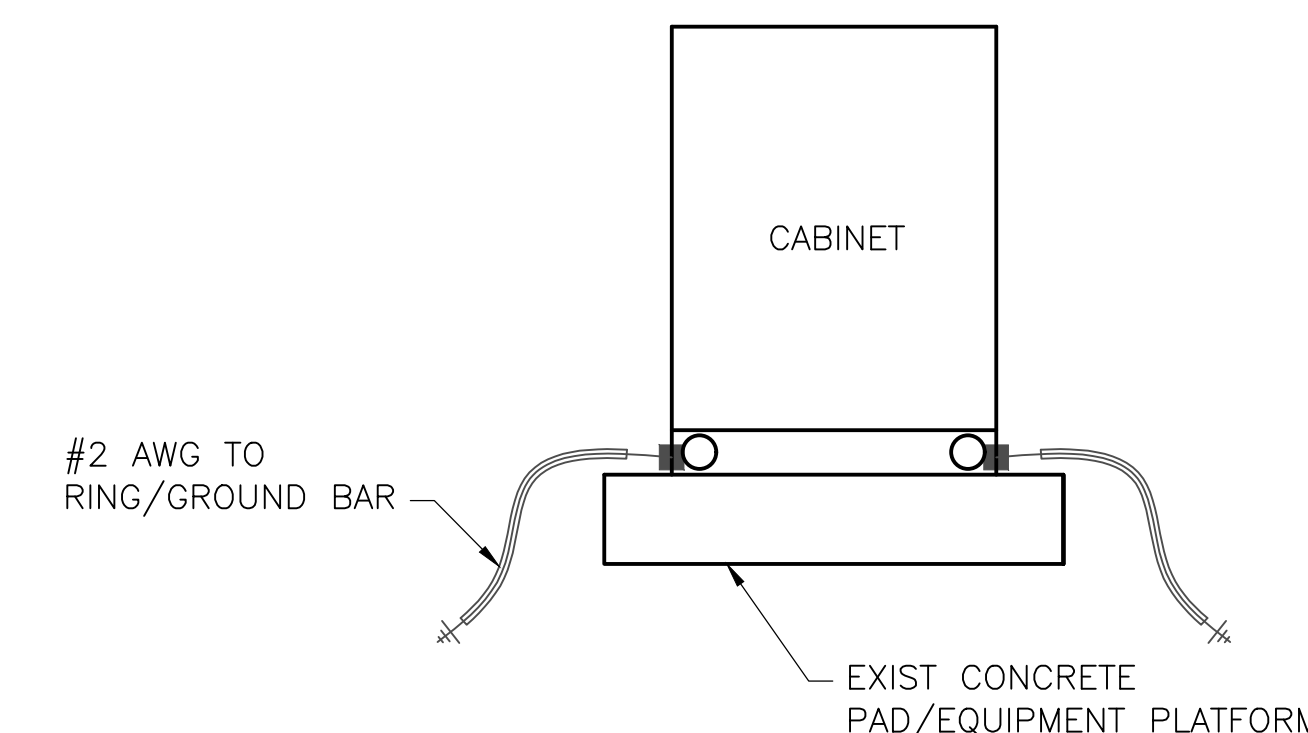


NOTES:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.
4. ALL GROUND LUGS MUST NE HEAT SHRUNK AT WIRE/LUG CONNECTION.

5 GROUND BAR CONNECTION DTL
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.



6 CABINET GROUNDING DTL
SCALE: NTS

COPIES OF THIS DOCUMENT WITHOUT A FACSIMILE OF THE SIGNATURE & AN ORIGINAL EMBOSSED SEAL OR ORIGINAL STAMP IN BLUE OR BLACK INK OF THE PROFESSIONAL ENGINEER OR LAND SURVEYOR SHALL NOT BE CONSIDERED VALID COPIES.
THIS DOCUMENT IS PREPARED SPECIFICALLY FOR THE CLIENT AND PROJECT DESIGNATED HEREON. MODIFICATION, ALTERATION, REVISION, DUPLICATION, OR USE WITHOUT THE CONSENT OF TECTONIC IS STRICTLY PROHIBITED. COPYRIGHT 2020 TECTONIC. ALL RIGHTS RESERVED.



Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering & Surveying Consultants P.C.
70 Pleasant Hill Road Phone: (845) 534-5959
P.O. Box 37 (800) 529-6531
Mountaintop, NY 10953 www.tectonicengineering.com
Project Contact Info
1279 Route 300
Newburgh, NY 12550 Phone: (845) 567-6656

Mobile
NORTHEAST, LLC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

NSS NORTHEAST
SITE SOLUTIONS
Turnkey Wireless Development

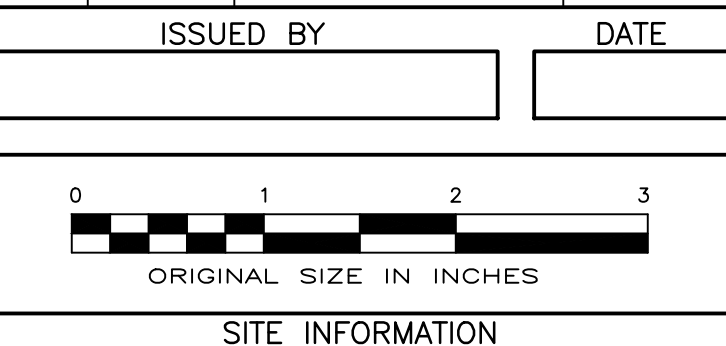
APPROVALS

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

PROJECT NUMBER 10473.CTHA149A
DESIGNED BY EI

REV.	DATE	DESCRIPTION	DRAWN BY
1	2/25/2021	ISSUED FOR CONSTRUCTION	BWY
2	7/13/2021	REVISED STRUCTURAL	BWY

ISSUED BY _____ DATE _____



FARMINGTON PD MP
CTHA149A
319 NEW BRITAIN AVENUE
FARMINGTON, CT 06032

SHEET TITLE
GROUNDING DTLS & NOTES

SHEET NUMBER

G-1

MODIFICATION OF EXISTING WIRELESS FACILITY BY



T-MOBILE NORTHEAST LLC

PROJECT TITLE: NATIONAL HARDENING

SITE NUMBER: CTHA149A

SITE NAME: FARMINGTON PD MP

SITE ADDRESS: 319 NEW BRITAIN AVENUE

FARMINGTON, CT 06032

APPLICANT:

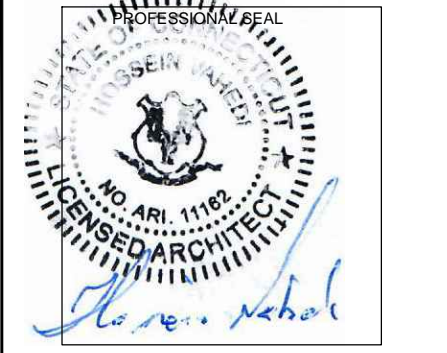
T-MOBILE NORTHEAST LLC
 35 GRIFFIN ROAD SOUTH
 BLOOMFIELD, CT 06002
 860-692-7100

PROJECT MANAGER

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

CONSULTANT:

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



THIS DOCUMENT IS THE DESIGN PROPERTY AND COPYRIGHT OF FORESITE, LLC. AND FOR THE EXCLUSIVE USE BY THE TITLE CLIENT. DUPLICATION OR USE WITHOUT THE EXPRESS WRITTEN CONSENT OF THE CREATOR IS STRICTLY PROHIBITED. DRAWING SCALES ARE INTENDED FOR 11"x17" SIZE PRINTED MEDIA ONLY. ALL OTHER PRINTED SIZES ARE DEEMED "NOT TO SCALE".

PROJECT NOTES:

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

CODE COMPLIANCE:

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

- CONNECTICUT STATE BUILDING CODE (CSBC).
- ANSI/TIA-222-G STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.
- NATIONAL ELECTRICAL CODE (NEC) FOR POWER AND GROUNDING REQUIREMENTS.
- OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA).
- NFPA - NATIONAL FIRE PROTECTION ASSOCIATION.



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

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

CONTRACTOR'S NOTES:

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

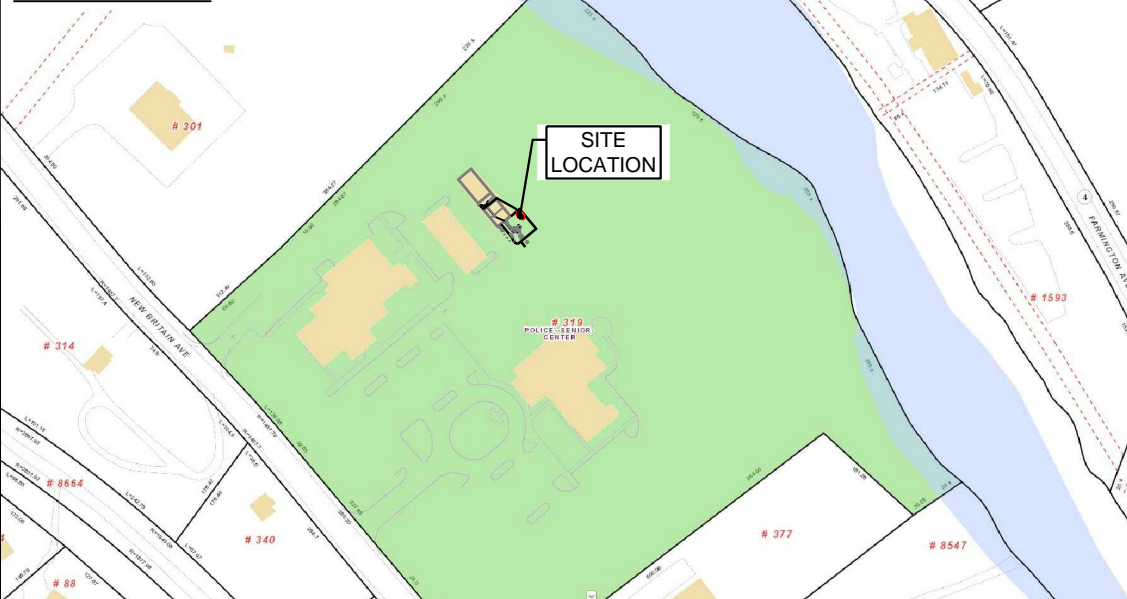
APPROVALS:

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

SITE IMAGE:



SITE VICINITY :



PROJECT SCOPE:

THE PROPOSED PROJECT SCOPE WILL CONSIST OF INSTALLING A NEW GENERAC RD 25 KW AC DIESEL GENERATOR AND TANK FOR AN EXISTING TELECOM BASE STATION. NO SIGNIFICANT GRADING IS REQUIRED. ALL PROPOSED CONSTRUCTION WILL BE CONTAINED IN THE LIMITS OF THE EXISTING FENCED COMPOUND AND TOWER SITE LEASE AREA.

PROJECT INFORMATION:

ADDRESS: 319 NEW BRITAIN AVENUE
 FARMINGTON, CT 06032
 MAP BLOCK LOT: 035 1-8
 ZONING DISTRICT: CR
 COORDINATES: 41° 44' 59.45" N 72° 52' 21.66" W
 GROUND ELEV: 195± (AMSL)

PROJECT TEAM:

APPLICANT: T-MOBILE NORTHEAST, LLC.
 35 GRIFFIN ROAD SOUTH
 BLOOMFIELD, CT 06002
 860-692-7100
 PROPERTY OWNER: FARMINGTON TOWN OF
 NEW POLICE/COMMUNITY CENTER
 1 MONTEITH DR
 FARMINGTON, CT 06032
 PROJECT MANAGER: NORTHEAST SITE SOLUTIONS
 420 MAIN STREET, BLDG 4
 STURBRIDGE, MA 01566
 SHELDON FREINCKLE
 SHELDON@NORTHEASTSITESOLUTIONS.COM
 201-776-8521
 ENGINEERING CONSULTANTS: FORESITE LLC
 462 WALNUT ST
 NEWTON, MA 02460
 SAEED MOSSAVAT
 SMOSSAVAT@FORESITELLC.COM
 617-212-3123

SHEET INDEX:

- T-1: TITLE SHEET
- N-1: GENERAL NOTES
- A-1: SITE LOCATION PLAN
- A-2: EQUIPMENT LAYOUT PLAN
- A-3: GENERATOR SPECIFICATIONS
- A-4: GENERATOR SPECIFICATIONS
- A-5: AUTOMATIC TRANSFER SWITCH SPECIFICATIONS
- A-6: CONCRETE PAD AND UNDERGROUND CONDUIT DETAILS
- E-1: ELECTRICAL DETAILS
- G-1: GROUNDING DETAILS

REV	DESCRIPTION	DATE
A	PRELIMINARY	06/23/21

SITE NUMBER: CTHA149A
SITE NAME: FARMINGTON PD MP
 SITE ADDRESS: 319 NEW BRITAIN AVENUE
 FARMINGTON, CT 06032

SHEET TITLE:
 T-1: TITLE SHEET

Copyright © 2020 Foresite LLC. All rights reserved. The details, templates, drawing formats or any portion of this document generated by Foresite LLC may not be duplicated, traced or used otherwise for any profit-driven enterprise.

Copyright © 2020 Foresite LLC all rights reserved. The details, templates, drawing formats or any portion of this document generated by Foresite LLC may not be duplicated, traced or used otherwise for any profit-driven enterprise.

GENERAL NOTES:

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAS MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE CLIENT'S REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS.
6. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S / VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
7. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS DURING CONSTRUCTION.
8. THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT SECTIONS OF THE BASIC STATE BUILDING CODE, LATEST EDITION, AND ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJEC
9. THE CONTRACTOR SHALL NOTIFY THE CLIENT'S REPRESENTATIVE IN WRITING WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE CLIENT'S REPRESENTATIVE.
10. THE WORK SHALL CONFORM TO THE CODES AND STANDARDS OF THE FOLLOWING AGENCIES AS FURTHER CITED HEREIN:
 - A. ASTM: AMERICAN SOCIETY FOR TESTING AND MATERIALS, AS PUBLISHED IN "COMPILATION OF ASTM STANDARDS BUILDING CODES" OR LATEST EDITION.
 - B. AWS: AMERICAN WELDING SOCIETY INC. AS PUBLISHED IN "STANDARD D1.1-08, STRUCTURAL WELDING CODE" OR LATEST EDITION.
 - C. AISC: AMERICAN INSTITUTE FOR STEEL CONSTRUCTION AS PUBLISHED IN "CODE FOR STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"; "SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS" (LATEST EDITION).
11. BOLTING:
 - A. BOLTS SHALL BE CONFORMING TO ASTM A325 HIGH STRENGTH, HOT DIP GALVANIZED WITH ASTM A153 HEAVY HEX TYPE NUTS.
 - B. BOLTS SHALL BE 3/4"Ø MINIMUM (UNLESS OTHERWISE NOTED)
 - C. ALL CONNECTIONS SHALL BE 2 BOLTS MINIMUM.
12. FABRICATION:
 - A. FABRICATION OF STEEL SHALL CONFORM TO THE AISC AND AWS STANDARDS AND CODES (LATEST EDITION).
 - B. ALL STRUCTURAL STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 (LATEST EDITION), UNLESS OTHERWISE NOTED.
13. ERECTION OF STEEL:
 - A. PROVIDE ALL ERECTION EQUIPMENT, BRACING, PLANKING, FIELD BOLTS, NUTS, WASHERS, DRIFT PINS, AND SIMILAR MATERIALS WHICH DO NOT FORM A PART OF THE COMPLETED CONSTRUCTION BUT ARE NECESSARY FOR ITS PROPER ERECTION.
 - B. ERECT AND ANCHOR ALL STRUCTURAL STEEL IN ACCORDANCE WITH AISC REFERENCE STANDARDS. ALL WORK SHALL BE ACCURATELY SET TO ESTABLISHED LINES AND ELEVATIONS AND RIGIDLY FASTENED IN PLACE WITH SUITABLE ATTACHMENTS TO THE CONSTRUCTION OF THE BUILDING.
 - C. TEMPORARY BRACING, GUYING AND SUPPORT SHALL BE PROVIDED TO KEEP THE STRUCTURE SAFE AND ALIGNED AT ALL TIMES DURING CONSTRUCTION, AND TO PREVENT DANGER TO PERSONS AND PROPERTY. CHECK ALL TEMPORARY LOADS AND STAY WITHIN SAFE CAPACITY OF ALL BUILDING COMPONENTS.
14. RELATED WORK, FURNISH THE FOLLOWING WORK AS SPECIFIED UNDER CONSTRUCTION DOCUMENTS, BUT COORDINATE WITH OTHER TRADES PRIOR TO BID:
 - A. FLASHING OF OPENING INTO OUTSIDE WALLS


- B. SEALING AND CAULKING ALL OPENINGS
- C. PAINTING
- D. CUTTING AND PATCHING
15. REQUIREMENTS OF REGULATORY AGENCIES:
 - A. FURNISH U.L. LISTED EQUIPMENT WHERE SUCH LABEL IS AVAILABLE. INSTALL IN CONFORMANCE WITH U.L. STANDARDS WHERE APPLICABLE.
 - B. INSTALL ANTENNA, ANTENNA CABLES, GROUNDING SYSTEM IN ACCORDANCE WITH DRAWINGS AND SPECIFICATION IN EFFECT AT PROJECT LOCATION AND RECOMMENDATIONS OF STATE AND LOCAL BUILDING CODES, AND SPECIAL CODES HAVING JURISDICTION OVER SPECIFIC PORTIONS OF WORK. THIS WORK INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:
 - C. TIA-EIA - 222 (LATEST EDITION). STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES.
 - D. FAA - FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR AC 70/7460-IH, OBSTRUCTION MARKING AND LIGHTING.
 - E. FCC - FEDERAL COMMUNICATIONS COMMISSION RULES AND REGULATIONS FORM 715, OBSTRUCTION MARKING AND LIGHTING SPECIFICATION FOR ANTENNA STRUCTURES AND FORM 715A, HIGH INTENSITY OBSTRUCTION LIGHTING SPECIFICATIONS FOR ANTENNA STRUCTURES.
 - F. AISC - AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS (LATEST EDITION).
 - G. NEC - NATIONAL ELECTRICAL CODE - ON TOWER LIGHTING KITS.
 - H. UL - UNDERWRITER'S LABORATORIES APPROVED ELECTRICAL PRODUCTS.
 - I. IN ALL CASES, PART 77 OF THE FAA RULES AND PARTS 17 AND 22 OF THE FCC RULES ARE APPLICABLE AND IN THE EVENT OF CONFLICT, SUPERSEDE ANY OTHER STANDARDS OR SPECIFICATIONS.
 - J. 2018 LIFE SAFETY CODE NFPA - 101.


APPLICANT:

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

PROJECT MANAGER

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

CONSULTANT:

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



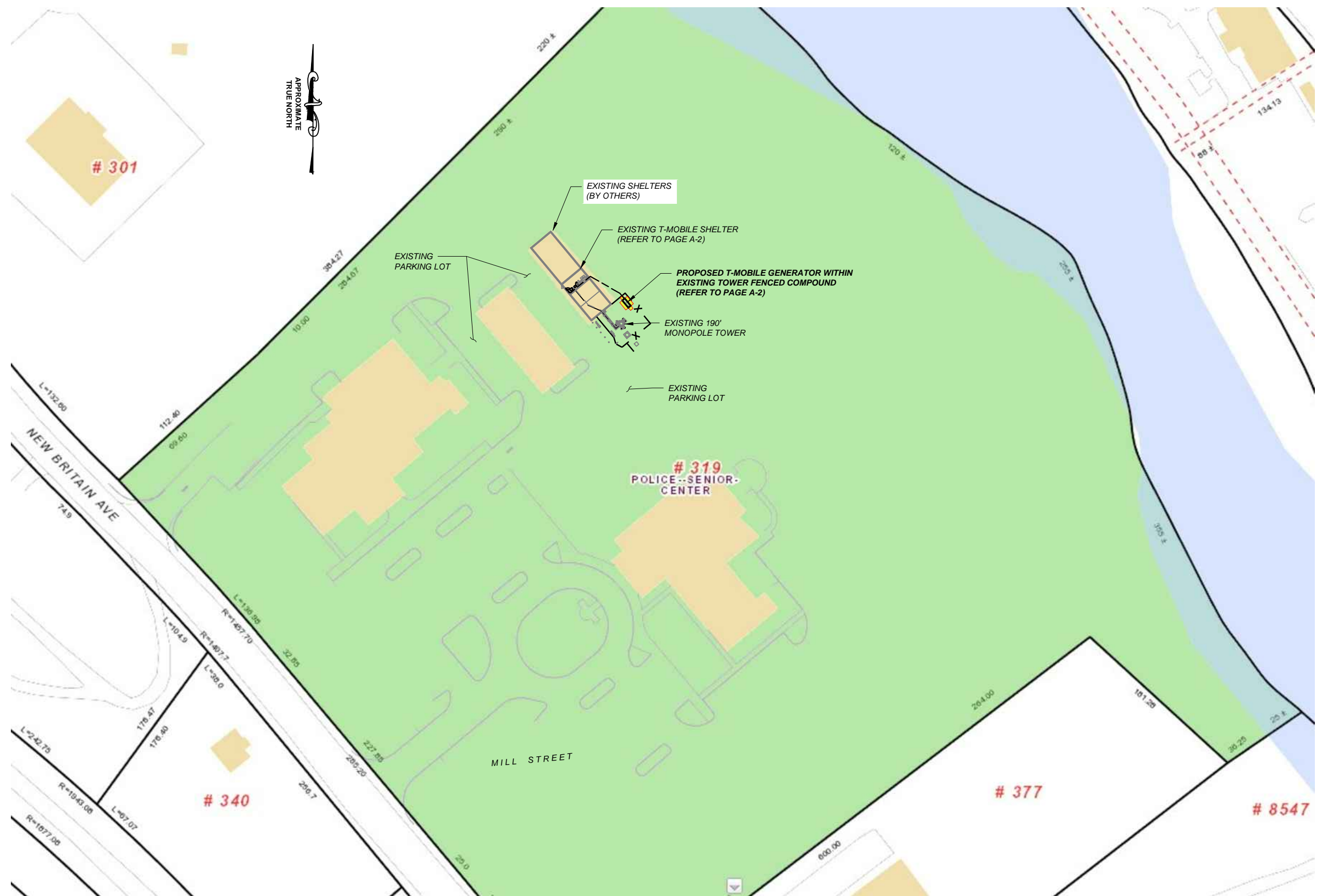
THIS DOCUMENT IS THE DESIGN PROPERTY AND COPYRIGHT OF FORESITE, LLC. AND FOR THE EXCLUSIVE USE BY THE TITLE CLIENT. DUPLICATION OR USE WITHOUT THE EXPRESS WRITTEN CONSENT OF THE CREATOR IS STRICTLY PROHIBITED. DRAWING SCALES ARE INTENDED FOR 11"x17" SIZE PRINTED MEDIA ONLY. ALL OTHER PRINTED SIZES ARE DEEMED "NOT TO SCALE".

REV	DESCRIPTION	DATE
A	PRELIMINARY	06/23/21

SITE NUMBER: CTHA149A
 SITE NAME: FARMINGTON PD MP
 SITE ADDRESS: 319 NEW BRITAIN AVENUE
 FARMINGTON, CT 06032

SHEET TITLE:
N-1: GENERAL NOTES

Copyright © 2020 Foresite LLC all rights reserved. The details, templates, drawing formats or any portion of this document generated by Foresite LLC may not be duplicated, traced or used otherwise for any profit-driven enterprise.



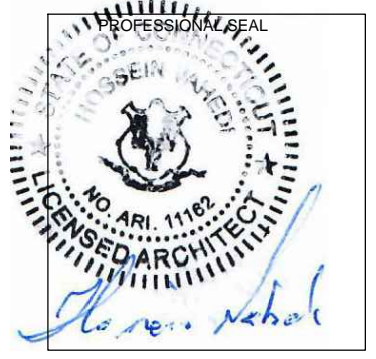
SITE LOCATION PLAN 1
 NTS A-1

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

PROJECT MANAGER

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

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



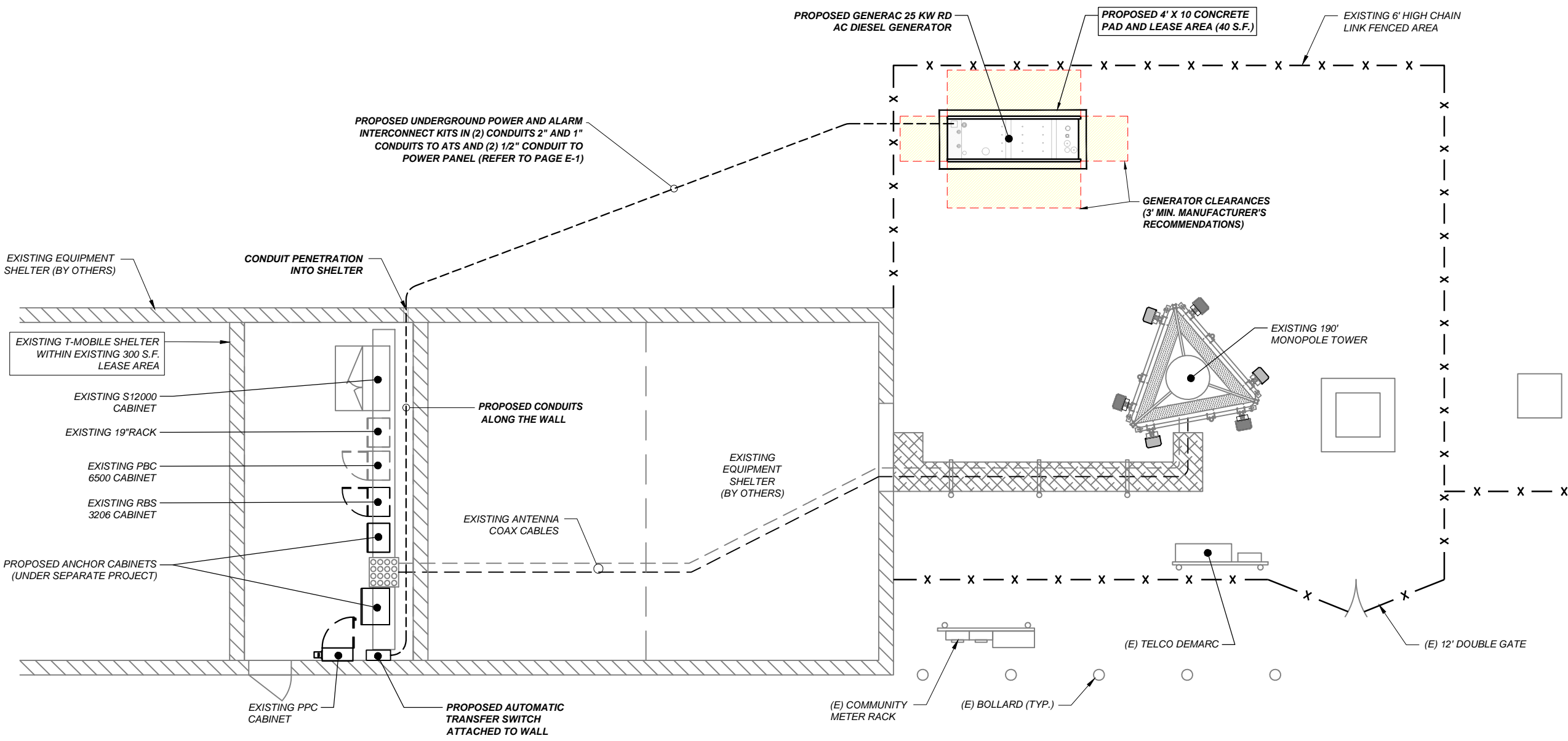
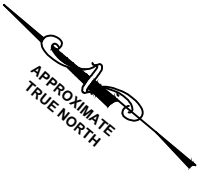
THIS DOCUMENT IS THE DESIGN PROPERTY AND COPYRIGHT OF FORESITE, LLC. AND FOR THE EXCLUSIVE USE BY THE TITLE CLIENT. DUPLICATION OR USE WITHOUT THE EXPRESS WRITTEN CONSENT OF THE CREATOR IS STRICTLY PROHIBITED. DRAWING SCALES ARE INTENDED FOR 11"x17" SIZE PRINTED MEDIA ONLY. ALL OTHER PRINTED SIZES ARE DEEMED "NOT TO SCALE".

REV	DESCRIPTION	DATE
A	PRELIMINARY	06/23/21

SITE NUMBER: CTHA149A
SITE NAME: FARMINGTON PD MP
SITE ADDRESS: 319 NEW BRITAIN AVENUE
 FARMINGTON, CT 06032

SHEET TITLE:
 A-1: SITE LOCATION PLAN

Copyright © 2020 Foresite LLC all rights reserved. The details, templates, drawing formats or any portion of this document generated by Foresite LLC may not be duplicated, traced or used otherwise for any profit-driven enterprise.



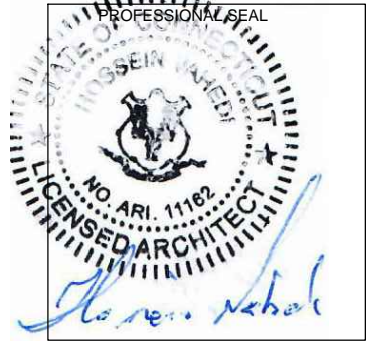
EQUIPMENT LAYOUT PLAN 1
SCALE: 1/4" = 1'-0" A-2

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

PROJECT MANAGER

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

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



THIS DOCUMENT IS THE DESIGN PROPERTY AND COPYRIGHT OF FORESITE, LLC. AND FOR THE EXCLUSIVE USE BY THE TITLE CLIENT. DUPLICATION OR USE WITHOUT THE EXPRESS WRITTEN CONSENT OF THE CREATOR IS STRICTLY PROHIBITED. DRAWING SCALES ARE INTENDED FOR 11"x17" SIZE PRINTED MEDIA ONLY. ALL OTHER PRINTED SIZES ARE DEEMED "NOT TO SCALE".

REV	DESCRIPTION	DATE
A	PRELIMINARY	06/23/21

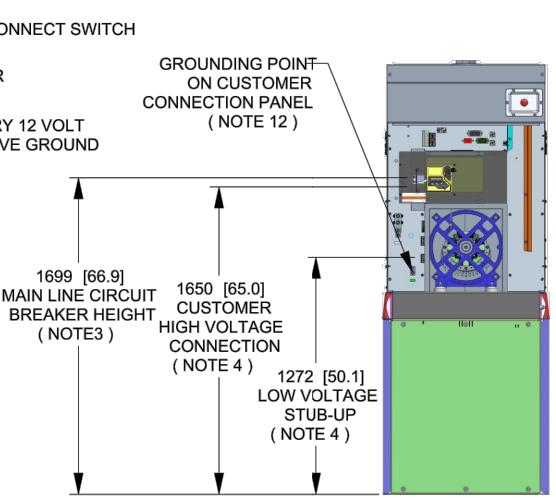
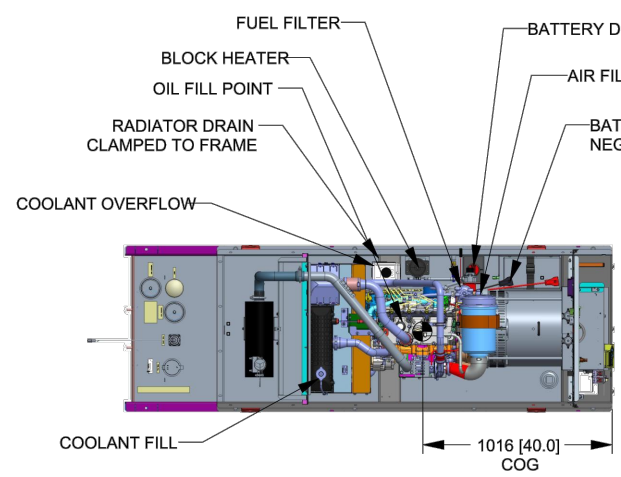
SITE NUMBER: CTHA149A
SITE NAME: FARMINGTON PD MP
SITE ADDRESS: 319 NEW BRITAIN AVENUE
FARMINGTON, CT 06032

SHEET TITLE:
A-2: EQUIPMENT PLAN

Copyright © 2020 Foresite LLC all rights reserved. The details, templates, drawing formats or any portion of this document generated by Foresite LLC may not be duplicated, traced or used otherwise for any profit-driven enterprise.

GENERAC RD 25 KW AC DIESEL GENERATOR AND TANK

SH	1/2	REV	2	WINDCHILL VERSION	2.12
----	-----	-----	---	-------------------	------

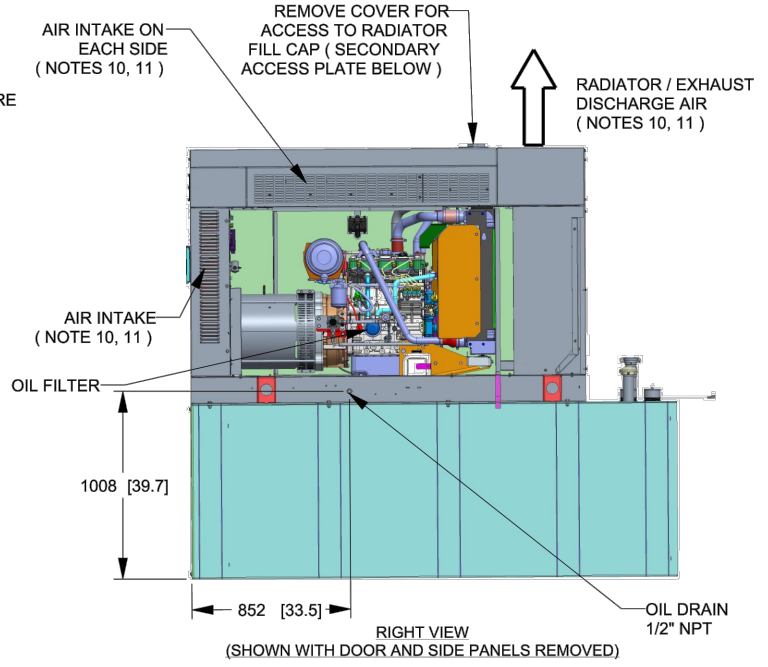
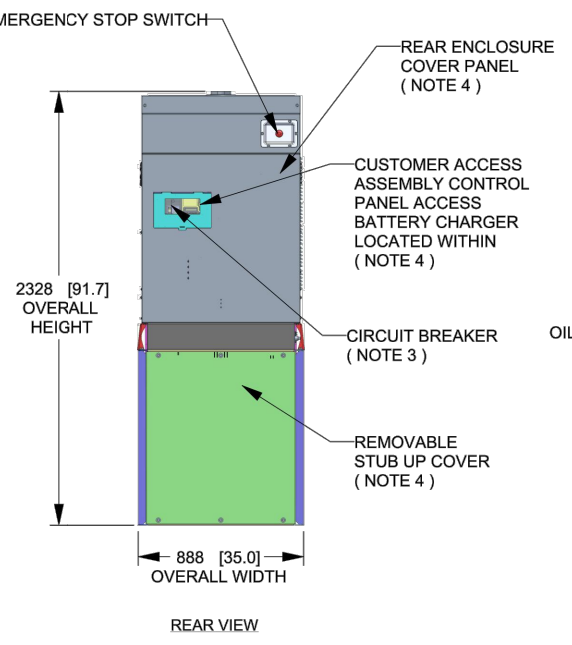
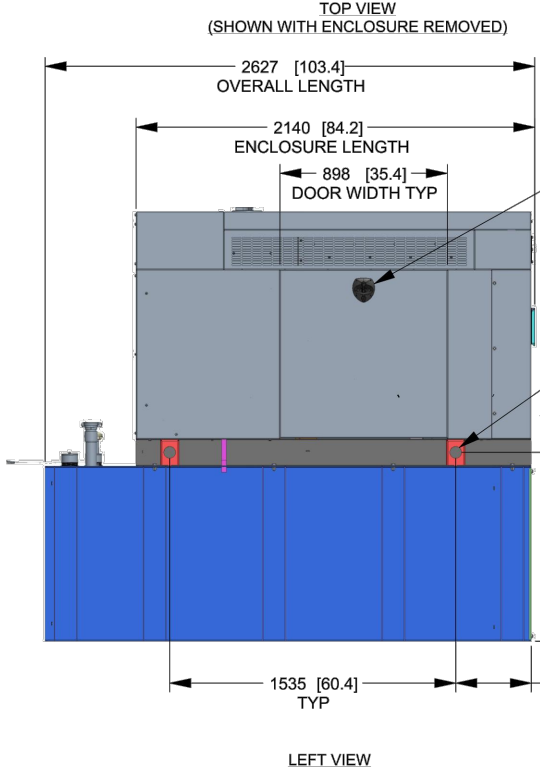


WEIGHT DATA WITH EMPTY BASE TANK (SEE NOTE 6)

GENERATOR AS SHOWN	1336 [2946]
WITH WOODEN SHIPPING SKID	1354 [2984]

WEIGHT: KG [LBS]
DIMENSIONS: MM [INCHES]

- NOTES:**
- THIS UNIT MUST BE INSTALLED IN ACCORDANCE WITH CURRENT APPLICABLE NFPA 37 AND NFPA 70 STANDARDS AS WELL AS ANY OTHER FEDERAL, STATE, AND LOCAL CODES.
 - BATTERY (12 VOLT NEGATIVE GROUND SYSTEM).
 - CONTROL PANEL / CIRCUIT BREAKER INFORMATION:
 - MAIN LINE CIRCUIT BREAKER 125 AMPS
 - SEE SPECIFICATION SHEET OR OWNERS MANUAL
 - ACCESSIBLE THROUGH CUSTOMER ACCESS ASSEMBLY DOOR ON REAR OF GENERATOR.
 - CONTROL PANEL INCLUDES INTEGRATED BATTERY CHARGER
 - REMOVE THE REAR STUB-UP AND REAR ENCLOSURE COVER PANEL TO ACCESS THE STUB-UP AREAS AS FOLLOWS:
 - HIGH VOLTAGE CONNECTION INCLUDING AC LOAD LEAD CONDUIT CONNECTION, NEUTRAL CONNECTION, AND BATTERY CHARGER 120 VOLT AC (0.5 AMP MAX) CONNECTION.
 - LOW VOLTAGE CONNECTION INCLUDING TRANSFER SWITCH CONTROL WIRES
 - ENGINE SERVICE CONNECTIONS
OIL DRAIN: 1/2" NPT
RADIATOR DRAIN : HOSE CLAMPED TO FRAME
 - CENTER OF GRAVITY AND WEIGHT MAY CHANGE DUE TO UNIT OPTIONS.
 - BOTTOM OF GENERATOR SET MUST BE ENCLOSED TO PREVENT PEST INTRUSION AND RECIRCULATION OF DISCHARGE AIR AND/OR IMPROPER COOLING AIR FLOW.
 - REFERENCE OWNERS MANUAL FOR LIFTING WARNINGS.
 - MOUNTING BOLTS OR STUDS TO MOUNTING SURFACE SHALL BE 5/8-11 GRADE 5 (USE STANDARD SAE TORQUE SPECS)
 - MUST ALLOW FREE FLOW OF INTAKE AIR, DISCHARGE AIR AND EXHAUST. SEE SPEC SHEET FOR MINIMUM AIR FLOW AND MAXIMUM RESTRICTION REQUIREMENTS.
 - GENERATOR MUST BE INSTALLED SUCH THAT FRESH COOLING AIR IS AVAILABLE AND THAT DISCHARGE AIR FROM RADIATOR IS NOT RECIRCULATED. RECOMMENDED MINIMUM PERIMETER(3FT) AND VERTICAL OVER EXHAUST (5FT) CLEARANCE FOR SITE LOCATION.
 - GENERATOR MUST BE GROUNDED.



DRAWING CREATED FROM PRO/ENGINEER 3D FILE. ECO MODIFICATION TO BE APPLIED TO SOLID MODEL ONLY.

INSTALLATION DRAWING

GENERAC POWER SYSTEMS OWNS THE COPYRIGHT OF THIS DRAWING WHICH IS SUPPLIED IN CONFIDENCE AND MUST NOT BE USED FOR ANY PURPOSE OTHER THAN FOR WHICH IT IS SUPPLIED WITHOUT THE EXPRESS WRITTEN CONSENT OF GENERAC POWER SYSTEMS. ©GENERAC POWER SYSTEMS 2013

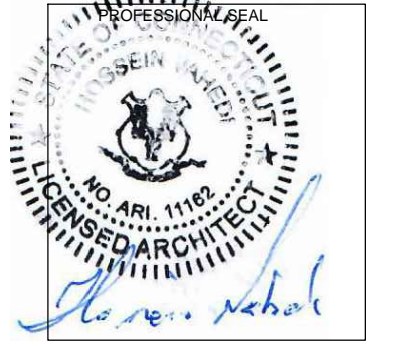
ELECTRONICALLY APPROVED INSIDE WINDCHILL

GENERAC			
TITLE INSTALLATION D2.2L 25KW Y06 PD			
ISSUE DATE: 5/10/18			
SIZE B	CAGE NO N/A	DWG NO 10000036728	REV 2
SCALE 0.031	WT-KG SEE ABOVE	SHEET 1 of 2	

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

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

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



THIS DOCUMENT IS THE DESIGN PROPERTY AND COPYRIGHT OF FORESITE, LLC. AND FOR THE EXCLUSIVE USE BY THE TITLE CLIENT. DUPLICATION OR USE WITHOUT THE EXPRESS WRITTEN CONSENT OF THE CREATOR IS STRICTLY PROHIBITED. DRAWING SCALES ARE INTENDED FOR 11"x17" SIZE PRINTED MEDIA ONLY. ALL OTHER PRINTED SIZES ARE DEEMED "NOT TO SCALE".

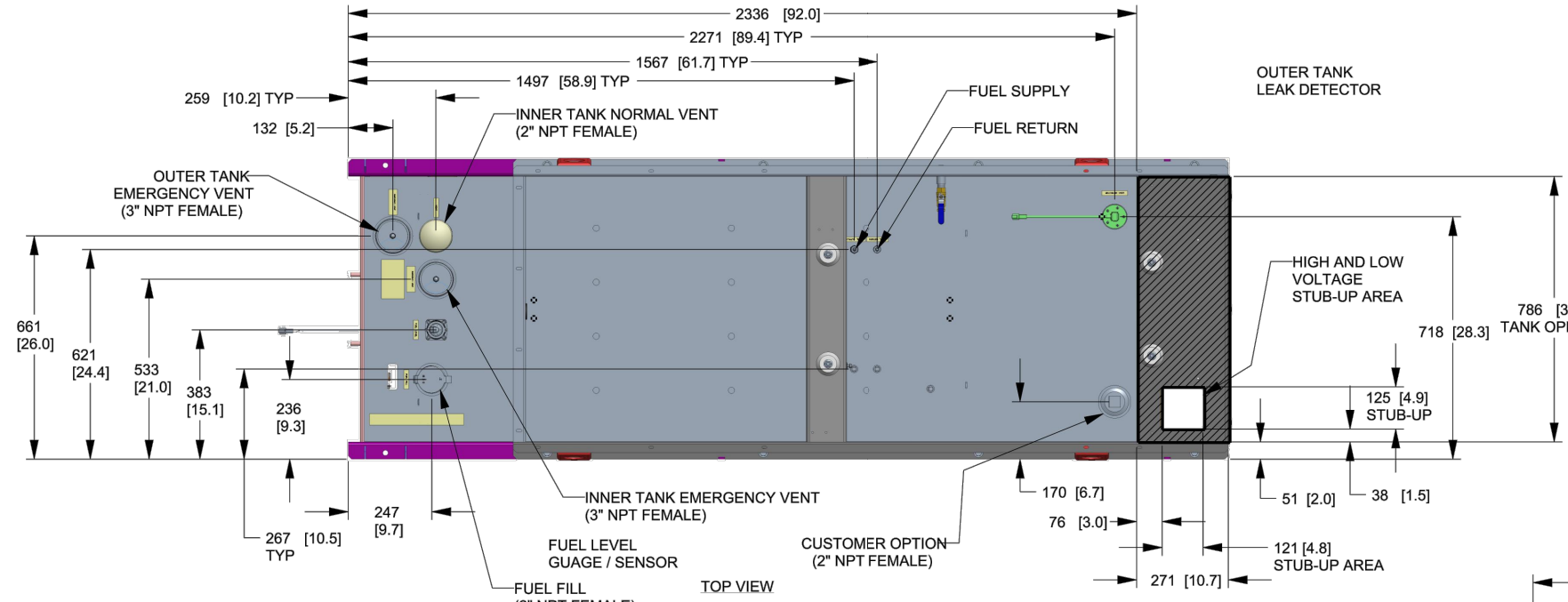
REV	DESCRIPTION	DATE
A	PRELIMINARY	06/23/21

SITE NUMBER: CTHA149A
SITE NAME: FARMINGTON PD MP
SITE ADDRESS: 319 NEW BRITAIN AVENUE
FARMINGTON, CT 06032

SHEET TITLE:
A-3: GENERATOR SPECIFICATIONS

Copyright © 2020 Foresite LLC all rights reserved. The details, templates, drawing formats or any portion of this document generated by Foresite LLC may not be duplicated, traced or used otherwise for any profit-driven enterprise.

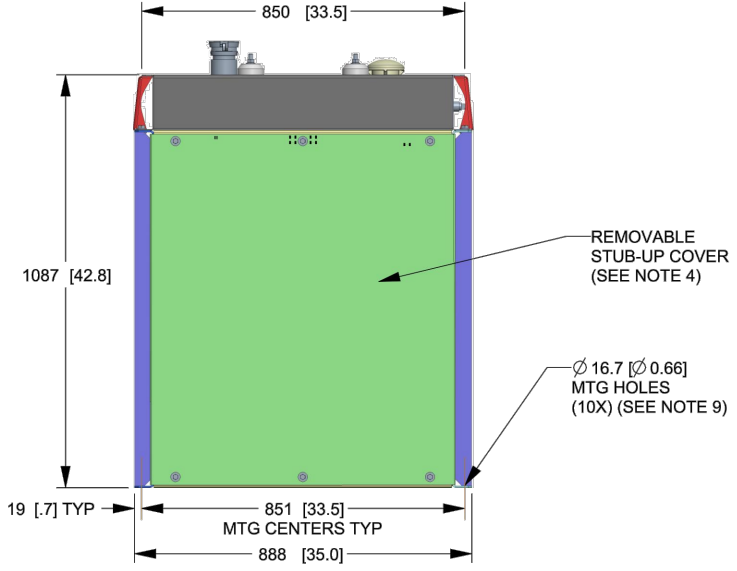
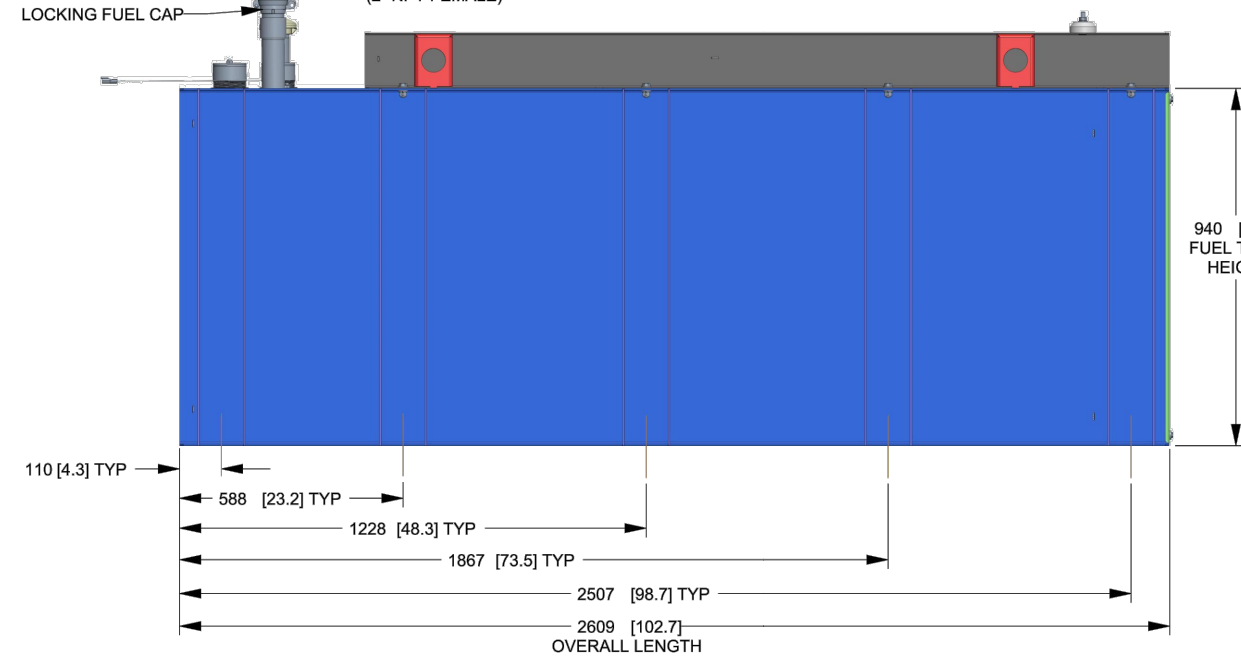
SH 2/2 REV 2 WINDCHILL VERSION 2.12



FUEL TANK	
TOTAL CAPACITY	908.5 (240)
USABLE CAPACITY	866.9 (229)

CAPACITY: LITER (GALLON)
DIMENSIONS: MM (INCH)
TANK IS LISTED TO UL142 AND ULC5601

NOTE:
STUB-UP AREA FOR HIGH AND LOW VOLTAGE CONNECTIONS
CIRCUIT BREAKER, NEUTRAL AND CUSTOMER CONNECTION OPENING.



GENERAC			
TITLE INSTALLATION D2.2L 25KW Y06 PD			
ISSUE DATE: 5/10/18			
SIZE B	CAGE NO N/A	DWG NO 10000036728	REV 2
SCALE 0.063	WT-KG	SEE ABOVE	SHEET 2 of 2

DRAWING CREATED FROM PRO/ENGINEER 3D FILE. ECO MODIFICATION TO BE APPLIED TO SOLID MODEL ONLY.

INSTALLATION DRAWING

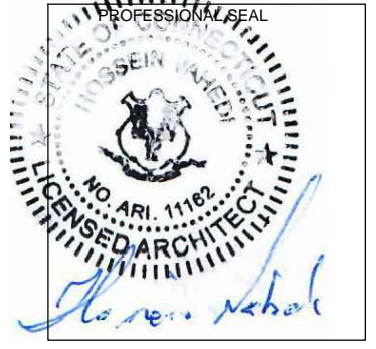
GENERAC POWER SYSTEMS OWNS THE COPYRIGHT OF THIS DRAWING WHICH IS SUPPLIED IN CONFIDENCE AND MUST NOT BE USED FOR ANY PURPOSE OTHER THAN FOR WHICH IT IS SUPPLIED WITHOUT THE EXPRESS WRITTEN CONSENT OF GENERAC POWER SYSTEMS. ©GENERAC POWER SYSTEMS 2013

ELECTRONICALLY APPROVED
INSIDE WINDCHILL

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

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

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



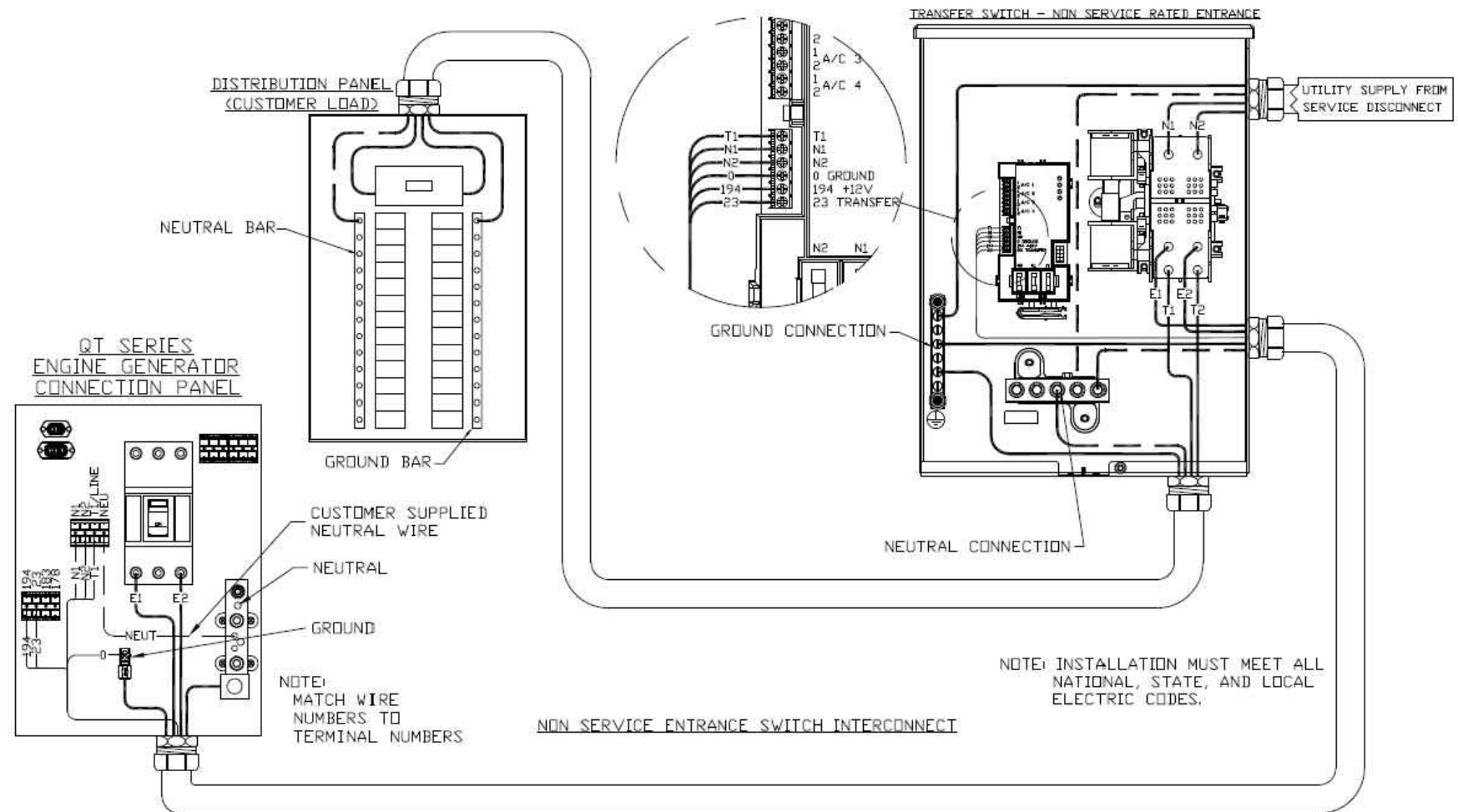
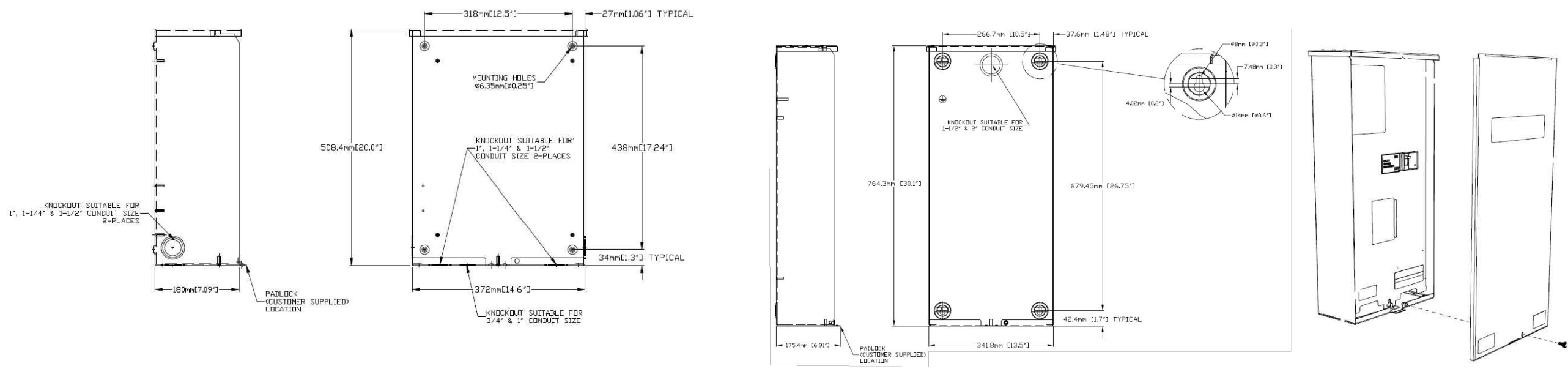
THIS DOCUMENT IS THE DESIGN PROPERTY AND COPYRIGHT OF FORESITE, LLC. AND FOR THE EXCLUSIVE USE BY THE TITLE CLIENT. DUPLICATION OR USE WITHOUT THE EXPRESS WRITTEN CONSENT OF THE CREATOR IS STRICTLY PROHIBITED. DRAWING SCALES ARE INTENDED FOR 11"x17" SIZE PRINTED MEDIA ONLY. ALL OTHER PRINTED SIZES ARE DEEMED "NOT TO SCALE".

REV	DESCRIPTION	DATE
A	PRELIMINARY	06/23/21

SITE NUMBER: CTHA149A
SITE NAME: FARMINGTON PD MP
SITE ADDRESS: 319 NEW BRITAIN AVENUE
FARMINGTON, CT 06032

SHEET TITLE:
A-4: GENERATOR SPECIFICATIONS

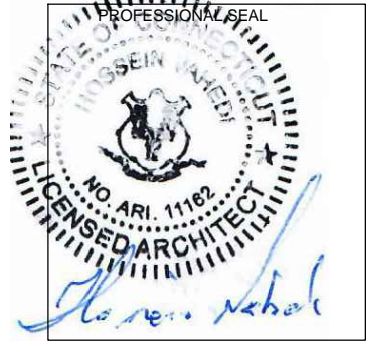
Copyright © 2020 Foresite LLC all rights reserved. The details, templates, drawing formats or any portion of this document generated by Foresite LLC may not be duplicated, traced or used otherwise for any profit-driven enterprise.



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

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

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



THIS DOCUMENT IS THE DESIGN PROPERTY AND COPYRIGHT OF FORESITE, LLC. AND FOR THE EXCLUSIVE USE BY THE TITLE CLIENT. DUPLICATION OR USE WITHOUT THE EXPRESS WRITTEN CONSENT OF THE CREATOR IS STRICTLY PROHIBITED. DRAWING SCALES ARE INTENDED FOR 11"x17" SIZE PRINTED MEDIA ONLY. ALL OTHER PRINTED SIZES ARE DEEMED "NOT TO SCALE".

REV	DESCRIPTION	DATE
A	PRELIMINARY	06/23/21

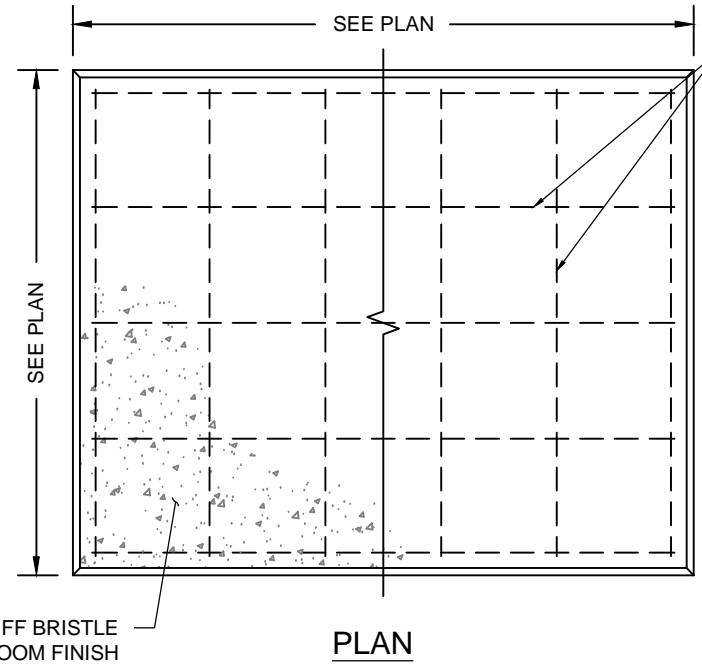
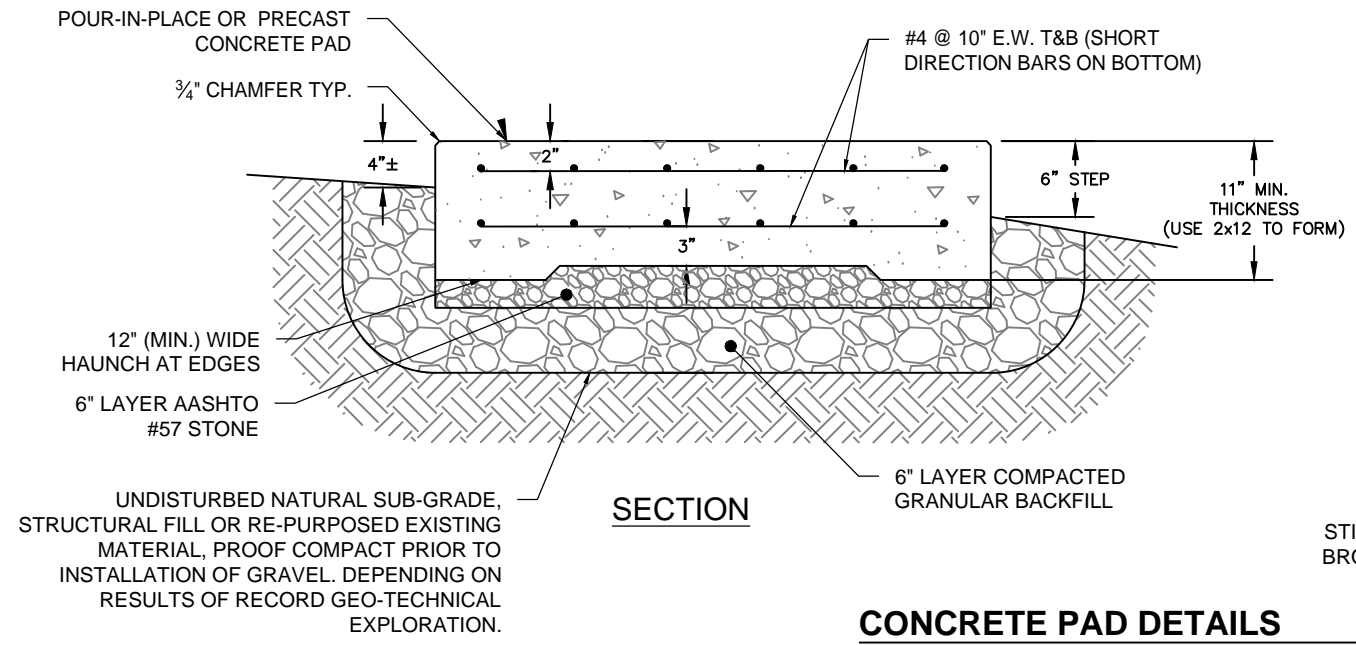
SITE NUMBER: CTHA149A
SITE NAME: FARMINGTON PD MP
 SITE ADDRESS: 319 NEW BRITAIN AVENUE
 FARMINGTON, CT 06032

SHEET TITLE:
A-5: AUTOMATIC TRANSFER SWITCH DETAILS

AUTOMATIC TRANSFER SWITCH DETAILS
 SCALE: N.T.S. 1
A-5

Copyright © 2020 Foresite LLC all rights reserved. The details, templates, drawing formats or any portion of this document generated by Foresite LLC may not be duplicated, traced or used otherwise for any profit-driven enterprise.

CONSTRUCTION NOTES:
 - (HAND-DUG UTILITY TRENCH EXCAVATION REQUIRED):
 - EXISTING UNDERGROUND UTILITY LOCATIONS ARE UNKNOWN. GENERAL CONTRACTOR SHALL HAND-EXCAVATE TO REQUIRED SUB-GRADE DEPTH, SUFFICIENT TEST HOLES.
 ALL PROPOSED UNDERGROUND UTILITY TRENCHES SHALL BE HAND-EXCAVATE AS REQUIRED.
 - GENERAL CONTRACTOR IS RESPONSIBLE FOR ANY REQUIRED SPECIAL TEMPORARY PROTECTION OF, PHYSICAL DAMAGE TO, OR REPAIR OF EXISTING UNDERGROUND CONDUIT INCLUDING RESTORATION OF SERVICE.

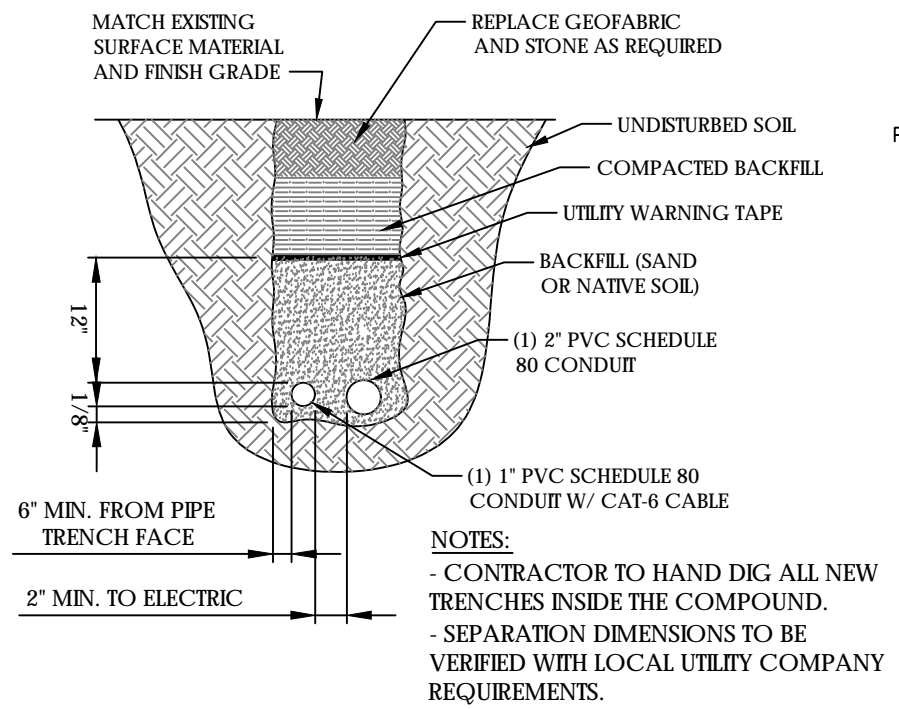


#4 @ 10" E.W. T&B (SHORT DIRECTION BARS ON BOTTOM)

NOTES:
 1. BEARING STRATA MEDIUM TO DENSE INSET GRANULAR MATERIAL OR COMPACTED FILL. 95% COMPACTION.
 2. SUBGRADE AND FILL SHALL CONSIST OF CLEAN SOIL. NO DELETERIOUS MATERIALS OR ORGANICS TO BE USED.
 3. CONCRETE FORM WORK SHALL BE CONSTRUCTED USING MINIMUM 2"x8" NOMINAL SIZE LUMBER. STRIP AND REMOVE UPON COMPLETION.
 4. CONCRETE SHALL HAVE 4000PSI 28-DAY COMPRESSIVE STRENGTH WITH 5(±1)% AIR ENTRAINMENT, 4(±1)" SLUMP AND BRISTLE BROOM FINISH.

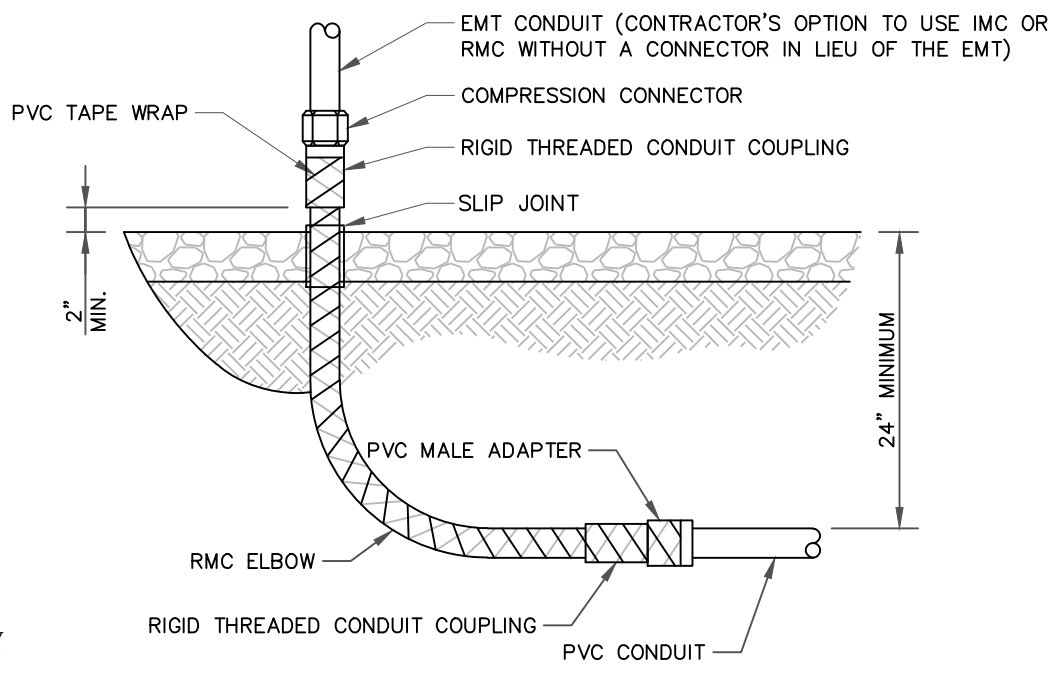
CONCRETE PAD DETAILS
 SCALE: N.T.S.

1
A-6



TRENCH DETAIL
 SCALE: N.T.S.

2
A-6



UNDERGROUND CONDUIT STUB UP
 SCALE: N.T.S.

ALL METAL CONDUIT INSTALLED IN DIRECT CONTACT WITH THE EARTH SHALL BE CONSIDERED TO BE INSTALLED IN A SEVERELY CORROSIVE ENVIRONMENT AND IS REQUIRED TO HAVE SUPPLEMENTAL PROTECTION AGAINST CORROSION (NEC ARTICLE 342.10(B) & 344.10(B)(1)). THIS PROTECTION SHALL EITHER BE AN APPROVED MANUFACTURER INSTALLED PROTECTIVE COATING ON THE CONDUIT OR SHALL BE (2) LAYERS OF 10 MIL PVC PIPE WRAP TAPE INSTALLED USING OPPOSING SPIRAL WRAPS. ON VERTICAL PIPE THE OUTSIDE LAYER OF TAPE SHALL BE WRAPPED SO AS TO PROVIDE SHEDDING OF WATER (i.e. TAPE SHOULD WRAP IN AN UPWARD DIRECTION WITH LOWER WRAP BEING BENEATH THE WRAP ABOVE). SPIRAL WRAPS SHALL HAVE A MINIMUM OF 1/4" OVERLAP WITH THE PRECEDING TAPE WRAP. ANY OTHER METHODS OF CORROSION PROTECTION SHALL REQUIRE APPROVAL BY THE ENGINEER OF RECORD PRIOR TO BEING USED.

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

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

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

THIS DOCUMENT IS THE DESIGN PROPERTY AND COPYRIGHT OF FORESITE, LLC. AND FOR THE EXCLUSIVE USE BY THE TITLE CLIENT. DUPLICATION OR USE WITHOUT THE EXPRESS WRITTEN CONSENT OF THE CREATOR IS STRICTLY PROHIBITED. DRAWING SCALES ARE INTENDED FOR 11"x17" SIZE PRINTED MEDIA ONLY. ALL OTHER PRINTED SIZES ARE DEEMED "NOT TO SCALE".

REV	DESCRIPTION	DATE
A	PRELIMINARY	06/23/21

SITE NUMBER: CTHA149A
 SITE NAME: FARMINGTON PD MP
 SITE ADDRESS: 319 NEW BRITAIN AVENUE
 FARMINGTON, CT 06032

SHEET TITLE:
 A-6: CONCRETE PAD AND UNDERGROUND CONDUIT DETAILS

Copyright © 2020 Foresite LLC all rights reserved. The details, templates, drawing formats or any portion of this document generated by Foresite LLC may not be duplicated, traced or used otherwise for any profit-driven enterprise.

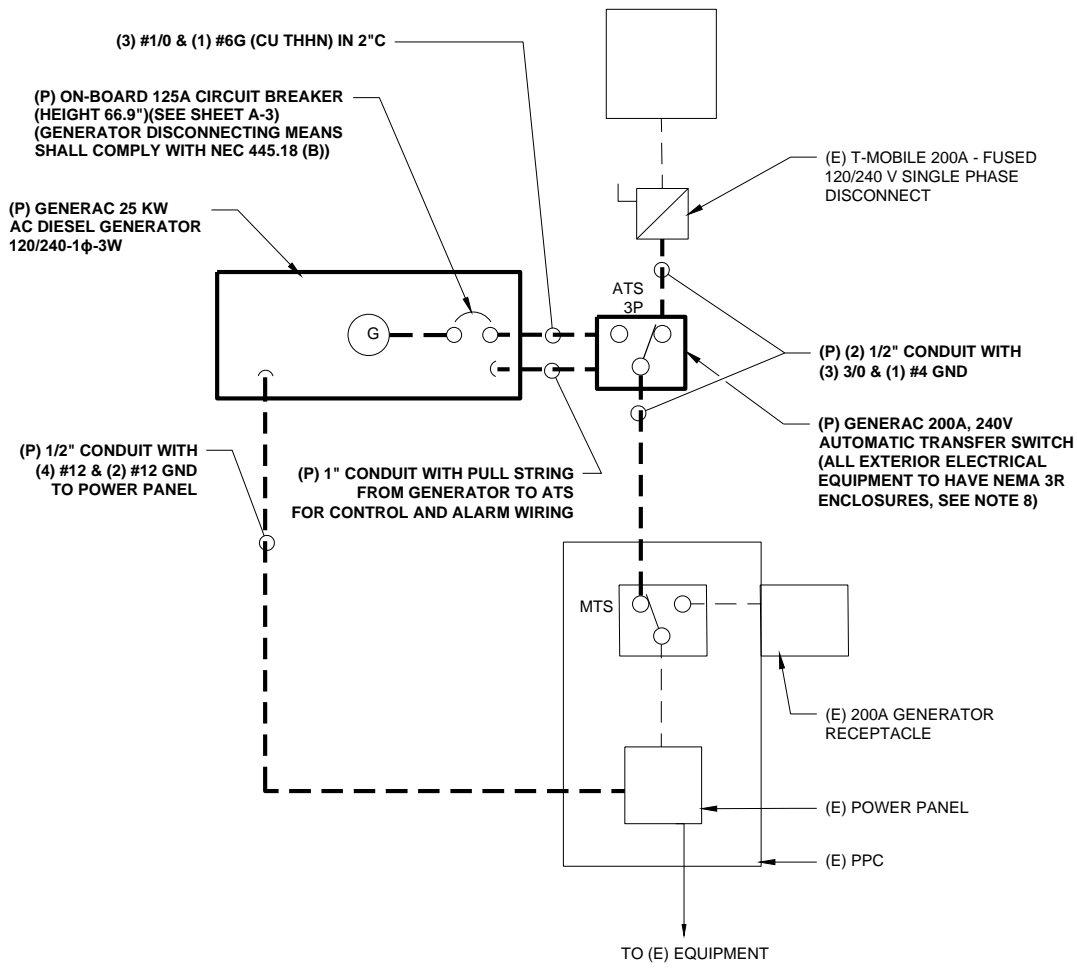
GENERAL ELECTRICAL NOTES

- ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES INCLUDING LATEST EDITIONS OF:
 NFPA - NATIONAL FIRE PROTECTION ASSOCIATION
 UL - UNDERWRITERS LABORATORIES
 NEC - 2017 NATIONAL ELECTRICAL CODE NEMA - NATIONAL ELECTRIC MANUFACTURERS ASSOCIATION
 OSHA - OCCUPATIONAL SAFETY AND HEALTH ACT
 IBC - 2015 INTERNATIONAL BUILDING CODE
- ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PRODUCED PER SPECIFICATION REQUIREMENTS.
- THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
- GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
- ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
- RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
- ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
- ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NAME 3R ENCLOSURE.
- GROUNDED SHALL COMPLY WITH NEC ART. 250.
- GROUNDED COAX CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDED KITS SUPPLIED BY PROJECT OWNER.
- USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSTALLATION FOR ABOVE GRADE GROUNDED (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDED AS INDICATED ON THE GROUND.
- ALL GROUND CONNECTION TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
- ROUTE GROUNDED CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDED LEADS SHOULD NEVER BE BENT AS RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY BOND ANY METER OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
- CONNECTIONS TO MGB SHALL BE ARRANGED IN THREE MAIN GROUPS: SURGE PROCEDURES (COAXIAL CABLE GROUND KITS, TELCO AND POWER PANEL GROUND); (GROUNDING ELECTRODE RING OR BUILDING STEEL); NON-SURGING OBJECTS (EGB GROUND IN RBS UNIT).
- CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
- APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTION.
- TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.
- BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
- VERIFY PROPOSED SERVICE UPGRADE WITH LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTION.
- EXISTING UNDERGROUND UTILITY LOCATIONS ARE UNKNOWN. GENERAL CONTRACTOR SHALL HAND-EXCAVATE TO REQUIRED SUB-GRADE DEPTH, SUFFICIENT TEST HOLES OR AS DIRECTED / REQUIRED BY CONSTRUCTION MANAGER. ALL PROPOSED UNDERGROUND UTILITY TRENCHES SHALL BE HAND-EXCAVATE AS REQUIRED. GENERAL CONTRACTOR IS RESPONSIBLE FOR ANY REQUIRED SPECIAL TEMPORARY PROTECTION OF, PHYSICAL DAMAGE TO, OR REPAIR OF EXISTING UNDERGROUND CONDUIT INCLUDING RESTORATION OF SERVICE.
- PROVIDE SLIP JOINS WHERE CONDUITS TRANSITION FROM UNDERGROUND TO ABOVE GROUND.

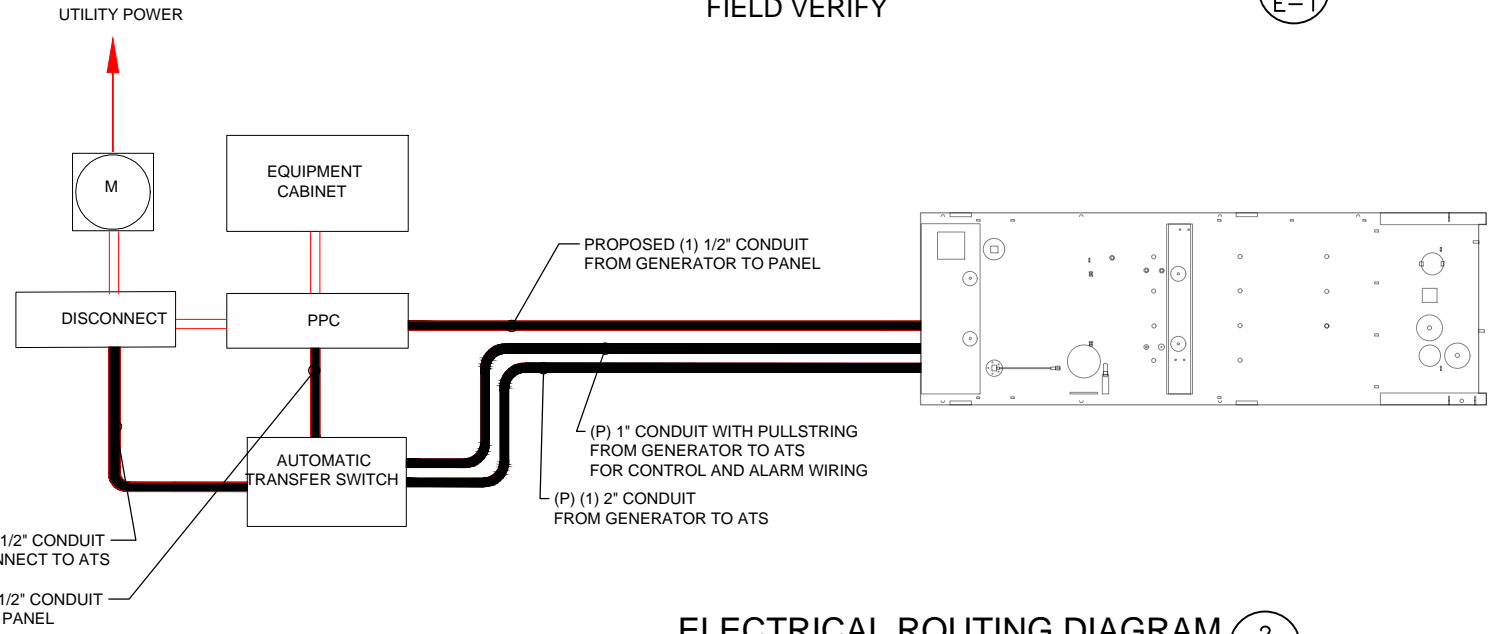
NOTES:
 DIAGRAM AS SHOWN, IS A GENERIC ROUTING SCHEMATIC BASED ON AVAILABLE INFORMATION AND MAY NOT REPRESENT ACTUAL FIELD CONDITIONS. CONTRACTOR SHOULD INSTALL THE GENERATOR, EQUIPMENT AND CONNECTIONS BASED ON VERIFIED ELECTRICAL AUDITS AND PER MANUFACTURER'S INSTALLATION GUIDELINES AS WELL AS ALL APPLICABLE LOCAL AND NATIONAL CODES AND REQUIREMENTS.

GROUNDED NOTES:

- GROUNDED SHALL COMPLY WITH NEC ART. 250 AND MANUFACTURER'S RECOMMENDATIONS. TIE INTO THE EXISTING GROUNDED SYSTEM.
- CONTRACTOR SHALL INSTALL GROUND RODS ON ALL UNDERGROUND GROUNDED RUNS LONGER THAN 10'. GROUND RODS WILL BE INSTALLED ON 20' CENTERS MAXIMUM.
- ALL DOWN CONDUCTORS MUST GO DOWN PER NFPA 780.
- CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER WHEN THE GROUNDED SYSTEM IS COMPLETE. THE CONSTRUCTION MANAGER SHALL INSPECT THE GROUNDED SYSTEM PRIOR TO BACKFILLING.
- CONTRACTOR MY USE EXISTING CONDUITS AND CONDUCTORS PROVIDED THEY ARE IN GOOD CONDITION AND ARE SUFFICIENTLY RATED.



TYP. ONE LINE DIAGRAM
 FIELD VERIFY



ELECTRICAL ROUTING DIAGRAM
 SCALE: N.T.S

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

PROJECT MANAGER

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

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

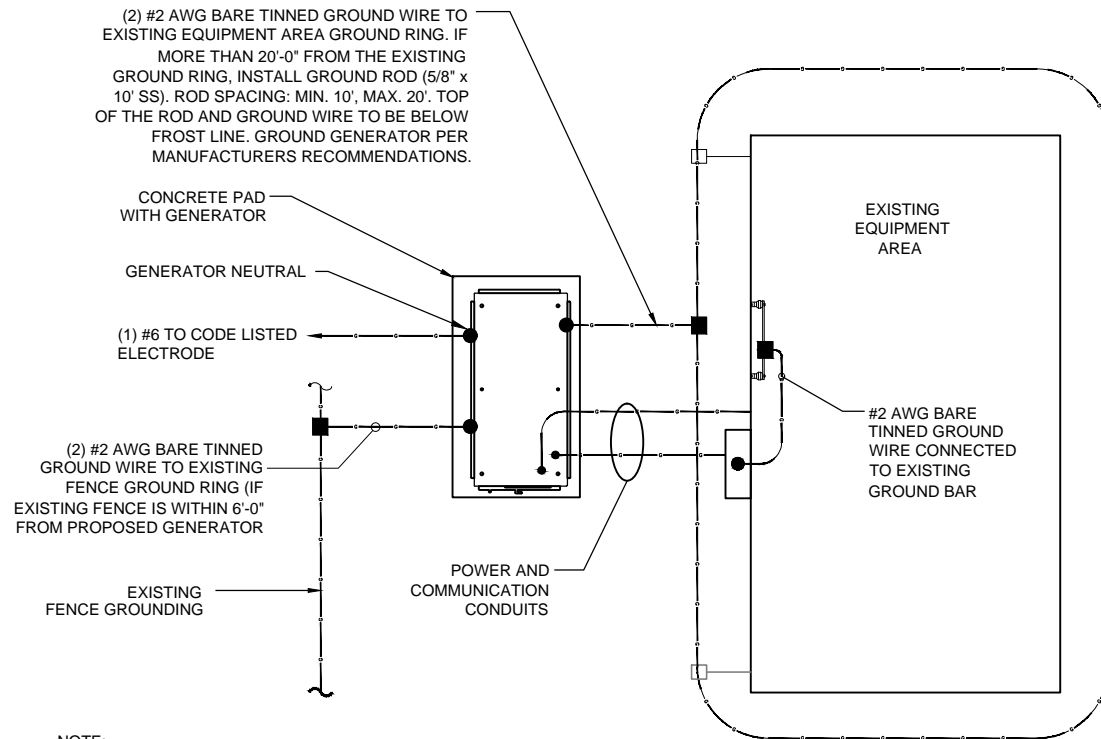
THIS DOCUMENT IS THE DESIGN PROPERTY AND COPYRIGHT OF FORESITE, LLC. AND FOR THE EXCLUSIVE USE BY THE TITLE CLIENT. DUPLICATION OR USE WITHOUT THE EXPRESS WRITTEN CONSENT OF THE CREATOR IS STRICTLY PROHIBITED. DRAWING SCALES ARE INTENDED FOR 11"x17" SIZE PRINTED MEDIA ONLY. ALL OTHER PRINTED SIZES ARE DEEMED "NOT TO SCALE".

REV	DESCRIPTION	DATE
A	PRELIMINARY	06/23/21

SITE NUMBER: CTHA149A
 SITE NAME: FARMINGTON PD MP
 SITE ADDRESS: 319 NEW BRITAIN AVENUE
 FARMINGTON, CT 06032

SHEET TITLE:
 E-1: ELECTRICAL DETAILS

Copyright © 2020 Foresite LLC all rights reserved. The details, templates, drawing formats or any portion of this document generated by Foresite LLC may not be duplicated, traced or used otherwise for any profit-driven enterprise.

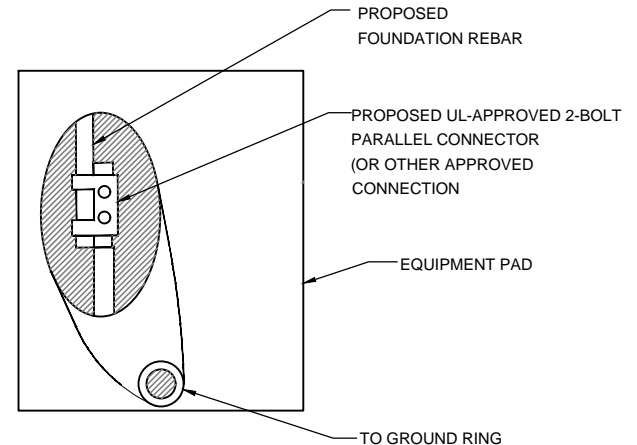


NOTE:
 1- PROVIDE GENERATOR NEUTRAL GROUND AS A SEPARATELY- DERIVED SYSTEM PER NEC / NFPA 70 - 250.30A.
 2- FOR ACTUAL ORIENTATION OF GENERATOR, PAD, FENCE, TOWER & UNDER GROUND POWER/TELCO SEE PAGE A-1.

NOTE:
 VERIFY QTY., LENGTH, TYPE & CONFIGURATION OF GROUND RODS TO ENSURE SYSTEM PROVIDES GROUND RESISTANCE OF 5 OHMS OR LESS

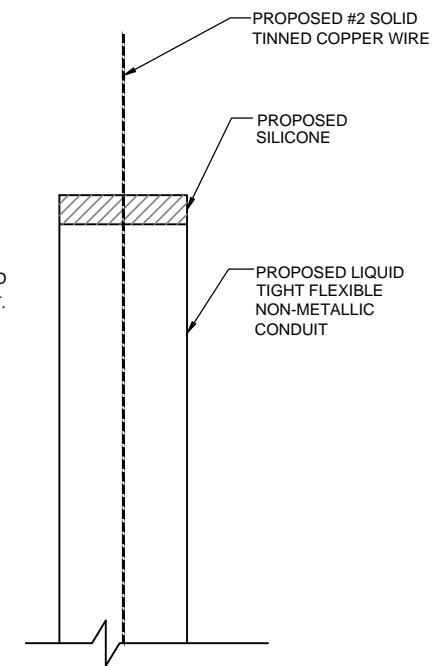
GROUND PLAN 1
 NTS G-1

NOTES:
 1. CONNECTION SHALL BE COVERED BY NO LESS THAN 2" OF CONCRETE.
 2. ATTEMPT TO MAKE CONNECTION TO A 6'-0" RUN OF REBAR OR GREATER.
 3. APPLY HEAT SHRINK OR ELECTRICAL TAPE AROUND THE CONDUCTOR TO AVOID CORROSION.



EQUIPMENT PAD GROUNDING 2
 NTS G-1

NOTE:
 CONTRACTOR TO USE CLEAR OR GRAY SILICONE AS NECESSARY TO SEAL LIQUID TIGHT FLEXIBLE NON-METALLIC CONDUIT.



GROUND WIRE WEATHERPROOFING 3
 NTS G-1

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

PROJECT MANAGER

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

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



THIS DOCUMENT IS THE DESIGN PROPERTY AND COPYRIGHT OF FORESITE, LLC. AND FOR THE EXCLUSIVE USE BY THE TITLE CLIENT. DUPLICATION OR USE WITHOUT THE EXPRESS WRITTEN CONSENT OF THE CREATOR IS STRICTLY PROHIBITED. DRAWING SCALES ARE INTENDED FOR 11"x17" SIZE PRINTED MEDIA ONLY. ALL OTHER PRINTED SIZES ARE DEEMED "NOT TO SCALE".

REV	DESCRIPTION	DATE
A	PRELIMINARY	06/23/21

SITE NUMBER: CTHA149A
 SITE NAME: FARMINGTON PD MP
 SITE ADDRESS: 319 NEW BRITAIN AVENUE
 FARMINGTON, CT 06032

SHEET TITLE:
 G-1: GROUNDING DETAILS

Exhibit D

Structural Analysis Report

Tower Owner: Town of Farmington
Carrier: T-Mobile Northeast LLC

Site ID: CTHA149A
Site Name: Farmington PD MP
Site Data: 319 New Britain Ave, Farmington, Hartford County, CT 06085
Latitude 41° 44' 58.96", Longitude -72° 52' 21.04"
190 ft Monopole Tower

Tectonic Project Number: 10473.CTHA149A – Rev 3

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 – 86%**
Foundation: **Sufficient Capacity – 75 %**

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 III 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: 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
Equal Opportunity Employer

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 - Proposed Antenna and Cable Information

Table 2 - Existing / Reserved Antenna and Cable Information

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Table 5 – Tower Component Stresses vs. Capacity

4.1) Result / Conclusions

5) APPENDIX A

tnxTower Output

6) APPENDIX B

Additional Calculations

1) INTRODUCTION

This tower is a 190 ft modified monopole tower mapped by HighTower Solutions, Inc. in February of 2021. The tower was originally designed by PiRod, Inc. in 2001. The site was visited by Tectonic on June 22, 2021 to verify the existing anchors and baseplate geometry.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-G
Structure Class:	III
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
160.0	T-Mobile	1	sitepro1	HRK12 Top Rail Kit	3	6X12 Hybrid	-
		3	commscope	SDX1926Q-43			
		3	ericsson	AIR 32 B66Aa B2a			
		3	ericsson	AIR 6449 B41			
		3	ericsson	RADIO 4449 B71/B85			
		3	ericsson	RRUS 4415 B25			
		3	rfs celwave	APXVAALL24_43-U-NA20			

Table 2 - Existing / Reserved 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
193.0	Municipal	1	radiowaves	HP2-11	5 2 1	7/8 1/2 1-1/4	1
187.0		2	-	8' Whip			
		3	tower mounts	Standoff mount			
185.0		1	gabriel electronics	3' Grid Dish			
183.0		2	-	2' Yagi			
		1	tower mounts	Standoff mount			
179.0		1	-	6' Whip			
178.0		2	tower mounts	Standoff Mount			
172.0	Sprint	3	alcatel lucent	RRH2X50-800	3	1-1/4	1
170.0		1	tower mounts	12.5' Platform Mount			
		3	alcatel lucent	RRH2X50-800			
		3	alcatel lucent	TD-RRH8x20-25			
		3	commscope	DT465B-2XR-V2			
		3	rfs celwave	APXVSP18-C-A20			
169.0		3	alcatel lucent	RRH4X45-19			

Mounting Level (ft)	Carrier Designation	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
160.0	T-Mobile	1	tower mounts	12.5' Platform Mount	6	1-5/8	1
		6	ericsson	KRY 112 144/1			
		3	commscope	LNx-6515DS-A1M	6 1	1-5/8 9x18 Hybrid	2
		3	ericsson	AIR 21 B4A/B2P			
		3	ericsson	AIR 21 B2A/B4P			
		3	ericsson	RRUS 11 B12			
150.0	AT&T	3	tower mounts	12.0' Sector Mount	6 2 4	1-5/8 2-1/4 1/2	1
		3	cci antennas	TPA-65R-LCUUUU-H8			
		3	kathrein	800 10121			
		6	powerwave	LGP21901			
		6	powerwave	LGP21401			
		3	ericsson	RRUS 32 B2			
		3	ericsson	RRUS 32 B30	2	1/2	3
		2	raycap	DC6-48-60-18-8F			
		1	raycap	DC6-48-60-18-8F			
		3	cci antennas	DMP65R-BU8DA			
		3	cci antennas	OPA65R-BU8DA			
		3	ericsson	RRH 4449-B5/12			
		3	ericsson	RRH 4478 B14			
		1	ericsson	RRH 8843 B2/B66A			
112.0	Municipal	3	pctel	BOA4753	3	1/2	1
		3	tower mounts	Standoff mount			
90.0	Municipal	3	-	20' Whip	3	1/2	1
		3	tower mounts	Standoff mount			
50.0		1	gps	GPS_A	1	1/2	1

- Notes:
 1) Existing equipment
 2) Existing equipment to be removed, not considered in analysis
 3) Reserved equipment to be installed by others.

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Dated
Geotechnical Report	Dr. Clarence Welti, P.E., P.C.	03/29/01
Tower Assembly Drawings	PiRod, Inc.	11/07/01
Tower Foundation Drawings	PiRod, Inc.	04/19/02
Structural Analysis Report	Maser Consulting	10/19/14
RFDS	T-Mobile	10/06/20
Tower Mapping Report	Hightower Solutions, Inc.	02/10/21
Construction Drawing	Centerline Communications	02/02/21
Site Investigation	Tectonic	06/22/21

3.1) Analysis Method

tnxTower (version 8.1.1), 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.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are presented in Appendix B.

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) AT&T antenna configurations are based on the construction drawing by Centerline Communications, referenced above.
- 4) The anchor bolts are ASTM 1554 grade 105 with a minimum tensile strength of 125 ksi as manufactured by PiRod Inc. The anchor quantity and diameter were confirmed during our Site Investigation.

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	% Capacity	Pass / Fail
L1	190 - 170	Pole	TP24.135x19.563x0.25	Pole	6.3%	Pass
L2	170 - 167.17	Pole	TP25.45x24.135x0.25	Pole	9.5%	Pass
L3	167.17 - 147.17	Pole	TP29.118x24.282x0.3125	Pole	29.9%	Pass
L4	147.17 - 133.5	Pole	TP33.35x29.118x0.3125	Pole	46.5%	Pass
L5	133.5 - 113.5	Pole	TP36.729x31.799x0.375	Pole	52.6%	Pass
L6	113.5 - 100.67	Pole	TP41.043x36.729x0.375	Pole	58.4%	Pass
L7	100.67 - 80.67	Pole	TP44.158x39.142x0.375	Pole	67.6%	Pass
L8	80.67 - 68.67	Pole	TP48.546x44.158x0.375	Pole	70.9%	Pass
L9	68.67 - 48.67	Pole	TP51.453x46.417x0.375	Pole	77.2%	Pass
L10	48.67 - 45	Pole	TP52.377x51.453x0.375	Pole	78.0%	Pass
L11	45 - 44.75	Pole + Reinf.	TP52.44x52.377x0.5875	Reinf. 2 Tension Rupture	65.6%	Pass
L12	44.75 - 37.42	Pole + Reinf.	TP55.859x52.44x0.5875	Reinf. 2 Tension Rupture	66.7%	Pass
L13	37.42 - 30.17	Pole + Reinf.	TP55.369x53.535x0.575	Reinf. 1 Tension Rupture	69.1%	Pass
L14	30.17 - 10.17	Pole + Reinf.	TP60.428x55.369x0.5625	Reinf. 1 Tension Rupture	71.0%	Pass
L15	10.17 - 0	Pole + Reinf.	TP63x60.428x0.55	Reinf. 1 Tension Rupture	71.7%	Pass
					Summary	
				Pole	78.0%	Pass
				Reinforcement	71.7%	Pass
				Overall	78.0%	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	81.9	Pass
1	Base Plate	0	86	Pass
1	Base Foundation Soil Interaction	0	53.6	Pass
1	Base Foundation	0	75	Pass

Structure Rating (max from all components) =	86%
---	------------

Note:

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

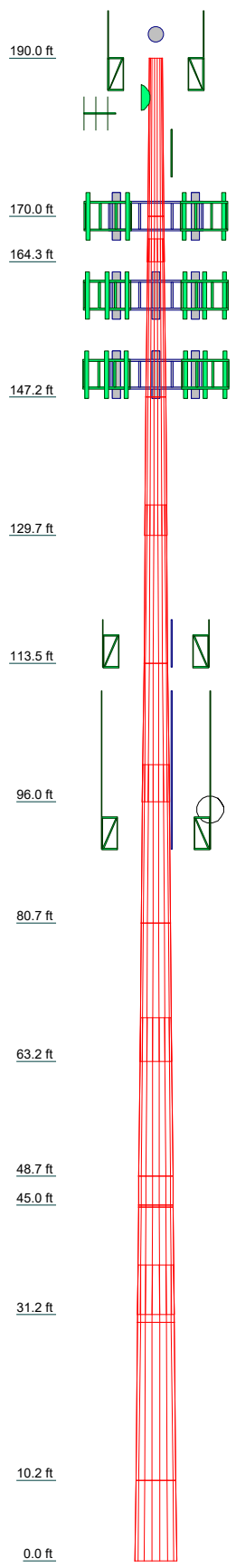
4.1) Result / Conclusions

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

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 equipment configuration should be reviewed with respect to their effect on structural loads prior to implementation.

APPENDIX A
TNXTOWER OUTPUT

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Length (ft)	20.00	3.75	20.00	17.50	20.00	17.50	20.00	17.50	20.00	17.50	20.00	17.50	20.00	20.00	10.17
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.2500	0.2500	0.3125	0.3125	0.3750	0.3750	0.3750	0.3750	0.3750	0.3750	0.3750	0.3750	0.3750	0.5625	0.5500
Socket Length (ft)		2.92		3.83		4.67		5.50		6.25		6.25		6.04276	63.00000
Top Dia (in)	19.5625	24.1353	24.2824	29.1184	31.7989	36.7292	39.1420	44.1576	46.4169	52.4396	55.3689	55.3689	55.3689	60.4276	63.00000
Bot Dia (in)	24.1353	25.4500	29.1184	33.3500	36.7292	41.0432	44.1576	48.5462	51.4326	55.3689	55.3689	55.3689	55.3689	60.4276	63.00000
Grade	A572-65														
Weight (K)	1.2	0.4	1.8	1.8	2.7	2.7	3.3	3.3	3.9	4.5	4.5	4.5	4.5	6.8	3.6




DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
HP2-11	193	SDX1926Q-43	160
10' x 2" STD Pipe	188	SDX1926Q-43	160
8' Whip	187	SDX1926Q-43	160
6' x 2" STD Pipe	187	HRK12 SitePro1 Top Rail Kit	160
Standoff mount	187	12.5' Platform Mount	160
8' Whip	187	(2) KRY 112 144/1	160
GHF3-18	185	(2) KRY 112 144/1	160
Standoff mount	183	800 10121_TIA w/ Mount Pipe	150
(2) 2'x1' Yagi	183	TPA-65R-LCUUUU-H8_TIA w/ Mount Pipe	150
10' x 2" STD Pipe	183	TPA-65R-LCUUUU-H8_TIA w/ Mount Pipe	150
6' Whip	179	TPA-65R-LCUUUU-H8_TIA w/ Mount Pipe	150
Standoff Mount	178	TPA-65R-LCUUUU-H8_TIA w/ Mount Pipe	150
6' x 2" STD Pipe	178	(2) LGP21901	150
Standoff Mount	178	(2) LGP21901	150
RRH2X50-800	172	(2) LGP21901	150
RRH2X50-800	172	(2) LGP21901	150
RRH2X50-800	172	(2) LGP21401	150
6' x 3" STD Pipe	171	(2) LGP21401	150
6' x 3" STD Pipe	171	(2) LGP21401	150
6' x 3" STD Pipe	171	DMP65R-BU8D w/ Mount Pipe	150
APXVSP18-C-A20_TIA w/ Mount Pipe	170	DMP65R-BU8D w/ Mount Pipe	150
APXVSP18-C-A20_TIA w/ Mount Pipe	170	DMP65R-BU8D w/ Mount Pipe	150
APXVSP18-C-A20_TIA w/ Mount Pipe	170	OPA65R-BU8D w/ Mount Pipe	150
APXVSP18-C-A20_TIA w/ Mount Pipe	170	OPA65R-BU8D w/ Mount Pipe	150
DT465B-2XR-V2_TIA w/ Mount Pipe	170	RADIO 8843 B2/B66A	150
DT465B-2XR-V2_TIA w/ Mount Pipe	170	RADIO 8843 B2/B66A	150
DT465B-2XR-V2_TIA w/ Mount Pipe	170	RADIO 8843 B2/B66A	150
TD-RRH8x20-25	170	RRUS 4478 B14	150
TD-RRH8x20-25	170	RRUS 4478 B14	150
TD-RRH8x20-25	170	RRUS 4478 B14	150
RRH2X50-800	170	RRUS 4449 B5/B12	150
RRH2X50-800	170	RRUS 4449 B5/B12	150
RRH2X50-800	170	RRUS 4449 B5/B12	150
12.5' Platform Mount	170	DC6-48-60-18-8F	150
RRH4X45-19	169	DC6-48-60-18-8F	150
RRH4X45-19	169	DC6-48-60-18-8F	150
RRH4X45-19	169	RRUS 32 B30	150
(2) KRY 112 144/1	160	RRUS 32 B30	150
AIR 32 B66Aa B2a w/ Mount Pipe	160	RRUS 32 B30	150
AIR 32 B66Aa B2a w/ Mount Pipe	160	RRUS 32 B2	150
AIR 32 B66Aa B2a w/ Mount Pipe	160	RRUS 32 B2	150
APXVAALL24_43-U-NA20 w/ Mount Pipe	160	RRUS 32 B2	150
APXVAALL24_43-U-NA20 w/ Mount Pipe	160	12.0' Sector Mount	150
APXVAALL24_43-U-NA20 w/ Mount Pipe	160	800 10121_TIA w/ Mount Pipe	150
APXVAALL24_43-U-NA20 w/ Mount Pipe	160	800 10121_TIA w/ Mount Pipe	150
RADIO 4449 B71/B85	160	BOA4753	112
RADIO 4449 B71/B85	160	Standoff mount	112
RADIO 4449 B71/B85	160	BOA4753	112
RADIO 4449 B71/B85	160	BOA4753	112
AIR 6449 B41 w/ Mount Pipe	160	20' Whip	90
AIR 6449 B41 w/ Mount Pipe	160	Standoff mount	90
AIR 6449 B41 w/ Mount Pipe	160	20' Whip	90
RRUS 4415 B25	160	20' Whip	90
RRUS 4415 B25	160	ICE BRIDGE	85.5
RRUS 4415 B25	160	GPS_A	50
		3' x 3" STD Pipe	49

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			



Tectonic
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
FAX: (845) 567-8703

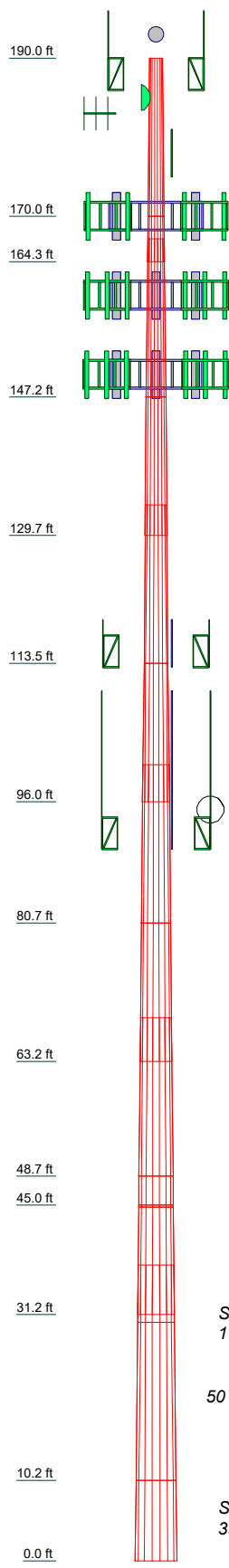
Job: **10473.CTHA149A - Rev 3**

Project: **190' Monopole**

Client: T-Mobile	Drawn by: Ian Marinaccio	App'd:
Code: TIA-222-G	Date: 07/09/21	Scale: NTS
Path:	Dwg No. E-1	

© Newburgh/Projects/10473/ISS/10473.CTHA149A/Structural/Tower Analysis/Rev 3/10473.CTHA149A - TowerSA_Rev3.rvt

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Length (ft)	20.00	3.75	20.00	17.50	20.00	17.50	20.00	17.50	20.00	17.50	20.00	7.25	20.00	20.00	10.17
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.2500	0.2500	0.3125	0.3125	0.3750	0.3750	0.3750	0.3750	0.3750	0.3750	0.5750	0.5750	0.5625	0.5500	0.5500
Socket Length (ft)		2.92		3.83		4.67		5.50		6.25		6.25		6.04276	63.00000
Top Dia (in)	19.5625	24.1353	24.2824	29.1184	31.7989	36.7292	39.1420	44.1576	46.4169	52.4396	55.3689	55.3689	60.4276	60.4276	63.00000
Bot Dia (in)	24.1353	25.4500	29.1184	33.3500	36.7292	41.0432	44.1576	48.5462	51.4526	55.8568	55.8568	55.8568	60.4276	60.4276	63.00000
Grade	A572-65														
Weight (K)	1.2	0.4	1.8	1.8	2.7	2.7	3.3	3.3	3.9	4.5	4.5	4.5	2.4	6.8	3.6



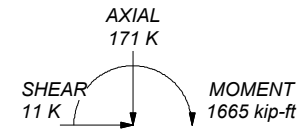
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

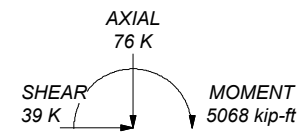
TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-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 III.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 78.0%

ALL REACTIONS ARE FACTORED



TORQUE 2 kip-ft
50 mph WIND - 1.0000 in ICE



TORQUE 7 kip-ft
REACTIONS - 97 mph WIND

<p>Tectonic PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.</p>	<p>Tectonic 1279 Route 300 Newburgh, NY 12550 Phone: (845) 567-6656 FAX: (845) 567-8703</p>		<p>Job: 10473.CTHA149A - Rev 3</p>	
	<p>Project: 190' Monopole</p>		<p>Client: T-Mobile</p>	<p>Drawn by: Ian Marinaccio</p>
	<p>Code: TIA-222-G</p>		<p>Date: 07/09/21</p>	<p>App'd:</p>
	<p>Path:</p>		<p>Scale: NTS</p>	<p>Dwg No. E-2</p>
	<p><small>© Newburgh/Projects/10473-NSSI/10473.CTHA149A/Structural/Tower Analysis/Rev 3/10473.CTHA149A - TowerSA_Rev3.dwg</small></p>			

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 Hartford County, Connecticut.
- 2) Basic wind speed of 97 mph.
- 3) Structure Class III.
- 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 Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area ✓ Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination ✓ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
--	---	---

Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
L1	190.00-170.00	20.00	0.00	18	19.5625	24.1353	0.2500	1.0000	A572-65 (65 ksi)
L2	170.00-164.25	5.75	2.92	18	24.1353	25.4500	0.2500	1.0000	A572-65 (65 ksi)
L3	164.25-147.17	20.00	0.00	18	24.2824	29.1184	0.3125	1.2500	A572-65 (65 ksi)
L4	147.17-129.67	17.50	3.83	18	29.1184	33.3500	0.3125	1.2500	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L5	129.67-113.50	20.00	0.00	18	31.7989	36.7292	0.3750	1.5000	(65 ksi) A572-65
L6	113.50-96.00	17.50	4.67	18	36.7292	41.0432	0.3750	1.5000	(65 ksi) A572-65
L7	96.00-80.67	20.00	0.00	18	39.1420	44.1576	0.3750	1.5000	(65 ksi) A572-65
L8	80.67-63.17	17.50	5.50	18	44.1576	48.5462	0.3750	1.5000	(65 ksi) A572-65
L9	63.17-48.67	20.00	0.00	18	46.4169	51.4526	0.3750	1.5000	(65 ksi) A572-65
L10	48.67-45.00	3.67	0.00	18	51.4526	52.3766	0.3750	1.5000	(65 ksi) A572-65
L11	45.00-44.75	0.25	0.00	18	52.3766	52.4396	0.5875	2.3500	(65 ksi) A572-65
L12	44.75-31.17	13.58	6.25	18	52.4396	55.8588	0.5875	2.3500	(65 ksi) A572-65
L13	31.17-30.17	7.25	0.00	18	53.5352	55.3689	0.5750	2.3000	(65 ksi) A572-65
L14	30.17-10.17	20.00	0.00	18	55.3689	60.4276	0.5625	2.2500	(65 ksi) A572-65
L15	10.17-0.00	10.17		18	60.4276	63.0000	0.5500	2.2000	(65 ksi) A572-65

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	19.8257	15.3245	722.1042	6.8559	9.9377	72.6627	1445.1586	7.6637	3.0030	12.012
	24.4691	18.9530	1366.0838	8.4793	12.2607	111.4194	2733.9651	9.4783	3.8078	15.231
L2	24.4691	18.9530	1366.0838	8.4793	12.2607	111.4194	2733.9651	9.4783	3.8078	15.231
	25.8040	19.9962	1604.3016	8.9460	12.9286	124.0893	3210.7141	10.0000	4.0392	16.157
L3	25.3257	23.7751	1725.8036	8.5093	12.3354	139.9061	3453.8781	11.8898	3.7237	11.916
	29.5194	28.5719	2995.3012	10.2261	14.7922	202.4924	5994.5436	14.2887	4.5748	14.64
L4	29.5194	28.5719	2995.3012	10.2261	14.7922	202.4924	5994.5436	14.2887	4.5748	14.64
	33.8163	32.7691	4518.7251	11.7283	16.9418	266.7205	9043.3961	16.3876	5.3196	17.023
L5	33.1903	37.4023	4666.1166	11.1555	16.1538	288.8550	9338.3730	18.7047	4.9366	13.164
	37.2379	43.2706	7225.0200	12.9057	18.6584	387.2255	14459.546	21.6394	5.8043	15.478
L6	37.2379	43.2706	7225.0200	12.9057	18.6584	387.2255	14459.546	21.6394	5.8043	15.478
	41.6185	48.4053	10114.408	14.4372	20.8499	485.1048	20242.125	24.2073	6.5636	17.503
L7	40.8772	46.1424	8761.1558	13.7623	19.8841	440.6106	17533.839	23.0756	6.2290	16.611
	44.7809	52.1122	12620.575	15.5428	22.4320	562.6138	25257.757	26.0610	7.1117	18.965
L8	44.7809	52.1122	12620.575	15.5428	22.4320	562.6138	25257.757	26.0610	7.1117	18.965
	49.2373	57.3358	16808.851	17.1008	24.6615	681.5835	33639.820	28.6733	7.8841	21.024
L9	48.4813	54.8014	14676.947	16.3449	23.5798	622.4375	29373.207	27.4059	7.5094	20.025
	52.1885	60.7951	20038.570	18.1325	26.1379	766.6477	40103.508	30.4033	8.3957	22.388
L10	52.1885	60.7951	20038.570	18.1325	26.1379	766.6477	40103.508	30.4033	8.3957	22.388
	53.1268	61.8949	21145.919	18.4606	26.6073	794.7404	42319.662	30.9534	8.5583	22.822
L11	53.0940	96.5725	32724.133	18.3851	26.6073	1229.8917	65491.325	48.2954	8.1843	13.931
	53.1579	96.6899	32843.599	18.4075	26.6393	1232.9000	65730.415	48.3541	8.1954	13.95
L12	53.1579	96.6899	32843.599	18.4075	26.6393	1232.9000	65730.415	48.3541	8.1954	13.95

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
	56.6299	103.0658	39778.7638	19.6213	28.3763	1401.8320	79609.8694	51.5427	8.7971	14.974
L13	55.8775	96.6549	34249.9462	18.8009	27.1959	1259.3810	68544.9593	48.3366	8.4102	14.626
	56.1344	100.0017	37932.3445	19.4518	28.1274	1348.5896	75914.6013	50.0103	8.7329	15.188
L14	56.1363	97.8500	37133.1300	19.4563	28.1274	1320.1755	74315.1207	48.9343	8.7549	15.564
	61.2731	106.8817	48393.7224	21.2521	30.6972	1576.4843	96851.1225	53.4510	9.6453	17.147
L15	61.2750	104.5284	47347.9531	21.2566	30.6972	1542.4171	94758.2079	52.2741	9.6673	17.577
	63.8870	109.0190	53716.0897	22.1698	32.0040	1678.4180	107502.8604	54.5198	10.1200	18.4

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 190.00-170.00				1	1	1			
L2 170.00-164.25				1	1	1			
L3 164.25-147.17				1	1	1			
L4 147.17-129.67				1	1	1			
L5 129.67-113.50				1	1	1			
L6 113.50-96.00				1	1	1			
L7 96.00-80.67				1	1	1			
L8 80.67-63.17				1	1	1			
L9 63.17-48.67				1	1	1			
L10 48.67-45.00				1	1	1			
L11 45.00-44.75				1	1	0.977052			
L12 44.75-31.17				1	1	0.965409			
L13 31.17-30.17				1	1	0.979561			
L14 30.17-10.17				1	1	0.97284			
L15 10.17-0.00				1	1	0.981853			

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 r in	Perimeter r in	Weight plf
LCF158-50JA-A7(1 5/8)	A	No	Surface Ar (CaAa)	160.00 - 0.00	6	6	0.250 0.400	1.9800		0.72
HCS 6X12 4AWG(1- 5/8) **	A	No	Surface Ar (CaAa)	160.00 - 0.00	3	3	0.000 0.000	1.6600		2.40
Black Cable	A	No	Surface Ar (CaAa)	50.00 - 0.00	1	1	0.000 0.000	0.0000		0.15
Ground Cable	A	No	Surface Ar (CaAa)	50.00 - 0.00	1	1	0.000 0.000	0.8650		0.15

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
**										
Banjo	C	No	Surface Ar (CaAa)	155.00 - 7.50	1	1	0.000 0.000	1.0000		5.00
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
**										
PL1 1/4"x6 1/2"	A	No	Surface Af (CaAa)	48.00 - 0.00	1	1	0.000 0.000	6.5000	15.5000	27.64
PL1 1/4"x6 1/2"	B	No	Surface Af (CaAa)	48.00 - 0.00	1	1	0.000 0.000	6.5000	15.5000	27.64
PL1 1/4"x6 1/2"	C	No	Surface Af (CaAa)	48.00 - 0.00	1	1	0.400 0.400	6.5000	15.5000	27.64
PL1 1/4"x6 1/2"	C	No	Surface Af (CaAa)	48.00 - 0.00	1	1	-0.400 -0.400	6.5000	15.5000	27.64
**										

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
**									
LDF5-50A(7/8)	B	No	No	Inside Pole	190.00 - 5.00	2	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
LDF5-50A(7/8)	B	No	No	Inside Pole	187.00 - 5.00	2	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
LDF4-50A(1/2)	B	No	No	Inside Pole	183.00 - 5.00	2	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
LDF5-50A(7/8)	B	No	No	Inside Pole	179.00 - 5.00	1	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
LDF6-50A(1-1/4)	B	No	No	Inside Pole	185.00 - 5.00	1	No Ice	0.00	0.60
							1/2" Ice	0.00	0.60
							1" Ice	0.00	0.60
**									
HB114-1-05U5-S6J(1-1/4")	B	No	No	Inside Pole	170.00 - 5.00	3	No Ice	0.00	1.30
							1/2" Ice	0.00	1.30
							1" Ice	0.00	1.30
**									
Black Cable	A	No	No	Inside Pole	160.00 - 2.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
**									
**									
HJ12-50(2-1/4")	A	No	No	Inside Pole	150.00 - 0.00	2	No Ice	0.00	1.16
							1/2" Ice	0.00	1.16
							1" Ice	0.00	1.16
LDF7-50A(1-5/8)	A	No	No	Inside Pole	150.00 - 0.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
PWRT-208-S(1/2)	A	No	No	Inside Pole	150.00 - 0.00	4	No Ice	0.00	0.20
							1/2" Ice	0.00	0.20
							1" Ice	0.00	0.20
PWRT-208-S(1/2)	A	No	No	Inside Pole	150.00 - 0.00	2	No Ice	0.00	0.20
							1/2" Ice	0.00	0.20
							1" Ice	0.00	0.20
**									
LDF4P-50A(1/2)	A	No	No	Inside Pole	112.00 - 0.00	3	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15

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
LDF4P-50A(1/2)	A	No	No	Inside Pole	90.00 - 0.00	3	1" Ice	0.00	0.15
							No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
**									

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	190.00-170.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.04
		C	0.000	0.000	0.688	0.000	0.04
L2	170.00-164.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.04
		C	0.000	0.000	0.791	0.000	0.05
L3	164.25-147.17	A	0.000	0.000	21.631	0.000	0.17
		B	0.000	0.000	0.000	0.000	0.11
		C	0.000	0.000	3.132	0.000	0.18
L4	147.17-129.67	A	0.000	0.000	29.505	0.000	0.35
		B	0.000	0.000	0.000	0.000	0.11
		C	0.000	0.000	4.156	0.000	0.23
L5	129.67-113.50	A	0.000	0.000	27.263	0.000	0.32
		B	0.000	0.000	0.000	0.000	0.10
		C	0.000	0.000	3.840	0.000	0.21
L6	113.50-96.00	A	0.000	0.000	29.505	0.000	0.36
		B	0.000	0.000	0.000	0.000	0.11
		C	0.000	0.000	4.156	0.000	0.23
L7	96.00-80.67	A	0.000	0.000	25.846	0.000	0.32
		B	0.000	0.000	0.000	0.000	0.10
		C	0.000	0.000	3.641	0.000	0.20
L8	80.67-63.17	A	0.000	0.000	29.505	0.000	0.37
		B	0.000	0.000	0.000	0.000	0.11
		C	0.000	0.000	4.156	0.000	0.23
L9	63.17-48.67	A	0.000	0.000	24.562	0.000	0.30
		B	0.000	0.000	0.000	0.000	0.09
		C	0.000	0.000	3.444	0.000	0.19
L10	48.67-45.00	A	0.000	0.000	9.755	0.000	0.16
		B	0.000	0.000	3.250	0.000	0.11
		C	0.000	0.000	7.372	0.000	0.21
L11	45.00-44.75	A	0.000	0.000	0.714	0.000	0.01
		B	0.000	0.000	0.271	0.000	0.01
		C	0.000	0.000	0.601	0.000	0.02
L12	44.75-31.17	A	0.000	0.000	38.782	0.000	0.66
		B	0.000	0.000	14.712	0.000	0.46
		C	0.000	0.000	32.649	0.000	0.93
L13	31.17-30.17	A	0.000	0.000	2.856	0.000	0.05
		B	0.000	0.000	1.083	0.000	0.03
		C	0.000	0.000	2.404	0.000	0.07
L14	30.17-10.17	A	0.000	0.000	57.117	0.000	0.98
		B	0.000	0.000	21.667	0.000	0.68
		C	0.000	0.000	47.863	0.000	1.35
L15	10.17-0.00	A	0.000	0.000	29.044	0.000	0.50
		B	0.000	0.000	11.018	0.000	0.31
		C	0.000	0.000	22.302	0.000	0.58

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Sectio n	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	$C_{AA}A_A$ In Face ft ²	$C_{AA}A_A$ Out Face ft ²	Weight K
L1	190.00-170.00	A	2.962	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.04
		C		0.000	0.000	6.611	0.000	0.17
L2	170.00-164.25	A	2.940	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.04
		C		0.000	0.000	7.553	0.000	0.20
L3	164.25-147.17	A	2.919	0.000	0.000	45.901	0.000	1.03
		B		0.000	0.000	0.000	0.000	0.11
		C		0.000	0.000	27.824	0.000	0.73
L4	147.17-129.67	A	2.885	0.000	0.000	62.125	0.000	1.49
		B		0.000	0.000	0.000	0.000	0.11
		C		0.000	0.000	34.449	0.000	0.91
L5	129.67-113.50	A	2.848	0.000	0.000	57.404	0.000	1.37
		B		0.000	0.000	0.000	0.000	0.10
		C		0.000	0.000	31.831	0.000	0.84
L6	113.50-96.00	A	2.806	0.000	0.000	61.431	0.000	1.45
		B		0.000	0.000	0.000	0.000	0.11
		C		0.000	0.000	33.616	0.000	0.88
L7	96.00-80.67	A	2.758	0.000	0.000	53.813	0.000	1.28
		B		0.000	0.000	0.000	0.000	0.10
		C		0.000	0.000	29.447	0.000	0.77
L8	80.67-63.17	A	2.702	0.000	0.000	60.524	0.000	1.41
		B		0.000	0.000	0.000	0.000	0.11
		C		0.000	0.000	32.528	0.000	0.84
L9	63.17-48.67	A	2.635	0.000	0.000	51.701	0.000	1.20
		B		0.000	0.000	0.000	0.000	0.09
		C		0.000	0.000	26.951	0.000	0.69
L10	48.67-45.00	A	2.589	0.000	0.000	21.407	0.000	0.52
		B		0.000	0.000	4.803	0.000	0.18
		C		0.000	0.000	16.180	0.000	0.48
L11	45.00-44.75	A	2.578	0.000	0.000	1.528	0.000	0.04
		B		0.000	0.000	0.400	0.000	0.01
		C		0.000	0.000	1.246	0.000	0.04
L12	44.75-31.17	A	2.535	0.000	0.000	82.371	0.000	2.00
		B		0.000	0.000	21.596	0.000	0.80
		C		0.000	0.000	67.071	0.000	2.02
L13	31.17-30.17	A	2.482	0.000	0.000	6.066	0.000	0.15
		B		0.000	0.000	1.590	0.000	0.06
		C		0.000	0.000	4.939	0.000	0.15
L14	30.17-10.17	A	2.378	0.000	0.000	117.867	0.000	2.78
		B		0.000	0.000	31.179	0.000	1.14
		C		0.000	0.000	94.082	0.000	2.79
L15	10.17-0.00	A	2.072	0.000	0.000	56.511	0.000	1.26
		B		0.000	0.000	15.232	0.000	0.51
		C		0.000	0.000	31.838	0.000	0.98

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
L1	190.00-170.00	0.0000	0.3397	0.0000	1.2782
L2	170.00-164.25	0.0000	1.1751	0.0000	3.7925
L3	164.25-147.17	-3.2226	-4.2436	-2.3915	-0.8385
L4	147.17-129.67	-3.8924	-5.1385	-2.8917	-1.2296
L5	129.67-113.50	-4.0889	-5.3930	-3.1018	-1.3086
L6	113.50-96.00	-4.2971	-5.6626	-3.3286	-1.4421
L7	96.00-80.67	-4.4487	-5.8590	-3.5044	-1.5108
L8	80.67-63.17	-4.6180	-6.0782	-3.6957	-1.6577
L9	63.17-48.67	-4.7713	-6.2489	-4.0032	-1.8141
L10	48.67-45.00	-2.9749	-6.0476	-3.9563	-3.5008
L11	45.00-44.75	-2.7364	-6.0336	-3.7504	-3.6413

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
L12	44.75-31.17	-2.7953	-6.1665	-3.8245	-3.7434
L13	31.17-30.17	-2.8317	-6.2485	-3.8807	-3.7986
L14	30.17-10.17	-2.9216	-6.4862	-3.9673	-4.1192
L15	10.17-0.00	-3.1053	-7.5578	-4.2950	-6.9044

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	29	Climbing Ladder	170.00 - 175.00	1.0000	1.0000
L1	30	Safety Line 3/8	170.00 - 175.00	1.0000	1.0000
L2	29	Climbing Ladder	164.25 - 170.00	1.0000	1.0000
L2	30	Safety Line 3/8	164.25 - 170.00	1.0000	1.0000
L3	13	LCF158-50JA-A7(1 5/8)	147.17 - 160.00	1.0000	1.0000
L3	15	HCS 6X12 4AWG(1-5/8)	147.17 - 160.00	1.0000	1.0000
L3	28	Banjo	147.17 - 155.00	1.0000	1.0000
L3	29	Climbing Ladder	147.17 - 164.25	1.0000	1.0000
L3	30	Safety Line 3/8	147.17 - 164.25	1.0000	1.0000
L4	13	LCF158-50JA-A7(1 5/8)	129.67 - 147.17	1.0000	1.0000
L4	15	HCS 6X12 4AWG(1-5/8)	129.67 - 147.17	1.0000	1.0000
L4	28	Banjo	129.67 - 147.17	1.0000	1.0000
L4	29	Climbing Ladder	129.67 - 147.17	1.0000	1.0000
L4	30	Safety Line 3/8	129.67 - 147.17	1.0000	1.0000
L5	13	LCF158-50JA-A7(1 5/8)	113.50 - 129.67	1.0000	1.0000
L5	15	HCS 6X12 4AWG(1-5/8)	113.50 - 129.67	1.0000	1.0000
L5	28	Banjo	113.50 - 129.67	1.0000	1.0000
L5	29	Climbing Ladder	113.50 - 129.67	1.0000	1.0000
L5	30	Safety Line 3/8	113.50 - 129.67	1.0000	1.0000
L6	13	LCF158-50JA-A7(1 5/8)	96.00 - 113.50	1.0000	1.0000
L6	15	HCS 6X12 4AWG(1-5/8)	96.00 - 113.50	1.0000	1.0000
L6	28	Banjo	96.00 - 113.50	1.0000	1.0000
L6	29	Climbing Ladder	96.00 - 113.50	1.0000	1.0000
L6	30	Safety Line 3/8	96.00 - 113.50	1.0000	1.0000
L7	13	LCF158-50JA-A7(1 5/8)	80.67 - 96.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L7	15	HCS 6X12 4AWG(1-5/8)	80.67 - 96.00	1.0000	1.0000
L7	28	Banjo	80.67 - 96.00	1.0000	1.0000
L7	29	Climbing Ladder	80.67 - 96.00	1.0000	1.0000
L7	30	Safety Line 3/8	80.67 - 96.00	1.0000	1.0000
L8	13	LCF158-50JA-A7(1 5/8)	63.17 - 80.67	1.0000	1.0000
L8	15	HCS 6X12 4AWG(1-5/8)	63.17 - 80.67	1.0000	1.0000
L8	28	Banjo	63.17 - 80.67	1.0000	1.0000
L8	29	Climbing Ladder	63.17 - 80.67	1.0000	1.0000
L8	30	Safety Line 3/8	63.17 - 80.67	1.0000	1.0000
L9	13	LCF158-50JA-A7(1 5/8)	48.67 - 63.17	1.0000	1.0000
L9	15	HCS 6X12 4AWG(1-5/8)	48.67 - 63.17	1.0000	1.0000
L9	25	Black Cable	48.67 - 50.00	1.0000	1.0000
L9	26	Ground Cable	48.67 - 50.00	1.0000	1.0000
L9	28	Banjo	48.67 - 63.17	1.0000	1.0000
L9	29	Climbing Ladder	48.67 - 63.17	1.0000	1.0000
L9	30	Safety Line 3/8	48.67 - 63.17	1.0000	1.0000
L10	13	LCF158-50JA-A7(1 5/8)	45.00 - 48.67	1.0000	1.0000
L10	15	HCS 6X12 4AWG(1-5/8)	45.00 - 48.67	1.0000	1.0000
L10	25	Black Cable	45.00 - 48.67	1.0000	1.0000
L10	26	Ground Cable	45.00 - 48.67	1.0000	1.0000
L10	28	Banjo	45.00 - 48.67	1.0000	1.0000
L10	29	Climbing Ladder	45.00 - 48.67	1.0000	1.0000
L10	30	Safety Line 3/8	45.00 - 48.67	1.0000	1.0000
L10	32	PL1 1/4"x6 1/2"	45.00 - 48.00	1.0000	1.0000
L10	33	PL1 1/4"x6 1/2"	45.00 - 48.00	1.0000	1.0000
L10	34	PL1 1/4"x6 1/2"	45.00 - 48.00	1.0000	1.0000
L10	35	PL1 1/4"x6 1/2"	45.00 - 48.00	1.0000	1.0000
L11	13	LCF158-50JA-A7(1 5/8)	44.75 - 45.00	1.0000	1.0000
L11	15	HCS 6X12 4AWG(1-5/8)	44.75 - 45.00	1.0000	1.0000
L11	25	Black Cable	44.75 - 45.00	1.0000	1.0000
L11	26	Ground Cable	44.75 - 45.00	1.0000	1.0000
L11	28	Banjo	44.75 - 45.00	1.0000	1.0000
L11	29	Climbing Ladder	44.75 - 45.00	1.0000	1.0000
L11	30	Safety Line 3/8	44.75 - 45.00	1.0000	1.0000
L11	32	PL1 1/4"x6 1/2"	44.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L11	33	PL1 1/4"x6 1/2"	45.00 44.75 -	1.0000	1.0000
L11	34	PL1 1/4"x6 1/2"	45.00 44.75 -	1.0000	1.0000
L11	35	PL1 1/4"x6 1/2"	45.00 44.75 -	1.0000	1.0000
L12	13	LCF158-50JA-A7(1 5/8)	45.00 31.17 -	1.0000	1.0000
L12	15	HCS 6X12 4AWG(1-5/8)	44.75 31.17 -	1.0000	1.0000
L12	25	Black Cable	44.75 31.17 -	1.0000	1.0000
L12	26	Ground Cable	44.75 31.17 -	1.0000	1.0000
L12	28	Banjo	44.75 31.17 -	1.0000	1.0000
L12	29	Climbing Ladder	44.75 31.17 -	1.0000	1.0000
L12	30	Safety Line 3/8	44.75 31.17 -	1.0000	1.0000
L12	32	PL1 1/4"x6 1/2"	44.75 31.17 -	1.0000	1.0000
L12	33	PL1 1/4"x6 1/2"	44.75 31.17 -	1.0000	1.0000
L12	34	PL1 1/4"x6 1/2"	44.75 31.17 -	1.0000	1.0000
L12	35	PL1 1/4"x6 1/2"	44.75 31.17 -	1.0000	1.0000
L13	13	LCF158-50JA-A7(1 5/8)	44.75 30.17 -	1.0000	1.0000
L13	15	HCS 6X12 4AWG(1-5/8)	31.17 30.17 -	1.0000	1.0000
L13	25	Black Cable	31.17 30.17 -	1.0000	1.0000
L13	26	Ground Cable	31.17 30.17 -	1.0000	1.0000
L13	28	Banjo	31.17 30.17 -	1.0000	1.0000
L13	29	Climbing Ladder	31.17 30.17 -	1.0000	1.0000
L13	30	Safety Line 3/8	31.17 30.17 -	1.0000	1.0000
L13	32	PL1 1/4"x6 1/2"	31.17 30.17 -	1.0000	1.0000
L13	33	PL1 1/4"x6 1/2"	31.17 30.17 -	1.0000	1.0000
L13	34	PL1 1/4"x6 1/2"	31.17 30.17 -	1.0000	1.0000
L13	35	PL1 1/4"x6 1/2"	31.17 30.17 -	1.0000	1.0000
L14	13	LCF158-50JA-A7(1 5/8)	31.17 10.17 -	1.0000	1.0000
L14	15	HCS 6X12 4AWG(1-5/8)	30.17 10.17 -	1.0000	1.0000
L14	25	Black Cable	30.17 10.17 -	1.0000	1.0000
L14	26	Ground Cable	30.17 10.17 -	1.0000	1.0000
L14	28	Banjo	30.17 10.17 -	1.0000	1.0000
L14	29	Climbing Ladder	30.17 12.00 -	1.0000	1.0000
L14	30	Safety Line 3/8	30.17 11.17 -	1.0000	1.0000
L14	32	PL1 1/4"x6 1/2"	30.17 10.17 -	1.0000	1.0000
L14	33	PL1 1/4"x6 1/2"	30.17 10.17 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L14	34	PL1 1/4"x6 1/2"	10.17 - 30.17	1.0000	1.0000
L14	35	PL1 1/4"x6 1/2"	10.17 - 30.17	1.0000	1.0000
L15	13	LCF158-50JA-A7(1 5/8)	0.00 - 10.17	1.0000	1.0000
L15	15	HCS 6X12 4AWG(1-5/8)	0.00 - 10.17	1.0000	1.0000
L15	25	Black Cable	0.00 - 10.17	1.0000	1.0000
L15	26	Ground Cable	0.00 - 10.17	1.0000	1.0000
L15	28	Banjo	7.50 - 10.17	1.0000	1.0000
L15	32	PL1 1/4"x6 1/2"	0.00 - 10.17	1.0000	1.0000
L15	33	PL1 1/4"x6 1/2"	0.00 - 10.17	1.0000	1.0000
L15	34	PL1 1/4"x6 1/2"	0.00 - 10.17	1.0000	1.0000
L15	35	PL1 1/4"x6 1/2"	0.00 - 10.17	1.0000	1.0000

Discrete Tower Loads

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

10' x 2" STD Pipe	A	From Leg	0.00	0.0000	188.00	No Ice	2.38	2.38	0.04
			0.00			1/2"	3.40	3.40	0.05
			2.00			Ice	4.45	4.45	0.08
						1" Ice			
8' Whip	B	From Leg	5.00	0.0000	187.00	No Ice	2.30	2.30	0.05
			0.00			1/2"	3.13	3.13	0.06
			4.00			Ice	3.62	3.62	0.09
						1" Ice			
8' Whip	C	From Leg	5.00	0.0000	187.00	No Ice	2.30	2.30	0.05
			0.00			1/2"	3.13	3.13	0.06
			4.00			Ice	3.62	3.62	0.09
						1" Ice			
6' x 2" STD Pipe	A	From Leg	5.00	0.0000	187.00	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			
Standoff mount	C	None		0.0000	187.00	No Ice	1.66	1.66	0.32
						1/2"	2.17	2.17	0.33
						Ice	2.68	2.68	0.34
						1" Ice			

(2) 2'x1' Yagi	C	From Leg	5.00	0.0000	183.00	No Ice	0.52	0.52	0.02
			0.00			1/2"	0.67	0.67	0.02
			0.00			Ice	0.83	0.83	0.03
						1" Ice			
10' x 2" STD Pipe	C	From Leg	5.00	0.0000	183.00	No Ice	2.38	2.38	0.04
			0.00			1/2"	3.40	3.40	0.05
			2.00			Ice	4.45	4.45	0.08
						1" Ice			
Standoff mount	C	None		0.0000	183.00	No Ice	0.50	0.88	0.11
						1/2"	0.68	1.13	0.11
						Ice	0.86	1.38	0.11
						1" Ice			

6' x 2" STD Pipe	C	From Leg	5.00	0.0000	178.00	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			
Standoff Mount	C	None		0.0000	178.00	No Ice	0.50	0.88	0.11
						1/2"	0.68	1.13	0.11
						Ice	0.86	1.38	0.11
						1" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
6' Whip	B	From Leg	5.00 0.00 3.00	0.0000	179.00	1" Ice			
						No Ice	1.73	1.73	0.03
						1/2"	2.09	2.09	0.05
Standoff Mount	B	None		0.0000	178.00	Ice	2.46	2.46	0.06
						1" Ice			
						No Ice	0.50	0.88	0.11
*** RRH2X50-800	A	From Leg	1.00 0.00 0.00	0.0000	172.00	1/2"	1.86	1.43	0.07
						Ice	2.03	1.58	0.09
						No Ice	1.70	1.28	0.05
RRH2X50-800	B	From Leg	1.00 0.00 0.00	0.0000	172.00	1/2"	1.86	1.43	0.07
						Ice	2.03	1.58	0.09
						No Ice	1.70	1.28	0.05
RRH2X50-800	C	From Leg	1.00 0.00 0.00	0.0000	172.00	1/2"	1.86	1.43	0.07
						Ice	2.03	1.58	0.09
						No Ice	1.70	1.28	0.05
RRH4X45-19	A	From Leg	1.00 0.00 0.00	0.0000	169.00	1" Ice			
						No Ice	2.31	2.38	0.09
						1/2"	2.52	2.58	0.11
RRH4X45-19	B	From Leg	1.00 0.00 0.00	0.0000	169.00	Ice	2.73	2.79	0.14
						1" Ice			
						No Ice	2.31	2.38	0.09
RRH4X45-19	C	From Leg	1.00 0.00 0.00	0.0000	169.00	1/2"	2.52	2.58	0.11
						Ice	2.73	2.79	0.14
						No Ice	2.31	2.38	0.09
6' x 3" STD Pipe	A	From Leg	1.00 0.00 0.00	0.0000	171.00	1" Ice			
						No Ice	1.90	1.90	0.05
						1/2"	2.29	2.29	0.06
6' x 3" STD Pipe	B	From Leg	1.00 0.00 0.00	0.0000	171.00	Ice	2.67	2.67	0.08
						1" Ice			
						No Ice	1.90	1.90	0.05
6' x 3" STD Pipe	C	From Leg	1.00 0.00 0.00	0.0000	171.00	1/2"	2.29	2.29	0.06
						Ice	2.67	2.67	0.08
						No Ice	1.90	1.90	0.05
APXVSPP18-C-A20_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	170.00	1" Ice			
						No Ice	8.26	7.47	0.10
						1/2"	8.82	8.66	0.17
APXVSPP18-C-A20_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	170.00	Ice	9.35	9.56	0.24
						1" Ice			
						No Ice	8.26	7.47	0.10
APXVSPP18-C-A20_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	170.00	1/2"	8.82	8.66	0.17
						Ice	9.35	9.56	0.24
						No Ice	8.26	7.47	0.10
DT465B-2XR-V2_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	170.00	1" Ice			
						No Ice	9.34	7.63	0.08
						1/2"	9.91	8.82	0.16
DT465B-2XR-V2_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	170.00	Ice	10.44	9.72	0.25
						1" Ice			
						No Ice	9.34	7.63	0.08
DT465B-2XR-V2_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	170.00	1/2"	9.91	8.82	0.16
						Ice	10.44	9.72	0.25
						No Ice	9.34	7.63	0.08

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
			ft	ft	°	ft	ft ²	ft ²	K
DT465B-2XR-V2_TIA w/ Mount Pipe	C	From Leg	4.00	0.0000	170.00	1" Ice			
			0.00	0.00		No Ice	9.34	7.63	0.08
			0.00	0.00		1/2"	9.91	8.82	0.16
TD-RRH8x20-25	A	From Leg	4.00	0.0000	170.00	Ice	10.44	9.72	0.25
			0.00	0.00		1" Ice			
			0.00	0.00		No Ice	4.05	1.53	0.07
TD-RRH8x20-25	B	From Leg	4.00	0.0000	170.00	1/2"	4.30	1.71	0.10
			0.00	0.00		Ice	4.56	1.90	0.13
			0.00	0.00		1" Ice			
TD-RRH8x20-25	C	From Leg	4.00	0.0000	170.00	No Ice	4.05	1.53	0.07
			0.00	0.00		1/2"	4.30	1.71	0.10
			0.00	0.00		Ice	4.56	1.90	0.13
RRH2X50-800	A	From Leg	4.00	0.0000	170.00	1" Ice			
			0.00	0.00		No Ice	1.70	1.28	0.05
			0.00	0.00		1/2"	1.86	1.43	0.07
RRH2X50-800	B	From Leg	4.00	0.0000	170.00	Ice	2.03	1.58	0.09
			0.00	0.00		1" Ice			
			0.00	0.00		No Ice	1.70	1.28	0.05
RRH2X50-800	C	From Leg	4.00	0.0000	170.00	1/2"	1.86	1.43	0.07
			0.00	0.00		Ice	2.03	1.58	0.09
			0.00	0.00		1" Ice			
12.5' Platform Mount	C	None		0.0000	170.00	No Ice	23.81	23.81	1.59
						1/2"	30.24	30.24	2.10
						Ice	36.33	36.33	2.73
***						1" Ice			
(2) KRY 112 144/1	A	From Leg	4.00	0.0000	160.00	No Ice	0.35	0.14	0.01
			0.00	0.00		1/2"	0.43	0.20	0.01
			0.00	0.00		Ice	0.51	0.26	0.02
(2) KRY 112 144/1	B	From Leg	4.00	0.0000	160.00	1" Ice			
			0.00	0.00		No Ice	0.35	0.14	0.01
			0.00	0.00		1/2"	0.43	0.20	0.01
(2) KRY 112 144/1	C	From Leg	4.00	0.0000	160.00	Ice	0.51	0.26	0.02
			0.00	0.00		1" Ice			
			0.00	0.00		No Ice	0.35	0.14	0.01
AIR 32 B66Aa B2a w/ Mount Pipe	A	From Leg	4.00	0.0000	160.00	1/2"	0.43	0.20	0.01
			0.00	0.00		Ice	0.51	0.26	0.02
			0.00	0.00		1" Ice			
AIR 32 B66Aa B2a w/ Mount Pipe	B	From Leg	4.00	0.0000	160.00	No Ice	6.81	6.14	0.15
			0.00	0.00		1/2"	7.30	6.99	0.22
			0.00	0.00		Ice	7.76	7.73	0.28
AIR 32 B66Aa B2a w/ Mount Pipe	C	From Leg	4.00	0.0000	160.00	1" Ice			
			0.00	0.00		No Ice	6.81	6.14	0.15
			0.00	0.00		1/2"	7.30	6.99	0.22
APXVAALL24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00	0.0000	160.00	Ice	7.76	7.73	0.28
			0.00	0.00		1" Ice			
			0.00	0.00		No Ice	20.24	10.63	0.18
APXVAALL24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00	0.0000	160.00	1/2"	20.89	12.06	0.31
			0.00	0.00		Ice	21.55	13.34	0.46
			0.00	0.00		1" Ice			
APXVAALL24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00	0.0000	160.00	No Ice	20.24	10.63	0.18
			0.00	0.00		1/2"	20.89	12.06	0.31
			0.00	0.00		Ice	21.55	13.34	0.46

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
APXVAALL24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00	0.0000	160.00	1" Ice	20.24	10.63	0.18
			0.00			No Ice	20.89	12.06	0.31
			0.00			1/2" Ice	21.55	13.34	0.46
RADIO 4449 B71/B85	A	From Leg	4.00	0.0000	160.00	1" Ice	1.64	1.31	0.07
			0.00			No Ice	1.80	1.46	0.09
			0.00			1/2" Ice	1.97	1.61	0.11
RADIO 4449 B71/B85	B	From Leg	4.00	0.0000	160.00	1" Ice	1.64	1.31	0.07
			0.00			No Ice	1.80	1.46	0.09
			0.00			1/2" Ice	1.97	1.61	0.11
RADIO 4449 B71/B85	C	From Leg	4.00	0.0000	160.00	1" Ice	1.64	1.31	0.07
			0.00			No Ice	1.80	1.46	0.09
			0.00			1/2" Ice	1.97	1.61	0.11
AIR 6449 B41 w/ Mount Pipe	A	From Leg	4.00	0.0000	160.00	1" Ice	6.90	4.32	0.13
			0.00			No Ice	7.74	5.37	0.19
			0.00			1/2" Ice	8.49	6.28	0.26
AIR 6449 B41 w/ Mount Pipe	B	From Leg	4.00	0.0000	160.00	1" Ice	6.90	4.32	0.13
			0.00			No Ice	7.74	5.37	0.19
			0.00			1/2" Ice	8.49	6.28	0.26
AIR 6449 B41 w/ Mount Pipe	C	From Leg	4.00	0.0000	160.00	1" Ice	6.90	4.32	0.13
			0.00			No Ice	7.74	5.37	0.19
			0.00			1/2" Ice	8.49	6.28	0.26
RRUS 4415 B25	A	From Leg	4.00	0.0000	160.00	1" Ice	1.64	0.68	0.04
			0.00			No Ice	1.80	0.79	0.06
			0.00			1/2" Ice	1.97	0.91	0.07
RRUS 4415 B25	B	From Leg	4.00	0.0000	160.00	1" Ice	1.64	0.68	0.04
			0.00			No Ice	1.80	0.79	0.06
			0.00			1/2" Ice	1.97	0.91	0.07
RRUS 4415 B25	C	From Leg	4.00	0.0000	160.00	1" Ice	1.64	0.68	0.04
			0.00			No Ice	1.80	0.79	0.06
			0.00			1/2" Ice	1.97	0.91	0.07
SDX1926Q-43	A	From Leg	4.00	0.0000	160.00	1" Ice	0.24	0.10	0.01
			0.00			No Ice	0.31	0.14	0.01
			0.00			1/2" Ice	0.38	0.19	0.01
SDX1926Q-43	B	From Leg	4.00	0.0000	160.00	1" Ice	0.24	0.10	0.01
			0.00			No Ice	0.31	0.14	0.01
			0.00			1/2" Ice	0.38	0.19	0.01
SDX1926Q-43	C	From Leg	4.00	0.0000	160.00	1" Ice	0.24	0.10	0.01
			0.00			No Ice	0.31	0.14	0.01
			0.00			1/2" Ice	0.38	0.19	0.01
HRK12 SitePro1 Top Rail Kit	C	From Leg	0.00	0.0000	160.00	1" Ice	4.56	4.56	0.25
			0.00			No Ice	6.39	6.39	0.31
			3.00			Ice	8.18	8.18	0.40
12.5' Platform Mount	C	None		0.0000	160.00	1" Ice	14.69	14.69	1.25
						No Ice	18.01	18.01	1.57
						Ice	21.34	21.34	1.94

800 10121_TIA w/ Mount Pipe	A	From Leg	4.00	0.0000	150.00	1" Ice	5.40	4.61	0.07
			0.00			No Ice	5.82	5.36	0.12
			3.00			Ice	6.25	6.06	0.17

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft ²	ft ²	K	
800 10121_TIA w/ Mount Pipe	B	From Leg	4.00		0.0000	150.00	1" Ice			
			0.00				No Ice	5.40	4.61	0.07
			3.00				1/2"	5.82	5.36	0.12
800 10121_TIA w/ Mount Pipe	C	From Leg	4.00		0.0000	150.00	Ice	6.25	6.06	0.17
			0.00				1" Ice			
			3.00				No Ice	5.40	4.61	0.07
TPA-65R-LCUUUU-H8_TIA w/ Mount Pipe	A	From Leg	4.00		0.0000	150.00	1/2"	5.82	5.36	0.12
			0.00				Ice	6.25	6.06	0.17
			3.00				1" Ice			
TPA-65R-LCUUUU-H8_TIA w/ Mount Pipe	B	From Leg	4.00		0.0000	150.00	No Ice	13.54	10.96	0.11
			0.00				1/2"	14.24	12.49	0.22
			3.00				Ice	14.95	14.04	0.33
TPA-65R-LCUUUU-H8_TIA w/ Mount Pipe	C	From Leg	4.00		0.0000	150.00	1" Ice			
			0.00				No Ice	13.54	10.96	0.11
			3.00				1/2"	14.24	12.49	0.22
(2) LGP21901	A	From Leg	4.00		0.0000	150.00	Ice	14.95	14.04	0.33
			0.00				1" Ice			
			3.00				No Ice	0.23	0.16	0.01
(2) LGP21901	B	From Leg	4.00		0.0000	150.00	1/2"	0.29	0.21	0.01
			0.00				Ice	0.36	0.28	0.01
			3.00				1" Ice			
(2) LGP21901	C	From Leg	4.00		0.0000	150.00	No Ice	0.23	0.16	0.01
			0.00				1/2"	0.29	0.21	0.01
			3.00				Ice	0.36	0.28	0.01
(2) LGP21401	A	From Leg	4.00		0.0000	150.00	1" Ice			
			0.00				No Ice	1.10	0.21	0.01
			3.00				1/2"	1.24	0.27	0.02
(2) LGP21401	B	From Leg	4.00		0.0000	150.00	Ice	1.38	0.35	0.03
			0.00				1" Ice			
			3.00				No Ice	1.10	0.21	0.01
(2) LGP21401	C	From Leg	4.00		0.0000	150.00	1/2"	1.24	0.27	0.02
			0.00				Ice	1.38	0.35	0.03
			3.00				1" Ice			
DMP65R-BU8D w/ Mount Pipe	A	From Leg	4.00		0.0000	150.00	No Ice	18.11	10.26	0.13
			0.00				1/2"	18.84	11.78	0.25
			3.00				Ice	19.59	13.33	0.38
DMP65R-BU8D w/ Mount Pipe	B	From Leg	4.00		0.0000	150.00	1" Ice			
			0.00				No Ice	18.11	10.26	0.13
			3.00				1/2"	18.84	11.78	0.25
DMP65R-BU8D w/ Mount Pipe	C	From Leg	4.00		0.0000	150.00	Ice	19.59	13.33	0.38
			0.00				1" Ice			
			3.00				No Ice	18.11	10.26	0.13
OPA65R-BU8D w/ Mount Pipe	A	From Leg	4.00		0.0000	150.00	1/2"	18.84	11.78	0.25
			0.00				Ice	19.59	13.33	0.38
			3.00				1" Ice			
OPA65R-BU8D w/ Mount Pipe	B	From Leg	4.00		0.0000	150.00	No Ice	18.33	10.34	0.11
			0.00				1/2"	19.06	11.86	0.23
			3.00				Ice	19.81	13.41	0.37
OPA65R-BU8D w/ Mount Pipe	C	From Leg	4.00		0.0000	150.00	1" Ice			
			0.00				No Ice	18.33	10.34	0.11
			3.00				1/2"	19.06	11.86	0.23
			4.00		0.0000	150.00	Ice	19.81	13.41	0.37
			0.00				1" Ice			
			3.00				No Ice	18.33	10.34	0.11

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _{Front}	C _A A _{Side}	Weight
			Horz	Lateral					
							ft ²	ft ²	K
OPA65R-BU8D w/ Mount Pipe	C	From Leg	4.00	0.0000	150.00	No Ice	18.33	10.34	0.11
			0.00			1/2"	19.06	11.86	0.23
			3.00			Ice	19.81	13.41	0.37
RADIO 8843 B2/B66A	A	From Leg	4.00	0.0000	150.00	No Ice	1.64	1.38	0.08
			0.00			1/2"	1.80	1.53	0.09
			3.00			Ice	1.97	1.69	0.11
RADIO 8843 B2/B66A	B	From Leg	4.00	0.0000	150.00	No Ice	1.64	1.38	0.08
			0.00			1/2"	1.80	1.53	0.09
			3.00			Ice	1.97	1.69	0.11
RADIO 8843 B2/B66A	C	From Leg	4.00	0.0000	150.00	No Ice	1.64	1.38	0.08
			0.00			1/2"	1.80	1.53	0.09
			3.00			Ice	1.97	1.69	0.11
RRUS 4478 B14	A	From Leg	4.00	0.0000	150.00	No Ice	1.84	1.06	0.06
			0.00			1/2"	2.01	1.20	0.08
			3.00			Ice	2.19	1.34	0.09
RRUS 4478 B14	B	From Leg	4.00	0.0000	150.00	No Ice	1.84	1.06	0.06
			0.00			1/2"	2.01	1.20	0.08
			3.00			Ice	2.19	1.34	0.09
RRUS 4478 B14	C	From Leg	4.00	0.0000	150.00	No Ice	1.84	1.06	0.06
			0.00			1/2"	2.01	1.20	0.08
			3.00			Ice	2.19	1.34	0.09
RRUS 4449 B5/B12	A	From Leg	4.00	0.0000	150.00	No Ice	1.97	1.41	0.07
			0.00			1/2"	2.14	1.56	0.09
			3.00			Ice	2.33	1.73	0.11
RRUS 4449 B5/B12	B	From Leg	4.00	0.0000	150.00	No Ice	1.97	1.41	0.07
			0.00			1/2"	2.14	1.56	0.09
			3.00			Ice	2.33	1.73	0.11
RRUS 4449 B5/B12	C	From Leg	4.00	0.0000	150.00	No Ice	1.97	1.41	0.07
			0.00			1/2"	2.14	1.56	0.09
			3.00			Ice	2.33	1.73	0.11
DC6-48-60-18-8F	B	From Leg	2.00	0.0000	150.00	No Ice	0.92	0.92	0.02
			0.00			1/2"	1.46	1.46	0.04
			0.00			Ice	1.64	1.64	0.06
DC6-48-60-18-8F	A	From Leg	2.00	0.0000	150.00	No Ice	0.92	0.92	0.02
			0.00			1/2"	1.46	1.46	0.04
			0.00			Ice	1.64	1.64	0.06
DC6-48-60-18-8F	C	From Leg	2.00	0.0000	150.00	No Ice	0.92	0.92	0.02
			0.00			1/2"	1.46	1.46	0.04
			0.00			Ice	1.64	1.64	0.06
RRUS 32 B30	A	From Leg	4.00	0.0000	150.00	No Ice	2.69	1.57	0.06
			0.00			1/2"	2.91	1.76	0.08
			0.00			Ice	3.14	1.95	0.10
RRUS 32 B30	B	From Leg	4.00	0.0000	150.00	No Ice	2.69	1.57	0.06
			0.00			1/2"	2.91	1.76	0.08
			0.00			Ice	3.14	1.95	0.10
RRUS 32 B30	C	From Leg	4.00	0.0000	150.00	No Ice	2.69	1.57	0.06
			0.00			1/2"	2.91	1.76	0.08
			0.00			Ice	3.14	1.95	0.10
RRUS 32 B2	A	From Leg	4.00	0.0000	150.00	No Ice	2.71	1.66	0.05

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft ²	ft ²	K	
			0.00			1/2"	2.93	1.85	0.07	
			0.00			Ice	3.16	2.04	0.10	
						1" Ice				
RRUS 32 B2	B	From Leg	4.00		0.0000	150.00	No Ice	2.71	1.66	0.05
			0.00				1/2"	2.93	1.85	0.07
			0.00				Ice	3.16	2.04	0.10
							1" Ice			
RRUS 32 B2	C	From Leg	4.00		0.0000	150.00	No Ice	2.71	1.66	0.05
			0.00				1/2"	2.93	1.85	0.07
			0.00				Ice	3.16	2.04	0.10
							1" Ice			
12.0' Sector Mount	C	None			0.0000	150.00	No Ice	29.82	29.82	1.67
							1/2"	42.21	42.21	2.27
							Ice	54.43	54.43	3.05
							1" Ice			
**										
BOA4753	A	From Leg	5.00		0.0000	112.00	No Ice	1.36	1.36	0.01
			0.00				1/2"	2.08	2.08	0.02
			4.00				Ice	2.62	2.62	0.03
							1" Ice			
BOA4753	B	From Leg	5.00		0.0000	112.00	No Ice	1.36	1.36	0.01
			0.00				1/2"	2.08	2.08	0.02
			4.00				Ice	2.62	2.62	0.03
							1" Ice			
BOA4753	C	From Leg	5.00		0.0000	112.00	No Ice	1.36	1.36	0.01
			0.00				1/2"	2.08	2.08	0.02
			4.00				Ice	2.62	2.62	0.03
							1" Ice			
Standoff mount	C	None			0.0000	112.00	No Ice	1.66	1.66	0.32
							1/2"	2.17	2.17	0.33
							Ice	2.68	2.68	0.34
							1" Ice			
**										
20' Whip	A	From Leg	5.00		0.0000	90.00	No Ice	4.75	4.75	0.07
			0.00				1/2"	6.78	6.78	0.11
			10.00				Ice	8.82	8.82	0.16
							1" Ice			
20' Whip	B	From Leg	5.00		0.0000	90.00	No Ice	4.75	4.75	0.07
			0.00				1/2"	6.78	6.78	0.11
			10.00				Ice	8.82	8.82	0.16
							1" Ice			
20' Whip	C	From Leg	5.00		0.0000	90.00	No Ice	4.75	4.75	0.07
			0.00				1/2"	6.78	6.78	0.11
			10.00				Ice	8.82	8.82	0.16
							1" Ice			
Standoff mount	C	None			0.0000	90.00	No Ice	1.66	1.66	0.32
							1/2"	2.17	2.17	0.33
							Ice	2.68	2.68	0.34
							1" Ice			
ICE BRIDGE	B	From Leg	4.00		0.0000	85.50	No Ice	0.39	0.17	0.01
			0.00				1/2"	0.47	0.23	0.01
			0.00				Ice	0.56	0.30	0.01
							1" Ice			
GPS_A	C	From Leg	4.00		0.0000	50.00	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			
3' x 3" STD Pipe	C	None			0.0000	49.00	No Ice	0.76	0.76	0.02
							1/2"	0.96	0.96	0.03
							Ice	1.16	1.16	0.04
							1" Ice			

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft ²	Weight K	
**											
HP2-11	A	Paraboloid w/Shroud (HP)	From Leg	0.00 0.00 0.00	50.0000		193.00	2.04	No Ice 1/2" Ice 1" Ice	3.27 3.55 3.82	0.03 0.05 0.06
GHF3-18	C	Grid	From Leg	0.00 0.00 0.00	50.0000		185.00	3.25	No Ice 1/2" Ice 1" Ice	8.30 8.73 9.16	0.06 0.10 0.14
*											

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service

Comb. No.	Description
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	190 - 170	Pole	Max Tension	48	0.00	0.00	0.00
			Max. Compression	26	-7.76	2.43	-2.91
			Max. Mx	20	-2.70	41.80	-2.53
			Max. My	14	-2.73	2.89	-39.58
			Max. Vy	20	-3.55	41.80	-2.53
			Max. Vx	14	3.40	2.89	-39.58
			Max. Torque	22			1.69
L2	170 - 164.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.94	11.84	-8.46
			Max. Mx	20	-5.79	66.07	-3.53
			Max. My	14	-5.83	4.28	-62.61
			Max. Vy	20	-8.37	66.07	-3.53
			Max. Vx	14	8.10	4.28	-62.61
			Max. Torque	12			-6.65
L3	164.25 - 147.17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.39	15.27	-10.20
			Max. Mx	20	-16.04	364.27	-7.63
			Max. My	14	-16.11	9.09	-355.06
			Max. Vy	20	-24.47	364.27	-7.63
			Max. Vx	14	24.16	9.09	-355.06
			Max. Torque	12			-6.86
L4	147.17 - 129.67	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.81	17.83	-11.16
			Max. Mx	20	-18.50	707.57	-10.45
			Max. My	14	-18.57	12.40	-693.61
			Max. Vy	20	-25.75	707.57	-10.45
			Max. Vx	14	25.37	12.40	-693.61
			Max. Torque	12			-6.85
L5	129.67 - 113.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.74	21.47	-12.44
			Max. Mx	20	-23.48	1243.04	-14.56
			Max. My	14	-23.54	17.22	-1220.69
			Max. Vy	20	-27.72	1243.04	-14.56
			Max. Vx	14	27.28	17.22	-1220.69
			Max. Torque	12			-6.85
L6	113.5 - 96	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-89.74	23.78	-13.18
			Max. Mx	20	-27.06	1609.94	-17.19
			Max. My	14	-27.12	20.30	-1581.86
			Max. Vy	20	-29.16	1609.94	-17.19
			Max. Vx	14	28.72	20.30	-1581.86
			Max. Torque	12			-6.83
L7	96 - 80.67	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-103.28	27.09	-14.40
			Max. Mx	20	-33.91	2224.53	-21.28
			Max. My	14	-33.95	25.02	-2187.57
			Max. Vy	20	-31.71	2224.53	-21.28
			Max. Vx	14	31.27	25.02	-2187.57
			Max. Torque	12			-6.82
L8	80.67 - 63.17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-109.60	29.17	-14.97
			Max. Mx	20	-37.40	2611.31	-23.67
			Max. My	14	-37.44	27.82	-2568.97
			Max. Vy	20	-32.74	2611.31	-23.67
			Max. Vx	14	32.30	27.82	-2568.97

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L9	63.17 - 48.67	Pole	Max. Torque	12			-6.79
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-122.92	32.82	-15.95
			Max. Mx	20	-44.81	3285.09	-27.61
			Max. My	14	-44.83	32.45	-3233.85
			Max. Vy	20	-34.53	3285.09	-27.61
			Max. Vx	14	34.10	32.45	-3233.85
L10	48.67 - 45	Pole	Max. Torque	12			-6.84
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-125.76	33.55	-16.41
			Max. Mx	20	-46.40	3412.37	-28.54
			Max. My	14	-46.42	33.29	-3359.74
			Max. Vy	20	-34.82	3412.37	-28.54
			Max. Vx	14	34.39	33.29	-3359.74
L11	45 - 44.75	Pole	Max. Torque	12			-6.84
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-126.00	33.61	-16.46
			Max. Mx	20	-46.56	3421.08	-28.61
			Max. My	14	-46.58	33.35	-3368.36
			Max. Vy	20	-34.83	3421.08	-28.61
			Max. Vx	14	34.39	33.35	-3368.36
L12	44.75 - 31.17	Pole	Max. Torque	12			-6.84
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-132.96	35.05	-17.55
			Max. Mx	20	-50.84	3678.88	-30.60
			Max. My	14	-50.86	35.03	-3623.50
			Max. Vy	20	-35.48	3678.88	-30.60
			Max. Vx	14	35.05	35.03	-3623.50
L13	31.17 - 30.17	Pole	Max. Torque	12			-6.84
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-143.50	36.48	-18.63
			Max. Mx	20	-57.57	3939.00	-32.57
			Max. My	14	-57.59	36.70	-3880.99
			Max. Vy	20	-36.23	3939.00	-32.57
			Max. Vx	14	35.79	36.70	-3880.99
L14	30.17 - 10.17	Pole	Max. Torque	12			-6.84
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-162.47	40.11	-21.45
			Max. Mx	20	-69.67	4679.19	-38.02
			Max. My	14	-69.68	41.26	-4614.04
			Max. Vy	20	-37.76	4679.19	-38.02
			Max. Vx	14	37.34	41.26	-4614.04
L15	10.17 - 0	Pole	Max. Torque	12			-6.84
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-171.50	41.74	-22.00
			Max. Mx	20	-75.87	5067.36	-40.46
			Max. My	14	-75.87	43.56	-4998.35
			Max. Vy	20	-38.54	5067.36	-40.46
			Max. Vx	14	38.13	43.56	-4998.35
			Max. Torque	12			-6.84

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	171.50	0.00	-0.00
	Max. H _x	20	75.88	38.53	-0.17
	Max. H _z	2	75.88	-0.14	38.10
	Max. M _x	2	4979.87	-0.14	38.10
	Max. M _z	8	5045.29	-38.48	0.16

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. Torsion	24	6.80	19.04	32.98
	Min. Vert	5	56.91	-19.21	33.02
	Min. H _x	8	75.88	-38.48	0.16
	Min. H _z	15	56.91	0.19	-38.11
	Min. M _x	14	-4998.35	0.19	-38.11
	Min. M _z	20	-5067.36	38.53	-0.17
	Min. Torsion	12	-6.83	-19.04	-32.98

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	63.24	-0.00	0.00	6.58	4.91	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	75.88	0.14	-38.10	-4979.87	-20.46	-5.60
0.9 Dead+1.6 Wind 0 deg - No Ice	56.91	0.14	-38.10	-4922.29	-21.64	-5.55
1.2 Dead+1.6 Wind 30 deg - No Ice	75.88	19.21	-33.02	-4315.92	-2517.66	-2.90
0.9 Dead+1.6 Wind 30 deg - No Ice	56.91	19.21	-33.02	-4266.28	-2488.98	-2.88
1.2 Dead+1.6 Wind 60 deg - No Ice	75.88	33.22	-19.14	-2504.03	-4355.56	0.52
0.9 Dead+1.6 Wind 60 deg - No Ice	56.91	33.22	-19.14	-2476.02	-4304.89	0.51
1.2 Dead+1.6 Wind 90 deg - No Ice	75.88	38.48	-0.16	-23.72	-5045.29	3.80
0.9 Dead+1.6 Wind 90 deg - No Ice	56.91	38.48	-0.16	-25.33	-4986.39	3.76
1.2 Dead+1.6 Wind 120 deg - No Ice	75.88	33.13	18.96	2484.84	-4340.13	6.12
0.9 Dead+1.6 Wind 120 deg - No Ice	56.91	33.13	18.96	2453.19	-4289.66	6.07
1.2 Dead+1.6 Wind 150 deg - No Ice	75.88	19.04	32.98	4325.67	-2486.26	6.83
0.9 Dead+1.6 Wind 150 deg - No Ice	56.91	19.04	32.98	4271.96	-2458.03	6.78
1.2 Dead+1.6 Wind 180 deg - No Ice	75.88	-0.19	38.11	4998.35	43.56	5.71
0.9 Dead+1.6 Wind 180 deg - No Ice	56.91	-0.19	38.11	4936.58	41.43	5.67
1.2 Dead+1.6 Wind 210 deg - No Ice	75.88	-19.28	33.05	4338.92	2544.06	2.96
0.9 Dead+1.6 Wind 210 deg - No Ice	56.91	-19.28	33.05	4285.01	2512.02	2.94
1.2 Dead+1.6 Wind 240 deg - No Ice	75.88	-33.25	19.17	2525.66	4374.11	-0.52
0.9 Dead+1.6 Wind 240 deg - No Ice	56.91	-33.25	19.17	2493.42	4320.17	-0.52
1.2 Dead+1.6 Wind 270 deg - No Ice	75.88	-38.53	0.17	40.46	5067.36	-3.89
0.9 Dead+1.6 Wind 270 deg - No Ice	56.91	-38.53	0.17	37.92	5005.15	-3.85
1.2 Dead+1.6 Wind 300 deg - No Ice	75.88	-33.18	-18.94	-2464.72	4360.27	-6.20
0.9 Dead+1.6 Wind 300 deg - No Ice	56.91	-33.18	-18.94	-2437.27	4306.53	-6.14
1.2 Dead+1.6 Wind 330 deg - No Ice	75.88	-19.04	-32.98	-4309.59	2497.54	-6.80
0.9 Dead+1.6 Wind 330 deg - No Ice	56.91	-19.04	-32.98	-4260.02	2466.18	-6.74
1.2 Dead+1.0 Ice+1.0 Temp	171.50	-0.00	0.00	22.00	41.74	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	171.50	-0.01	-11.08	-1591.60	44.53	-2.05

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	171.50	5.59	-9.57	-1368.28	-775.96	-1.00
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	171.50	9.69	-5.48	-771.20	-1375.71	0.34
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	171.50	11.15	0.04	30.26	-1587.50	1.50
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	171.50	9.68	5.55	830.91	-1373.92	2.27
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	171.50	5.64	9.61	1421.05	-785.90	2.49
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	171.50	0.08	11.12	1643.37	25.34	2.09
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	171.50	-5.57	9.58	1416.47	855.19	1.04
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	171.50	-9.61	5.55	830.87	1442.93	-0.19
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	171.50	-11.12	0.01	24.97	1663.41	-1.42
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	171.50	-9.63	-5.55	-785.28	1446.76	-2.27
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	171.50	-5.54	-9.61	-1378.61	848.88	-2.49
Dead+Wind 0 deg - Service	63.24	0.03	-7.09	-915.28	0.12	-1.05
Dead+Wind 30 deg - Service	63.24	3.57	-6.14	-792.57	-461.47	-0.55
Dead+Wind 60 deg - Service	63.24	6.18	-3.56	-457.66	-801.21	0.10
Dead+Wind 90 deg - Service	63.24	7.16	-0.03	0.82	-928.71	0.72
Dead+Wind 120 deg - Service	63.24	6.16	3.53	464.50	-798.33	1.15
Dead+Wind 150 deg - Service	63.24	3.54	6.14	804.74	-455.66	1.28
Dead+Wind 180 deg - Service	63.24	-0.04	7.09	929.07	11.94	1.07
Dead+Wind 210 deg - Service	63.24	-3.59	6.15	807.20	474.14	0.55
Dead+Wind 240 deg - Service	63.24	-6.19	3.57	472.04	812.42	-0.10
Dead+Wind 270 deg - Service	63.24	-7.17	0.03	12.67	940.57	-0.72
Dead+Wind 300 deg - Service	63.24	-6.17	-3.52	-450.39	809.84	-1.16
Dead+Wind 330 deg - Service	63.24	-3.54	-6.14	-791.38	465.54	-1.28

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	-63.24	0.00	0.00	63.24	-0.00	0.000%
2	0.14	-75.88	-38.10	-0.14	75.88	38.10	0.000%
3	0.14	-56.91	-38.10	-0.14	56.91	38.10	0.000%
4	19.21	-75.88	-33.02	-19.21	75.88	33.02	0.000%
5	19.21	-56.91	-33.02	-19.21	56.91	33.02	0.000%
6	33.22	-75.88	-19.14	-33.22	75.88	19.14	0.000%
7	33.22	-56.91	-19.14	-33.22	56.91	19.14	0.000%
8	38.48	-75.88	-0.16	-38.48	75.88	0.16	0.000%
9	38.48	-56.91	-0.16	-38.48	56.91	0.16	0.000%
10	33.13	-75.88	18.96	-33.13	75.88	-18.96	0.000%
11	33.13	-56.91	18.96	-33.13	56.91	-18.96	0.000%
12	19.04	-75.88	32.98	-19.04	75.88	-32.98	0.000%
13	19.04	-56.91	32.98	-19.04	56.91	-32.98	0.000%
14	-0.19	-75.88	38.11	0.19	75.88	-38.11	0.000%
15	-0.19	-56.91	38.11	0.19	56.91	-38.11	0.000%
16	-19.28	-75.88	33.05	19.28	75.88	-33.05	0.000%
17	-19.28	-56.91	33.05	19.28	56.91	-33.05	0.000%
18	-33.25	-75.88	19.17	33.25	75.88	-19.17	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
19	-33.25	-56.91	19.17	33.25	56.91	-19.17	0.000%
20	-38.53	-75.88	0.17	38.53	75.88	-0.17	0.000%
21	-38.53	-56.91	0.17	38.53	56.91	-0.17	0.000%
22	-33.18	-75.88	-18.94	33.18	75.88	18.94	0.000%
23	-33.18	-56.91	-18.94	33.18	56.91	18.94	0.000%
24	-19.04	-75.88	-32.98	19.04	75.88	32.98	0.000%
25	-19.04	-56.91	-32.98	19.04	56.91	32.98	0.000%
26	0.00	-171.50	0.00	0.00	171.50	-0.00	0.000%
27	-0.01	-171.50	-11.08	0.01	171.50	11.08	0.000%
28	5.59	-171.50	-9.57	-5.59	171.50	9.57	0.000%
29	9.69	-171.50	-5.48	-9.69	171.50	5.48	0.000%
30	11.15	-171.50	0.04	-11.15	171.50	-0.04	0.000%
31	9.68	-171.50	5.55	-9.68	171.50	-5.55	0.000%
32	5.64	-171.50	9.61	-5.64	171.50	-9.61	0.000%
33	0.08	-171.50	11.12	-0.08	171.50	-11.12	0.000%
34	-5.57	-171.50	9.58	5.57	171.50	-9.58	0.000%
35	-9.61	-171.50	5.55	9.61	171.50	-5.55	0.000%
36	-11.12	-171.50	0.01	11.12	171.50	-0.01	0.000%
37	-9.63	-171.50	-5.55	9.63	171.50	5.55	0.000%
38	-5.54	-171.50	-9.61	5.54	171.50	9.61	0.000%
39	0.03	-63.24	-7.09	-0.03	63.24	7.09	0.000%
40	3.57	-63.24	-6.14	-3.57	63.24	6.14	0.000%
41	6.18	-63.24	-3.56	-6.18	63.24	3.56	0.000%
42	7.16	-63.24	-0.03	-7.16	63.24	0.03	0.000%
43	6.16	-63.24	3.53	-6.16	63.24	-3.53	0.000%
44	3.54	-63.24	6.14	-3.54	63.24	-6.14	0.000%
45	-0.04	-63.24	7.09	0.04	63.24	-7.09	0.000%
46	-3.59	-63.24	6.15	3.59	63.24	-6.15	0.000%
47	-6.19	-63.24	3.57	6.19	63.24	-3.57	0.000%
48	-7.17	-63.24	0.03	7.17	63.24	-0.03	0.000%
49	-6.17	-63.24	-3.52	6.17	63.24	3.52	0.000%
50	-3.54	-63.24	-6.14	3.54	63.24	6.14	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000526
2	Yes	5	0.00000001	0.00084846
3	Yes	5	0.00000001	0.00040003
4	Yes	6	0.00000001	0.00040163
5	Yes	6	0.00000001	0.00012919
6	Yes	6	0.00000001	0.00041635
7	Yes	6	0.00000001	0.00013422
8	Yes	5	0.00000001	0.00053363
9	Yes	5	0.00000001	0.00024795
10	Yes	6	0.00000001	0.00045113
11	Yes	6	0.00000001	0.00014748
12	Yes	6	0.00000001	0.00038091
13	Yes	6	0.00000001	0.00012205
14	Yes	6	0.00000001	0.00006707
15	Yes	5	0.00000001	0.00053511
16	Yes	6	0.00000001	0.00044075
17	Yes	6	0.00000001	0.00014240
18	Yes	6	0.00000001	0.00042870
19	Yes	6	0.00000001	0.00013776
20	Yes	5	0.00000001	0.00082166
21	Yes	5	0.00000001	0.00038143
22	Yes	6	0.00000001	0.00038412
23	Yes	6	0.00000001	0.00012298
24	Yes	6	0.00000001	0.00045387
25	Yes	6	0.00000001	0.00014864
26	Yes	5	0.00000001	0.00056317
27	Yes	7	0.00000001	0.00053277
28	Yes	7	0.00000001	0.00060002

29	Yes	7	0.00000001	0.00060345
30	Yes	7	0.00000001	0.00052659
31	Yes	7	0.00000001	0.00064924
32	Yes	7	0.00000001	0.00063215
33	Yes	7	0.00000001	0.00055796
34	Yes	7	0.00000001	0.00068450
35	Yes	7	0.00000001	0.00068131
36	Yes	7	0.00000001	0.00056441
37	Yes	7	0.00000001	0.00064651
38	Yes	7	0.00000001	0.00066447
39	Yes	4	0.00000001	0.00072161
40	Yes	5	0.00000001	0.00005754
41	Yes	5	0.00000001	0.00006147
42	Yes	4	0.00000001	0.00057150
43	Yes	5	0.00000001	0.00008355
44	Yes	5	0.00000001	0.00005871
45	Yes	4	0.00000001	0.00076756
46	Yes	5	0.00000001	0.00007491
47	Yes	5	0.00000001	0.00006804
48	Yes	4	0.00000001	0.00061178
49	Yes	5	0.00000001	0.00005789
50	Yes	5	0.00000001	0.00008604

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	190 - 170	25.280	48	1.1729	0.0119
L2	170 - 164.25	20.395	48	1.1558	0.0107
L3	167.17 - 147.17	19.712	48	1.1493	0.0098
L4	147.17 - 129.67	15.030	48	1.0703	0.0061
L5	133.5 - 113.5	12.113	48	0.9616	0.0043
L6	113.5 - 96	8.387	48	0.8021	0.0029
L7	100.67 - 80.67	6.389	48	0.6846	0.0022
L8	80.67 - 63.17	3.837	48	0.5173	0.0014
L9	68.67 - 48.67	2.676	48	0.4078	0.0010
L10	48.67 - 45	1.255	48	0.2537	0.0006
L11	45 - 44.75	1.073	48	0.2222	0.0005
L12	44.75 - 31.17	1.061	48	0.2208	0.0005
L13	37.42 - 30.17	0.753	48	0.1812	0.0004
L14	30.17 - 10.17	0.493	48	0.1588	0.0003
L15	10.17 - 0	0.055	48	0.0519	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
193.00	HP2-11	48	25.280	1.1729	0.0119	124790
188.00	10' x 2" STD Pipe	48	24.789	1.1724	0.0120	124790
187.00	8' Whip	48	24.544	1.1722	0.0121	124790
185.00	GHF3-18	48	24.053	1.1716	0.0121	124790
183.00	(2) 2'x1' Yagi	48	23.563	1.1708	0.0122	89136
179.00	6' Whip	48	22.584	1.1683	0.0121	56723
178.00	6' x 2" STD Pipe	48	22.340	1.1674	0.0121	51996
172.00	RRH2X50-800	48	20.879	1.1597	0.0112	35635
171.00	6' x 3" STD Pipe	48	20.637	1.1578	0.0110	34882
170.00	APXVSP18-C-A20_TIA w/ Mount Pipe	48	20.395	1.1558	0.0107	34561
169.00	RRH4X45-19	48	20.154	1.1536	0.0104	34423
160.00	(2) KRY 112 144/1	48	17.996	1.1297	0.0080	16836
150.00	800 10121_TIA w/ Mount Pipe	48	15.668	1.0875	0.0065	9246
112.00	BOA4753	48	8.138	0.7888	0.0028	6124

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
90.00	20' Whip	48	4.936	0.5960	0.0017	6475
85.50	ICE BRIDGE	48	4.385	0.5591	0.0016	6011
50.00	GPS_A	48	1.328	0.2661	0.0006	6346
49.00	3' x 3" STD Pipe	48	1.273	0.2568	0.0006	6396

Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
L1	190 - 170	135.891	20	6.2837	0.0636
L2	170 - 164.25	109.731	20	6.2012	0.0572
L3	167.17 - 147.17	106.072	20	6.1705	0.0524
L4	147.17 - 129.67	80.941	20	5.7608	0.0328
L5	133.5 - 113.5	65.257	20	5.1805	0.0232
L6	113.5 - 96	45.201	20	4.3239	0.0156
L7	100.67 - 80.67	34.439	20	3.6913	0.0117
L8	80.67 - 63.17	20.686	20	2.7898	0.0076
L9	68.67 - 48.67	14.423	20	2.1993	0.0054
L10	48.67 - 45	6.766	20	1.3676	0.0030
L11	45 - 44.75	5.781	20	1.1977	0.0025
L12	44.75 - 31.17	5.718	20	1.1903	0.0025
L13	37.42 - 30.17	4.056	20	0.9766	0.0020
L14	30.17 - 10.17	2.654	20	0.8558	0.0017
L15	10.17 - 0	0.295	20	0.2794	0.0005

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
193.00	HP2-11	20	135.891	6.2837	0.0637	26223
188.00	10' x 2" STD Pipe	20	133.263	6.2811	0.0642	26223
187.00	8' Whip	20	131.949	6.2798	0.0645	26223
185.00	GHF3-18	20	129.322	6.2766	0.0649	26223
183.00	(2) 2'x1' Yagi	20	126.697	6.2725	0.0652	18730
179.00	6' Whip	20	121.456	6.2604	0.0648	11918
178.00	6' x 2" STD Pipe	20	120.148	6.2563	0.0645	10924
172.00	RRH2X50-800	20	112.326	6.2193	0.0599	7507
171.00	6' x 3" STD Pipe	20	111.028	6.2107	0.0586	7373
170.00	APXVSP18-C-A20_TIA w/ Mount Pipe	20	109.731	6.2012	0.0572	7337
169.00	RRH4X45-19	20	108.437	6.1909	0.0555	7337
160.00	(2) KRY 112 144/1	20	96.868	6.0736	0.0429	3375
150.00	800 10121_TIA w/ Mount Pipe	20	84.369	5.8518	0.0348	1797
112.00	BOA4753	20	43.858	4.2523	0.0151	1150
90.00	20' Whip	20	26.609	3.2138	0.0093	1209
85.50	ICE BRIDGE	20	23.635	3.0151	0.0084	1121
50.00	GPS_A	20	7.157	1.4346	0.0032	1178
49.00	3' x 3" STD Pipe	20	6.862	1.3846	0.0030	1187

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L _u	Kl/r	A	P _u	φP _n	Ratio
	ft							K	$\frac{P_u}{\phi P_n}$
L1	190 - 170 (1)	TP24.1353x19.5625x0.25	20.00	0.00	0.0	18.953	-2.70	1408.11	0.002
L2	170 - 164.25 (2)	TP25.45x24.1353x0.25	5.75	0.00	0.0	19.466	-5.79	1446.26	0.004
L3	164.25 - 147.17 (3)	TP29.1184x24.2824x0.31 25	20.00	0.00	0.0	28.571	-16.05	2122.75	0.008
L4	147.17 - 129.67 (4)	TP33.35x29.1184x0.3125	17.50	0.00	0.0	31.850	-18.50	2350.34	0.008
L5	129.67 - 113.5 (5)	TP36.7292x31.7989x0.37 5	20.00	0.00	0.0	43.270	-23.48	3214.79	0.007
L6	113.5 - 96 (6)	TP41.0432x36.7292x0.37 5	17.50	0.00	0.0	47.035	-27.06	3447.88	0.008
L7	96 - 80.67 (7)	TP44.1576x39.142x0.375	20.00	0.00	0.0	52.112	-33.91	3709.62	0.009
L8	80.67 - 63.17 (8)	TP48.5462x44.1576x0.37 5	17.50	0.00	0.0	55.694	-37.41	3881.34	0.010
L9	63.17 - 48.67 (9)	TP51.4526x46.4169x0.37 5	20.00	0.00	0.0	60.795	-44.81	4107.39	0.011
L10	48.67 - 45 (10)	TP52.3766x51.4526x0.37 5	3.67	0.00	0.0	61.894	-46.40	4153.28	0.011
L11	45 - 44.75 (11)	TP52.4396x52.3766x0.58 75	0.25	0.00	0.0	96.689	-46.56	7183.57	0.006
L12	44.75 - 31.17 (12)	TP55.8588x52.4396x0.58 75	13.58	0.00	0.0	100.13	-50.84	7439.26	0.007
L13	31.17 - 30.17 (13)	TP55.3689x53.5352x0.57 5	7.25	0.00	0.0	100.00	-57.57	7429.62	0.008
L14	30.17 - 10.17 (14)	TP60.4276x55.3689x0.56 25	20.00	0.00	0.0	106.88	-69.67	7814.04	0.009
L15	10.17 - 0 (15)	TP63x60.4276x0.55	10.17	0.00	0.0	109.01	-75.87	7825.71	0.010

Pole Bending Design Data

Section No.	Elevation	Size	M _{ux}	φM _{nx}	Ratio	M _{uy}	φM _{ny}	Ratio
			kip-ft	kip-ft	$\frac{M_{ux}}{\phi M_{nx}}$	kip-ft	kip-ft	$\frac{M_{uy}}{\phi M_{ny}}$
L1	190 - 170 (1)	TP24.1353x19.5625x0.25	41.87	689.83	0.061	0.00	689.83	0.000
L2	170 - 164.25 (2)	TP25.45x24.1353x0.25	66.38	727.90	0.091	0.00	727.90	0.000
L3	164.25 - 147.17 (3)	TP29.1184x24.2824x0.31 25	364.84	1253.68	0.291	0.00	1253.68	0.000
L4	147.17 - 129.67 (4)	TP33.35x29.1184x0.3125	707.64	1549.09	0.457	0.00	1549.09	0.000
L5	129.67 - 113.5 (5)	TP36.7292x31.7989x0.37 5	1243.13	2397.41	0.519	0.00	2397.41	0.000
L6	113.5 - 96 (6)	TP41.0432x36.7292x0.37 5	1610.03	2797.22	0.576	0.00	2797.22	0.000
L7	96 - 80.67 (7)	TP44.1576x39.142x0.375	2224.63	3337.49	0.667	0.00	3337.49	0.000
L8	80.67 - 63.17 (8)	TP48.5462x44.1576x0.37 5	2611.42	3734.03	0.699	0.00	3734.03	0.000
L9	63.17 - 48.67 (9)	TP51.4526x46.4169x0.37 5	3285.20	4316.30	0.761	0.00	4316.30	0.000
L10	48.67 - 45 (10)	TP52.3766x51.4526x0.37 5	3412.49	4444.06	0.768	0.00	4444.06	0.000
L11	45 - 44.75 (11)	TP52.4396x52.3766x0.58 75	3421.20	7633.19	0.448	0.00	7633.19	0.000
L12	44.75 - 31.17	TP55.8588x52.4396x0.58	3679.01	8189.39	0.449	0.00	8189.39	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L13	31.17 - 30.17 (12)	TP55.3689x53.5352x0.57 75	3939.14	8349.42	0.472	0.00	8349.42	0.000
L14	30.17 - 10.17 (13)	TP60.4276x55.3689x0.56 5	4679.34	9604.58	0.487	0.00	9604.58	0.000
L15	10.17 - 0 (15) (14)	TP63x60.4276x0.55 25	5067.52	10040.17	0.505	0.00	10040.17	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	190 - 170 (1)	TP24.1353x19.5625x0.25	3.55	704.06	0.005	1.26	1383.52	0.001
L2	170 - 164.25 (2)	TP25.45x24.1353x0.25	8.39	723.13	0.012	0.49	1459.83	0.000
L3	164.25 - 147.17 (3) (2)	TP29.1184x24.2824x0.31 25	24.46	1061.37	0.023	0.49	2514.53	0.000
L4	147.17 - 129.67 (4) (3)	TP33.35x29.1184x0.3125	25.75	1175.17	0.022	3.86	3106.52	0.001
L5	129.67 - 113.5 (5) (4)	TP36.7292x31.7989x0.37 5	27.72	1607.39	0.017	3.86	4808.14	0.001
L6	113.5 - 96 (6) (5)	TP41.0432x36.7292x0.37 5	29.16	1723.94	0.017	3.85	5609.30	0.001
L7	96 - 80.67 (7)	TP44.1576x39.142x0.375	31.71	1854.81	0.017	3.87	6691.77	0.001
L8	80.67 - 63.17 (8)	TP48.5462x44.1576x0.37 5	32.74	1940.67	0.017	3.86	7486.23	0.001
L9	63.17 - 48.67 (9)	TP51.4526x46.4169x0.37 5	34.53	2053.69	0.017	3.89	8652.75	0.000
L10	48.67 - 45 (10)	TP52.3766x51.4526x0.37 5	34.82	2076.64	0.017	3.89	8908.67	0.000
L11	45 - 44.75 (11)	TP52.4396x52.3766x0.58 75	34.83	3591.79	0.010	3.89	15311.08	0.000
L12	44.75 - 31.17 (12)	TP55.8588x52.4396x0.58 75	35.48	3719.63	0.010	3.89	16425.83	0.000
L13	31.17 - 30.17 (13)	TP55.3689x53.5352x0.57 5	36.23	3714.81	0.010	3.89	16745.75	0.000
L14	30.17 - 10.17 (14)	TP60.4276x55.3689x0.56 25	37.77	3907.02	0.010	3.89	19260.00	0.000
L15	10.17 - 0 (15) (15)	TP63x60.4276x0.55	38.54	3912.85	0.010	3.89	20131.58	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		ϕP_n	ϕM_{nx}	ϕM_{ny}	ϕV_n	ϕT_n			
L1	190 - 170 (1)	0.002	0.061	0.000	0.005	0.001	0.063	1.000	4.8.2
L2	170 - 164.25 (2)	0.004	0.091	0.000	0.012	0.000	0.095	1.000	4.8.2
L3	164.25 - 147.17 (3) (2)	0.008	0.291	0.000	0.023	0.000	0.299	1.000	4.8.2
L4	147.17 - 129.67 (4) (3)	0.008	0.457	0.000	0.022	0.001	0.465	1.000	4.8.2
L5	129.67 - 113.5 (5) (4)	0.007	0.519	0.000	0.017	0.001	0.526	1.000	4.8.2
L6	113.5 - 96 (6) (5)	0.008	0.576	0.000	0.017	0.001	0.584	1.000	4.8.2
L7	96 - 80.67 (7)	0.009	0.667	0.000	0.017	0.001	0.676	1.000	4.8.2
L8	80.67 - 63.17 (8)	0.010	0.699	0.000	0.017	0.001	0.709	1.000	4.8.2
L9	63.17 - 48.67 (9)	0.011	0.761	0.000	0.017	0.000	0.772	1.000	4.8.2

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_u	M_{ux}	M_{uy}	V_u	T_u			
		ϕP_n	ϕM_{nx}	ϕM_{ny}	ϕV_n	ϕT_n			
L10	48.67 - 45 (9)	0.011	0.768	0.000	0.017	0.000	0.779	1.000	4.8.2
L11	45 - 44.75 (10)	0.006	0.448	0.000	0.010	0.000	0.455	1.000	4.8.2
L12	44.75 - 31.17 (11)	0.007	0.449	0.000	0.010	0.000	0.456	1.000	4.8.2
L13	31.17 - 30.17 (12)	0.008	0.472	0.000	0.010	0.000	0.480	1.000	4.8.2
L14	30.17 - 10.17 (13)	0.009	0.487	0.000	0.010	0.000	0.496	1.000	4.8.2
L15	10.17 - 0 (15) (14)	0.010	0.505	0.000	0.010	0.000	0.515	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	190 - 170	Pole	TP24.1353x19.5625x0.25	1	-2.70	1408.11	6.3	Pass	
L2	170 - 164.25	Pole	TP25.45x24.1353x0.25	2	-5.79	1446.26	9.5	Pass	
L3	164.25 - 147.17	Pole	TP29.1184x24.2824x0.3125	3	-16.05	2122.75	29.9	Pass	
L4	147.17 - 129.67	Pole	TP33.35x29.1184x0.3125	4	-18.50	2350.34	46.5	Pass	
L5	129.67 - 113.5	Pole	TP36.7292x31.7989x0.375	5	-23.48	3214.79	52.6	Pass	
L6	113.5 - 96	Pole	TP41.0432x36.7292x0.375	6	-27.06	3447.88	58.4	Pass	
L7	96 - 80.67	Pole	TP44.1576x39.142x0.375	7	-33.91	3709.62	67.6	Pass	
L8	80.67 - 63.17	Pole	TP48.5462x44.1576x0.375	8	-37.41	3881.34	70.9	Pass	
L9	63.17 - 48.67	Pole	TP51.4526x46.4169x0.375	9	-44.81	4107.39	77.2	Pass	
L10	48.67 - 45	Pole	TP52.3766x51.4526x0.375	10	-46.40	4153.28	77.9	Pass	
L11	45 - 44.75	Pole	TP52.4396x52.3766x0.5875	11	-46.56	7183.57	45.5	Pass	
L12	44.75 - 31.17	Pole	TP55.8588x52.4396x0.5875	12	-50.84	7439.26	45.6	Pass	
L13	31.17 - 30.17	Pole	TP55.3689x53.5352x0.575	13	-57.57	7429.62	48.0	Pass	
L14	30.17 - 10.17	Pole	TP60.4276x55.3689x0.5625	14	-69.67	7814.04	49.6	Pass	
L15	10.17 - 0	Pole	TP63x60.4276x0.55	15	-75.87	7825.71	51.5	Pass	
							Summary		
							Pole (L10)	77.9	Pass
							RATING =	77.9	Pass

***NOTE: Above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix B.**

APPENDIX B
ADDITIONAL CALCULATIONS

TNX Geometry Input

Increment (ft): 20

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	190 - 170	20		18	19.563	24.135	0.25	A572-65	1.000
2	170 - 167.17	5.75	2.92	18	24.135	25.450	0.25	A572-65	1.000
3	167.17 - 147.17	20		18	24.282	29.118	0.3125	A572-65	1.000
4	147.17 - 133.5	17.5	3.83	18	29.118	33.350	0.3125	A572-65	1.000
5	133.5 - 113.5	20		18	31.799	36.729	0.375	A572-65	1.000
6	113.5 - 100.67	17.5	4.67	18	36.729	41.043	0.375	A572-65	1.000
7	100.67 - 80.67	20		18	39.142	44.158	0.375	A572-65	1.000
8	80.67 - 68.67	17.5	5.5	18	44.158	48.546	0.375	A572-65	1.000
9	68.67 - 48.67	20		18	46.417	51.453	0.375	A572-65	1.000
10	48.67 - 45	3.67		18	51.453	52.377	0.375	A572-65	1.000
11	45 - 44.75	0.25		18	52.377	52.440	0.5875	A572-65	0.977
12	44.75 - 37.42	13.58	6.25	18	52.440	55.859	0.5875	A572-65	0.965
13	37.42 - 30.17	7.25		18	53.535	55.369	0.575	A572-65	0.980
14	30.17 - 10.17	20		18	55.369	60.428	0.5625	A572-65	0.973
15	10.17 - 0	10.17		18	60.428	63.000	0.55	A572-65	0.982

TNX Section Forces

Increment (ft):		TNX Output				
	20	Section Height (ft)		P_u (K)	M_{ux} (kip-ft)	V_u (K)
1		190	- 170	2.70	41.87	3.55
2		170	- 167.17	5.79	66.38	8.39
3		167.17	- 147.17	16.05	364.84	24.46
4		147.17	- 133.5	18.50	707.65	25.75
5		133.5	- 113.5	23.48	1243.13	27.72
6		113.5	- 100.67	27.06	1610.04	29.16
7		100.67	- 80.67	33.91	2224.64	31.71
8		80.67	- 68.67	37.40	2611.41	32.74
9		68.67	- 48.67	44.81	3285.20	34.53
10		48.67	- 45	46.40	3412.49	34.82
11		45	- 44.75	46.56	3421.20	34.83
12		44.75	- 37.42	50.84	3679.01	35.48
13		37.42	- 30.17	57.57	3939.14	36.23
14		30.17	- 10.17	69.67	4679.34	37.77
15		10.17	- 0	75.87	5067.52	38.54

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
190 - 170	Pole	TP24.135x19.563x0.25	Pole	6.3%	Pass
170 - 167.17	Pole	TP25.45x24.135x0.25	Pole	9.5%	Pass
167.17 - 147.17	Pole	TP29.118x24.282x0.3125	Pole	29.9%	Pass
147.17 - 133.5	Pole	TP33.35x29.118x0.3125	Pole	46.5%	Pass
133.5 - 113.5	Pole	TP36.729x31.799x0.375	Pole	52.6%	Pass
113.5 - 100.67	Pole	TP41.043x36.729x0.375	Pole	58.4%	Pass
100.67 - 80.67	Pole	TP44.158x39.142x0.375	Pole	67.6%	Pass
80.67 - 68.67	Pole	TP48.546x44.158x0.375	Pole	70.9%	Pass
68.67 - 48.67	Pole	TP51.453x46.417x0.375	Pole	77.2%	Pass
48.67 - 45	Pole	TP52.377x51.453x0.375	Pole	78.0%	Pass
45 - 44.75	Pole + Reinf.	TP52.44x52.377x0.5875	Reinf. 2 Tension Rupture	65.6%	Pass
44.75 - 37.42	Pole + Reinf.	TP55.859x52.44x0.5875	Reinf. 2 Tension Rupture	66.7%	Pass
37.42 - 30.17	Pole + Reinf.	TP55.369x53.535x0.575	Reinf. 1 Tension Rupture	69.1%	Pass
30.17 - 10.17	Pole + Reinf.	TP60.428x55.369x0.5625	Reinf. 1 Tension Rupture	71.0%	Pass
10.17 - 0	Pole + Reinf.	TP63x60.428x0.55	Reinf. 1 Tension Rupture	71.7%	Pass
				Summary	
			Pole	78.0%	Pass
			Reinforcement	71.7%	Pass
			Overall	78.0%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in ⁴)			Area (in ²)			% Capacity		
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2
190 - 170	1366	n/a	1366	18.95	n/a	18.95	6.3%		
170 - 167.17	1480	n/a	1480	19.47	n/a	19.47	9.5%		
167.17 - 147.17	2994	n/a	2994	28.57	n/a	28.57	29.9%		
147.17 - 133.5	4148	n/a	4148	31.85	n/a	31.85	46.5%		
133.5 - 113.5	7223	n/a	7223	43.27	n/a	43.27	52.6%		
113.5 - 100.67	9276	n/a	9276	47.03	n/a	47.03	58.4%		
100.67 - 80.67	12616	n/a	12616	52.11	n/a	52.11	67.6%		
80.67 - 68.67	15400	n/a	15400	55.69	n/a	55.69	70.9%		
68.67 - 48.67	20031	n/a	20031	60.79	n/a	60.79	77.2%		
48.67 - 45	21138	n/a	21138	61.89	n/a	61.89	78.0%		
45 - 44.75	21215	11770	32985	61.97	32.50	94.47	50.1%		65.6%
44.75 - 37.42	23552	12589	36141	64.16	32.50	96.66	51.6%		66.7%
37.42 - 30.17	25001	13083	38084	65.45	32.50	97.95	54.0%	69.1%	
30.17 - 10.17	32555	15514	48068	71.48	32.50	103.98	57.8%	71.0%	
10.17 - 0	36920	16830	53749	74.54	32.50	107.04	59.6%	71.7%	

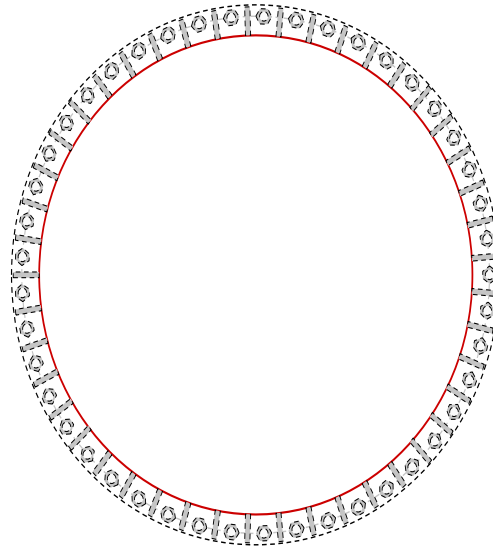
Note: Section capacity checked in 5 degree increments.

Monopole Base Plate Connection

Site Info	
Work Order #	10473.CTHA149A - R3
Site Name	Farmington PD MP

Analysis Considerations	
TIA-222 Revision	G
Grout Considered:	Yes
I_{ar} (in)	0
Eta Factor, η	0.55

Applied Loads	
Moment (kip-ft)	5067.52
Axial Force (kips)	75.87
Shear Force (kips)	38.54



Connection Properties		Analysis Results	
Anchor Rod Data		Anchor Rod Summary <i>(units of kips, kip-in)</i>	
(45) 1-1/4" ϕ bolts (F1554-105 N; Fy=105 ksi, Fu=125 ksi) on 68" BC		Pu_t = 77.79	$\phi Pn_t = 96.9$ Stress Rating
Base Plate Data		Vu = 0.86	$\phi Vn = n/a$ 81.9%
71" OD x 1.25" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)		Mu = n/a	$\phi Mn = n/a$ Pass
Stiffener Data		Base Plate Summary	
(45) 12"H x 3.75"W x 0.75"T, Notch: 0.5"		Max Stress (ksi):	38.68 (Roark's Flexural)
plate: Fy= 50 ksi ; weld: Fy= 70 ksi		Allowable Stress (ksi):	45
horiz. weld: 0.375" fillet		Stress Rating:	86.0% Pass
vert. weld: 0.375" fillet		Stiffener Summary	
Pole Data		Horizontal Weld:	83.7% Pass
63" x 0.55" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)		Vertical Weld:	25.6% Pass
		Plate Flexure+Shear:	9.3% Pass
		Plate Tension+Shear:	43.2% Pass
		Plate Compression:	42.4% Pass
		Pole Summary	
		Punching Shear:	5.0% Pass

Pier and Pad Foundation

WO # : 10473.CTHA149A
 Site Name: Farmington PD MP
 Revision: 3

TIA-222 Revision: G
 Tower Type: Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp} :	76	kips
Base Shear, V_{u_comp} :	39	kips
Moment, M_u :	5068	ft-kips
Tower Height, H :	190	ft
BP Dist. Above Fdn, bp_{dist} :	3	in

Foundation Analysis Checks				
	Capacity	Demand	Rating	Check
<i>Lateral (Sliding) (kips)</i>	461.85	39.00	8.4%	Pass
<i>Bearing Pressure (ksf)</i>	6.00	2.23	37.2%	Pass
<i>Overturing (kip*ft)</i>	10061.04	5389.75	53.6%	Pass
<i>Pier Flexure (Comp.) (kip*ft)</i>	7045.61	5282.50	75.0%	Pass
<i>Pier Compression (kip)</i>	35802.00	131.69	0.4%	Pass
<i>Pad Flexure (kip*ft)</i>	4057.58	1881.50	46.4%	Pass
<i>Pad Shear - 1-way (kips)</i>	835.52	262.96	31.5%	Pass
<i>Pad Shear - 2-way (Comp) (ksi)</i>	0.190	0.065	34.3%	Pass

Pier Properties		
Pier Shape:	Square	
Pier Diameter, $dpier$:	7.5	ft
Ext. Above Grade, E :	0.5	ft
Pier Rebar Size, Sc :	9	
Pier Rebar Quantity, mc :	40	
Pier Tie/Spiral Size, St :	4	
Pier Tie/Spiral Quantity, mt :	10	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

Soil Rating:	53.6%
Structural Rating:	75.0%

Pad Properties		
Depth, D :	7.5	ft
Pad Width, W_1 :	29	ft
Pad Thickness, T :	2.5	ft
Pad Rebar Size (Bottom dir. 2), Sp_2 :	9	
Pad Rebar Quantity (Bottom dir. 2), mp_2 :	37	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, F_y :	60	ksi
Concrete Compressive Strength, F'_c :	4	ksi
Dry Concrete Density, δ_c :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	125	pcf
Ultimate Gross Bearing, Q_{ult} :	8.000	ksf
Cohesion, C_u :		ksf
Friction Angle, ϕ :	32	degrees
SPT Blow Count, N_{blows} :		
Base Friction, μ :	0.5	
Neglected Depth, N :	3.50	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	N/A	ft

<-- Toggle between Gross and Net

CONNECTICUT DESIGN CRITERIA - STATE

Revison:

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
Farmington	35	0.183	0.064	115	125	135	89	97	105

Ice

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: Fri Dec 04 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

Mount Analysis Report

Tower Owner: Town of Farmington
Carrier: T-Mobile Northeast LLC

Site ID: CTHA149A
Site Name: Farmington PD MP
Site Data: 319 New Britain Ave, Farmington, Hartford County, CT 06085
Latitude 41° 44' 58.96", Longitude -72° 52' 21.04"
12.5 ft Platform Mount

Tectonic Project Number: 10473.CTHA149A

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:

Sector Frame: **Sufficient Capacity – 72%**

***The mount has sufficient capacity once the changes, described in the Recommendations section of this report, are completed.**


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 III 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
Equal Opportunity Employer

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 - Proposed Equipment Loading Information

Table 2 - Existing Equipment Loading Information

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

4) ANALYSIS RESULTS

Table 4 - Mount Component Stresses vs. Capacity

4.1) Results / Conclusions

5) APPENDIX A

Software Input Calculations

6) APPENDIX B

Wire Frame and Rendered Models

7) APPENDIX C

Software Analysis Output

1) INTRODUCTION

The existing mount is a 12.5' platform mount which was previously analyzed by EBI Consulting in August of 2014.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-G
Structure Class:	III
Wind Speed:	97 mph
Exposure Category:	B
Topographic Factor:	1.0
Ice Thickness:	1.00 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
160.0	T-Mobile	3	ericsson	AIR6449 B41	12.5' Platform w/ New Top Rail Kit	1
		3	rfs	APXVAALL24_43-U-NA20		
		3	ericsson	AIR 32 B66a B2a		
		3	commscope	SDX1926Q-43		
		3	ericsson	Radio 4449 B71/B85		
		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
160.0	T-Mobile	3	andrew	LNx-6515DS-A1M	-	2
		3	ericsson	AIR21 B2P B4A		
		3	ericsson	AIR21 B2A B4P		
		3	ericsson	RRUS11 B12		
		3	ericsson	TWIN TMA	12.5' Platform	1

Notes:

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

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Dated
MOUNT ANALYSIS REPORT	EBI Consulting	08/06/14
RFDS	T-Mobile	10/14/20
FIELD NOTES	Tectonic	11/11/20

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	160.0	26	Pass
	Standoff Horizontal		48	Pass
	Mount Pipe		72	Pass
	Standoff Brace		28	Pass
	(P) Top Rail		36	Pass
	Corner Connection		12	Pass
	Connection to Collar Mount		35	Pass

Structure Rating (max from all components) =	72%
---	------------

Note:

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

4.1) Results / Conclusions

The existing platform mount and its connection to the collar mount will have sufficient capacity to carry the proposed T-Mobile load configurations once the following modifications have been satisfied as detailed in the report below.

- 1) A top rail kit shall be installed and attached to the existing antenna pipes, part number HRK12 HD as manufactured by SitePro1.

This structural analysis only includes evaluation of the antenna platform mount and not the monopole tower. The monopole tower is to be analyzed under a separate structural analysis by others.

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



Job No. 10473.CTHA149A
 Sheet No. 1 of 3
 Calculated By JJ Date : 12/8/2020
 Checked By IM Date : 12/8/2020

WIND AND ICE LOADS PER TIA-222-G

W.O.	10473.CTHA149A
Project Name	Farmington PD MP
Location	319 New Britain Ave, Farmington, CT 06085
County	Hartford

Tower Type	MP	Monopole
Structure Class	3	High hazard or Essential facility
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

Importance Factor	
Wind only	1.15
Wind with ice	1.00
Ice thickness	1.25
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)	160
	K_h	N/A
	K_{zt}	1.00
	K_z	1.13
	K_{iz}	1.17
Wind Pressure, qz (psf)	No Ice	29.74
	With Ice	6.87
	Service	11.38
(tiz)	Ice Thk	2.93
Appurtenances (qzGh)	No Ice	29.74
	With Ice	6.87
	Service	11.38

*Ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second wind gust speed of 97 mph per Section 1609.3 and Appendix N, as required for use in the TIA-222-G Standard.

Appurtenance Information

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

$(EPA)_T = \sum(C_s A_A)_T$

$(EPA)_N = \sum(C_s A_A)_N$

Reduction Factor = 1

Wind Only Load Combinations

Antenna Configuration	(E) or (P)	Qty	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna $(Ca)_T$	Antenna $(Ca)_N$	Side Face $(A_s)_T$ (ft ²)	Wind ward Side Face $(CaA)_T$ (ft ²)	Face Normal $(A_n)_N$ (ft ²)	Windward face Normal $(CaA)_N$ (ft ²)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)	Antenna Weight (lb)	Total Weight (lb)
AIR 6449 B41	P	3	160	2.76	20.50	8.30	Flat	1.27	1.20	1.91	7.25	4.71	16.96	168	72	103.0	309.0
RRUS 4415 B25	P	3	160	1.24	13.20	5.40	Flat	1.21	1.20	0.56	2.03	1.37	4.92	49	20	46.3	138.9
SDX1926Q-43	P	3	160	0.35	6.93	2.91	Flat	1.20	1.20	0.08	0.30	0.20	0.72	7	3	6.2	18.5
TMA	E	3	160	1.32	14.00	3.10	Flat	1.32	1.20	0.34	1.34	1.54	5.53	55	13	33.0	99.0
RADIO 4449 B71/B85	P	3	160	1.25	13.19	10.51	Flat	1.20	1.20	1.09	3.93	1.37	4.93	49	39	75.0	224.9
AIR-32 B2A/B66A	P	3	160	4.72	12.90	8.70	Flat	1.38	1.28	3.42	14.14	5.07	19.53	194	140	132.2	396.6
APXVAALL24_43-U-NA20	P	3	160	7.99	24.00	8.50	Flat	1.54	1.27	5.66	26.20	15.98	60.73	602	260	149.9	449.7
										$\sum(CaA)_T$	55.19	$\sum(CaA)_N$	113.32				1637

Wind with Ice Load Combinations

Ice Thk= 2.93 in

Antenna Configuration	(E), (R) or (P)	Qty	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna $(Ca)_T$	Antenna $(Ca)_N$	Side Face $(A_s)_T$ (ft ²)	Windward Side Face $(CaA)_T$ (ft ²)	Face Normal $(A_n)_N$ (ft ²)	Windward Face Normal $(CaA)_N$ (ft ²)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)	Ice Area for Weight (ft ²)	Ice Weight Alone (lbs)
AIR 6449 B41	P	3	160	3.25	26.36	14.16	Cylindrical	1.21	1.20	3.83	13.91	7.13	25.67	59	32	13.2	180.9
RRUS 4415 B25	P	3	160	1.73	19.06	11.26	Cylindrical	1.20	1.20	1.62	5.84	2.75	9.89	23	13	3.8	52.6
SDX1926Q-43	P	3	160	0.84	12.78	8.77	Cylindrical	1.20	1.20	0.61	2.20	0.89	3.20	7	5	0.6	7.8
TMA	E	3	160	1.80	19.86	8.96	Cylindrical	1.20	1.20	1.35	4.85	2.99	10.75	25	11	3.8	51.3
RADIO 4449 B71/B85	P	3	160	1.73	19.05	16.37	Cylindrical	1.20	1.20	2.37	8.52	2.75	9.91	23	20	4.9	67.3
AIR-32 B2A/B66A	P	3	160	5.20	18.76	14.56	Cylindrical	1.28	1.24	6.31	24.23	8.13	30.18	69	56	17.0	232.0
APXVAALL24_43-U-NA20	P	3	160	8.48	29.86	14.36	Cylindrical	1.40	1.24	10.14	42.69	21.10	78.50	180	98	43.3	591.4
										$\sum(CaA)_T$	102.24	$\sum(CaA)_N$	168.10				1183



Job No. 10473.CTHA149A
 Sheet No. 3 of 3
 Calculated By JJ Date : 12/08/20
 Checked By IM Date : 12/08/20

Existing Platform Mount

Mount Center Line= 160 ft

Member sizes are based on the previous mount analysis report by EBI Consulting, dated 8/06/14

Reduction Factor = 1

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 Wind Force (lbs/ft)
(P) HRK12 Top Rail_2.0" STD Pipe	3	12.50	2.38	2.38	Cylindrical	1.2	8.93	7.1	23.35	8.5	30.88	5.7	2.7
Bottom Face Horizontal_3.0 STD Pipe	3	12.50	3.50	3.50	Cylindrical	1.2	13.13	10.4	34.34	12.5	35.08	6.4	4.0
Standoff Horizontal_HSS4x4x1/4	3	5.28	4.00	4.00	Flat	2	10.56	19.8	21.12	18.2	26.02	11.3	7.6
Standoff Brace_L2x2x3/16	3	4.28	2.00	2.00	Flat	2	4.28	9.9	8.56	9.1	16.81	9.0	3.8
Mount Pipe_2.0" STD	6	6.00	2.38	2.38	Cylindrical	1.2	8.57	7.1	22.42	8.5	29.65	5.7	2.7
Bottom Connection_PL6x7/16	3	1.03	6.00	0.44	Flat	2	3.09	29.7	3.32	14.7	6.11	13.6	11.4
(P) Top Connection_L2.5x2.5x1/4	3	1.63	2.50	2.50	Flat	2	2.04	12.4	4.08	11.4	6.81	9.6	4.7

APPENDIX B
WIRE FRAME AND RENDERED MODELS



(E) Twin TMA

(P) AIR 6449 B41

(P) RRU 4424 B25

(P) SDX1926Q-43

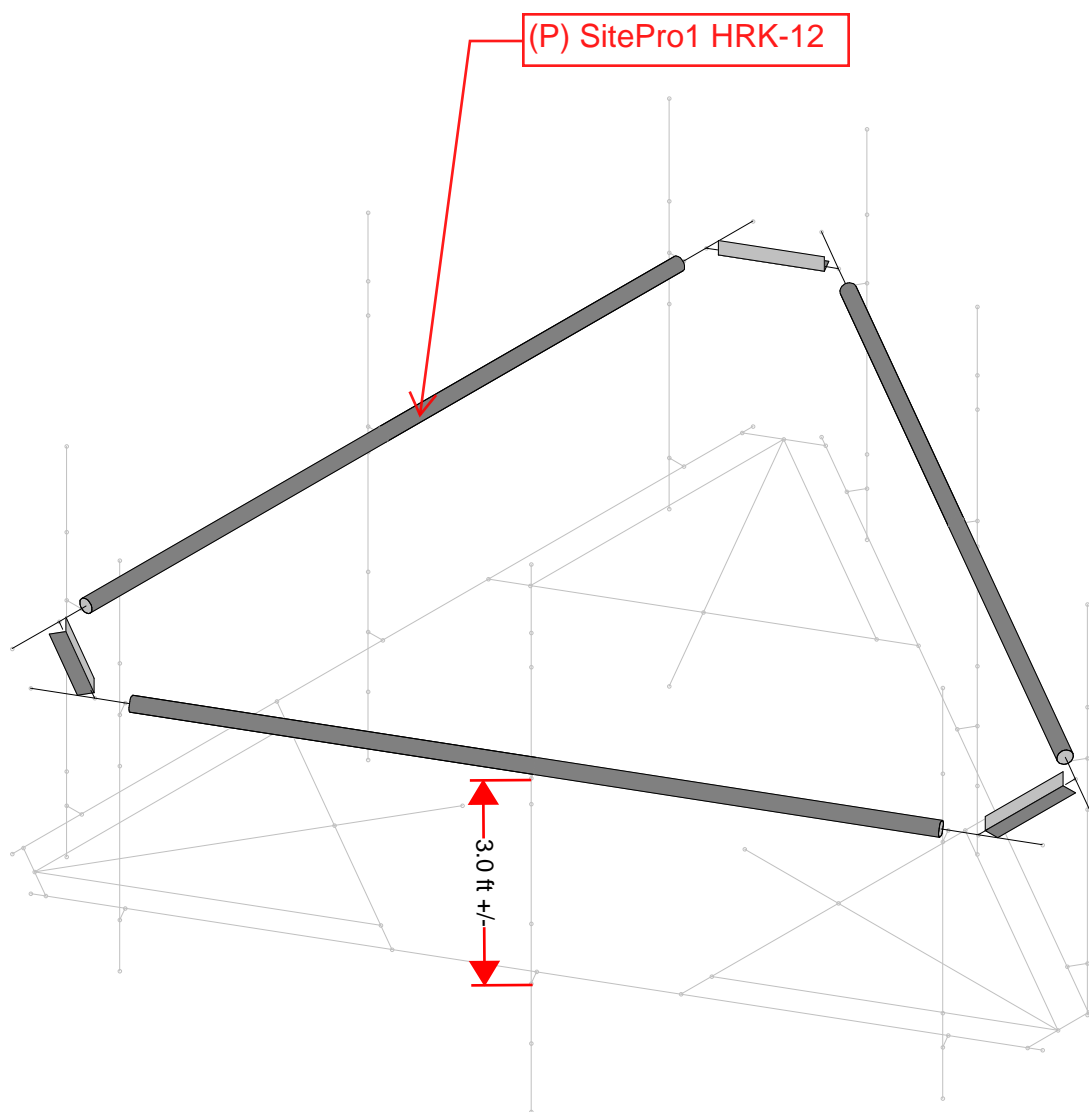
(P) APXVAALL24_43-U-NA20

(P) RRU 4449 B71+B12

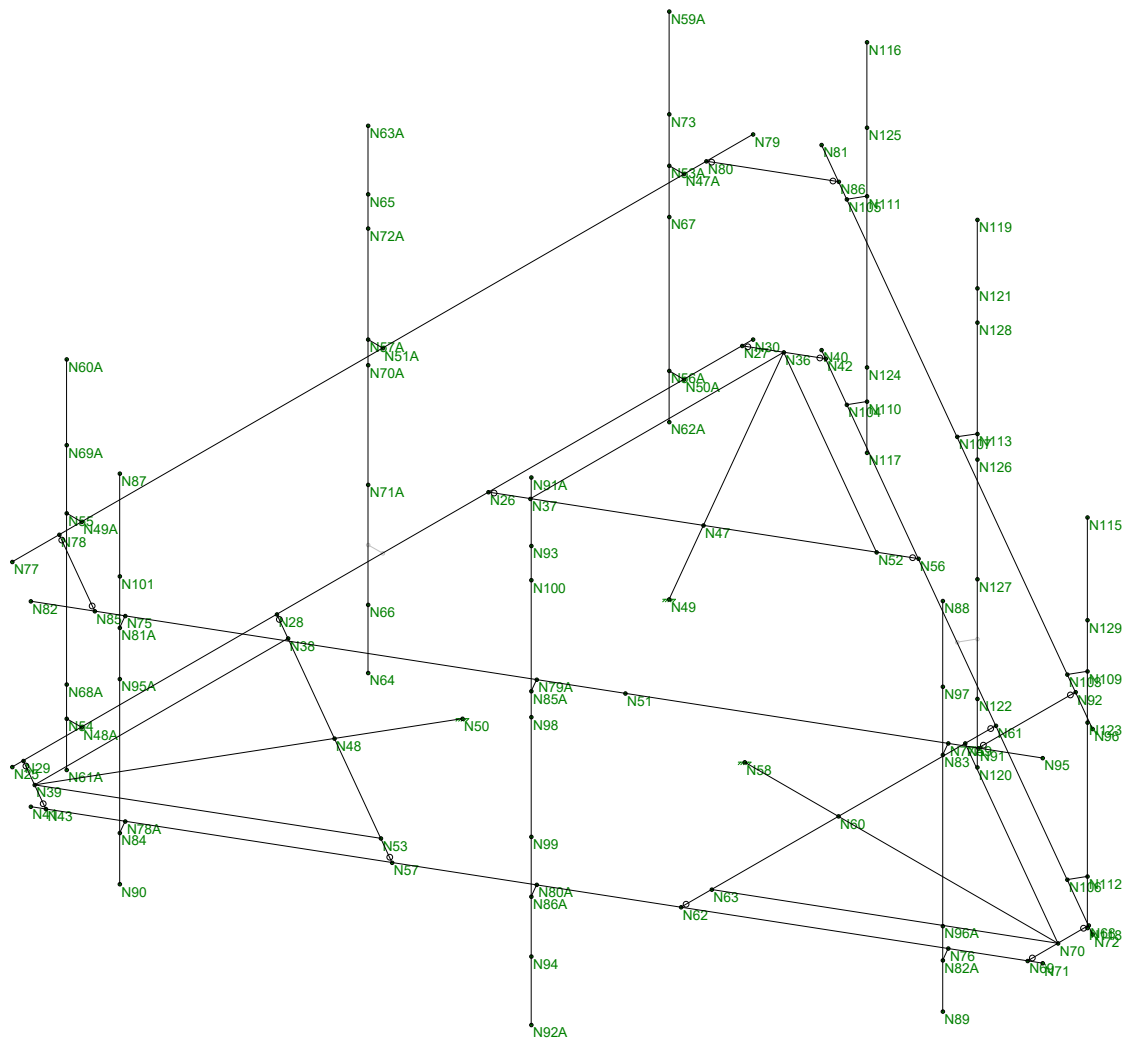
(P) AIR32-B66A-B2A

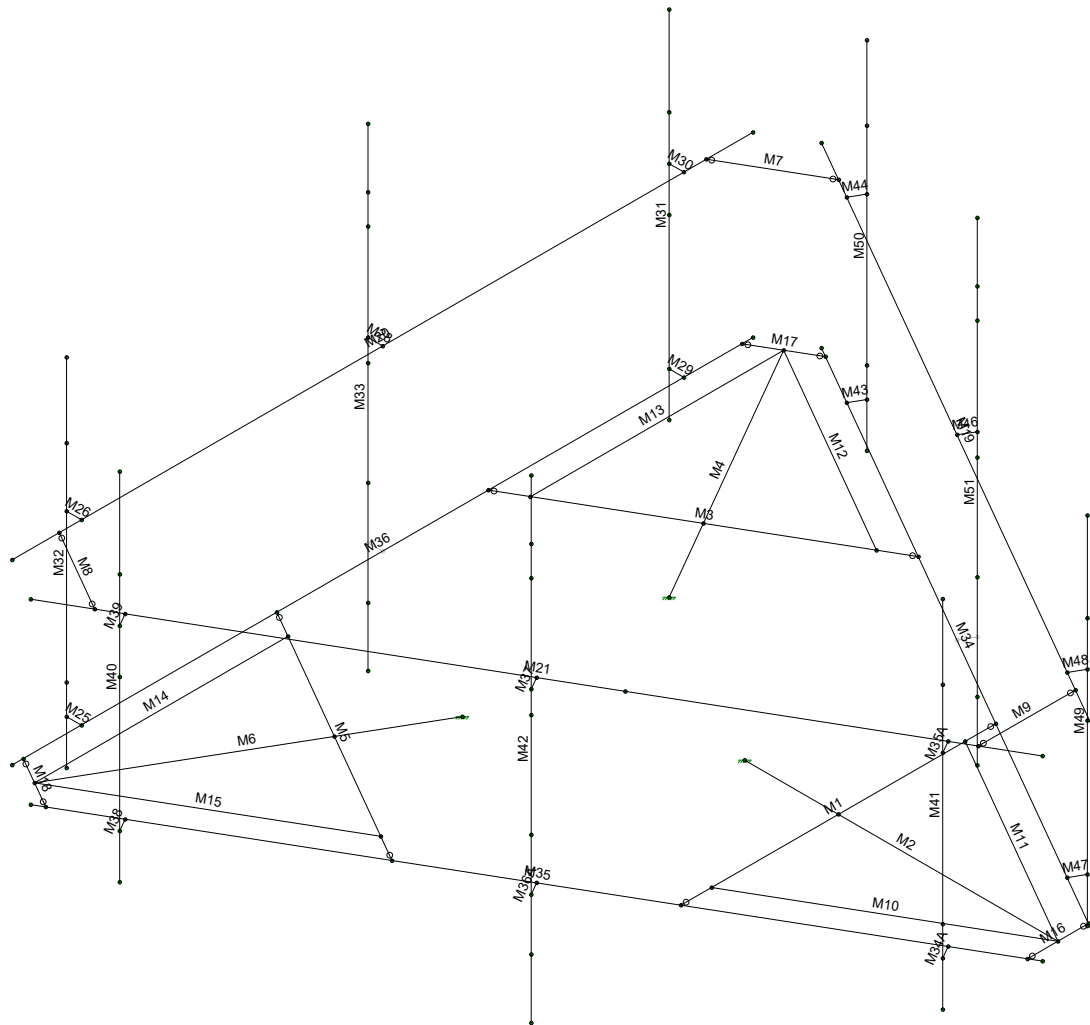
(P) PROPOSED
(E) EXISTING

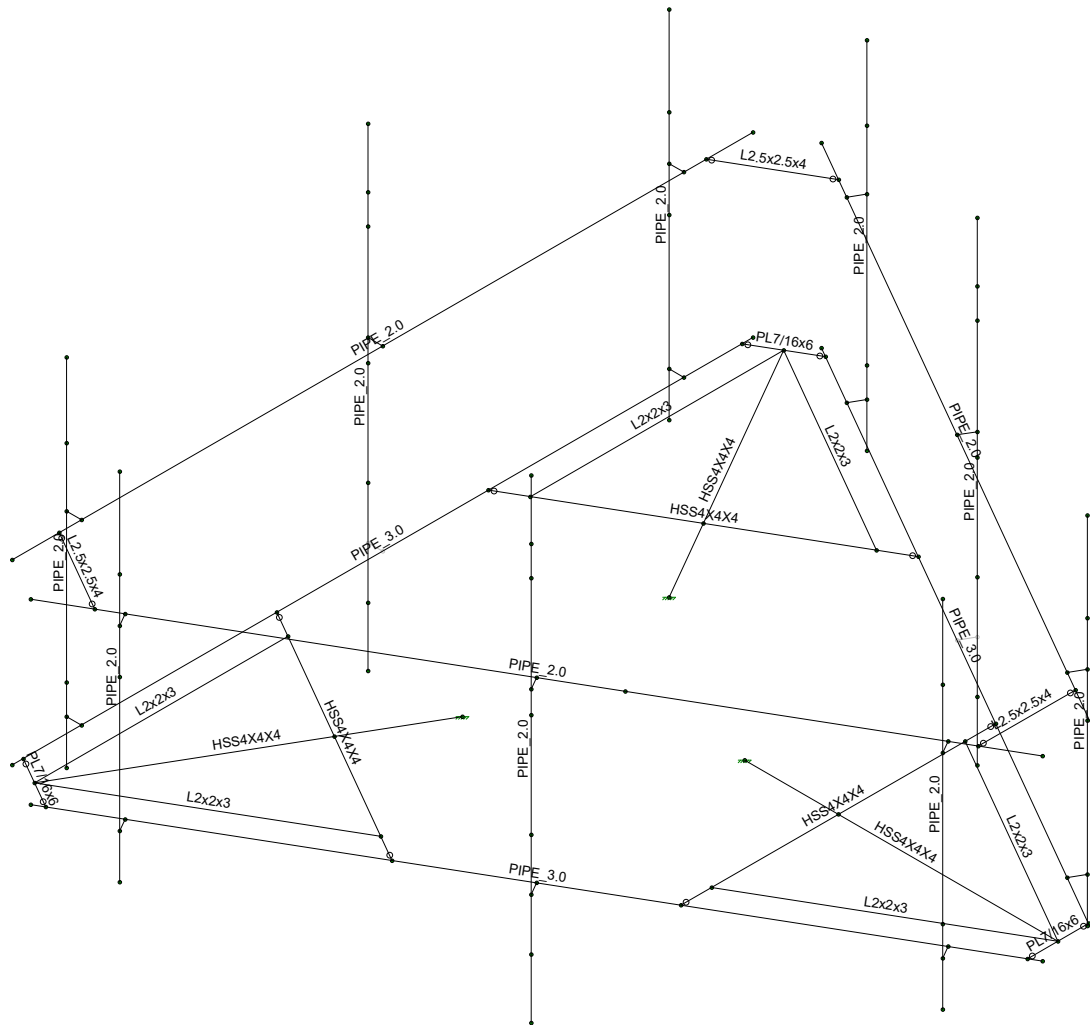
NOTES:
1) EXISTING AND PROPOSED ANTENNAS AND MOUNTING PIPES HAVE BEEN VERTICALLY CENTERED ALONG THE EXISTING MOUNT (NO OFFSET).
2) LISTED APPURTENANCES ABOVE ARE TYPICAL FOR ALL SECTORS.
3) RADIOS ARE LOCATED BEHIND THE ANTENNAS.

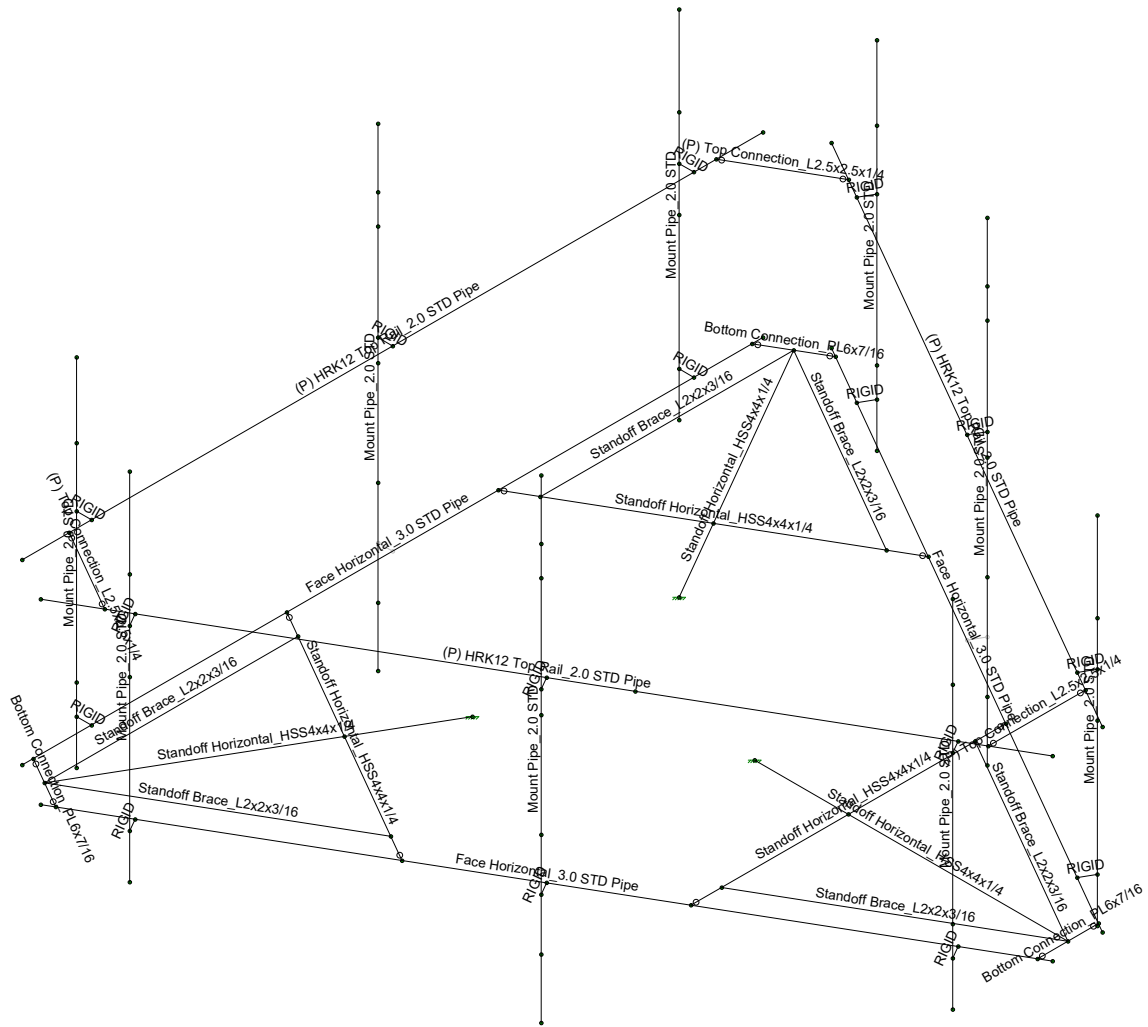


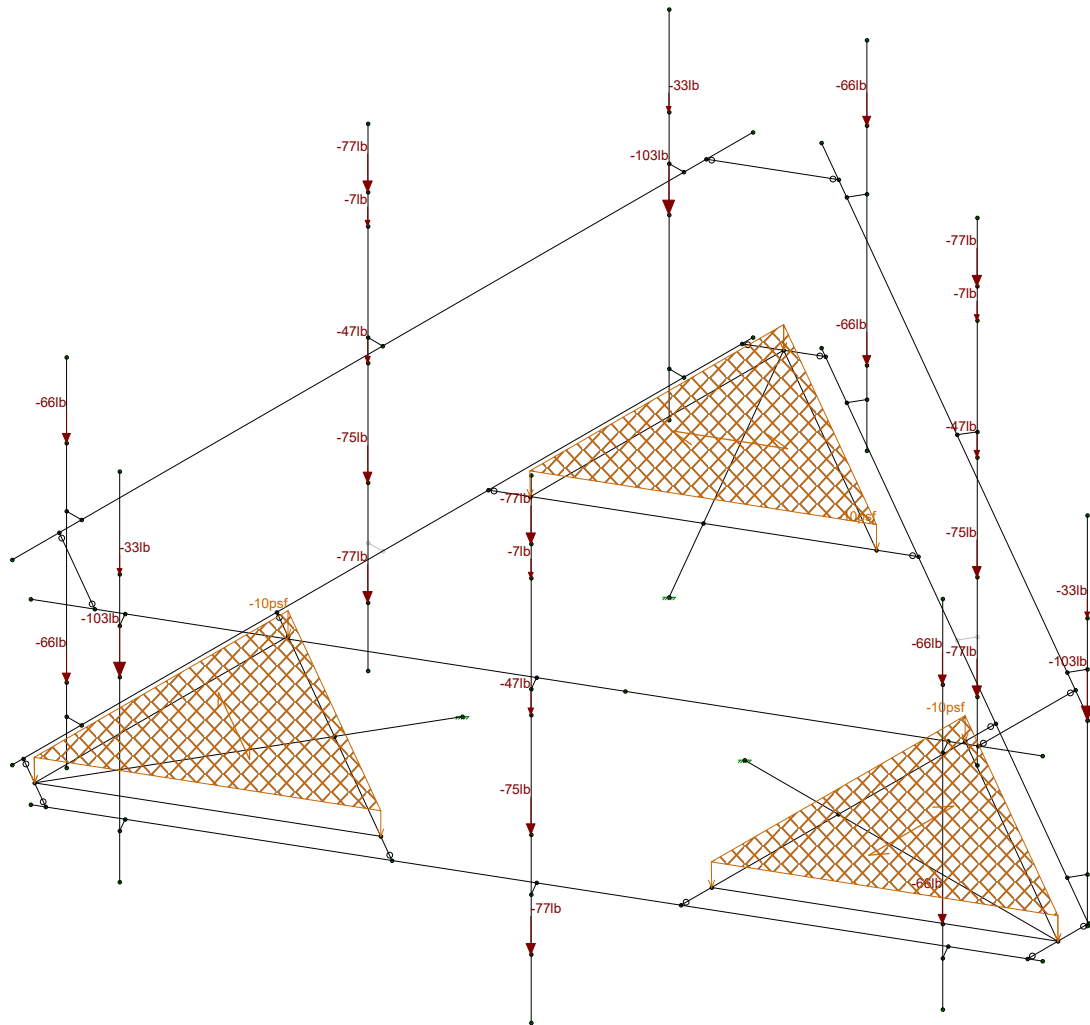
*Handrail kit added to satisfy two point connections for APXVAALL24_43-U-NA20 antenna per T-Mobile Policy.

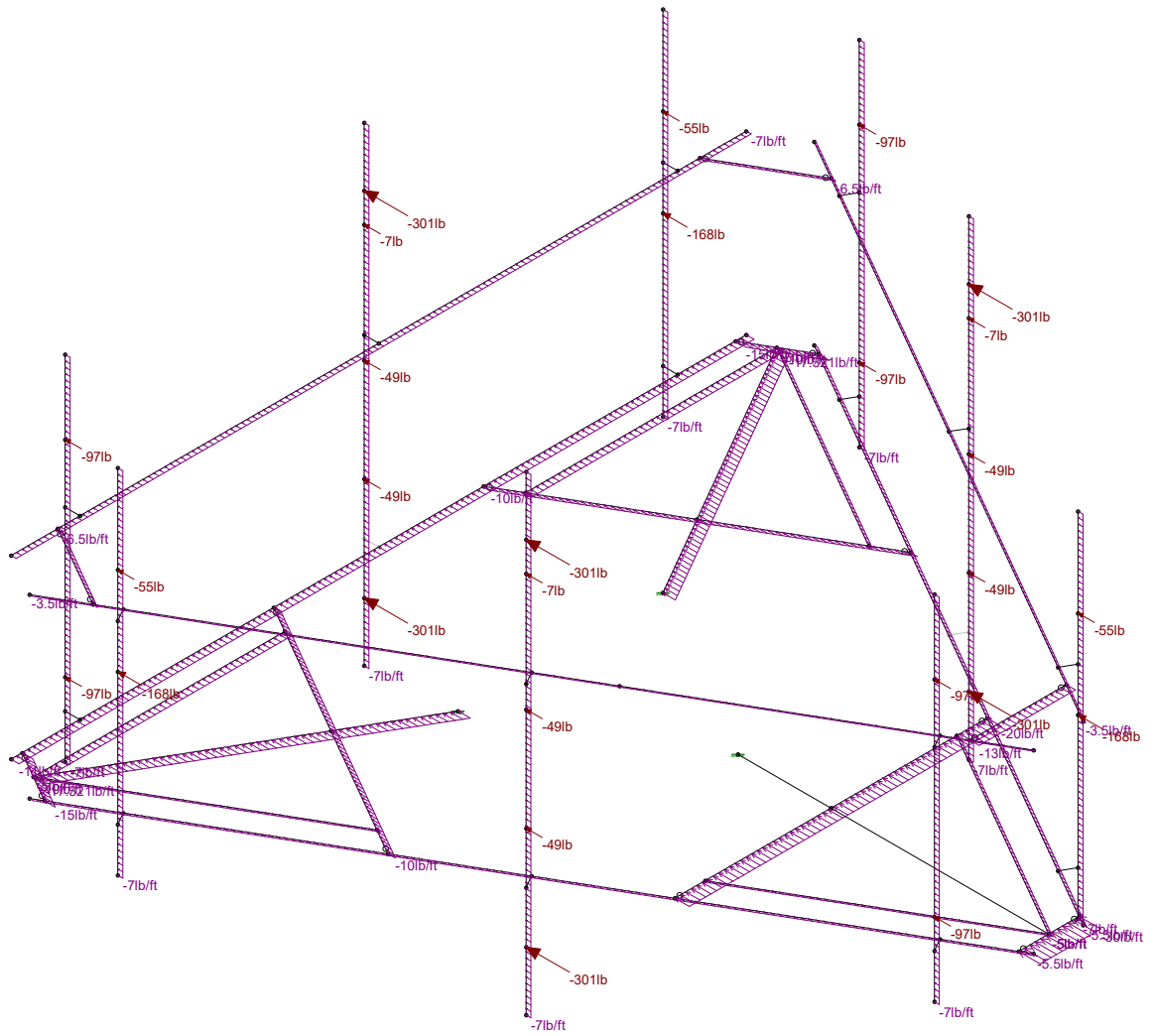


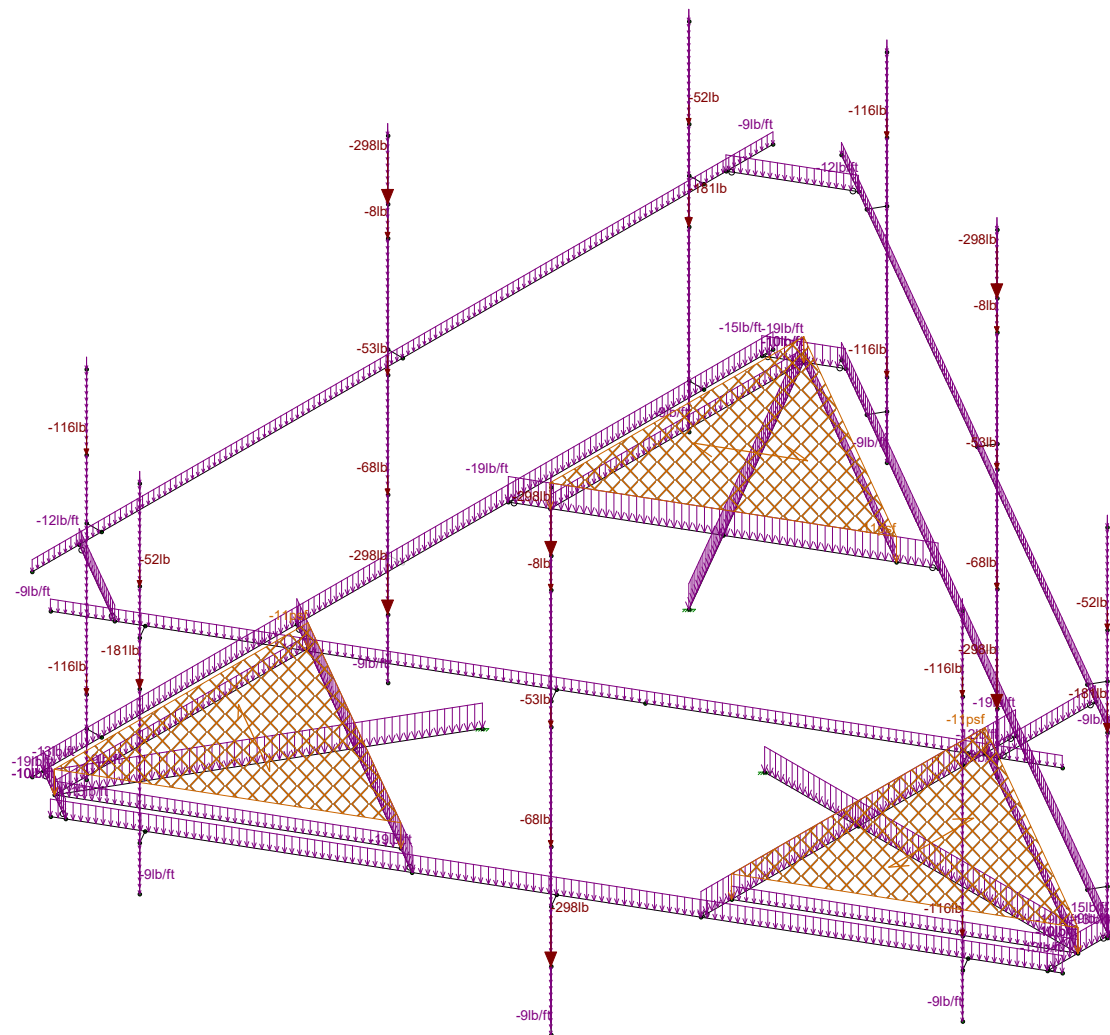








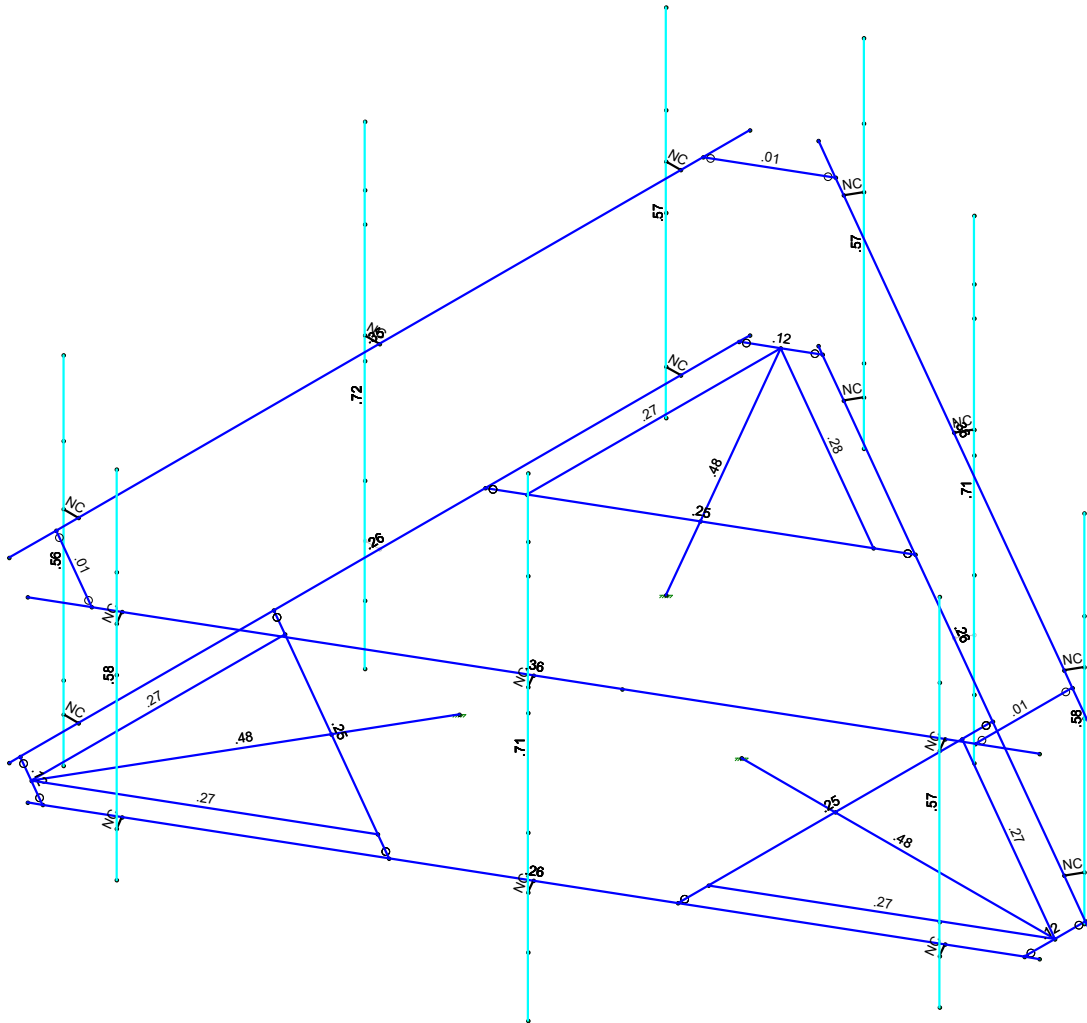




APPENDIX C
SOFTWARE ANALYSIS OUTPUT



Code Check (Enr)	
Black	No Calc
Red	> 1.0
Yellow	40-1.0
Green	75-90
Cyan	50-75
Blue	0-.50





Hot Rolled Steel Properties

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

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(...
1	DL	DL		-1.05		27		3	
2	WLX	WLX				27		33	
3	WLZ	WLZ				27		33	
4	DLi	OL1				27		33	3
5	WLXi	OL2				27		33	
6	WLZi	OL3				27		33	
7	BLC 1 Transient Are...	None						12	
8	BLC 4 Transient Are...	None						12	

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...		
1	1.4D	Yes	Y		1	1.4																		
2	1.2D+(WLX+WLZ) - 0 Deg	Yes	Y		1	1.2	2	1																
3	1.2D+(WLX+WLZ) - 30 Deg	Yes	Y		1	1.2	2	.866	3	.5														
4	1.2D+(WLX+WLZ) - 60 Deg	Yes	Y		1	1.2	2	.5	3	.866														
5	1.2D+(WLX+WLZ) - 90 Deg	Yes	Y		1	1.2	2		3	1														
6	1.2D+(WLX+WLZ) - 120 Deg	Yes	Y		1	1.2	2	-.5	3	.866														
7	1.2D+(WLX+WLZ) - 150 Deg	Yes	Y		1	1.2	2	-.8...	3	.5														
8	1.2D+(WLX+WLZ) - 180 Deg	Yes	Y		1	1.2	2	-1	3															
9	1.2D+(WLX+WLZ) - 210 Deg	Yes	Y		1	1.2	2	-.8...	3	-.5														
10	1.2D+(WLX+WLZ) - 240 Deg	Yes	Y		1	1.2	2	-.5	3	-.8...														
11	1.2D+(WLX+WLZ) - 270 Deg	Yes	Y		1	1.2	2		3	-1														
12	1.2D+(WLX+WLZ) - 300 Deg	Yes	Y		1	1.2	2	.5	3	-.8...														
13	1.2D+(WLX+WLZ) - 330 Deg	Yes	Y		1	1.2	2	.866	3	-.5														
14	**Wind Load with Ice**																							
15	1.2D+1.0Di+1.0(WLXi+WLZi) - 0...	Yes	Y		1	1.2	4	1	5	1	6													
16	1.2D+1.0Di+1.0(WLXi+WLZi) - 3...	Yes	Y		1	1.2	4	1	5	.866	6	.5												
17	1.2D+1.0Di+1.0(WLXi+WLZi) - 6...	Yes	Y		1	1.2	4	1	5	.5	6	.866												
18	1.2D+1.0Di+1.0(WLXi+WLZi) - 9...	Yes	Y		1	1.2	4	1	5		6	1												
19	1.2D+1.0Di+1.0(WLXi+WLZi) - 1...	Yes	Y		1	1.2	4	1	5	-.5	6	.866												
20	1.2D+1.0Di+1.0(WLXi+WLZi) - 1...	Yes	Y		1	1.2	4	1	5	-.8...	6	.5												
21	1.2D+1.0Di+1.0(WLXi+WLZi) - 1...	Yes	Y		1	1.2	4	1	5	-1	6													
22	1.2D+1.0Di+1.0(WLXi+WLZi) - 2...	Yes	Y		1	1.2	4	1	5	-.8...	6	-.5												
23	1.2D+1.0Di+1.0(WLXi+WLZi) - 2...	Yes	Y		1	1.2	4	1	5	-.5	6	-.8...												
24	1.2D+1.0Di+1.0(WLXi+WLZi) - 2...	Yes	Y		1	1.2	4	1	5		6	-1												
25	1.2D+1.0Di+1.0(WLXi+WLZi) - 3...	Yes	Y		1	1.2	4	1	5	.5	6	-.8...												
26	1.2D+1.0Di+1.0(WLXi+WLZi) - 3...	Yes	Y		1	1.2	4	1	5	.866	6	-.5												



Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design... A [in2]	Iyy [in4]	Izz [in4]	J [in4]	
1	Mount Pipe_2.0 STD	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
2	(P) HRK12 Top Rail_...	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
3	Face Horizontal_3.0 ...	PIPE 3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
4	Standoff Horizontal_...	HSS4X4X4	Beam	Tube	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8
5	Standoff Brace_L2x2...	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
6	Bottom Connection_...	PL7/16x6	Beam	RECT	A36 Gr.36	Typical	2.625	.042	7.875	.16
7	(P) Top Connection_...	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026
8	Mount Pipe_2.5 STD	PIPE_2.5	Beam	Single Angle	A53 Gr.B	Typical	1.61	1.45	1.45	2.89

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	N49	max	1437.52	3	3763.255	17	1755.137	5	6586.261	17	1099.23	7	613.621	10
2		min	-1463.448	9	128.803	10	-1795.504	11	-1044.193	10	-1100.705	13	-3809.08	17
3	N58	max	2054.989	2	3770.963	21	1253.47	5	384.199	5	1264.448	11	7624.198	21
4		min	-2008.663	8	119.874	2	-1252.862	11	-381.544	11	-1264.146	5	-1229.768	2
5	N50	max	1423.278	13	3763.314	25	1807.015	5	1056.715	6	1098.86	3	591.918	6
6		min	-1450.223	7	128.823	6	-1767.261	11	-6594.741	25	-1100.753	9	-3794.607	25
7	Totals:	max	4912.98	2	9824.225	21	4815.622	5						
8		min	-4912.982	8	3661.532	2	-4815.627	11						

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

Member	Shape	Code Check	Loc[ft]	LC	Shear Check Loc	pbi*P	pbi*P	pbi*M	pbi*M	Ch	Eqn			
1	M33	PIPE 2.0	.716	1.917	8	.143	1.9...	11	14916...	32130	1871....	1871....	1.565	H1-1b
2	M42	PIPE 2.0	.708	1.917	4	.145	1.9...	7	14916...	32130	1871....	1871....	1.542	H1-1b
3	M51	PIPE 2.0	.708	1.917	12	.145	1.9...	3	14916...	32130	1871....	1871....	1.562	H1-1b
4	M40	PIPE 2.0	.578	.75	8	.170	.75	12	20866...	32130	1871....	1871....	2.548	H1-1b
5	M49	PIPE 2.0	.576	.75	4	.168	.75	8	20866...	32130	1871....	1871....	1.966	H1-1b
6	M31	PIPE 2.0	.571	.75	12	.173	.75	4	20866...	32130	1871....	1871....	2.345	H1-1b
7	M50	PIPE 2.0	.570	.75	8	.175	.75	4	20866...	32130	1871....	1871....	2.711	H1-1b
8	M41	PIPE 2.0	.568	.75	12	.173	.75	8	20866...	32130	1871....	1871....	2.093	H1-1b
9	M32	PIPE 2.0	.562	.75	4	.178	.75	12	20866...	32130	1871....	1871....	2.162	H1-1b
10	M4	HSS4X4X4	.481	5.286	16	.103	5.2...y	16	12411...	139518	16180...	16180...	2.959	H1-1b
11	M2	HSS4X4X4	.481	5.286	20	.103	5.2...y	20	12411...	139518	16180...	16180...	2.956	H1-1b
12	M6	HSS4X4X4	.481	5.286	26	.103	5.2...y	24	12411...	139518	16180...	16180...	2.964	H1-1b
13	M19	PIPE 2.0	.362	6.25	9	.197	6.25	4	6295....	32130	1871....	1871....	1.688	H1-1b
14	M21	PIPE 2.0	.362	6.25	13	.197	6.25	12	6295....	32130	1871....	1871....	1.688	H1-1b
15	M20	PIPE 2.0	.354	6.25	5	.198	6.25	12	6295....	32130	1871....	1871....	1.693	H1-1b
16	M12	L2x2x3	.276	4.279	13	.017	0 y	7	9348....	23392...	557.7...	1239....	2.355	H2-1
17	M14	L2x2x3	.275	4.279	9	.017	0 y	3	9348....	23392...	557.7...	1239....	2.384	H2-1
18	M15	L2x2x3	.274	4.279	3	.017	0 z	9	9348....	23392...	557.7...	1239....	2.358	H2-1
19	M10	L2x2x3	.273	4.279	5	.017	0 y	11	9348....	23392...	557.7...	1239....	2.374	H2-1
20	M13	L2x2x3	.272	4.279	7	.017	0 z	13	9348....	23392...	557.7...	1239....	2.388	H2-1
21	M11	L2x2x3	.272	4.279	12	.017	0 z	5	9348....	23392...	557.7...	1239....	2.397	H2-1
22	M36	PIPE 3.0	.262	8.073	2	.153	11....	7	28250...	65205	5748....	5748....	1.697	H1-1b
23	M34	PIPE 3.0	.262	4.427	6	.152	1.1...	11	28250...	65205	5748....	5748....	1.7	H1-1b
24	M35	PIPE 3.0	.260	4.427	10	.154	11....	3	28250...	65205	5748....	5748....	1.693	H1-1b
25	M5	HSS4X4X4	.252	2.655	24	.163	.498 z	4	12398...	139518	16180...	16180...	1.339	H1-1b
26	M3	HSS4X4X4	.252	2.655	18	.164	.498 z	8	12398...	139518	16180...	16180...	1.338	H1-1b
27	M1	HSS4X4X4	.252	2.655	20	.162	.498 z	12	12398...	139518	16180...	16180...	1.339	H1-1b
28	M16	PL7/16x6	.120	.516	7	.420	.516 y	11	32085...	85050	775.1...	10631...	1.479	H1-1b
29	M18	PL7/16x6	.118	.516	11	.423	.516 y	9	32085...	85050	775.1...	10631...	1.481	H1-1b
30	M17	PL7/16x6	.118	.516	3	.424	.516 y	7	32085...	85050	775.1...	10631...	1.476	H1-1b
31	M9	L2.5x2.5x4	.015	.818	8	.158	0 y	11	35328...	38556	1113....	2537....	1.136	H2-1
32	M8	L2.5x2.5x4	.014	.818	12	.160	0 y	3	35328...	38556	1113....	2537....	1.136	H2-1



Company : Tectonic Engineering
 Designer : John-Fritz Julien
 Job Number : 10473.CTHA149A
 Model Name : Platform Mount

Dec 8, 2020
 8:07 AM
 Checked By: Ian Marinaccio

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

Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc.....	phi*P...	phi*P...	phi*M...	phi*M...	Cb	Eqn		
33	M7	L2.5x2.5x4	.014	.818	4	.160	0	y 7	35328..	38556	1113....	2537....	1.136	H2-1

UPON MODIFICATION THE MAXIMUM MEMBER STRESS WILL BE REDUCED TO 72% OF ITS CAPACITY AND WILL BE ADEQUATE TO SUPPORT THE PROPOSED T-MOBILE UPGRADE.

SERVICE DEFLECTION = 2.96" x [(60MPH)^2/(97MPH)^2] = 1.1" < 1.6"
 HENCE, OK.

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

Connection Details

Bolts	
Quantity =	4
Diameter =	0.625
Vertical Spacing =	8 in (assumed)
Horizontal Spacing =	8 in (assumed)
Grade =	A325
F_{nt} =	90 ksi
F_{nv} =	54 ksi

Loading Details

Node N58	
Shear, Z =	1.253 k
Shear, Y =	3.771 k
Tension, X =	2.055 k
Mz =	7.624 k-ft
My =	1.264 k-ft
Mx =	0.384 k-ft
	[Table J3.2]
	[Table J3.2]

1 - Tensile Capacity

$$\phi R_{nt} = F_{nt} A_b \quad \text{[Eqn. J3-1]}$$

ϕ =	0.75
F_{nt} =	90 ksi
A_b =	0.307 in ²
ϕR_{nt} =	20.72 k
T_{max} =	7.18 k

Rnt > Tmax

35%

OK

2 - Shear Capacity

$$\phi R_{nv} = F_{nv} A_b \quad \text{[Eqn. J3-1]}$$

ϕ =	0.75
F_{nv} =	54 ksi
A_b =	0.307 in ²
ϕR_{nv} =	12.43 k
V_{max} =	1.40 k

Rnv > Vmax

11%

OK

3 - Combined Tension and Shear Capacity

$$\phi R'_{nt} = F'_{nt} A_b \quad \text{[Eqn. J3-2]}$$

$$F'_{nt} = 1.3F_{nt} - \frac{F_{nt}}{\phi F_{nv}} f_{rv} \leq F_{nt} \quad \text{[Eqn. J3-3a]}$$

ϕ =	0.75
F'_{nt} =	90 ksi
A_b =	0.307 in ²
$\phi R'_{nt}$ =	20.72 k
T_{max} =	7.18 k

R'nt > Tmax

35%

OK

CONNECTICUT DESIGN CRITERIA - STATE

Revison:

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
Farmington	35	0.183	0.064	115	125	135	89	97	105

Ice

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: Fri Dec 04 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 F

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

T-Mobile Existing Facility

Site ID: CTHA149A

Farmington PD MP
319 New Britain Avenue
Farmington, Connecticut 06032

March 2, 2021

EBI Project Number: 6221000825

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	16.69%

March 2, 2021

T-Mobile

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

Emissions Analysis for Site: CTHA149A - Farmington PD MP

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **319 New Britain Avenue in Farmington, 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 319 New Britain Avenue in Farmington, 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 power density calculations, the broadcast footprint of the AIR6449 antenna has been considered. Due to the beamforming nature of this antenna, the actual beam locations vary depending on demand and are narrow in nature. Using the broadcast footprint accounts for the potential location of beams at any given time.

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) 1 LTE channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.
- 9) 1 NR channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.
- 10) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 11) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 12) The antennas used in this modeling are the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector A, the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector B, the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative

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

- 13) The antenna mounting height centerline of the proposed antennas is 160 feet above ground level (AGL).
- 14) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 15) All calculations were done with respect to uncontrolled / general population threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd
Height (AGL):	160 feet	Height (AGL):	160 feet	Height (AGL):	160 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts
ERP (W):	12,841.53	ERP (W):	12,841.53	ERP (W):	12,841.53
Antenna A1 MPE %:	1.95%	Antenna B1 MPE %:	1.95%	Antenna C1 MPE %:	1.95%
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 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 / 13.65 dBd / 15.45 dBd / 16.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 16.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 16.45 dBd
Height (AGL):	160 feet	Height (AGL):	160 feet	Height (AGL):	160 feet
Channel Count:	9	Channel Count:	9	Channel Count:	9
Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts
ERP (W):	11,010.27	ERP (W):	11,010.27	ERP (W):	11,010.27
Antenna A2 MPE %:	2.54%	Antenna B2 MPE %:	2.54%	Antenna C2 MPE %:	2.54%
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	17.3 dBd / 17.3 dBd	Gain:	17.3 dBd / 17.3 dBd	Gain:	17.3 dBd / 17.3 dBd
Height (AGL):	160 feet	Height (AGL):	160 feet	Height (AGL):	160 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	12,888.76	ERP (W):	12,888.76	ERP (W):	12,888.76
Antenna A3 MPE %:	1.95%	Antenna B3 MPE %:	1.95%	Antenna C3 MPE %:	1.95%

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	6.44%
Town	0.23%
Emergency	0.89%
Public Works	4.04%
Sprint	1.83%
Clearwire	0.07%
AT&T	3.19%
Site Total MPE % :	16.69%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	6.44%
T-Mobile Sector B Total:	6.44%
T-Mobile Sector C Total:	6.44%
Site Total MPE % :	16.69%

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 1900 MHz GSM	4	1028.30	160.0	6.24	1900 MHz GSM	1000	0.62%
T-Mobile 1900 MHz LTE	2	2056.61	160.0	6.24	1900 MHz LTE	1000	0.62%
T-Mobile 2100 MHz LTE	2	2307.55	160.0	7.00	2100 MHz LTE	1000	0.70%
T-Mobile 600 MHz LTE	2	591.73	160.0	1.79	600 MHz LTE	400	0.45%
T-Mobile 600 MHz NR	1	1577.94	160.0	2.39	600 MHz NR	400	0.60%
T-Mobile 700 MHz LTE	2	695.22	160.0	2.11	700 MHz LTE	467	0.45%
T-Mobile 1900 MHz LTE	2	2104.51	160.0	6.38	1900 MHz LTE	1000	0.64%
T-Mobile 2100 MHz UMTS	2	1324.71	160.0	4.02	2100 MHz UMTS	1000	0.40%
T-Mobile 2500 MHz LTE	1	6444.38	160.0	9.77	2500 MHz LTE	1000	0.98%
T-Mobile 2500 MHz NR	1	6444.38	160.0	9.77	2500 MHz NR	1000	0.98%
						Total:	6.44%

• 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:	6.44%
Sector B:	6.44%
Sector C:	6.44%
T-Mobile Maximum MPE % (Sector A):	6.44%
Site Total:	16.69%
Site Compliance Status:	COMPLIANT

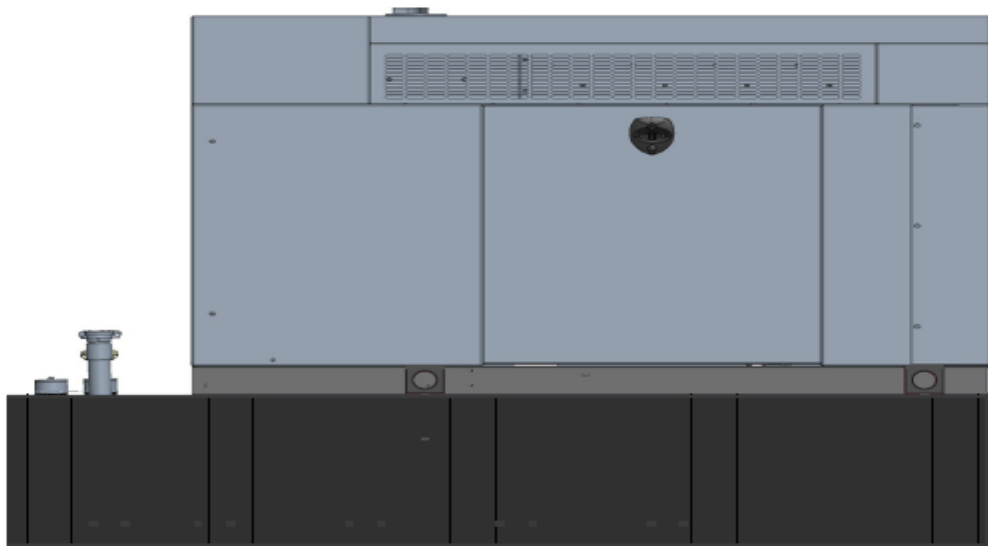
The anticipated composite MPE value for this site assuming all carriers present is **16.69%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Generac RD025 Design Document

Diesel, AC, 25kW External Fill Tank Model#7192-0 SKU#33651



The following are responsible for this project document:

Kevin Smith

SR. Engineer (770) 256-3594

Project Design Spec Revision	1.0	Last Date:08/23/2018	5/14/2018
Final doc URL (~Dnnnnn):			
Location	Use the InfoRouter Search (Advanced) putting the Document ID (nnnnn without the D) to find the location of the master document.		
Template URL:	http://docs.eng.t-mobile.com/InfoRouter/docs/~D423750 Slightly updated 1/2011		

Table of Contents

1	Introduction / Project Summary	3
1.1	Purpose of Project	3
1.2	Feature Description	3
1.3	Dimensions	3
2	Fuel Tanks.....	4
3	RXSC200A3 ATS/ Controller	4
3.1	Hardware	4
4	Architecture/Alarms.....	7
4.1	Interfaces and Alarming	7
5	Regulatory Requirements	9
6	Configuration/Diagrams	9
7	Maintenance.....	14

1 Introduction / Project Summary

1.1 Purpose of Project

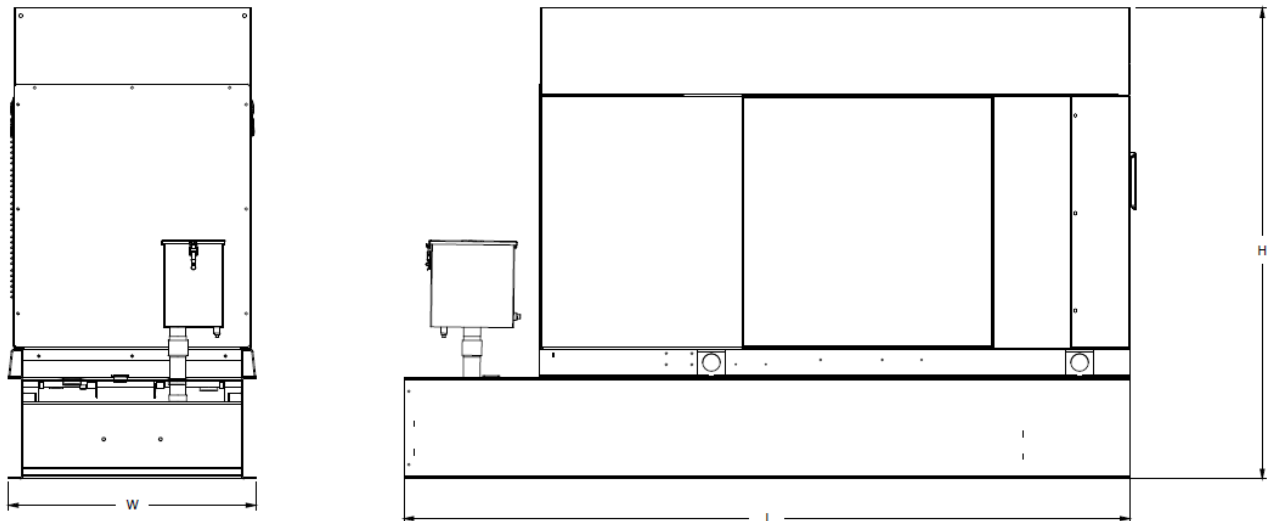
T-Mobile’s nationwide cell site hardening plan is providing a refuellable backup power system capable of powering a site for a minimum of 48 hours before refueling is required. The purpose of this project is to give T-Mobile customers reliable service during power outages and provide a sufficient layer of coverage. This design document is for Generac’s RD025 model#7192-0, which is a Diesel AC generator with a capacity of 25kW.

1.2 Feature Description

The Generac RD025 is a 25kW AC, diesel generator is one of the generators selected as part of the T-Mobile RFP in support of the nationwide cell site hardening plan. The RD025 has a Level 2 acoustic enclosure, 3 phase sensing, and +/-0.25% digital voltage regulation. It is equipped with RS232, RS485 and canbus remote ports and Evolution control panel. It is also equipped with a automatic transfer switch, the RXSC200A3 (Automatic Transfer Switch) Controls the process of transferring commercial AC power and generator power. The RXSC200A3 is a 200Amp, switch that is programmed to perform engine test runs and also has adjustable engine run time capabilities. For RXSC200A3 Owners Manual and full feature descriptions [LINK](#).

1.3 Dimensions

The dimensions of a level 2 Acoustic Enclosure L x W x H in inches 103.4 x 35 x 91.7. T-Mobile requires a 36-inch radius around the generator that will cover the 18” door swing on the generator.

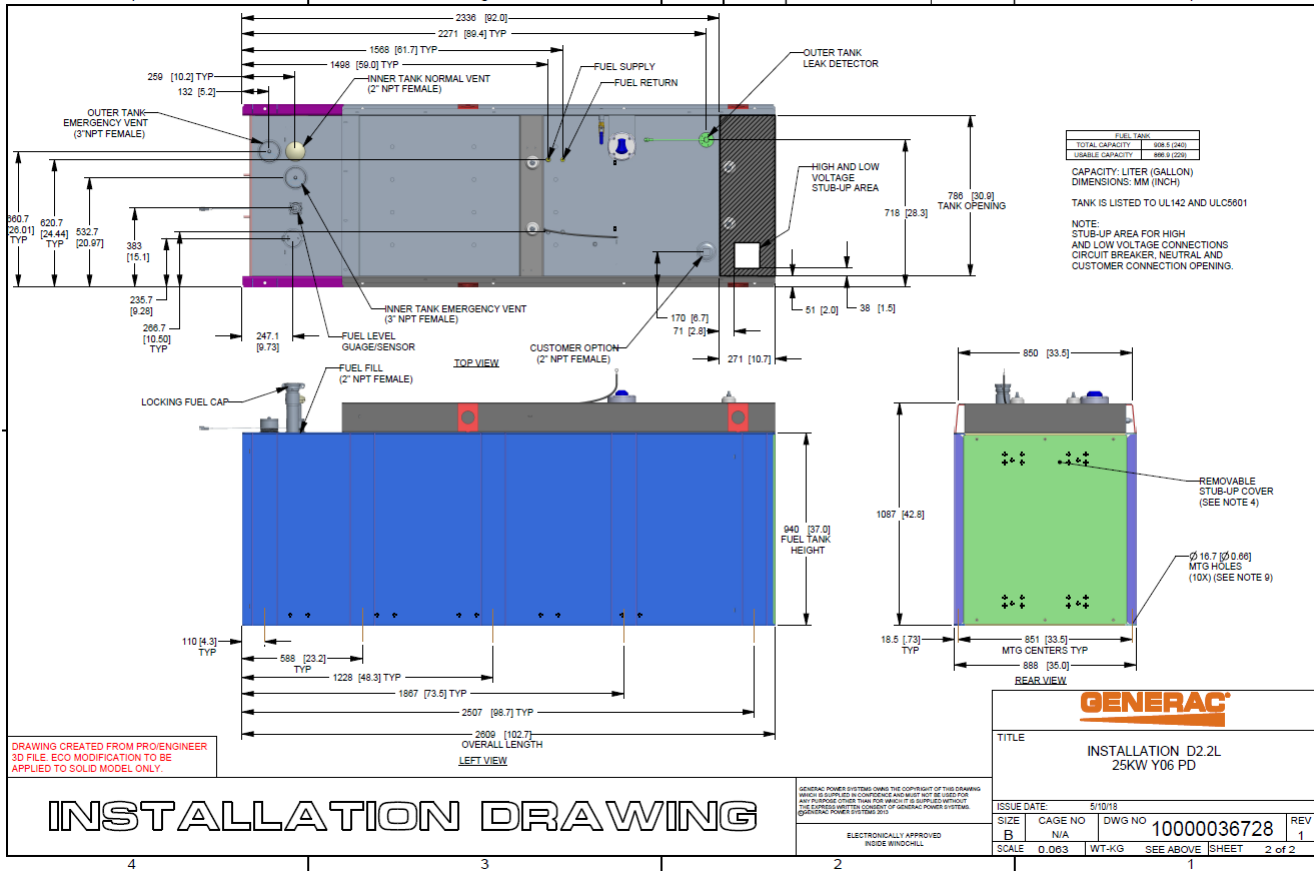


Weights and Dimensions

Unit Weight - lbs	Unit Weight with Skid - lbs	Dimensions (L x W x H) - in
2,123	2,161	103.4 x 35.0 x 73.8

2 Fuel Tanks

The RD025 has a 102.7" 240 Gallon Double-Wall UL142 Base tank to provide 98 hours of backup power at full load deployed on site. Below is the Install drawing for the 240-gallon tank for the RD025kW.



3 RXSC200A3 ATS/ Controller

3.1 Hardware

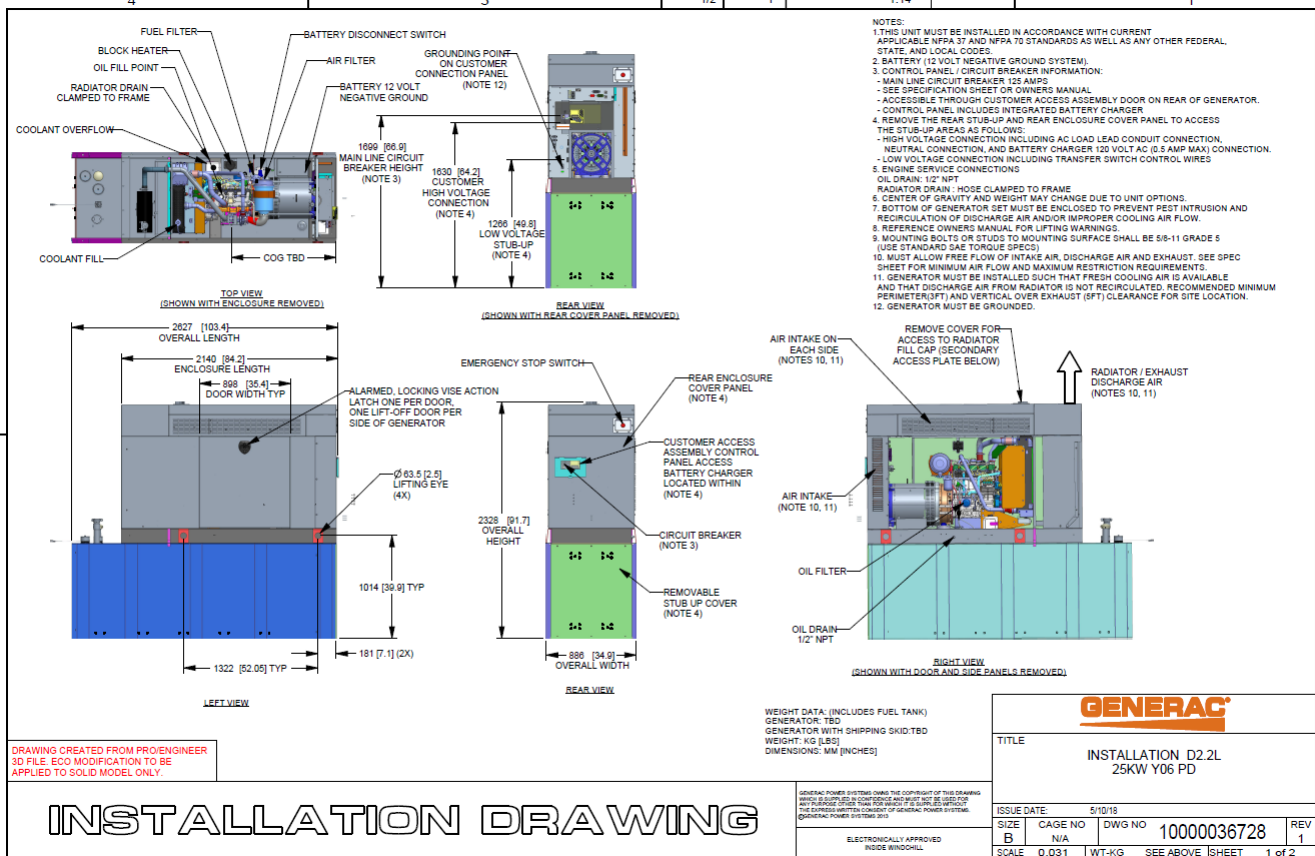
The RD025 will come with a RXSC200A3 and an Evollution controller. The sites considered for the RD025 should not have a DC power consumption above 20kW

RXSC200A3 [Link](#)

RXSC200A3 install drawing [Link](#)

Evolution controller spec sheet [Link](#)

RD025 installation drawings and supporting documentation [Link](#)

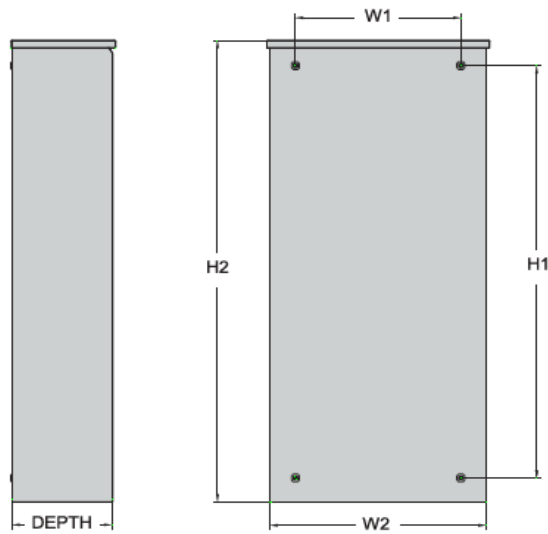


3.2 RXSC200A3 Automatic Transfer Switch

The RXSC200A3 (Automatic Transfer Switch) is equipped with the following functions. Utility voltage drop-out <65%. Timer to Generator start: 10 second factory set, adjustable between 2-1500 seconds. Engine Warm up delay: 5 seconds. Standby Voltage Sensor: 65% for 5 seconds. Utility Voltage Pickup >80%. Re-Transfer Time Delay: 15 seconds. Engine Cool-Down Timer: 60 seconds. Exerciser: 5 or 12 minute adjustable weekly/by-weekly/monthly. The transfer switch can also be operated manually without power applied

RXSC200A3 Dimensions

Model		RXSC200A3
Height (in./mm)	H1	17.24/437.9
	H2	20/508
Width (in./mm)	W1	12.5/317.5
	W2	14.6/370.8
Depth (in./mm)		7.09/180.1
Weight (lbs./kilos)		20/9.07



4 Architecture/Alarms

4.1 Interfaces and Alarming

The generator will be monitored by external alarms, conduit and cat five cables have to be installed from the Evolution Controllers Low Voltage Box located in the Generac generator to the appropriate cell site equipment. Nokia FSEB or FSEE and in Ericsson the SAU.

At a Nokia site, this connection is at the FSEB or an FSEE module. For the wiring diagram and instructions for the FSEB click the [Link](#). (The FSEE is the Nokia module that will be replacing the FSEB. For details on the FSEE contact: HQNokiaCellsiteDesigns@T-Mobile.com)

Ericsson sites will connect to the SAU module via OVP Expansion Kit for 8 External Alarms. Product number: UTOVP-ALM8EXP. For the wiring diagram and instructions for this click the [link](#).

The RXSC200A3 has auxiliary contacts that will facilitate the *ATS in Emergency position* alarm and will be a Normally Closed contact. Below is the wiring schematic for this contact and it can be found in the RXSC200A3 owners manual.

Auxiliary Contact

See [Figure 3-4](#). If desired, there is one normally-closed Auxiliary Contact (A) on the transfer switch to operate customer accessories, remote advisory lights, or remote annunciator devices. A suitable power source must be connected to the common terminal. If needed, an extra auxiliary contact can be added.

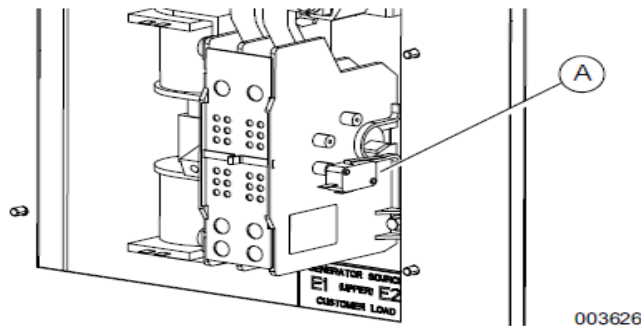


Figure 3-4. Auxiliary Contact

The auxiliary contact is normally closed when the transfer switch is in utility mode. The contacts will open when the transfer switch is in the standby power mode.

NOTE: Auxiliary Contact is rated 10 amps at 125 or 250 volts AC, and 0.6 amps at 125 volts DC.

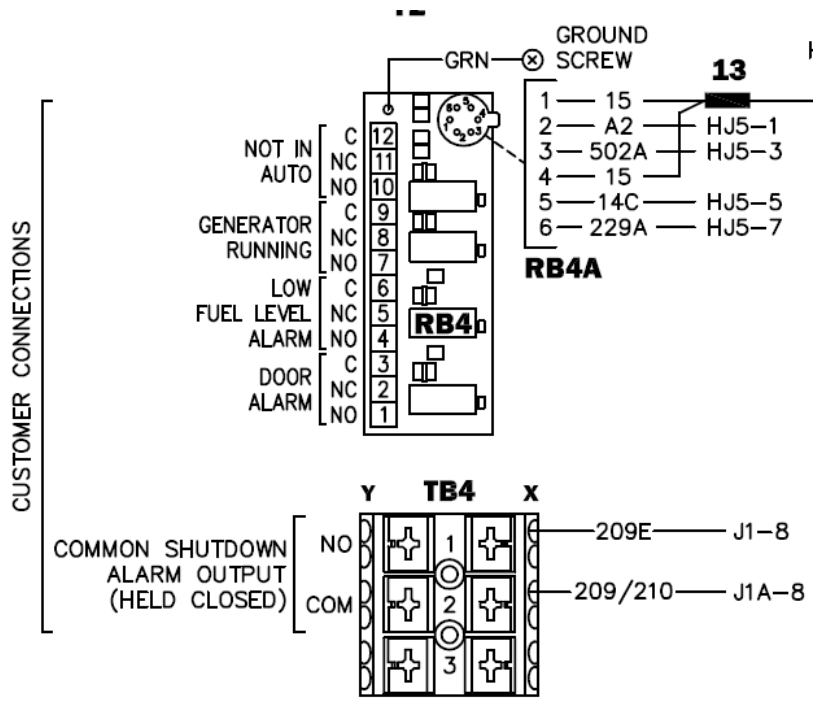
CAUTION

Equipment damage. Exceeding rated voltage and current will damage the auxiliary contacts. Verify that voltage and current are within specification before energizing this equipment.

(000134a)

T-Mobile has four relays available from the Generac controller that are user-defined. T-Mobile can have four-alarm categories and a limitless number of subcategories. T-Mobile will utilize Normally Closed (NC) dry contacts for alarms in Low Voltage Connection box in the spare outputs section. Ericsson cabinets need to be equipped with the alarm expansion kit (UTOVP-ALM8EXP) to handle external alarms.

Customer Connections Inside the RD025



Ericsson UTOVP- ALM8EXP



UTOVP-ALM8EXP	OVP Expansion Kit for 8 External Alarms	Qty
Product no	Denomination	
UTOVP-ALM8EXP	OVP Expansion Kit for 8 External Alarms	1
NFD30234/08	OVERVOLTAGE ARRESTER/OVP-ALM 8	1
RPM777143/01200	CABLE WITH CONNECTOR/SIGNAL CABLE	2

Evolution Controller Customer Connections	Nokia FSEB Alarm Connections 13-24	T-Mobile Standard Alarms
NC#8-Gen Running	NC 4110 grd 4111 pin 13	Generator Running
NC#11-Not In Auto	NC 4110 grd 4111 pin 14	Generator Alarm Critical
NC#2-Door Alarm	NC 4110 grd 4111 pin 15	Generator Alarm NSI
NC#5-Low Fuel	NC 4110 grd 4111 pin 16	Low Fuel
RXSC200A3-Auxiliary Contacts	NC 4110 grd 4111 pin 17	ATS in Emergency Position

Evolution Controller Customer Connections	Ericsson Alarm 8expConnections	T-Mobile Standard Alarms
NC#8- Gen. Running	NC - A5	Generator Running
NC#11-Not In Auto	NC - A6	Generator Alarm Critical
NC#2-Door Alarm	NC - A7	Generator Alarm NSI
NC#5-Low Fuel	NC - A8	Low Fuel
RXSC200A3-Auxiliary Contacts	NC - A9	ATS in Emergency Position

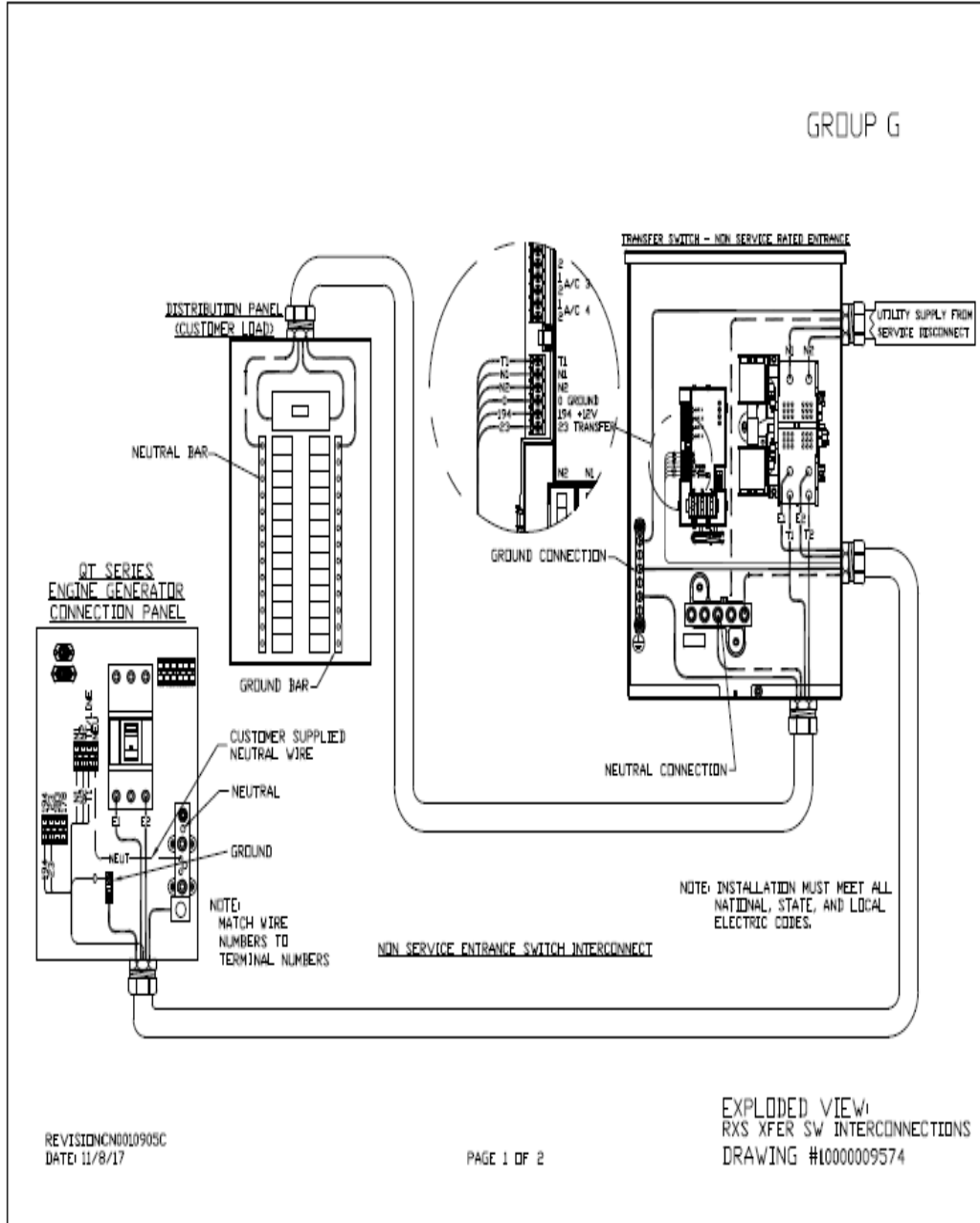
5 Regulatory Requirements

Level 2 Acoustic Enclosure provides a noise level of 67.5dBA. It is EPA certified and meets NFPA 99 and 110 requirements(NFPA National Fire Protection Association). The RD025 generator engines is a tier 4 engine and meets the EPA final standards.

6 Configuration/Diagrams

The physical configuration of the Generator and the RXSC200A3 is, ATS before the PPC to ensure overcurrent protection when commercial power is restored. The RD025 and the RXSC200A3 has to be wired to Commercial AC power.

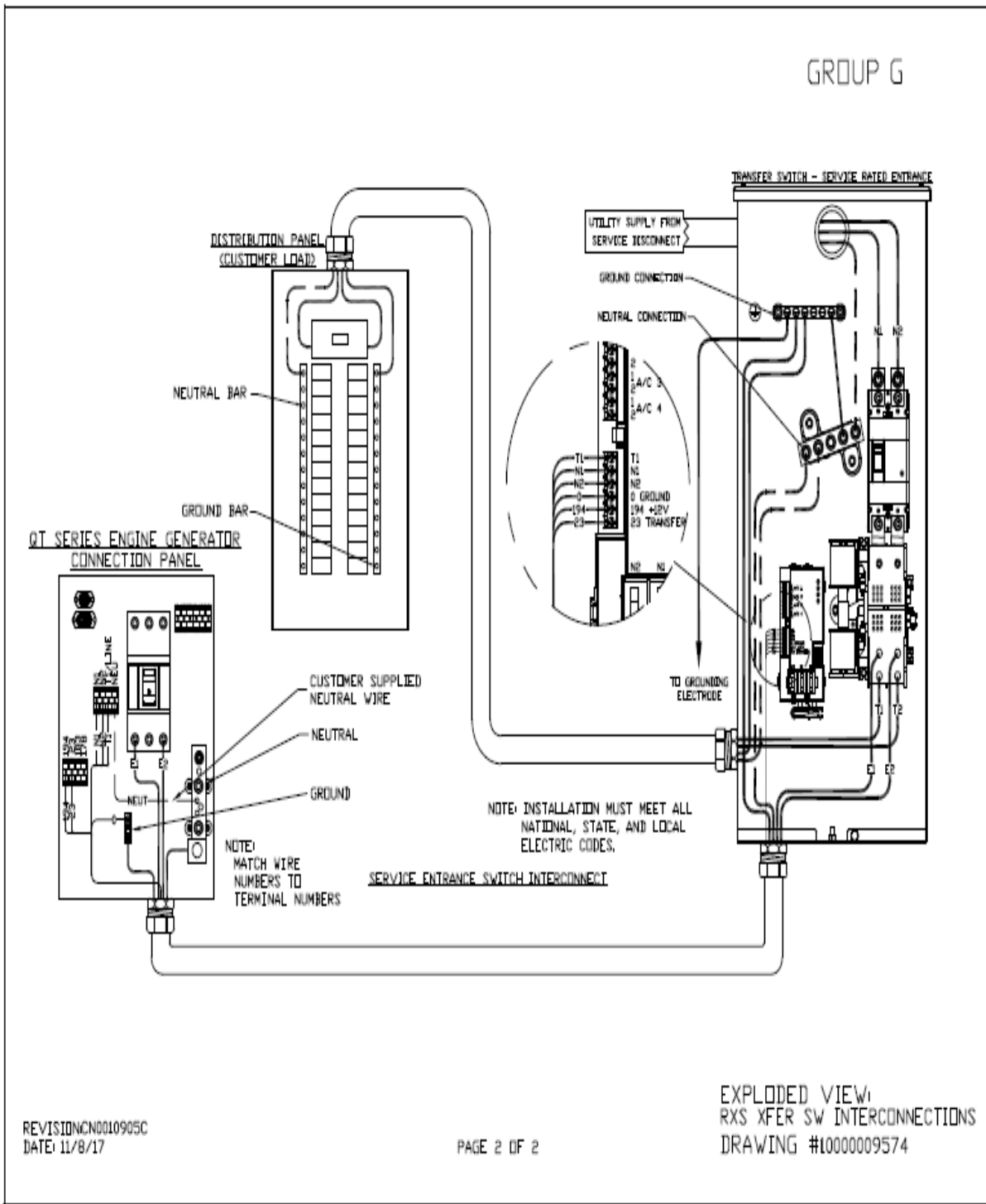
Commercial Power Connection Points
On The RXSC200A3



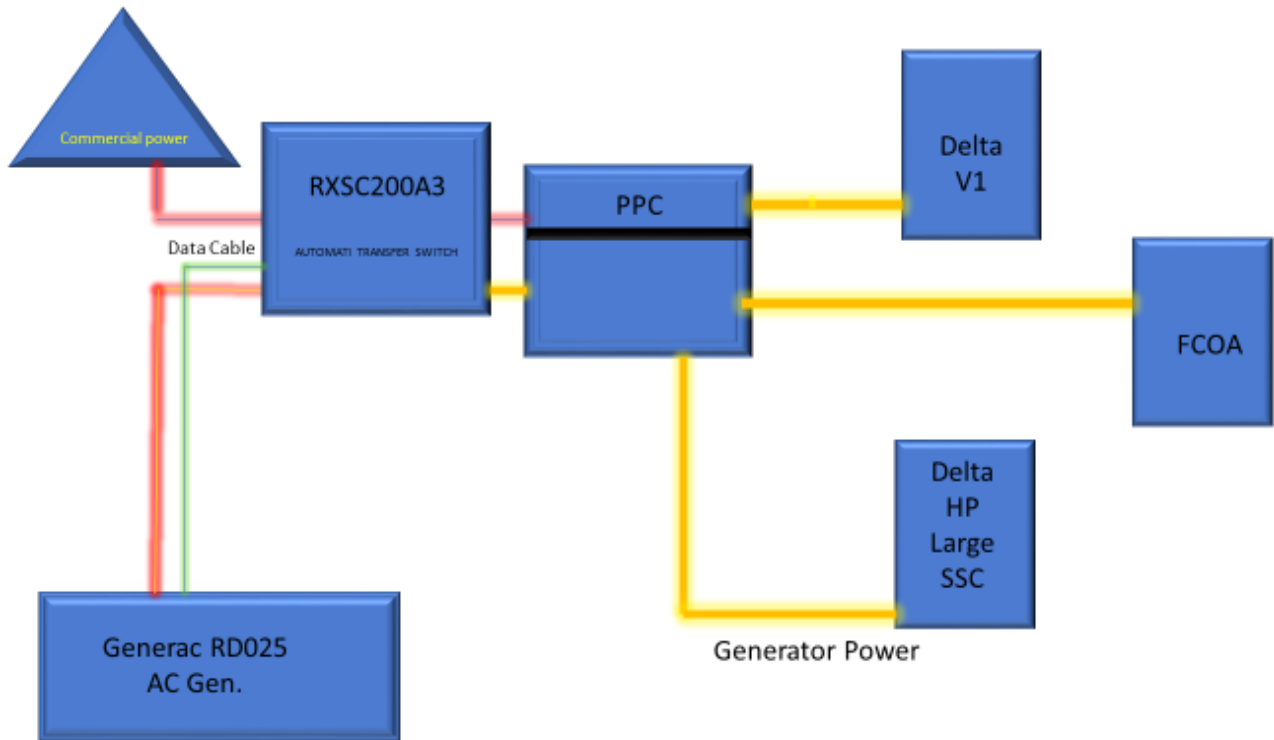
REVISIONC0010905C
 DATE: 11/8/17

PAGE 1 OF 2

EXPLODED VIEW:
 RXS XFER SW INTERCONNECTIONS
 DRAWING #10000009574



Compound Diagram:



7 Maintenance

T-Mobile is recommending preventive maintenance to be performed every 250 hours of run-time or every 12 months, whichever comes first.

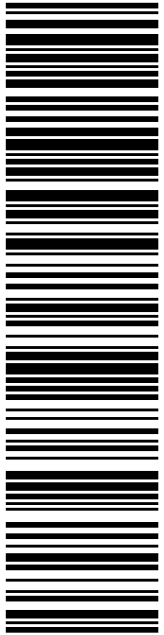
T-Mobile requires this minimum service checklist for the generator engine:

- Check engine mounts and support. Tighten fasteners.
- Check all the engine hoses and clamps for proper fit, and any signs of cracking and fatigue from wear.
- Inspect all belts for signs of cracking and fatigue from wear and adjust for proper tension.
- Inspect the exhaust system for leaks, burns and wet stacking. Drain exhaust line and tighten any clamps and flange bolts.
- Inspect silencer and plumbing for leaks, cracks or any other signs of wear.
- Inspect the system for fuel, oil and coolant leaks and signs of corrosion.
- Replace water separator.
- Replace water filter/ conditioner.
- Check Anti-Freeze (Spector-Analysis).
- Check coolant level and add, if needed.
- Inspect radiator mounting for signs or wear and cracking.
- Inspect/ clean air filter and change per manufacturer specifications.
- Inspect air intakes and outlets and tighten clamps and brackets, if applicable.
- Replace fuel filter.
- Inspect the carburetor fuel injection system, fuel injection pump and choke, if equipped. Adjust to manufacturers specifications.
- Change engine oil, oil filter and record the date on the filter casing.
- Check engine heater operation, if equipped.
- Check and adjust the battery charger operations, and charge rate within the manufacturer's recommended operating specifications.

- Inspect the battery housing, hardware connections, and cables for corrosion and wear.
- Check the battery electrolyte levels and specific gravity levels.
- Load test generator battery.
- Check, adjust and record generator output voltage, as necessary.
- Check and record the alternator charge rate.
- During inspection run the generator for 30 minutes under load. During this time, and after the engine is at full operational speed and has reached engine operating temperature; determine and record the condition of all inspection points: oil pressure, water/ coolant temperature, Fuel pressure, generator gauge, indicator operations, generator battery.
- Check the engine timing and adjust to manufacturers specifications, if necessary.
- Inspect, adjust and record governor and frequency, if necessary.
- Verify that the low fuel alarm is operational and configured correctly to trigger when the fuel tank reaches 50% of fuel tank capacity.

Check fuel level and refuel the generator during the preventive/ corrective maintenance visit.

Exhibit H



USPS TRACKING #

9405 5036 9930 0469 4864 20

Electronic Rate Approved #038555749

P

USPS.com 9405 5036 9930 0469 4864 20 0148 5000 0010 6051
US POSTAGE
 MD Flat Rate Box

08/10/2021 Mailed from 01566

U.S. POSTAGE PAID
Click-N-Ship®

Click-N-Ship®

PRIORITY MAIL 2-DAY™

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

Expected Delivery Date: 08/13/21
 Ref#: HA149ANHPL
0004

C006

SHIP TO: LISA A MATTHEWS
 CT SITING COUNCIL
 10 FRANKLIN SQ
 NEW BRITAIN CT 06051-2655



Cut on dotted line.

Instructions

1. 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.
2. Place your label so it does not wrap around the edge of the package.
3. Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
4. To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
5. Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0469 4864 20

Trans. #: 540438332	Priority Mail® Postage: \$15.50
Print Date: 08/10/2021	Total: \$15.50
Ship Date: 08/10/2021	
Expected Delivery Date: 08/13/2021	

From: DEBORAH CHASE Ref#: HA149ANHPL
 NORTHEAST SITE SOLUTIONS
 420 MAIN ST
 STE 1
 STURBRIDGE MA 01566-1359

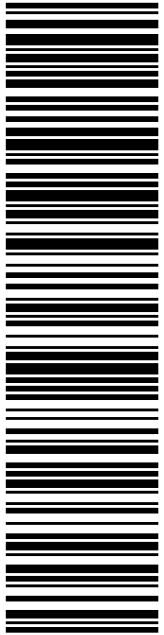
To: LISA A MATTHEWS
 CT SITING COUNCIL
 10 FRANKLIN SQ
 NEW BRITAIN CT 06051-2655

* 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

Exhibit ;



USPS TRACKING #

9405 5036 9930 0446 5136 51

Electronic Rate Approved #038555749

P

USPS.com
US POSTAGE
 Flat Rate Env
 \$7.95
 9405 5036 9930 0446 5136 51 0079 5000 0010 6032

07/19/2021

Mailed from 01566

U.S. POSTAGE PAID
Click-N-Ship®

PRIORITY MAIL 2-DAY™

Expected Delivery Date: 07/22/21
 Ref#: HA149NHPL6
0006

DEBORAH CHASE
 NORTHEAST SITE SOLUTIONS, LLC
 420 MAIN ST
 STE 1
 STURBRIDGE MA 01566-1359

R001

SHIP TO: KATHLEEN A BLONSKI
 FARMINGTON TOWN HALL- TOWN MANAGER
 1 MONTIETH DR
 FARMINGTON CT 06032-1082

✂ ————— Cut on dotted line. —————

Instructions

1. 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.
2. Place your label so it does not wrap around the edge of the package.
3. Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
4. To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
5. Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0446 5136 51

Trans. #: 538539288	Priority Mail® Postage: \$7.95
Print Date: 07/16/2021	Total: \$7.95
Ship Date: 07/19/2021	
Expected Delivery Date: 07/22/2021	

From: DEBORAH CHASE Ref#: HA149NHPL6
 NORTHEAST SITE SOLUTIONS, LLC
 420 MAIN ST
 STE 1
 STURBRIDGE MA 01566-1359

To: KATHLEEN A BLONSKI
 FARMINGTON TOWN HALL- TOWN MANAGER
 1 MONTIETH DR
 FARMINGTON CT 06032-1082

* 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

Tracking Number: 9405503699300446513651

Remove X

Your item was delivered to the front desk, reception area, or mail room at 9:57 am on August 9, 2021 in FARMINGTON, CT 06032.

Status

 **Delivered, Front Desk/Reception/Mail Room**

August 9, 2021 at 9:57 am
FARMINGTON, CT 06032

USPS Tracking Plus™ Available 

Get Updates 

Delivered

Text & Email Updates



Tracking History



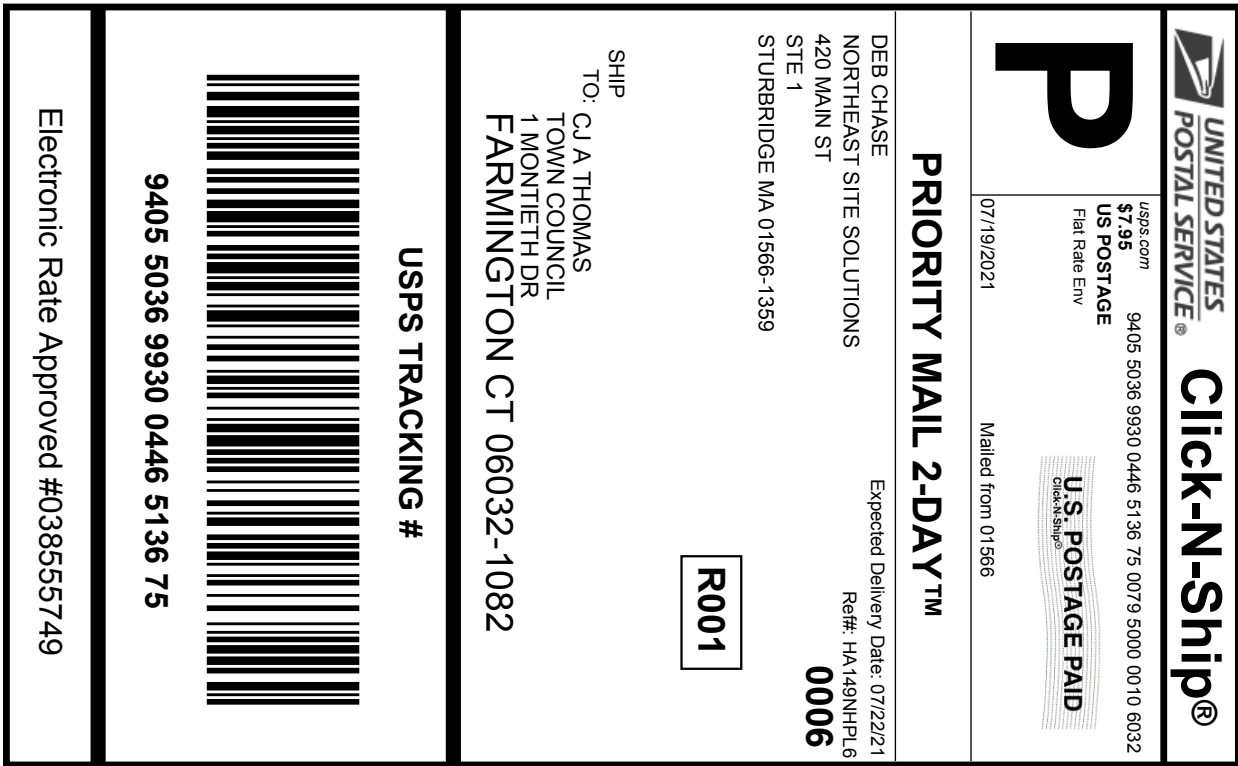
USPS Tracking Plus™



Product Information



See Less 



Cut on dotted line.

Instructions

1. 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.
2. Place your label so it does not wrap around the edge of the package.
3. Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
4. To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
5. Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0446 5136 75

Trans. #:	538539288	Priority Mail® Postage:	\$7.95
Print Date:	07/16/2021	Total:	\$7.95
Ship Date:	07/19/2021		
Expected			
Delivery Date:	07/22/2021		

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

To: CJ A THOMAS
 TOWN COUNCIL
 1 MONTIETH DR
 FARMINGTON CT 06032-1082

Ref#: HA149NHPL6

* 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

Tracking Number: 9405503699300446513675

Rem

Your item was delivered to the front desk, reception area, or mail room at 9:57 am on August 9, 2021 in FARMINGTON, CT 06032.

USPS Tracking Plus™ Available 

Status

 **Delivered, Front Desk/Reception/Mail Room**

August 9, 2021 at 9:57 am
FARMINGTON, CT 06032

Get Updates 

Delivered

Text & Email Updates



Tracking History



USPS Tracking Plus™



Product Information



See Less 