



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

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

VIA ELECTRONIC MAIL

June 15, 2021

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

RE: **EM-T-MOBILE-088-210528** – T-Mobile notice of intent to modify an existing telecommunications facility located at 0 Clark Hill Road, Naugatuck, Connecticut.

Dear Ms. Masse:

The Connecticut Siting Council (Council) is in receipt of your correspondence of June 14, 2021 submitted in response to the Council's June 14, 2021 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

s/ Melanie A. Bachman

Melanie A. Bachman
Executive Director

MAB/IN/emr

From: Deborah Chase <deborah@northeastsitesolutions.com>

Sent: Monday, June 14, 2021 6:32 PM

To: CSC-DL Siting Council <Siting.Council@ct.gov>; Bachman, Melanie <Melanie.Bachman@ct.gov>; Mathews, Lisa A <Lisa.A.Mathews@ct.gov>

Cc: victoria@northeastsitesolutions.com; Sheldon Freinle <sheldon@northeastsitesolutions.com>

Subject: CTNH305B-Anchor & L600-Fwd: Council Incomplete Letter for EM-T-MOBILE-088-210528 (0 Clark Hill Road, Naugatuck)

Siting Council-

Please see attached amended CSC application that includes electronic and hard copy receipt for Town Planner Lori Rotella.

Thank you

Deborah Chase

Senior Project Coordinator & Analyst

Mobile: 860-490-8839



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



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

June 14, 2021

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

RE: Exempt Modification Application
103 East Street AKA- 0 Clark Street, Naugatuck CT 06770
Latitude: 41.51780
Longitude: -73.01890
T-Mobile Site#: CTNH305B_Anchor_L600

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antenna at the 236-foot level of the existing 276-foot guyed tower at 103 East Street AKA- 0 Clark Street, Naugatuck CT 06770. The tower is owned by WTIC/WCCT-TV. The property is owned by Channel 20 Inc c/o WTIC TV. T-Mobile now intends to replace three (3) of its existing antenna with three (3) new 600/700/1900 MHz antenna. T-Mobile also intends to add three (3) new 2500 MHz 5G capable antenna. The new antennas would be installed at the 236-foot level of the tower. T-Mobile also intends to make the following modifications.

T-Mobile Planned Modifications:

Remove:

- (4) RFS ATMA3P4-1A20
- (2) RFS ATMA4P4-1A20
- (12) Coax lines

Remove and Replace:

- (3) Andrew DBXNH-6565A A2M (Remove) - (3) RFS-APXVAARR24_43-U-NA20 600/700/1900 MHz Antenna (Replace)
- (3) RRUS11 B12 (Remove) - (3) Ericsson Radio 4449 B71+B85 (Replace)
- (3) T-Arm Mounts (Remove) - (3) Sector Frames -SitePro1 VFA12-SD-S (Replace)

Install New:

- (3) Ericsson AIR6449 B41 - 2500 MHz 5G Capable Antenna
- (3) Radio 4415 B25
- (3) Hybrid lines



Existing to Remain:

- (3) Ericsson Air32 KRD901146 1900/2100 MHz Antenna
- (3) Hybrid lines

Ground:

- Extend existing concrete pad by 8'x7' (56 S.F.)
- (1) BBU B160
- (1) 6160 Radio Cabinet

This facility was approved by the Borough of Naugatuck. Approval was granted on July 17, 1991 to erect a transmission and communication tower with an overall height of 281-feet with supporting anchors and guy wires. 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 Mayor N. Warren "Pete" Hess III, Elected Official for the Town of Naugatuck, Lori Rotella, Town Planner for the Town of Naugatuck as well as the property owner and the tower owner.

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

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

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

Sincerely,

Victoria Masse
Mobile: 860-306-2326
Fax: 413-521-0558
Office: 420 Main Street, Unit 2, Sturbridge MA 01566



NSS **NORTHEAST**
SITE SOLUTIONS
Turnkey Wireless Development

Email: victoria@northeastsitesolutions.com

Attachments

cc: N. Warren "Pete" Hess III- Mayor - as elected official
(*email only at NWhess@naugatuck-ct.gov*)

Channel 20 Inc c/o WTIC TV - as tower owner & property owner
(*email only at NCialfi@fox61.com*)

Town Planner/WEO, Lori Rotella
(*email only at LRotella@naugatuck-ct.gov*)

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

WEBSTER BANK
51-7010/2111

4355

05/28/2021

PAY TO THE ORDER OF Connecticut Siting Council

\$ *625.00

EXACTLY SIX HUNDRED TWENTY-FIVE DOLLARS

DOLLARS

Connecticut Siting Council
10 Franklin Square
New Britain CT 06051

Lisa Lin Allen
AUTHORIZED SIGNATURE

MEMO

⑈004355⑈ ⑆211170101⑆10 0010608887⑈

Check#: 4355	Date: 05/28/2021	Vendor#: 10023 Connecticut Siting Co	Check Total: *625.00	4355		
<i>Invoice#</i>	<i>Invoice Date</i>	<i>Job/Description</i>	<i>Balance</i>	<i>Retain</i>	<i>Discount</i>	<i>This Check</i>
CTNH305B Zoning	05/28/2021	58 TMO Anchor L600	625.00			625.00

Check#: 4355	Date: 05/28/2021	Vendor#: 10023 Connecticut Siting Co	Check Total: *625.00	4355		
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CTNH305B Zoning	05/28/2021	58 TMO Anchor L600	625.00			625.00

Photo Safe Deposit®
Details on Back.

Exhibit A



BOROUGH OF NAUGATUCK

INLAND WETLANDS COMMISSION
PLANNING COMMISSION
ZONING BOARD OF APPEALS
ZONING COMMISSION

LAND USE OFFICE
213 CHURCH STREET
NAUGATUCK, CT 06770
203/729-4571

I HEREBY CERTIFY THAT Channel 20, Inc. owner of record
(owners address) 414 Meadow Street, Waterbury CT 06702, filed an
application pursuant to Section 32 of the Zoning Regulations of
the Borough of Naugatuck for a SPECIAL PERMIT for property at
described in the attached Schedule A, which was APPROVED
AT THE MEETING OF THE ZONING COMMISSION HELD ON:

Wednesday, July 17, 1991
DAY DATE

FOR THE PURPOSE OF: Erecting and operating a transmission and communication
tower with an overall height of 281 feet, with supporting anchors and
cuy wires.

SIGNED: Robert Wagner (cfm) Michael Wornile
Zoning Commission Chairman Zoning Enforcement Officer

This action shall be filed with the Town Clerk on the Land Records of the Town as required by Section 8-3c(b) of the State Statutes.

SCHEDULE A

All that certain piece or parcel of land situated on the southerly side of East Side Boulevard in the City of Waterbury and in the Borough of Naugatuck, County of New Haven and State of Connecticut, bounded and described as follows:

Beginning at a point in the southerly line of East Side Boulevard in the City of Waterbury, Connecticut at the north-easterly corner of a parcel designated as a 50' R.O.W. on a map entitled "Subdivision of Peach Orchard Estates, Section Four, Waterbury, Conn., August, 1972, Scale: 1"=50'", recorded in Map Drawer IV, Page 386 of Waterbury Land Records, said 50' R.O.W. being located easterly of Lot #107 as shown on said Map, thence running easterly in the southerly line of East Side Boulevard and in a line curving to the left having a radius of 110.26 feet, a distance of 50.00 feet to land now or formerly of L & M Builders, Incorporated, thence running in line of land now or formerly of L & M Builder, Incorporated S 2°43'42W and crossing the Waterbury-Naugatuck Town Line from Waterbury 15.17feet into Naugatuck S 1° 19' 46" E, 125.00 feet, thence continuing in line of land now or formerly of L & M Builders, Incorporated S 87° 32' 18" E, 100.22 feet to The Naugatuck-Prospect Town Line and land now or formerly of George and Jennie Nardozza, thence running in line of land now or formerly of George and Jennie Nardozza, land now or formerly of Mary F. Raynor, land now or formerly of Grace M. Perun, land now or formerly of Thomas Bros., Inc., and land now or formerly of Philip J. Langdo S 1° 19' 46" E, 821.13 feet to land now or formerly of Estate of Stanley J. Lucas, the last described line being the Naugatuck-Prospect Town Line, thence running in line of land now or formerly of Estate of Stanley J. Lucas N 73° 32' 16" W, 181.07 feet, N 70° 15' 58" W, 117.30 feet, and N 69° 28' 34" W, 130.68 feet, N 57° 19' 46" W, 94.73 feet, N 71° 30' 34" W, 73.64 feet, and N 80° 52' 16" W, 45.91 feet to a point, thence running in line of remaining land of Francis M. McWeeney, Jr., N 1° 19' 46" W, 200.00 feet, N 88° 40' 14" E, 266.87 feet, N 1° 19' 46" W, 516.79 feet to Lot #107 as shown on a map entitled "Subdivision of Peach Orchard Estates Section Four", thence running in line of said lot #107 and a 50' wide Right of Way S 97° 32' 18" E, 165.00 feet, the last described line being the Naugatuck-Waterbury Town Line, thence running in the easterly line of a 50' wide Right of Way N 30° 36' 32" E, 31.53 feet to East Side Boulevard and the point of beginning.
Bounded:

- Northerly - by Lot #107 "Peach Orchard Estates Section Four", a 50' wide Right of Way, East Side Boulevard, and land now or formerly of L & M Builders, Incorporated;
- Easterly - by land now or formerly of George & Jennie Nardozza, land now or formerly of Mary F. Raynor, land now or formerly of Grace M. Perun, land now or formerly of Thomas Bros. Inc., and land now or formerly of Philip J. Langdo;
- Southerly - by land now or formerly of Estate of Stanley J. Lucas;
- Westerly - by land now or formerly of Francis M. McWeeney, Jr.

Being a portion of the premises conveyed to Francis M. McWeeney, Jr., by L & M Builders, Incorporated a/k/a L & M Builders, Inc. by Quit-Claim Deed dated and recorded December 11, 1973 in Volume 1122, Page 152 of the Waterbury Land Records and in Volume 180, Page 27 of the Naugatuck Land Records.

SCHEDULE A
(continued)

Together with a right of way over area designated at 50' R.O.W. on map of "Subdivision of Peach Orchard Estates Section Four, Waterbury, Conn., August, 1972, Scale: 1"=50'", recorded in Drawer IV, Page 386, Waterbury Land Records, said right of way being located easterly of Lot #107 as shown on said Map and running southerly from East Side Boulevard to the Waterbury-Naugatuck Town Line as described in Volume 1121, Pages 011 and 012 of Waterbury Land Records.

Together with an easement and right of way through, over, under and across (a) the remaining land owned by Francis M. McWeeney, Jr. located northerly of the Waterbury town line and lying between said town line and the southerly line of East Side Boulevard, as shown on a map entitled "Map of Land of Thomas Bros., Inc. Prospect, Conn. The A. J. Patton Co., Surveyor, Waterbury, Conn. June 15, 1979 Scale: 1" = 40' Additions Oct. 21, 1980" (the "Map"), and (b) the remaining land of Francis M. McWeeney, Jr. located in the Town of Naugatuck, bounded northerly by the Waterbury town line, westerly and southerly by the Premises and easterly by land N/F of Grace M. Franco, as shown on said Map, to use said lands for all purposes customarily made of a public highway, including, without limiting the generality of the foregoing, the right to pass and repass on foot or in vehicles, to enter upon, travel and transport materials over and upon said lands and, if necessary or convenient, in connection therewith, the right to grade, excavate, fill or otherwise improve said lands, said easement and right of way to terminate upon the completion of the construction of a television tower and station upon the Premises.

Together with a permanent easement and right of way sufficient in width to satisfy town road specifications for the zone district in which the remaining land of Francis M. McWeeney, Jr. (as defined herein and hereinafter referred to as the "Remaining Property") is located, said easement to begin at a point in the westerly boundary of the Premises and running therefrom generally westerly through, over, under and across the Remaining Property to any future public highway constructed on or which adjoins or benefits the Remaining Property, to use said land for all purposes customarily made of a public highway, including without limiting the generality of the foregoing, the right to lay, install and maintain sewer, water and storm water lines therein, the right to pass and repass on foot or in vehicles, and, if necessary or convenient, in connection therewith, the right to grade, excavate, fill or otherwise improve said right of way. Said easement and right of way shall be located in such area as Francis M. McWeeney, Jr. or his successor shall determine; provided, however, that said easement and right shall be subject to the approval of the Naugatuck Economic Development Commission.

Exhibit 8



BOROUGH OF NAUGATUCK

ZONING PERMIT

PERMIT NO. _____

DATE June 18 19 91

PERMISSION TO: (BUILD) ~~(MAKE ALTERATIONS)~~ ~~(BUILD ON ADDITION)~~

A ~~FAMILY DWELLING OR OTHER~~ transmission tower 281 feet high

DESCRIPTION OF PREMISES: ZONING PDD-8/ICC VALUE \$70,000

Northeast corner of Naugatuck, at rear of William C. Rado Sr. Drive
and Industrial Park, bordering Town of Prospect and City of Waterbury;
Tax Map 354 C, Block 20E138, Lot A.

FEE 35.00

- ZONING
- PLANNING
- WETLAND---FLOOD PLAIN
- ZONING BOARD OF APPEALS
- HEALTH-LIQUID WASTE

SEPTIC TANK
Granted, DATE _____

APPLICANT: I hereby certify that the information contained herein is accurate.

Robert H. Hall
Signature of Applicant

Robert H. Hall, Attorney for Channel 20, Inc.
Name of Applicant (Print)
43 Main St., P.O. Box 395, Newtown, CT 06470
Address
426-8177
Telephone No.

ZONING ENFORCEMENT OFFICER _____

THIS APPROVAL IS SUBJECT TO COMPLIANCE (PRIOR TO OCCUPANCY) WITH THE PROVISIONS OF THE ZONING REGULATIONS AND THE SUBDIVISION REGULATIONS OF THE BOROUGH OF NAUGATUCK (WHERE APPLICABLE) AND AS AUTHORIZED UNDER SECTION 8 OF THE CONNECTICUT GENERAL STATUTES, AS AMENDED. THIS PERMIT IS BASED UPON THE PLOT PLAN SUBMITTED. FALSIFICATION BY MISREPRESENTATION OR OMISSION SHALL CONSTITUTE A VIOLATION OF THE BOROUGH ZONING REGULATIONS.

Exhibit B



Town of Naugatuck, CT

Property Listing Report

Map Block Lot

K-20E138-A

Building # 1

PID

1697

Account

011-3060

Property Information

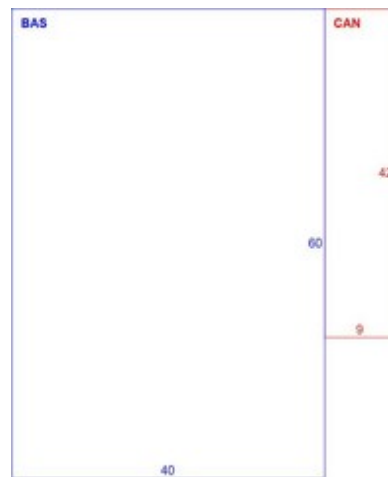
Property Location	0 CLARK HILL RD
Owner	TEGNA BROADCAST HOLDINGS LLC
Co-Owner	
Mailing Address	8350 BROAD STREET TYSON VA 22102
Land Use	4330 RAD/TV TR
Land Class	I
Zoning Code	R15
Census Tract	

Neighborhood	D
Acreage	7.9
Utilities	
Lot Setting/Desc	
Book / Page	1035/1
Additional Info	

Photo



Sketch



Primary Construction Details

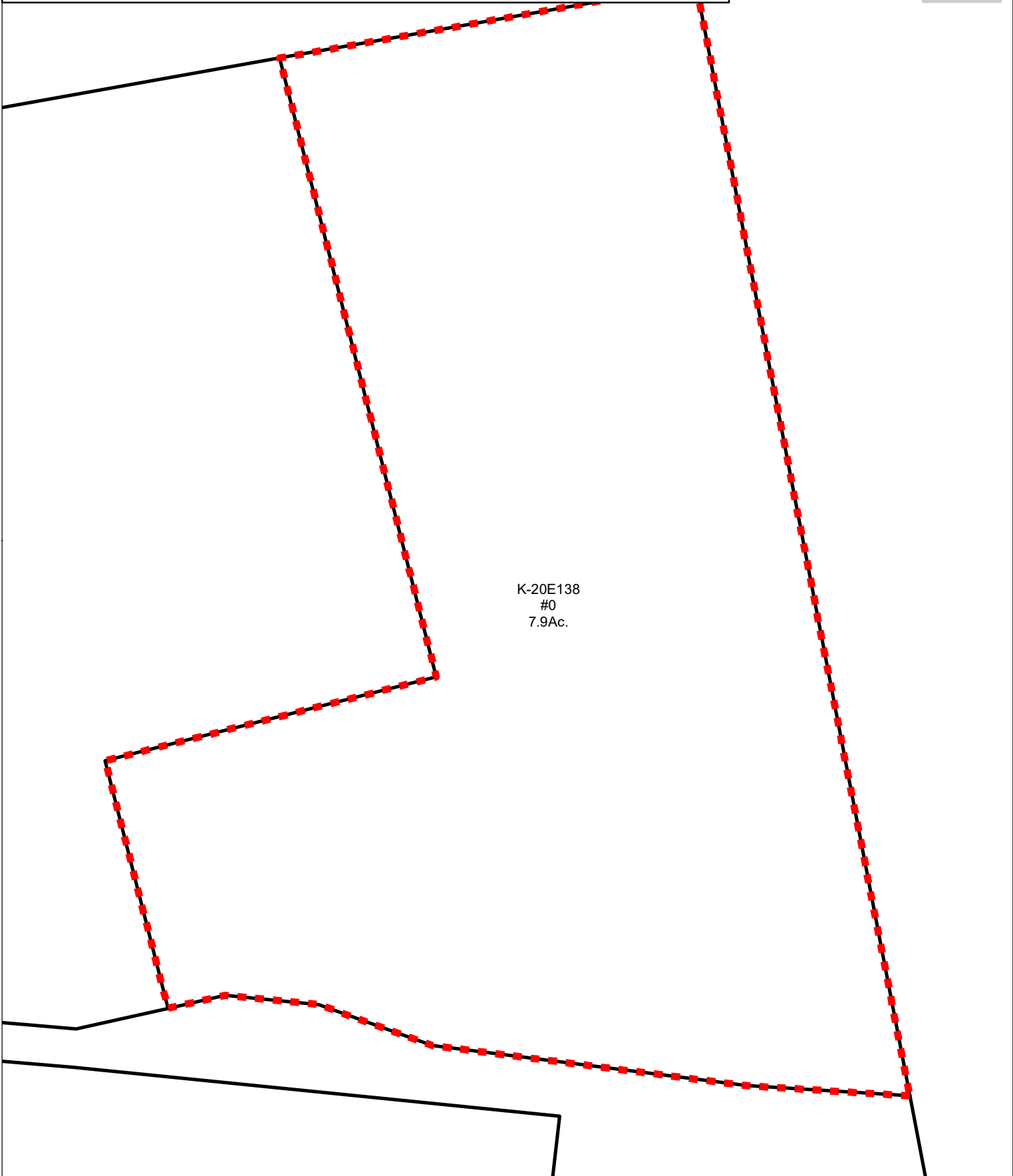
Year Built	1980
Building Desc.	RAD/TV TR
Building Style	Transmit Bldg
Building Grade	C
Stories	1
Occupancy	1.00
Exterior Walls	Pre-finish Metl
Exterior Walls 2	Aluminum Sidng
Roof Style	Gable
Roof Cover	Metal/Tin
Interior Walls	Drywall
Interior Walls 2	NA
Interior Floors 1	Concrete
Interior Floors 2	

Heating Fuel	Electric
Heating Type	Forced Hot Air
AC Type	Central
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	
Fin Bsmt Quality	
Bsmt Gar	0
Fireplaces	0

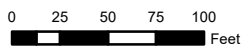
(*Industrial / Commercial Details)

Building Use	Ind/Comm
Building Condition	F
Sprinkler %	NA
Heat / AC	HEAT/AC SPLIT
Frame Type	STEEL
Baths / Plumbing	AVERAGE
Ceiling / Wall	CEIL & WALLS
Rooms / Prtns	AVERAGE
Wall Height	12.00
First Floor Use	NA
Foundation	NA

Borough of Naugatuck, Connecticut - Assessment Parcel Map
Parcel Account Number: 011-3060
Address: 0 CLARK HILL RD



K-20E138
#0
7.9Ac.



Disclaimer: This map is for informational purposes only.
All information is subject to verification by any user.
The Borough of Naugatuck and its mapping contractors
assume no legal responsibility for the information contained herein.

Map Produced March 2019

Exhibit C

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WIRELESS FACILITY UPGRADES BY



T-MOBILE NORTHEAST LLC

PROJECT: ANCHOR

SITE NUMBER: CTNH305B

SITE NAME: NH305/CHANNEL 20_ET

SITE ADDRESS: 103 EAST SIDE BOULEVARD

NAUGATUCK, CT 06770

(RF CONFIGURATION: 67D5994DB_2XAIR+1QP+1OP)

STRUCTURAL NOTES:
 PRIOR TO INSTALLATION OF THE PROPOSED EQUIPMENT CONTRACTOR SHOULD REVIEW THE MOUNT STRUCTURAL ANALYSIS REPORT DATED 08/01/2019 AND TOWER STRUCTURAL ANALYSIS REPORT DATED 4/14/2021 BOTH PREPARED BY FDH INFRASTRUCTURE SERVICES. AND ADHERE TO THE REPORT FULLY AND ALL THE RECOMMENDATIONS THEREIN, INCLUDING BUT NOT LIMITED TO ANTENNA PLACEMENT, COAX ROUTING, STRUCTURAL IMPROVEMENTS, ETC.

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.
- 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.
- DEVELOPMENT AND USE OF THE SITE WILL CONFORM TO ALL APPLICABLE CODES, ORDINANCES AND SPECIFICATIONS.

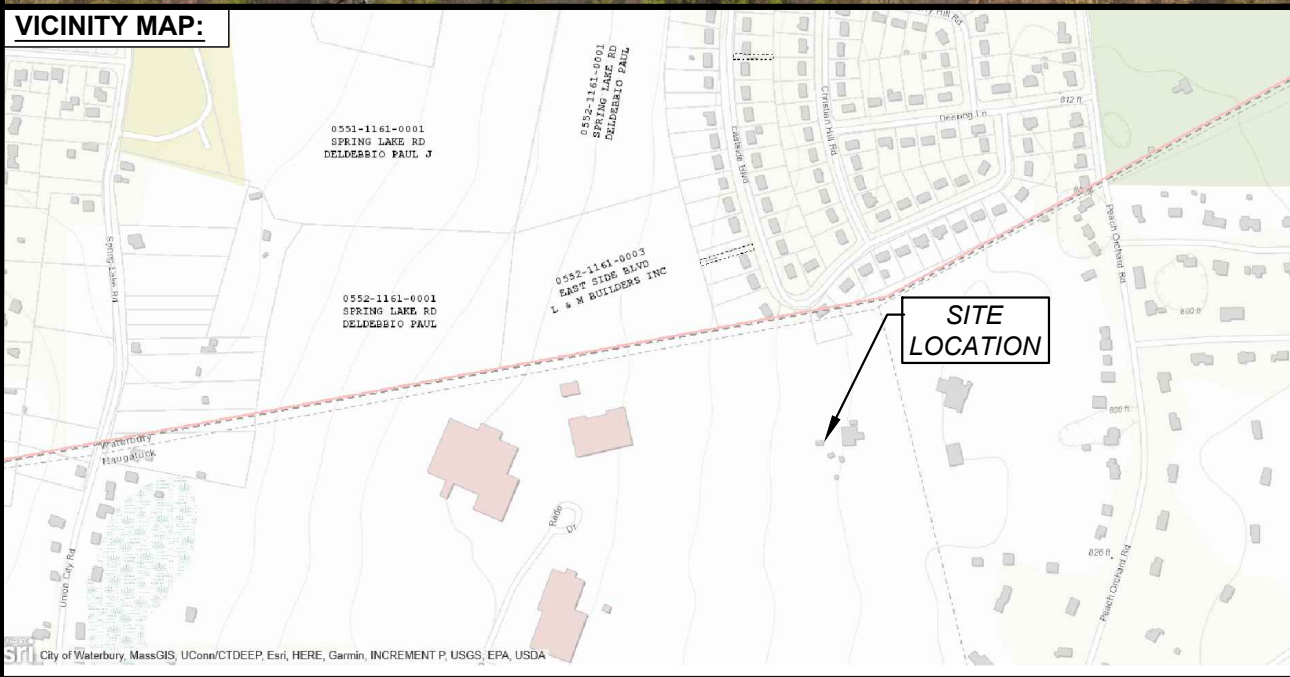
CODE COMPLIANCE:

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.

APPROVALS:

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



PROJECT SCOPE:

UPGRADE OF EXISTING WIRELESS FACILITY AS FOLLOWS:

CABINETS: UPGRADE EXISTING RBS 6102 CABINET INTERNALLY, ADD (1) 6160 AND (1) B160 CABINETS ON EXPANDED CONCRETE PAD.
ANTENNA MOUNTS: REPLACE EXISTING ANTENNA T-ARM MOUNTS WITH NEW SECTOR MOUNTS.
ANTENNAS: REMOVE ALL (6) EXISTING ANTENNAS AND ADD (9) NEW ANTENNAS TO THE NEW SECTOR MOUNT. REMOVE ALL (3) EXISTING TMAS, DIPLEXERS AND REMOTE RADIO UNITS. ADD (6) REMOTE RADIO UNITS AT ANTENNAS.
CABLES: REMOVE ALL (12) EXISTING COAXIAL LINES, REMOVE ANY 9X18 HCS LINES, ADD (3) 6X12 HCS FOR FINAL CONFIGURATION OF (6) 6X12 HCS CABLES.

PROJECT INFORMATION:

ADDRESS: 103 EAST SIDE BOULEVARD
 NAUGATUCK, CT 06770

STRUCTURE TYPE: GUYED TOWER
 COORDINATES: 41°31'04.69" N 73°01'06.43" W
 PARCEL ID: MAP 4, BLOCK 20E138, LOT A R-15
 ZONING DISTRICT: R-15

PROJECT TEAM:

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

LANDLORD: CHANNEL 20 INC C/O WTIC TV
 1 CORPORATE CENTER
 HARTFORD, CT 06103

PROJECT MANAGER: NORTHEAST SITE SOLUTIONS
 420 MAIN STREET, BLDG 4
 STURBRIDGE, MA 01566
 SHELDON FREINCLE
 SHELDON@NORTHEASTSITESOLUTIONS.COM
 201-776-8521

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 POINT CLOUD
 A-2: SITE PLAN
 A-3: EQUIPMENT LAYOUT, CONCRETE PAD DETAILS
 A-4: ELEVATION AND ANTENNA PLANS AND DETAILS
 A-5: ANTENNAS AND EQUIPMENT SPECIFICATIONS
 E-1: ONE LINE DIAGRAM AND GROUNDING DETAILS

APPLICANT:

T-Mobile
T-MOBILE NORTHEAST LLC

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

PROJECT MANAGER

NORTHEAST SITE SOLUTIONS
Turning Wireless Developments

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

CONSULTANT:

FORESITE LLC

Architects . Engineers . Surveyors

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

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REV	DESCRIPTION	DATE
A	PRELIMINARY	04/26/21
0	FINAL ISSUED	04/26/21
1	ANTENNA MODEL CORRECTION	05/03/21

SITE NUMBER: CTNH305B
 SITE NAME: NH305/CHANNEL 20_ET
 SITE ADDRESS: 103 EAST SIDE BOULEVARD
 NAUGATUCK, CT 06770

SHEET TITLE:
T-1: TITLE SHEET

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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" ϕ 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. ANTENNA INSTALLATION:
 - A. INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND CLIENT'S REPRESENTATIVE SPECIFICATIONS.
 - B. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.
 - C. INSTALL COAXIAL / FIBER CABLES AND TERMINATIONS BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTORS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS.
15. ANTENNA AND COAXIAL / FIBER CABLE GROUNDING:
 - A. ALL EXTERIOR #6 GREEN GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED WITH ANDREWS CONNECTOR/SPLICE WEATHERPROOFING KIT TYPE #221213 OR EQUAL.
 - B. ALL COAXIAL / FIBER CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL / FIBER CABLE (NOT WITHIN BENDS).
16. 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
17. 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
 NEWTON, MA 02460
 617-212-3123



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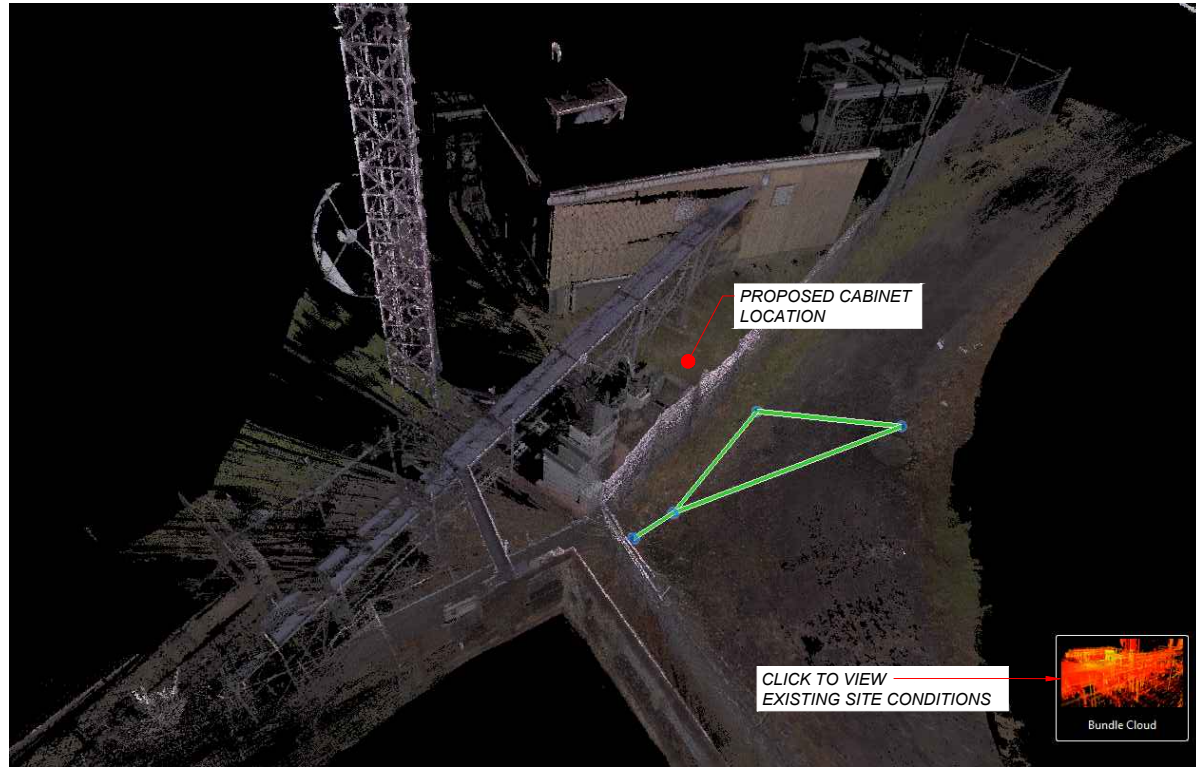
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A	PRELIMINARY	04/26/21
0	FINAL ISSUED	04/26/21
1	ANTENNA MODEL CORRECTION	05/03/21

SITE NUMBER: CTNH305B
 SITE NAME: NH305/CHANNEL 20_ET
 SITE ADDRESS: 103 EAST SIDE BOULEVARD
 NAUGATUCK, CT 06770

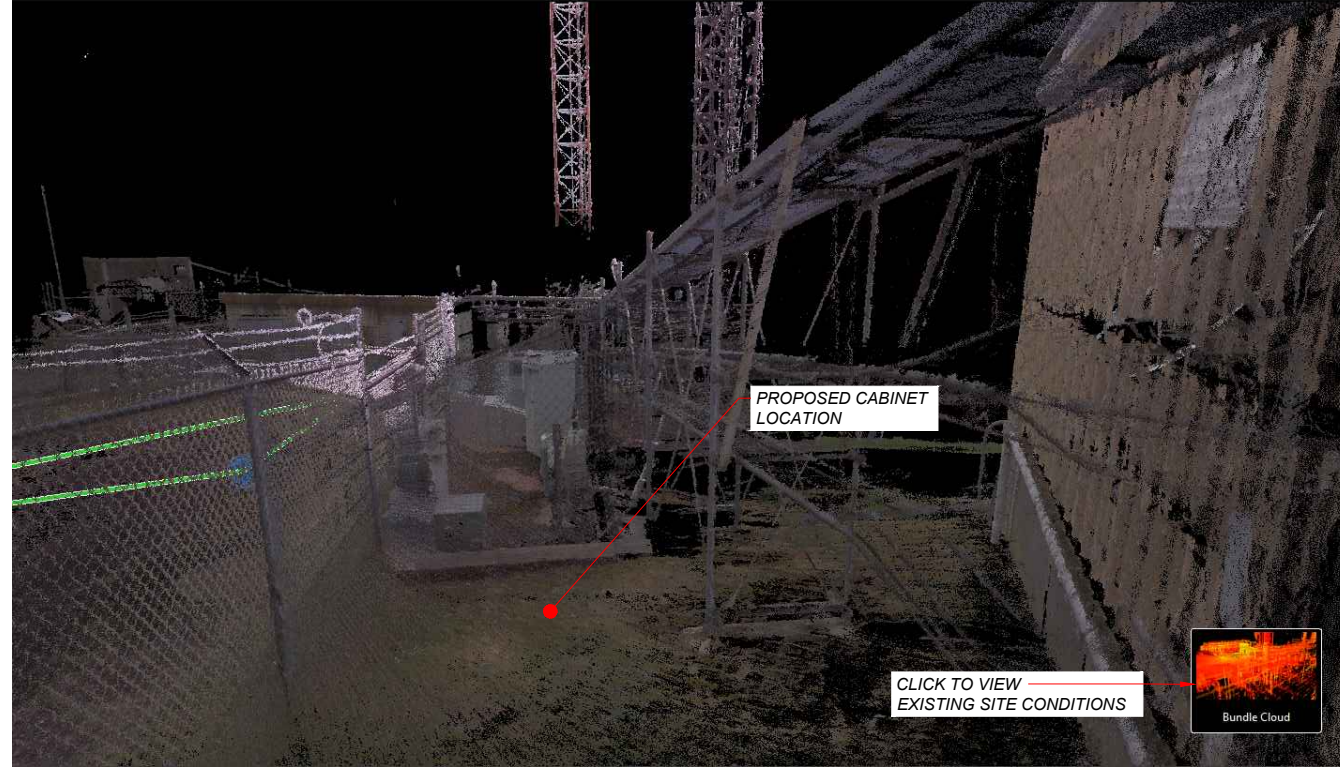
SHEET TITLE:
N-1: GENERAL NOTES

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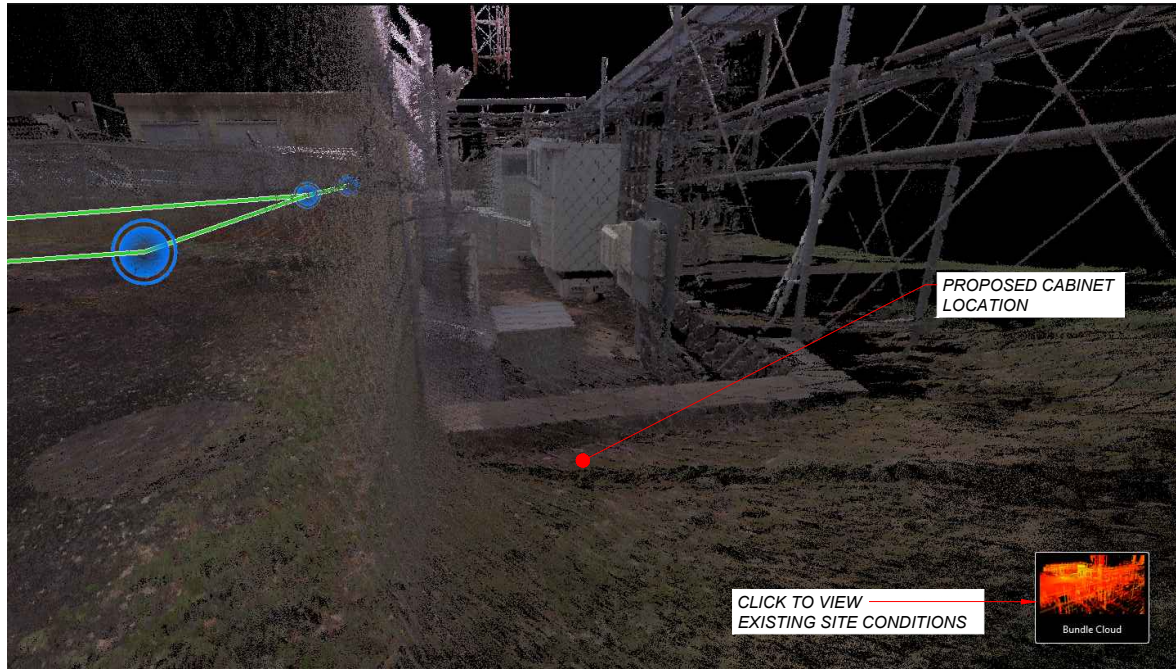
PROPOSED CABINET LOCATION

CLICK TO VIEW EXISTING SITE CONDITIONS



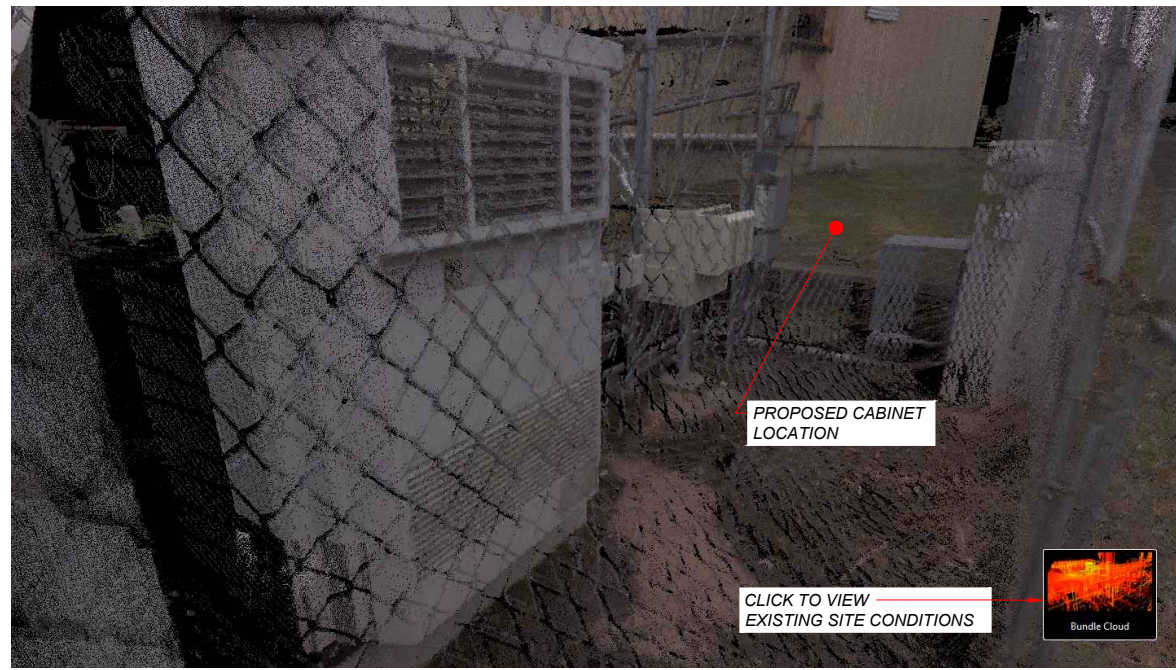
PROPOSED CABINET LOCATION

CLICK TO VIEW EXISTING SITE CONDITIONS



PROPOSED CABINET LOCATION

CLICK TO VIEW EXISTING SITE CONDITIONS



PROPOSED CABINET LOCATION

CLICK TO VIEW EXISTING SITE CONDITIONS



SITE POINT CLOUD
NTS

1
A-1

APPLICANT:
T-Mobile
T-MOBILE NORTHEAST LLC

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

PROJECT MANAGER
NORTHEAST SITE SOLUTIONS
Turning 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
NEWTON, MA 02460
617-212-3123



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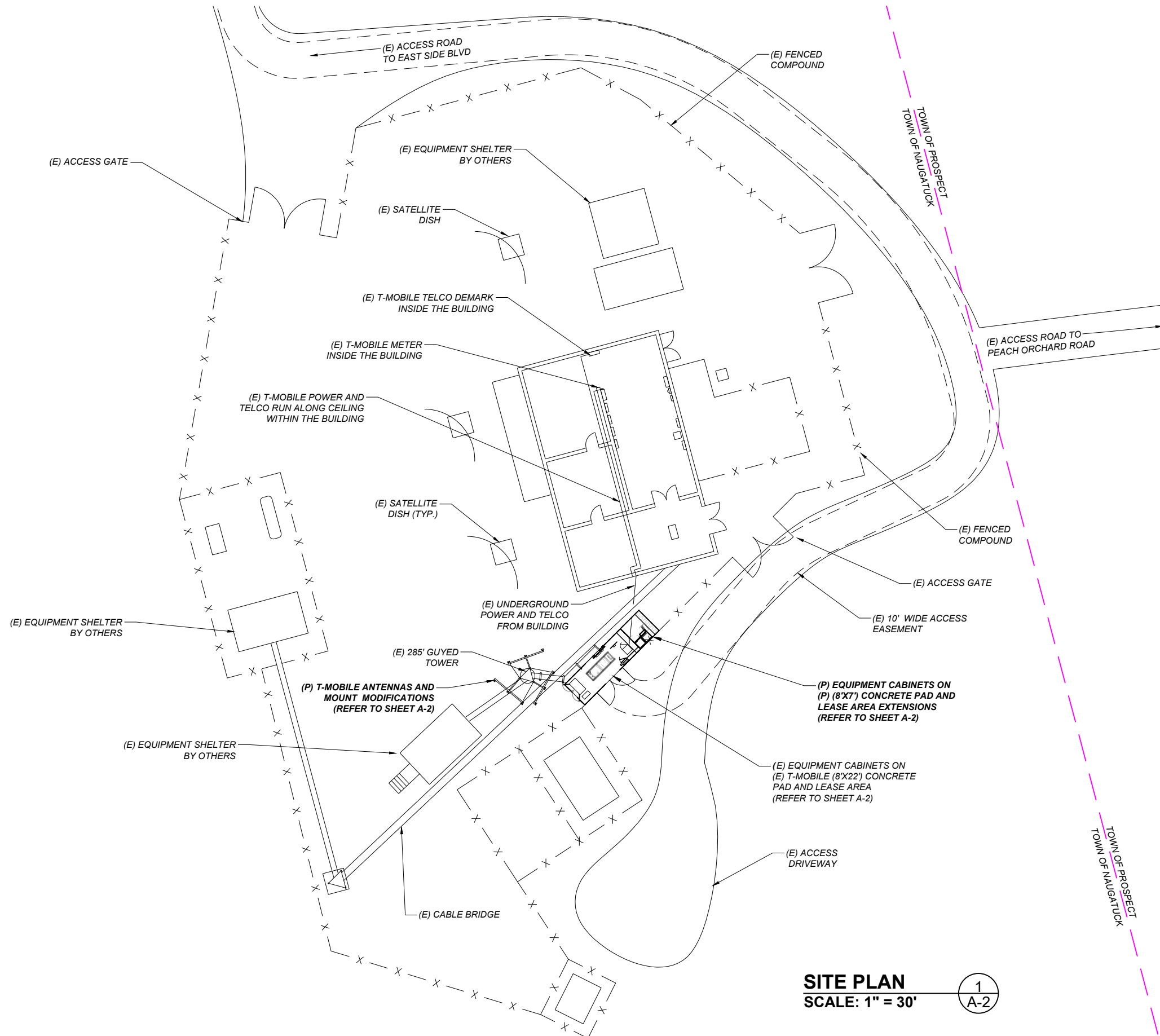
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SHEET TITLE:
A-1: SITE POINT CLOUD

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SITE PLAN
SCALE: 1" = 30'

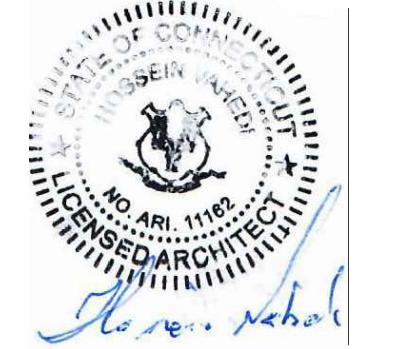
1
A-2

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

PROJECT MANAGER

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

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



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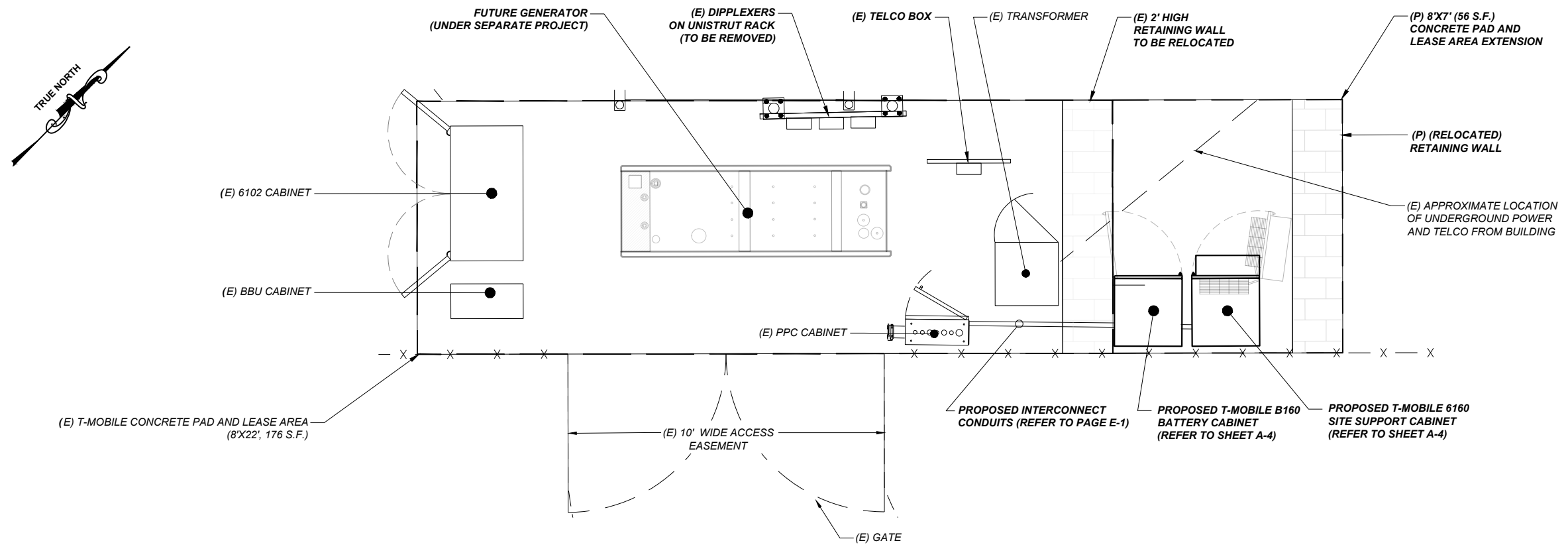
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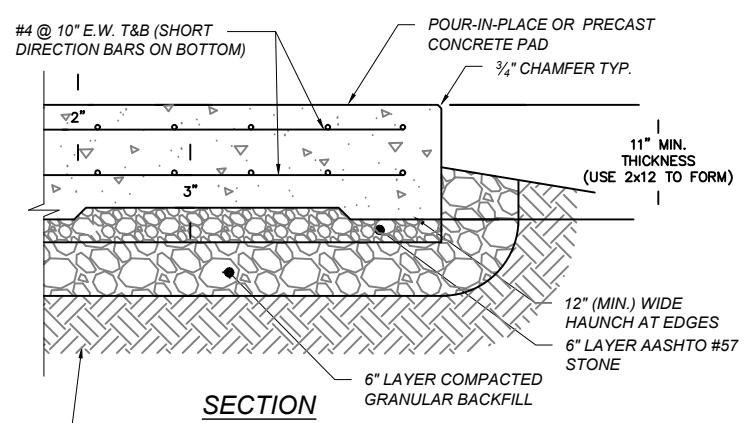
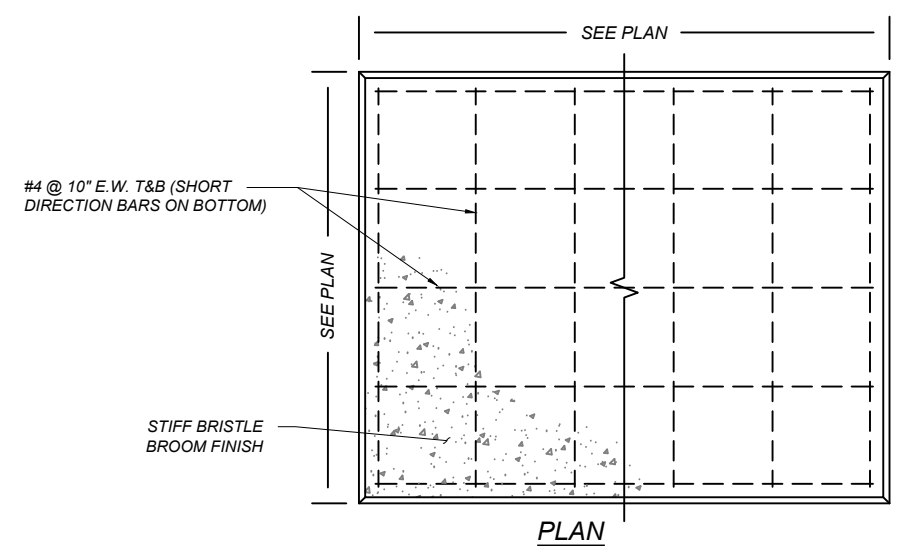
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SHEET TITLE:
A-2: SITE PLAN

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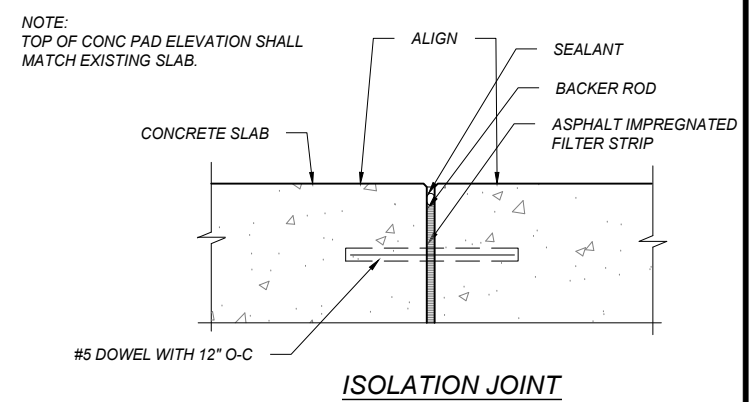


ENLARGED SITE PLAN 1
SCALE: 1/4" = 1'-0" A-3



CONCRETE PAD DETAILS 2
N.T.S. A-3

- CONCRETE PAD 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.



APPLICANT:
T-Mobile
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
 NEWTON, MA 02460
 617-212-3123



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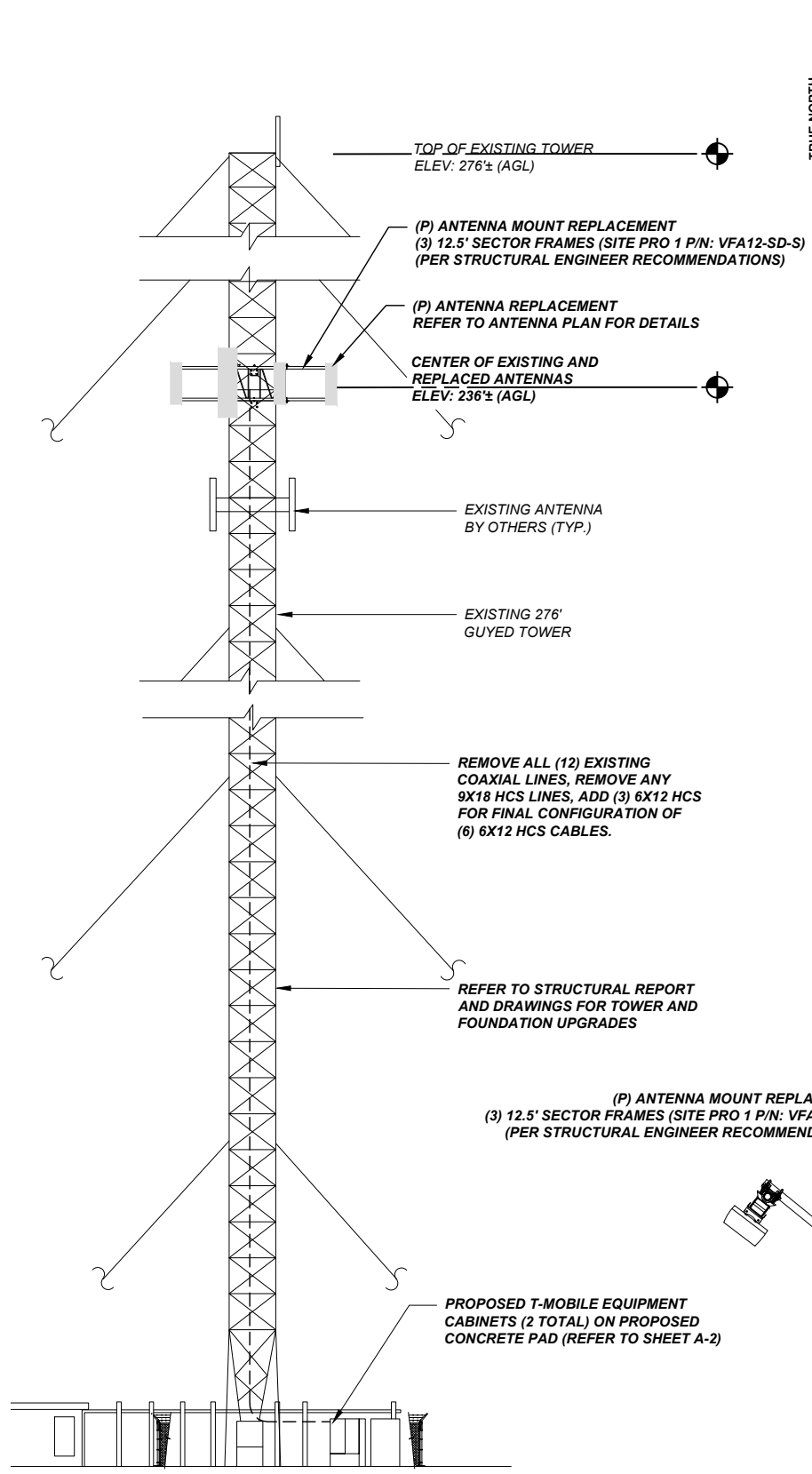
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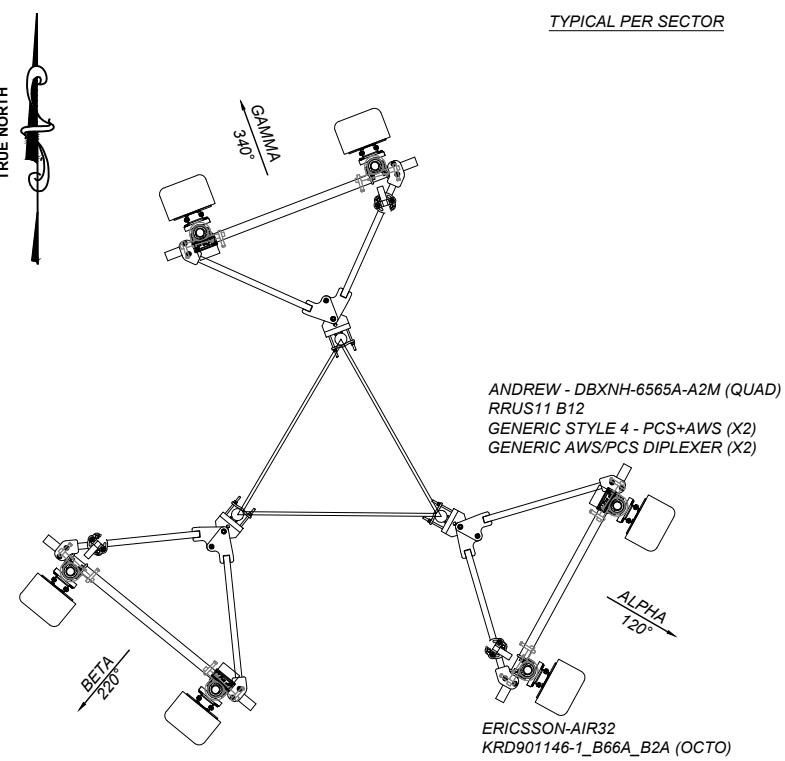
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SHEET TITLE:
 A-3: EQUIPMENT LAYOUT AND CONCRETE PAD DETAILS

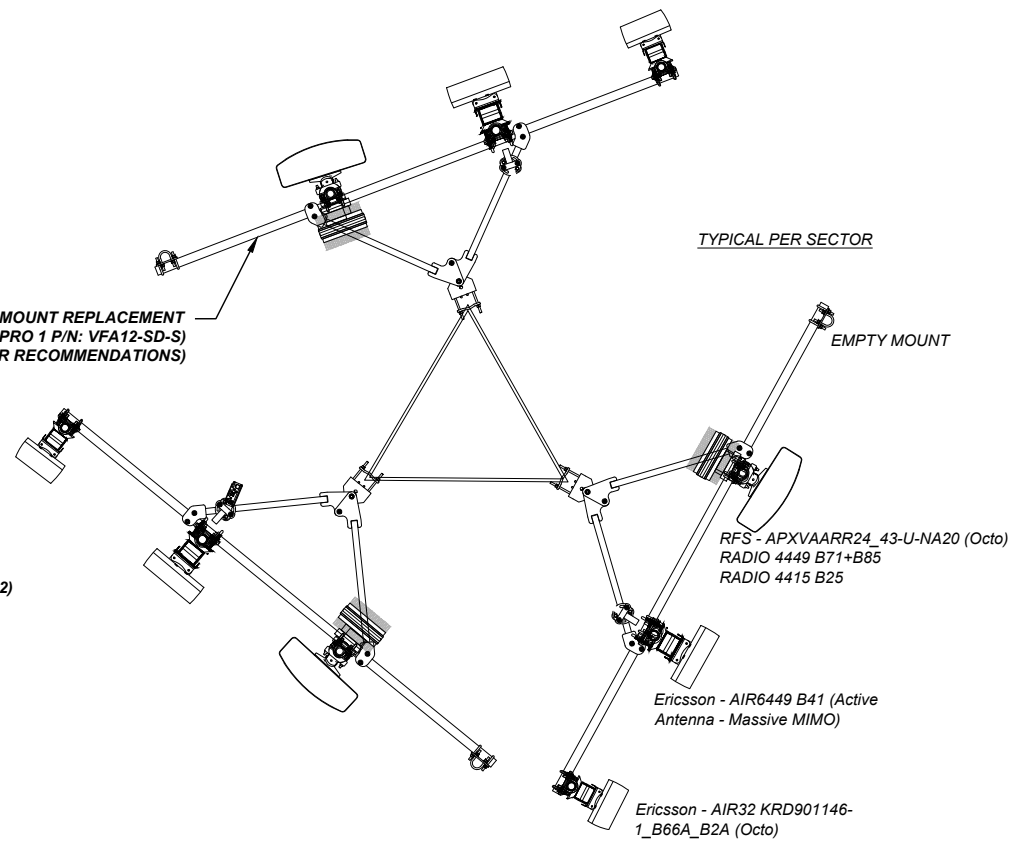
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ELEVATION
N.T.S. 1
A-4



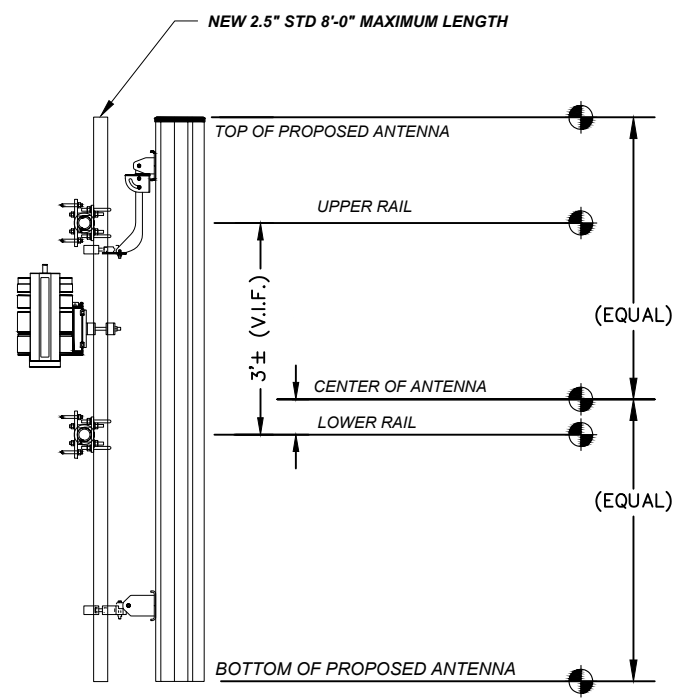
EXISTING ANTENNA PLAN
N.T.S. 2
A-4



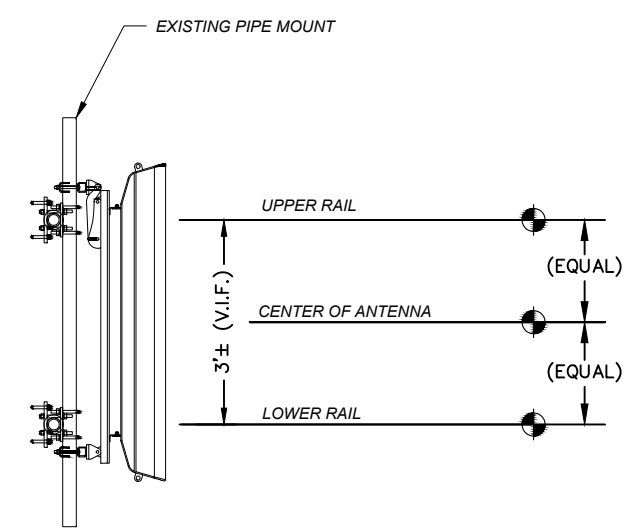
FINAL ANTENNA PLAN
N.T.S. 3
A-4

STRUCTURAL NOTES:

PRIOR TO INSTALLATION OF THE PROPOSED EQUIPMENT CONTRACTOR SHOULD REVIEW THE MOUNT STRUCTURAL ANALYSIS REPORT DATED 08/01/2019 AND TOWER STRUCTURAL ANALYSIS REPORT DATED 4/14/2021 BOTH PREPARED BY FDH INFRASTRUCTURE SERVICES. AND ADHERE TO THE REPORT FULLY AND ALL THE RECOMMENDATIONS THEREIN, INCLUDING BUT NOT LIMITED TO ANTENNA PLACEMENT, COAX ROUTING, STRUCTURAL IMPROVEMENTS, ETC.



**APXVAAR24_43-U-NA20
ANTENNA MOUNTING**
N.T.S. 4
A-4



**AIR32 KRD901146-1_B66A_B2A
ANTENNA MOUNTING**
N.T.S. 5
A-4

APPLICANT:

T-Mobile
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
NEWTON, MA 02460
617-212-3123

Forensic Seal

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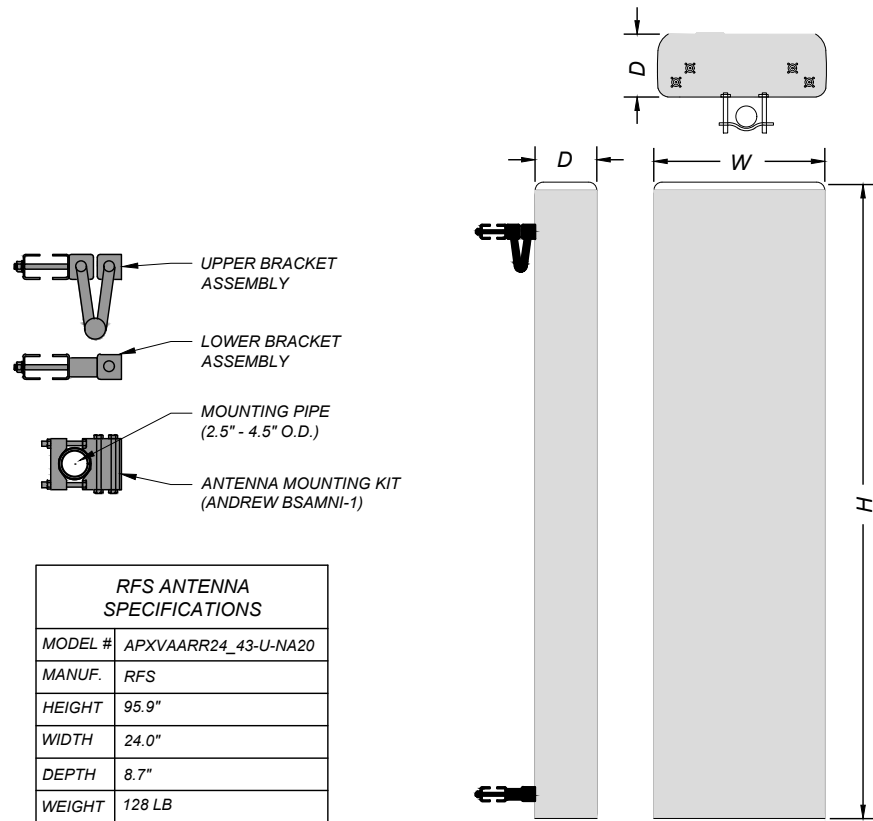
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NAUGATUCK, CT 06770

SHEET TITLE:
A-4: ELEVATIONS, ANTENNA PLANS
AND DETAILS

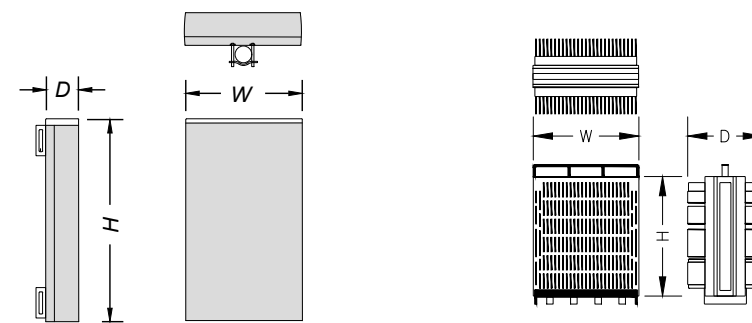
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RFS ANTENNA SPECIFICATIONS	
MODEL #	APXVAARR24_43-U-NA20
MANUF.	RFS
HEIGHT	95.9"
WIDTH	24.0"
DEPTH	8.7"
WEIGHT	128 LB

RFS APX ANTENNA
N.T.S.

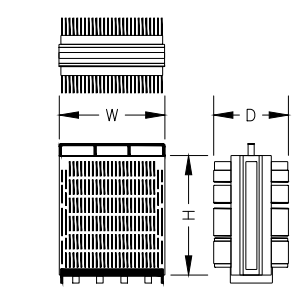
1
A-5



ERICSSON ANTENNA SPECIFICATIONS	
MODEL #	AIR6488 B41
MANUF.	ERICSSON
HEIGHT	34.8"
WIDTH	20.5"
DEPTH	7.2"
WEIGHT	128 LB

AIR6488 ANTENNA
N.T.S.

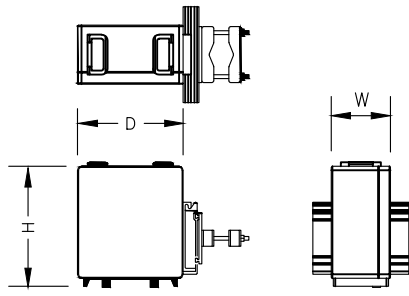
2
A-5



REMOTE RADIO UNIT SPECIFICATIONS	
MODEL #	RADIO 4449 B71+B12
MANUF.	ERICSSON
HEIGHT	14.9"
WIDTH	13.2"
DEPTH	10.4"
WEIGHT	74 LB

REMOTE RADIO UNIT
N.T.S.

3
A-5



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

REMOTE RADIO UNIT
N.T.S.

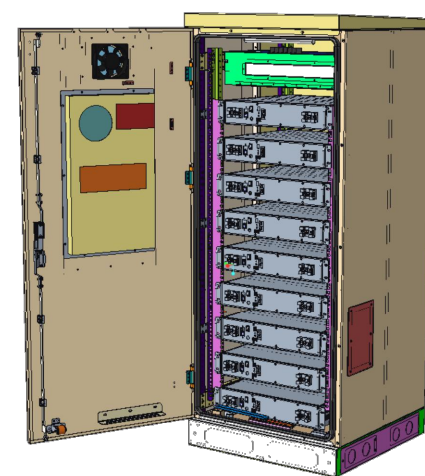
4
A-5



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

SITE SUPPORT CABINET
N.T.S.

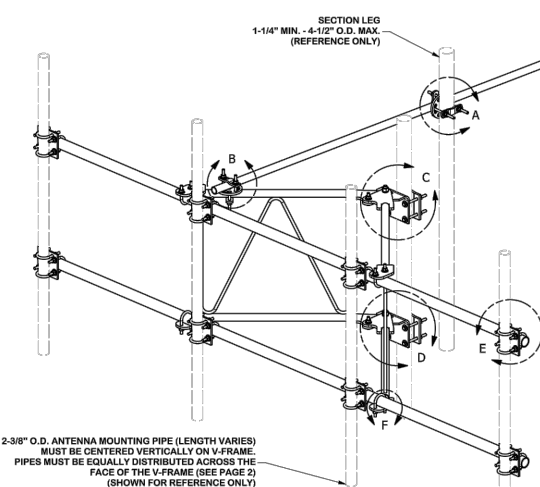
5
A-5



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

BATTERY CABINET
N.T.S.

6
A-5



REPLACED SECTOR MOUNT	
PART #	VFA12-SD-S
MANUF.	SITE PRO 1
WIDTH	12.5'

NEW SECTOR MOUNT
N.T.S.

8
A-5

APPLICANT:
T-Mobile
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

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462 WALNUT STREET
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617-212-3123

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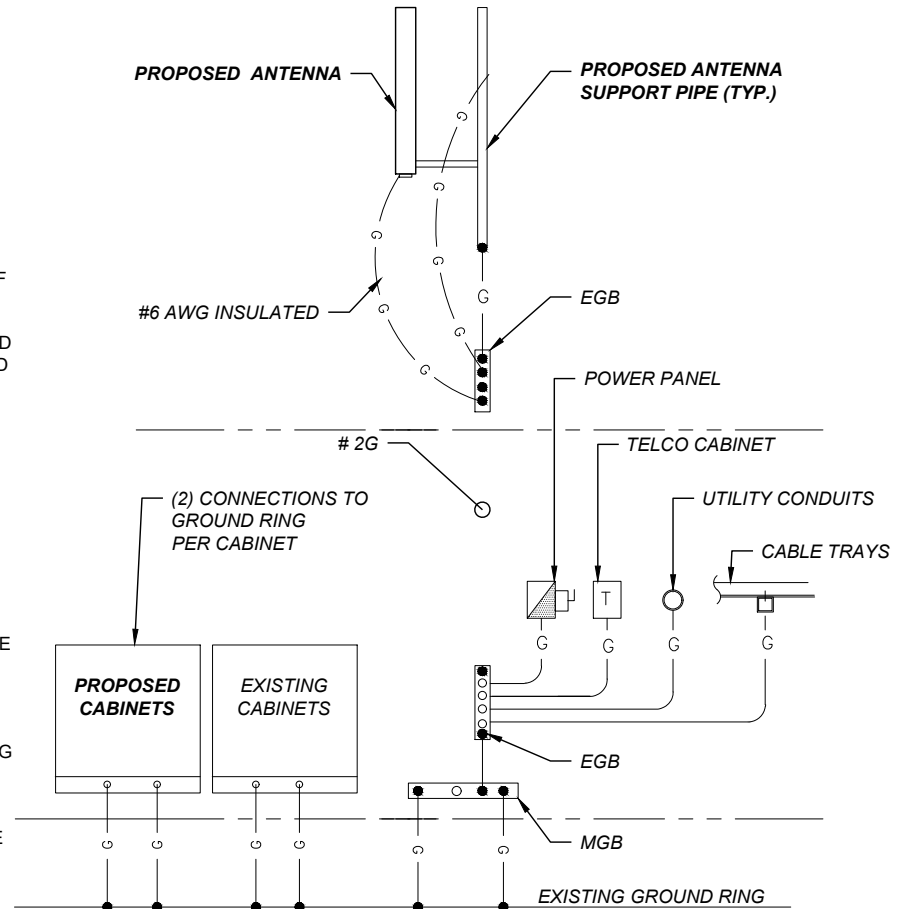
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SHEET TITLE:
A-5: ANTENNA AND EQUIPMENT SPECIFICATIONS

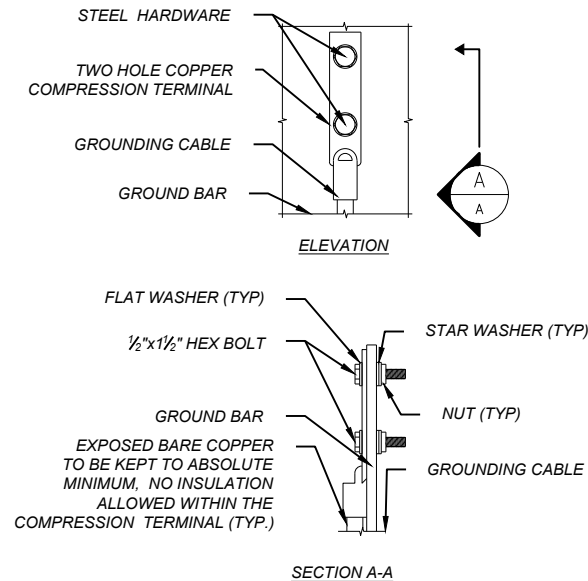
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ELECTRICAL & GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PRODUCED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) ND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLING BETWEEN ELECTRICAL ROOM AND PROPOSED CELL SITE ARE PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELECOM CABINET AND RBS CABINET AS INDICATED ON DRAWING A -1. PROVIDE FULL LENGTH PULL ROPE INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NAME 3R ENCLOSURE.
11. GROUNDING SHALL COMPLY WITH NEC ART. 250.
12. GROUNDING COAX CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURES COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
13. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSTALLATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE GROUND.
14. ALL GROUND CONNECTION TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
15. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AS RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY BOND ANY METER OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
16. CONNECTIONS TO MGB SHALL BE ARRANGED IN THREE MAIN GROUPS: SURGE PROCEDURES (COAXIAL CABLE GROUND KITS, TELCO AND POWER PANEL GROUND); (GROUNDING ELECTRODE RING OR BUILDING STEEL); NON-SURGING OBJECTS (EGB GROUND IN RBS UNIT).
17. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
18. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTION.
19. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
20. BOND ANTENNA EGB'S AND MGB TO WATER MAIN.
21. TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.
22. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
23. VERIFY PROPOSED SERVICE UPGRADE WITH LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTION.

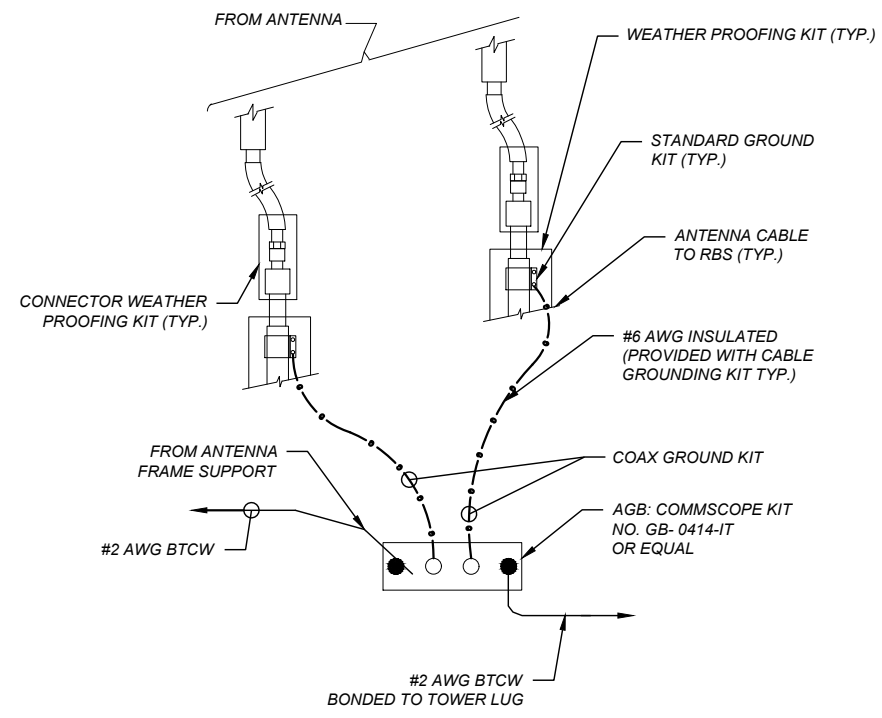


GROUNDING RISER DIAGRAM 1
N.T.S. E-1



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

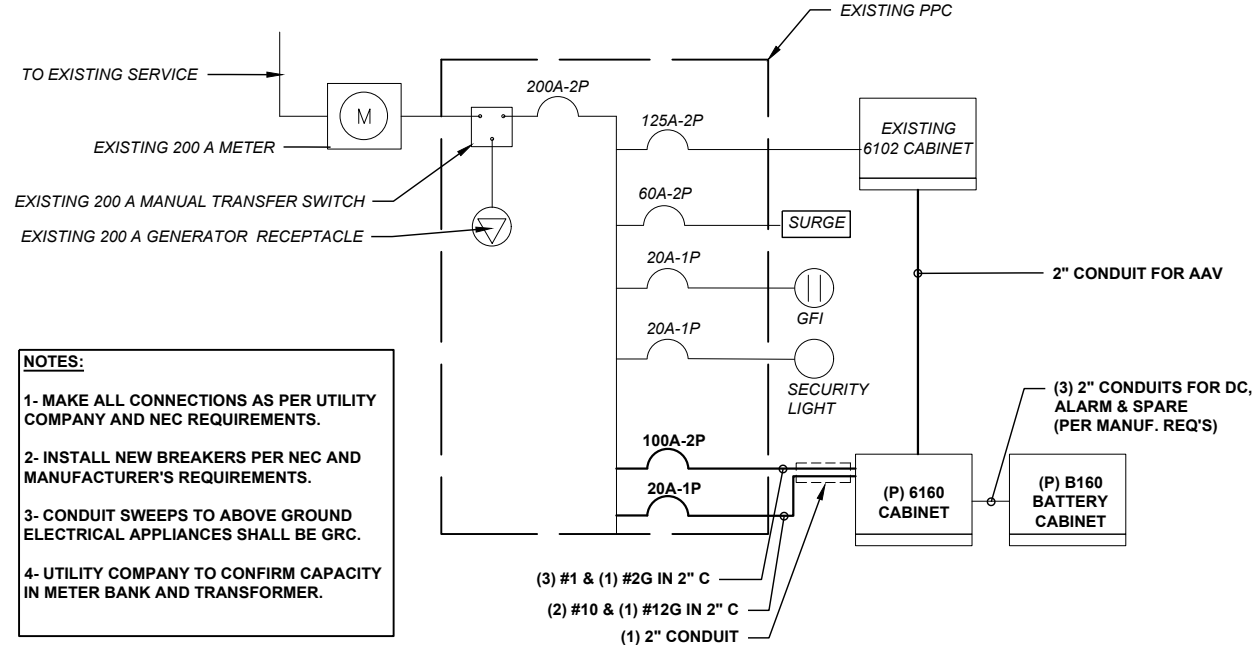
GROUND BAR CONNECTIONS 3
N.T.S. E-1



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

ANTENNA CABLE GROUNDING 2
N.T.S. E-1

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



- NOTES:
 1- MAKE ALL CONNECTIONS AS PER UTILITY COMPANY AND NEC REQUIREMENTS.
 2- INSTALL NEW BREAKERS PER NEC AND MANUFACTURER'S REQUIREMENTS.
 3- CONDUIT SWEEPS TO ABOVE GROUND ELECTRICAL APPLIANCES SHALL BE GRC.
 4- UTILITY COMPANY TO CONFIRM CAPACITY IN METER BANK AND TRANSFORMER.

TYPICAL ONE LINE DIAGRAM 4
N.T.S. E-1

APPLICANT:
T-Mobile
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
 NEWTON, MA 02460
 617-212-3123



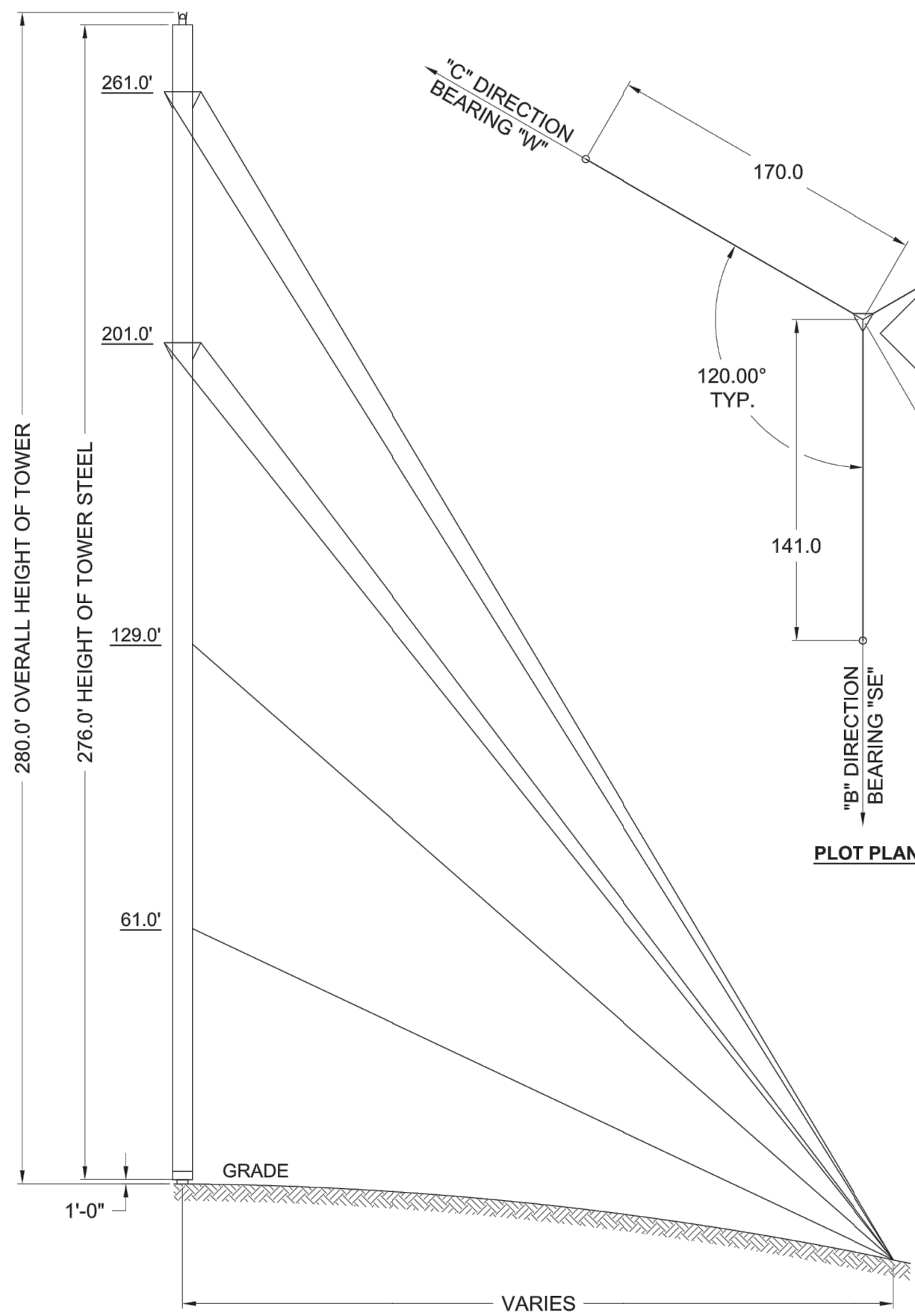
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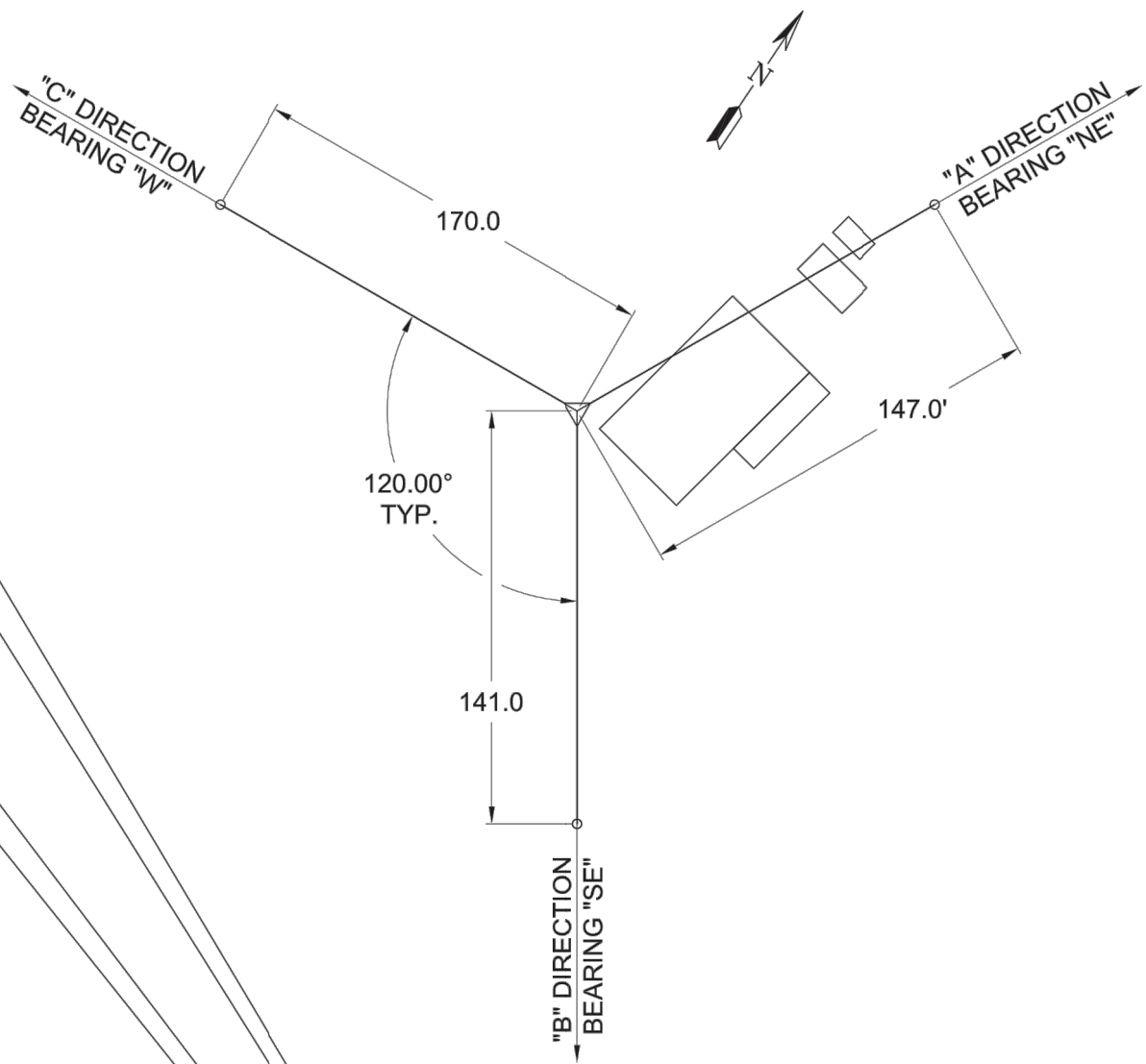
REV	DESCRIPTION	DATE
A	PRELIMINARY	04/26/21
0	FINAL ISSUED	04/26/21
1	ANTENNA MODEL CORRECTION	05/03/21

SITE NUMBER: CTNH305B
 SITE NAME: NH305/CHANNEL 20_ET
 SITE ADDRESS: 103 EAST SIDE BOULEVARD
 NAUGATUCK, CT 06770

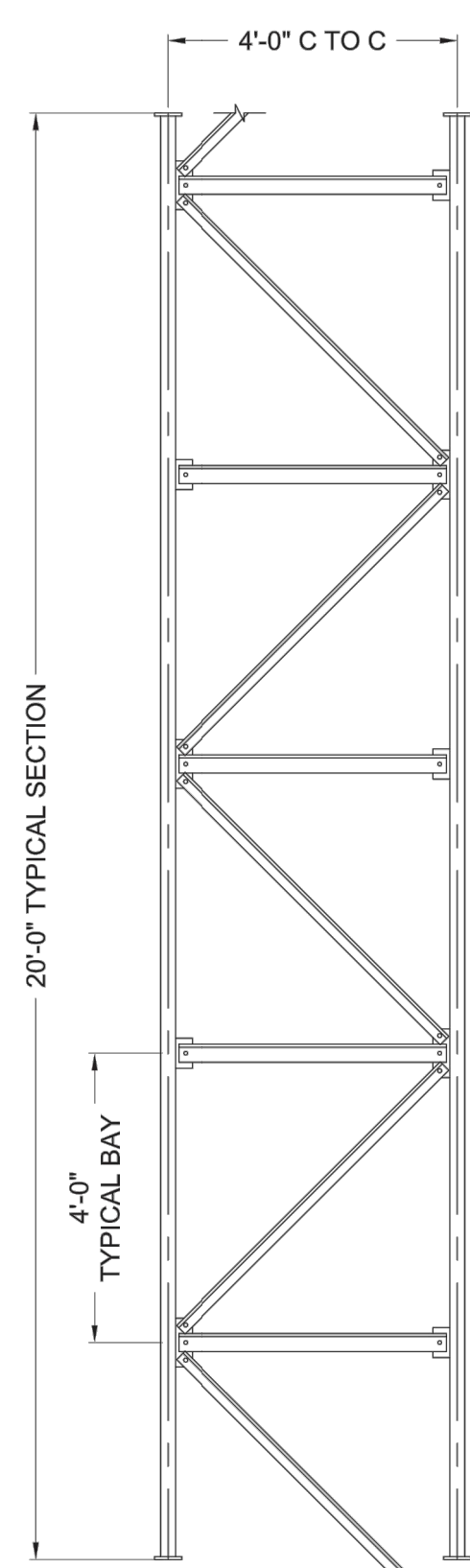
SHEET TITLE:
 E-1: GROUNDING DETAILS AND ONE LINE DIAGRAM



ELEVATION VIEW



PLOT PLAN



TOWER DETAIL

NOTE:
1. SEE SHEETS D01.01 & D01.02 FOR GENERAL NOTES.

 A BUSINESS OF FDH INFRASTRUCTURE SERVICES 100 West Main Street, Suite 400 Lansdale, PA 19446		PREPARED BY JMR 3/24/21
GENERAL ARRANGEMENT WATERBURY, CT		CHECKED BY GH 4/12/21
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REVISION DESCRIPTION * * * * *		DRAWING NUMBER D01.00
D.C.K DATE E.C.K DATE * * * * *		PROJECT NUMBER 350819
DATE * * * * *		DRAWING NUMBER D01.00

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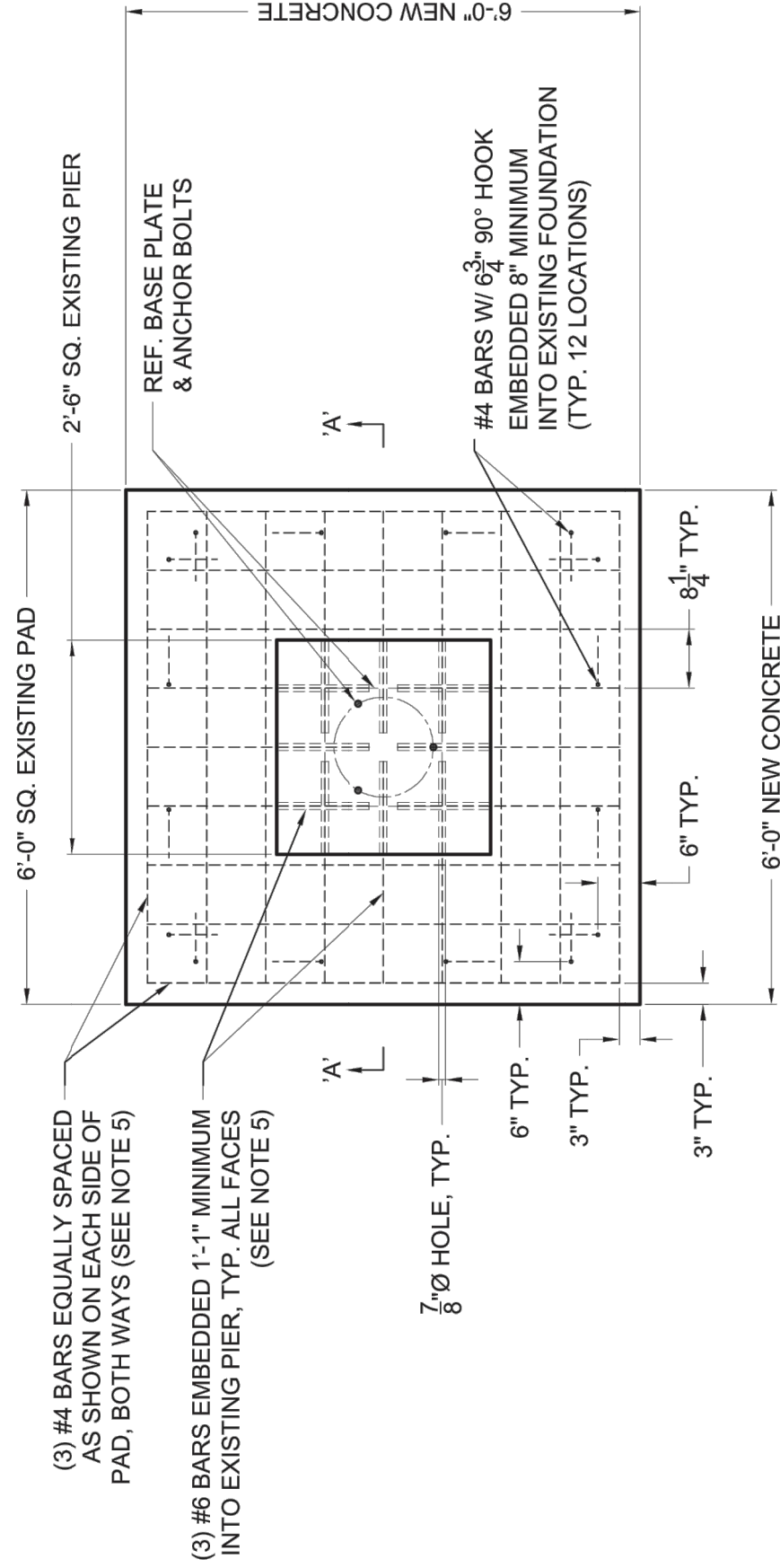


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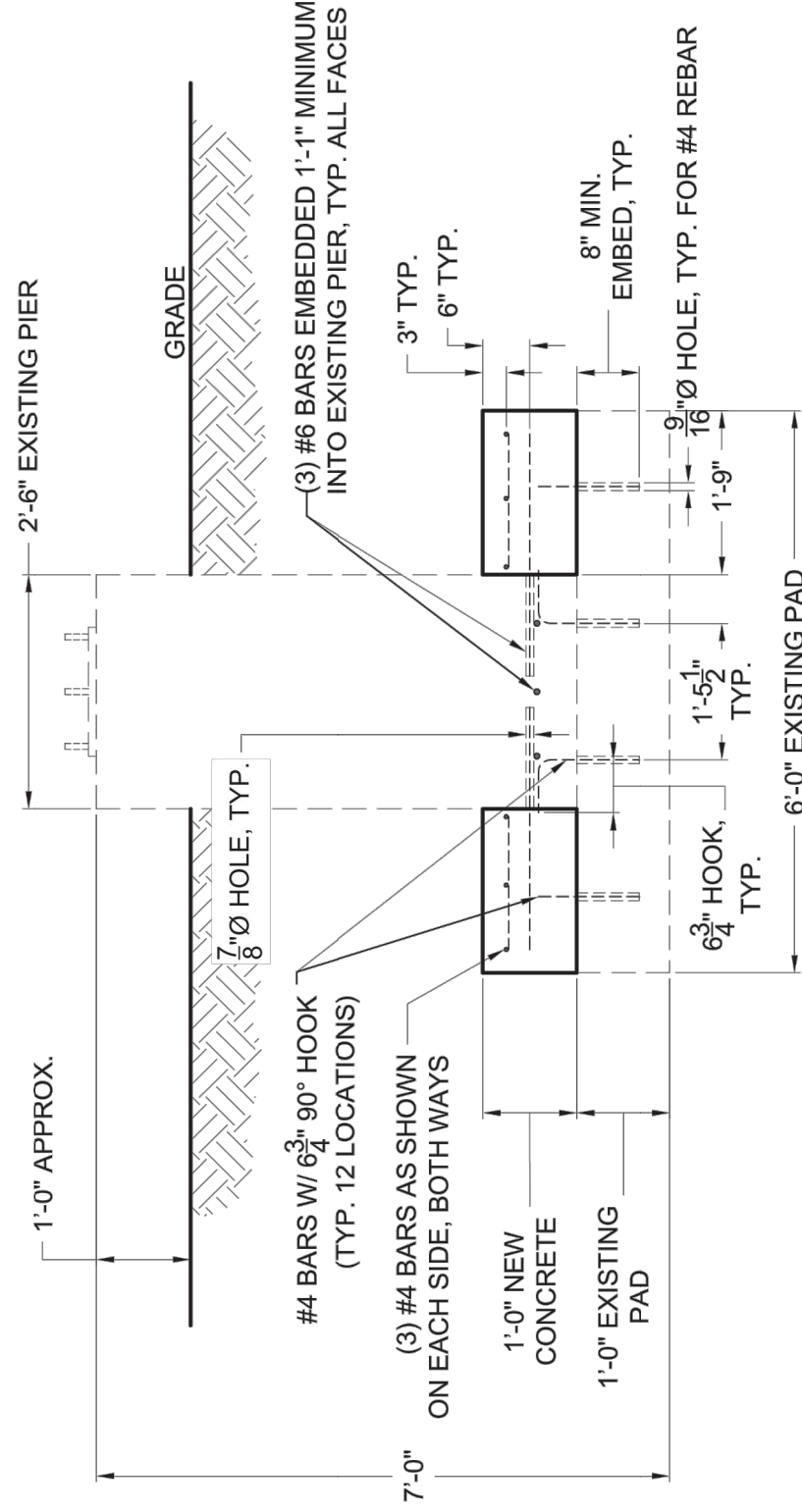
- SEE PAGE D02.01 FOR FOUNDATION NOTES.
- EXCAVATE AROUND PERIMETER OF EXISTING BASE PIER.
- CLEAN AND ROUGHEN ALL INTERFACES BETWEEN OLD AND NEW CONCRETE. APPLY BONDING AGENT SIKADUR 32, HI-MOD LPL OR EQUIVALENT BONDING AGENT PRIOR TO NEW CONCRETE PLACEMENT. BONDING AGENT SHALL BE APPLIED IN ACCORDANCE WITH MANUFACTURER APPLICATION SPECIFICATIONS AND GUIDELINES.
- SECURE DOWELED IN REBAR WITH REBAR ADHESIVE (HILTI-HIT HY 200 INJECTION ADHESIVE OR EQUIVALENT).
- FIELD LOCATE EXISTING REBAR PRIOR TO DRILLING. DO NOT DAMAGE EXISTING REBAR DURING INSTALLATION OF EPOXY DOWELS.
- REINFORCING SHALL BE POSITIONED AS SHOWN AND ADEQUATELY SUPPORTED AGAINST DISPLACEMENT. TACK WELDING IS NOT PERMITTED.
- BEND ALL REINFORCING COLD AND REMOVE ALL SCALE.
- MINIMUM COVER FOR REINFORCING BARS IS 3" UNLESS NOTED OTHERWISE.
- BACKFILL NEAR AND AROUND ALL FOUNDATIONS WITH A REASONABLE WELL GRADED FILL AND COMPACT TO WITHIN 95% OF MAXIMUM DRY UNIT DENSITY.
- FOUNDATION DESIGN IS BASED ON A GROSS ALLOWABLE BEARING PRESSURE OF 8000 PSF.
- BILL OF MATERIAL IS APPROXIMATE AND FOR REFERENCE ONLY. CONTRACTOR MUST VERIFY ALL QUANTITIES.

BILL OF MATERIAL

QTY.	NAME	DESCRIPTION
100 FT.	REINFORCING BARS	#4 - ASTM A615 GRADE 60
35 FT.	REINFORCING BARS	#6 - ASTM A615 GRADE 60
1.5 CU. YDS.	CONCRETE	4000 PSI AFTER 28 DAYS
AS REQUIRED	HILTI-HIT-HY 200 ADHESIVE	----



PLAN VIEW



SECTION "A-A"



BASE FOUNDATION MODIFICATION
WATERBURY, CT

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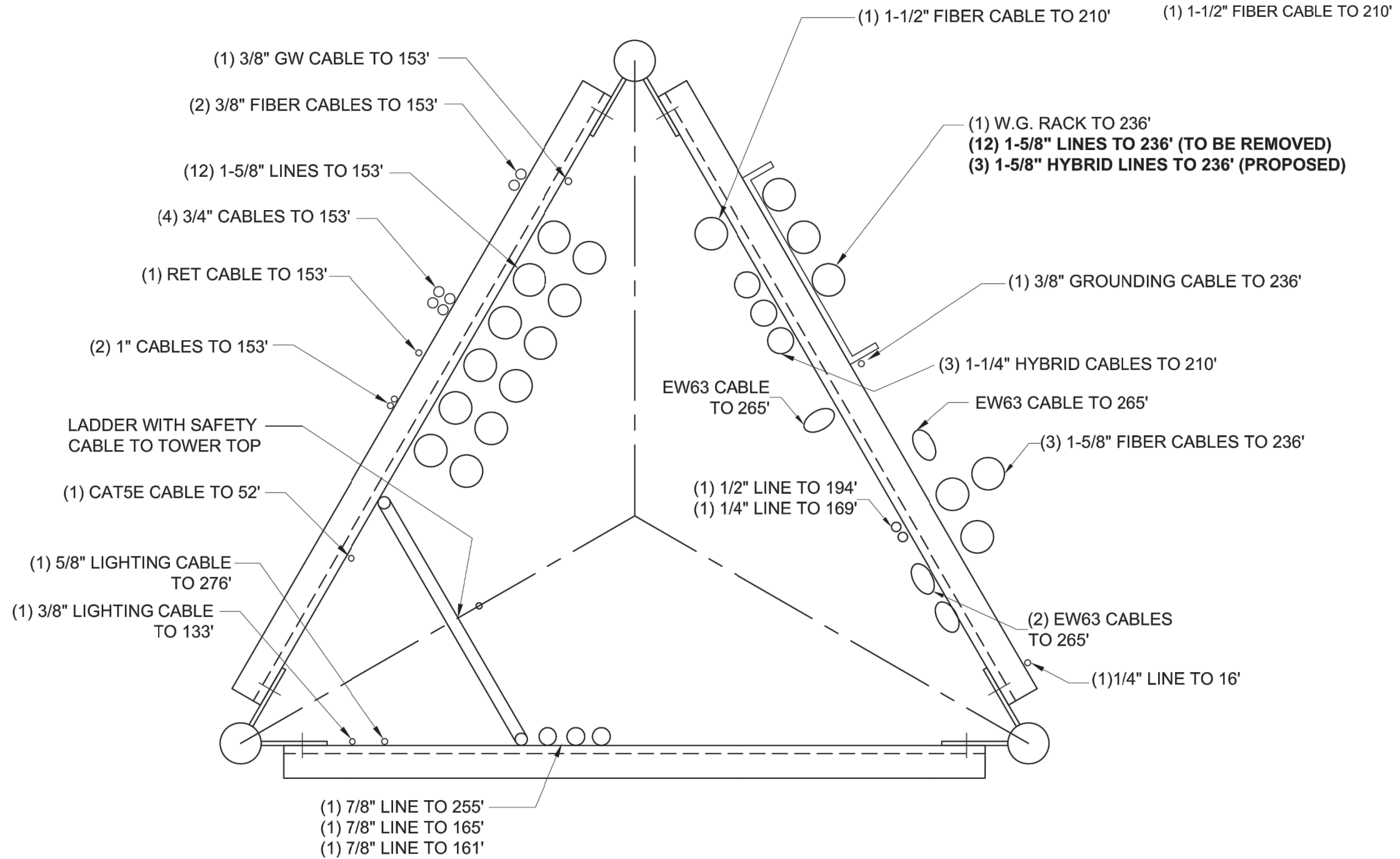
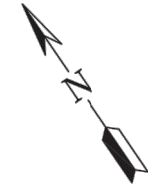
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PREPARED BY	JM/R	3/24/21
CHECKED BY	GH	4/12/21
ENGINEER REVIEW	AV	4/14/2021
PROJECT NUMBER	350819	
DRAWING NUMBER	D02.00	

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NOTE:

1. THE TOWER MODIFICATION IS BASED ON THE LINEAR APPURTENANCES (LADDER, TRANSMISSION LINES, CONDUITS, ETC.) BEING INSTALLED IN THE POSITION SHOWN ON THE CROSS SECTION. DEVIATING FROM THIS APPURTENANCE ARRANGEMENT COULD AFFECT THE STRUCTURAL INTEGRITY OF THE TOWER.



PREPARED BY	JMR	3/24/21
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DRAWING NUMBER	D05.00	

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LINEAR APPURTENANCES
WATERBURY, CT

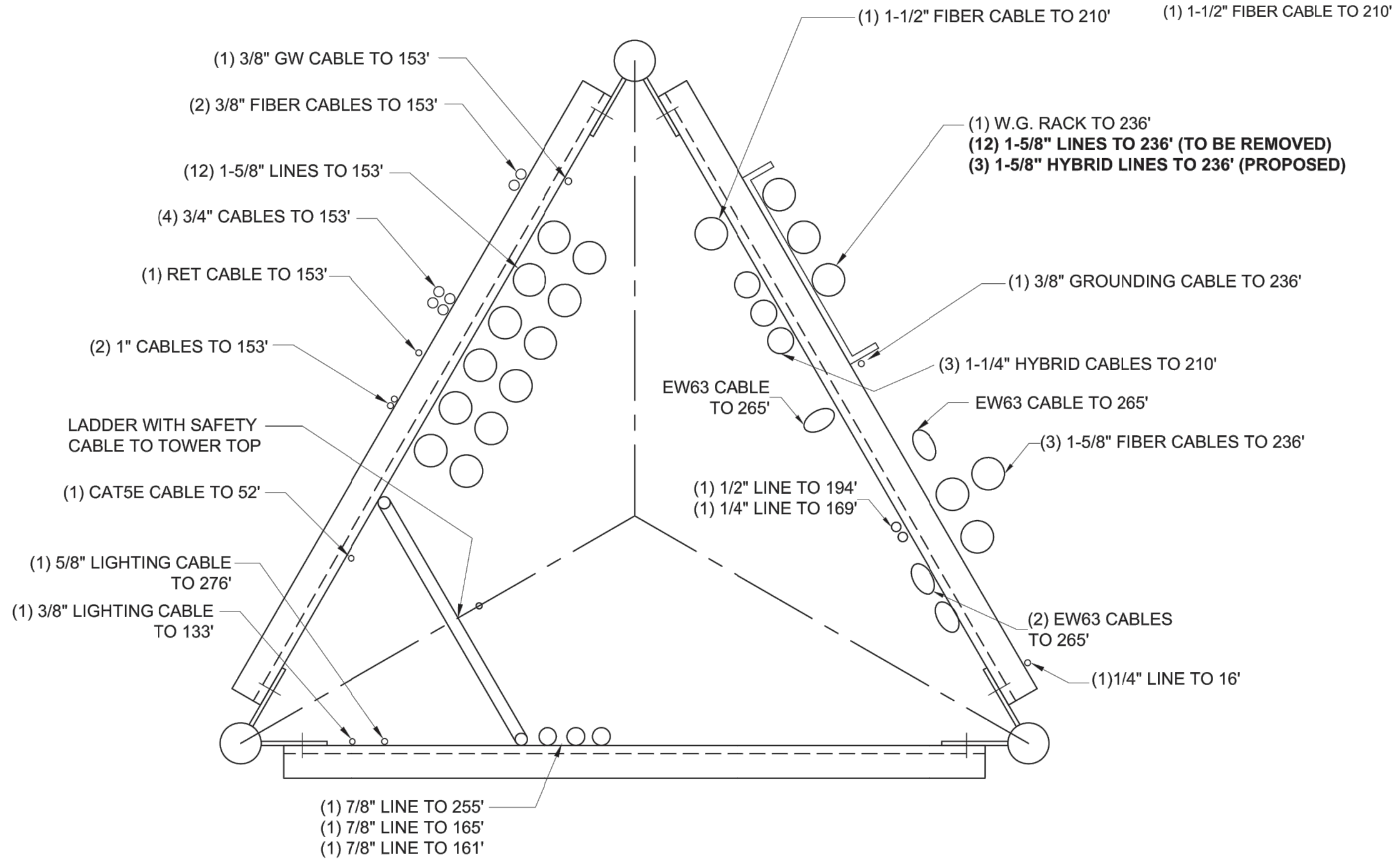
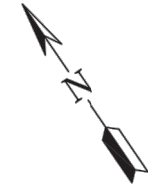
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NOTE:

1. THE TOWER MODIFICATION IS BASED ON THE LINEAR APPURTENANCES (LADDER, TRANSMISSION LINES, CONDUITS, ETC.) BEING INSTALLED IN THE POSITION SHOWN ON THE CROSS SECTION. DEVIATING FROM THIS APPURTENANCE ARRANGEMENT COULD AFFECT THE STRUCTURAL INTEGRITY OF THE TOWER.



PREPARED BY	JMR	3/24/21
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ENGINEER REVIEW	AV	4/14/2021
PROJECT NUMBER	350819	
DRAWING NUMBER	D05.00	

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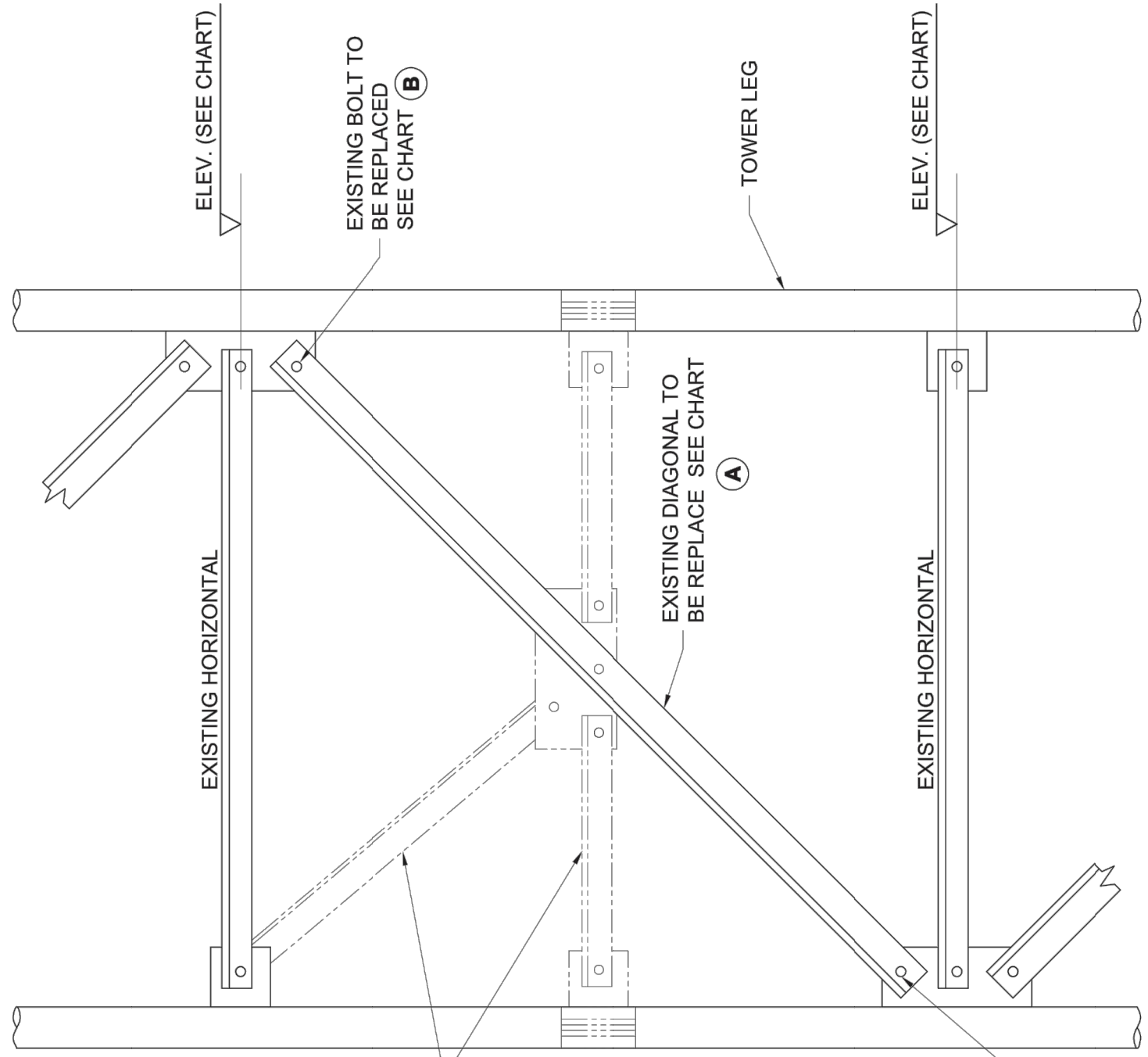
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LINEAR APPURTENANCES
WATERBURY, CT

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EXISTING SUB-BRACING TO REMAIN, DO NOT REMOVE BETWEEN LEVELS 5.0' - 9.0', 37.0' - 45.0' AND 129.0' - 133.0'. NEW SUB-BRACING TO BE INSTALLED BETWEEN LEVELS 229.0' - 241.0', SEE PAGES D05.02 - D05.04.

EXISTING BOLT TO BE REPLACED SEE CHART **(B)**

EXISTING DIAGONAL TO BE REPLACE SEE CHART **(A)**

EXISTING BOLT TO BE REPLACED SEE CHART **(B)**

ELEVATION VIEW

TOWER MUST BE ADEQUATELY BRACED BEFORE REMOVING ANY EXISTING TOWER MEMBERS. IN PARTICULAR CONTRACTOR IS ALERTED TO THE FACT THAT TEMPORARILY REMOVING EXISTING SUB BRACING TO THE LEGS WILL INCREASE THE BUCKLING LENGTH OF THE LEGS, HENCE REDUCING THE COMPRESSION LOAD CARRYING STRENGTH OF THE LEGS. THIS MUST BE CHECKED BY CONTRACTOR AS PART OF HIS 'MEANS AND METHODS' OF CONSTRUCTION.

ELEVATION	BAYS	DIAGONAL REPLACEMENTS		MAX. IMPOSED LOAD IN MEMBER
		(A)	(B)	
5.0' - 9.0'	1	L 2 x 2 x 1/4 (A36)	5/8" DIA. BOLT (A325X)	4.8 KIPS
37.0' - 45.0'	2	L 2 x 2 x 1/4 (A36)	5/8" DIA. BOLT (A325X)	4.6 KIPS
129.0' - 141.0'	3	L 2 1/2 x 2 1/2 x 3/8 (A36)	5/8" DIA. BOLT (A325X)	12.9 KIPS
149.0' - 153.0'	1	L 2 1/2 x 2 1/2 x 3/8 (A36)	5/8" DIA. BOLT (A325X)	10.0 KIPS
205.0' - 209.0'	1	L 2 1/2 x 2 1/2 x 3/8 (A36)	5/8" DIA. BOLT (A325X)	9.9 KIPS
221.0' - 225.0'	1	L 2 x 2 x 1/4 (A36)	5/8" DIA. BOLT (A325X)	4.5 KIPS



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DIAGONAL REPLACEMENT DETAILS
 WATERBURY, CT

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PROJECT NUMBER	350819	
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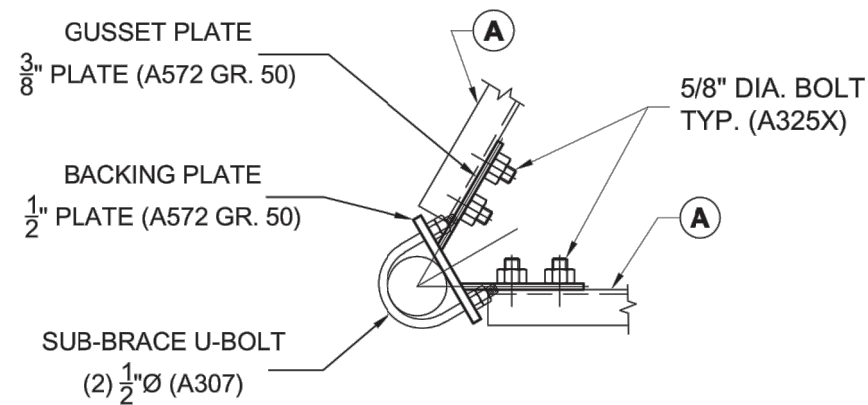
ELEVATION	BAYS	LEG DIA.	SUB BRACING		MAX. FACTORED COMPRESSION LEG LOADS
			A	B	
229.0' - 241.0'	3	1-3/4" Ø	L 2 x 2 x 1/4 (A36)	L 2 x 2 x 1/4 (A36)	86.9 KIPS

TOWER MUST BE ADEQUATELY BRACED BEFORE REMOVING ANY EXISTING TOWER BOLTS

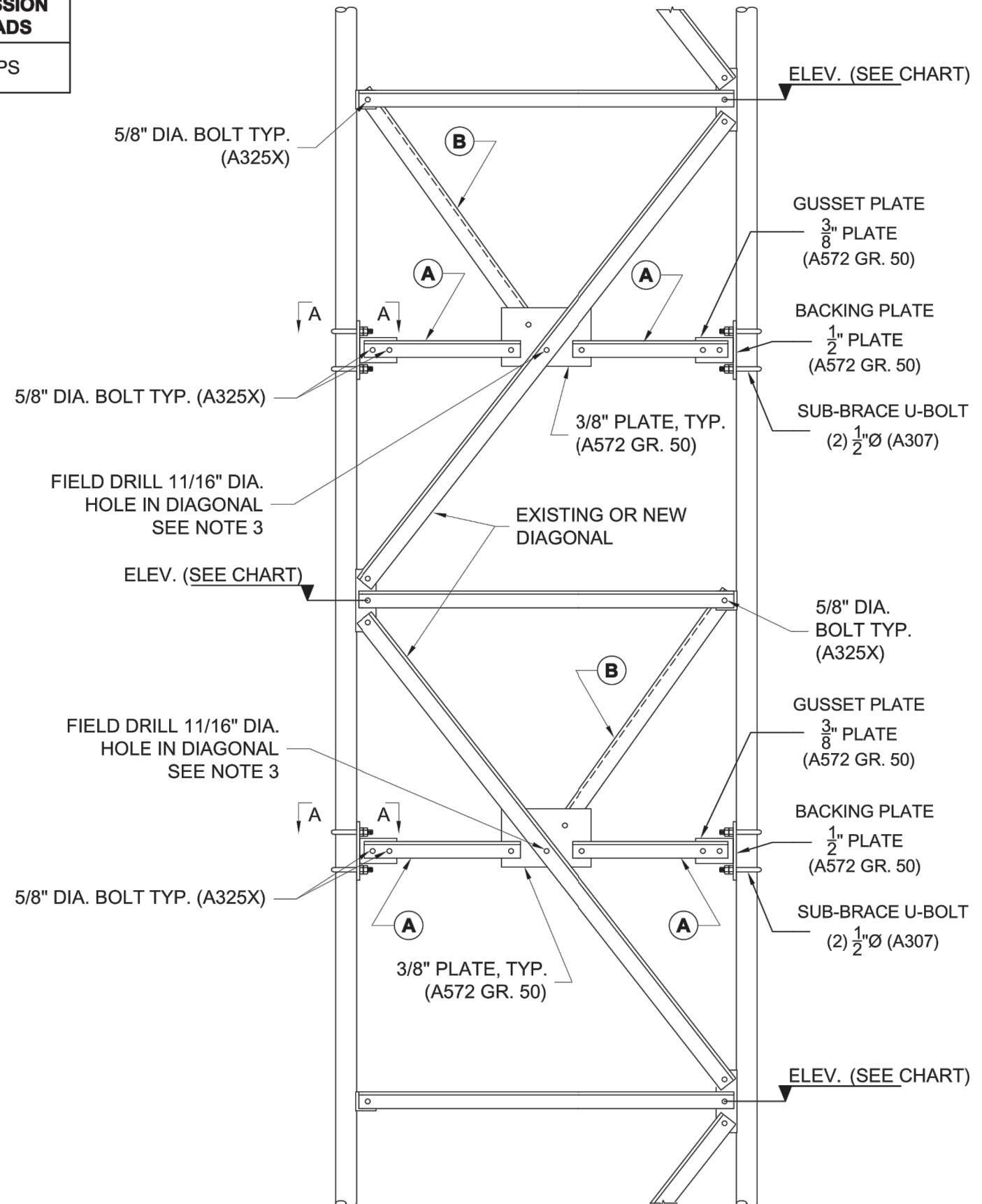
SEE PAGES D05.03 & D05.04 FOR SUB DIAGONAL CONFIGURATION WHERE SUB DIAGONAL INTERFERES WITH INSIDE CLIMBING LADDER ON THE "NW" AND "SW" FACES.

NOTES:

- CONTRACTOR IS ADVISED TO REMOVE AND REPLACE ONE HORIZONTAL BOLT, AT ONE LEVEL, AND ON ONE FACE, AT A TIME.
- DESIGN SUB BRACING CONNECTIONS PER ANSI/TIA 222-G BASED UPON THE MAXIMUM COMPRESSION LEG LOADS SHOWN.
- TOUCH-UP DAMAGED GALVANIZING IN ACCORDANCE WITH ASTM A780.
 - SURFACES TO BE PAINTED SHALL BE CLEAN, DRY AND FREE OF OIL, GREASE, PRE-EXISTING PAINT AND CORROSION BY-PRODUCTS.
 - APPLY ZINC RICH PAINT IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS IN A SINGLE APPLICATION, EMPLOYING MULTIPLE PASSES TO ACHIEVE A DRY FILM THICKNESS OF NO LESS THAN 6 MILS.

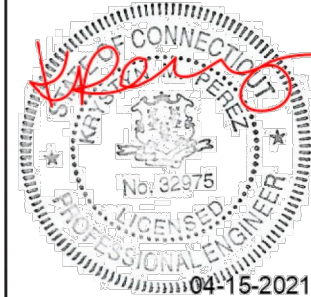


SECTION A - A



ELEVATION VIEW "EAST" FACE

PREPARED BY	JMR	3/24/21	CHECKED BY	GH	4/12/21	ENGINEER REVIEW	AV	4/14/2021	PROJECT NUMBER	350819	DRAWING NUMBER	D05.02
<p>STAINLESS A BUSINESS OF FDH INFRASTRUCTURE SERVICES 100 West Main Street, Suite 400 Lansdale, PA 19446</p> <p>WATERBURY, CT</p> <p>SUB BRACE DETAILS "EAST" FACE</p> <p>THIS DRAWING IS THE PROPERTY OF STAINLESS AND TRANSMITTED IN CONFIDENCE. AND THE REPRODUCTION, USE OR DISCLOSURE, IN WHOLE OR IN PART, OF THE DESIGN AND DETAILS CONTAINED HEREIN IS PROHIBITED WITHOUT THE PRIOR WRITTEN PERMISSION OF STAINLESS.</p>												
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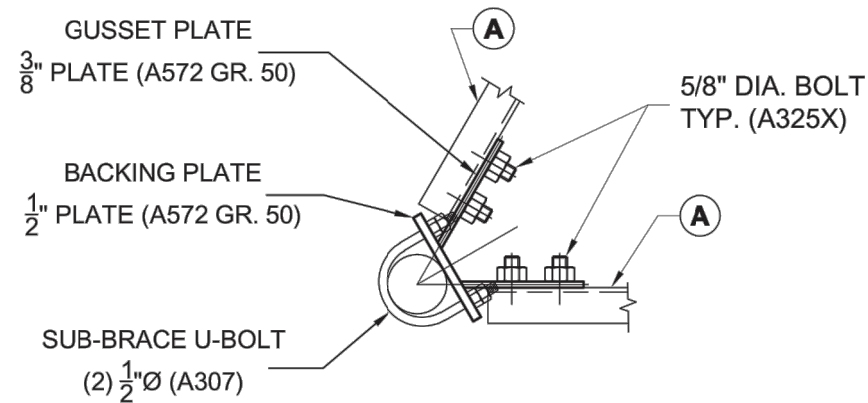


ELEVATION	BAYS	LEG DIA.	SUB BRACING ON "NW" FACE ONLY			MAX. FACTORED COMPRESSION LEG LOADS
			(A)	(B)	(C)	
229.0' - 241.0'	3	1-3/4" Ø	L 2 x 2 x 1/4 (A36)	L 2 x 2 x 1/4 (A36)	L 2 x 2 x 1/4 (A36) (COPED)	86.9 KIPS

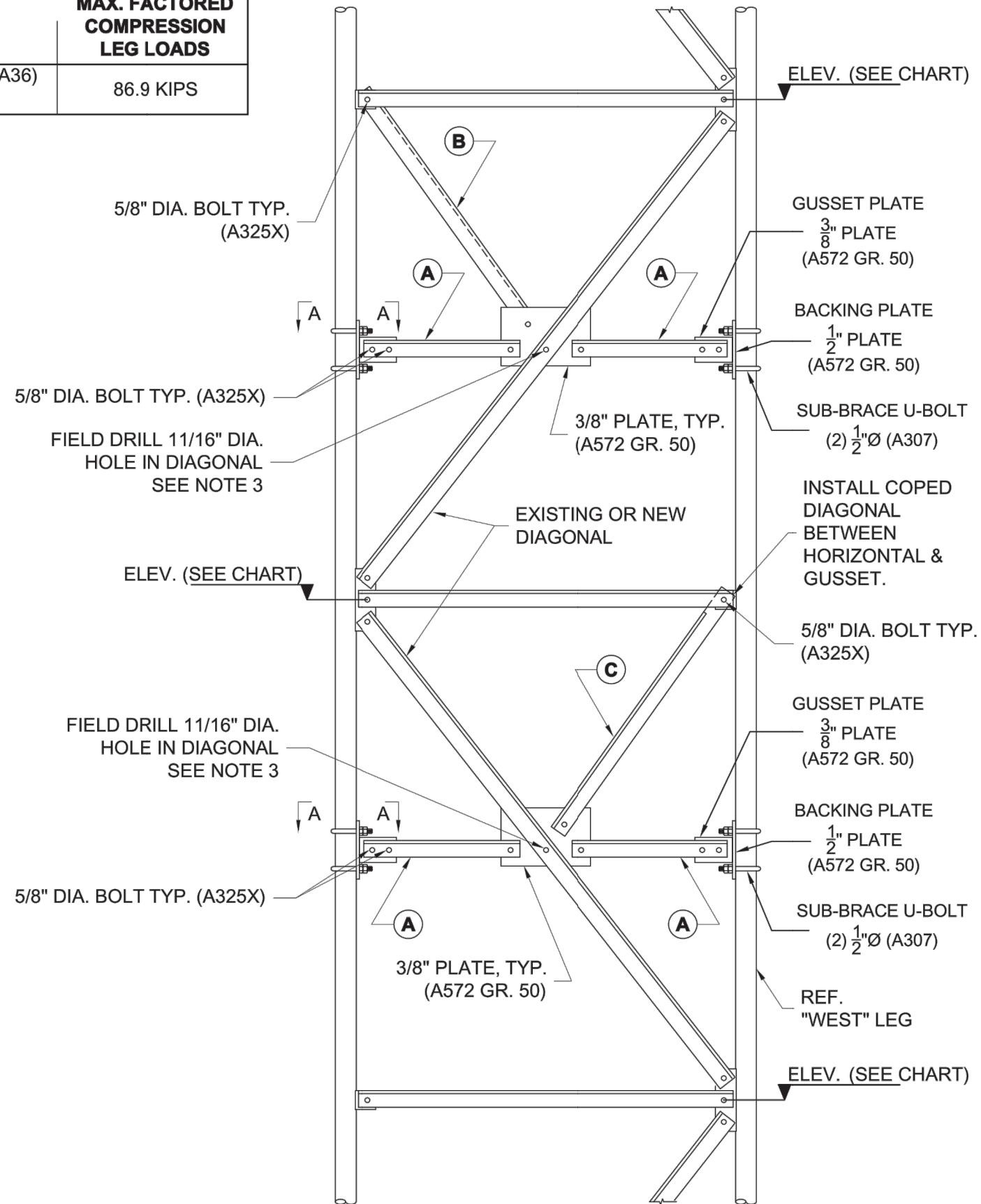
TOWER MUST BE ADEQUATELY BRACED BEFORE REMOVING ANY EXISTING TOWER BOLTS

NOTES:

1. CONTRACTOR IS ADVISED TO REMOVE AND REPLACE ONE HORIZONTAL BOLT, AT ONE LEVEL, AND ON ONE FACE, AT A TIME.
2. DESIGN SUB BRACING CONNECTIONS PER ANSI/TIA 222-G BASED UPON THE MAXIMUM COMPRESSION LEG LOADS SHOWN.
3. TOUCH-UP DAMAGED GALVANIZING IN ACCORDANCE WITH ASTM A780.
 - a. SURFACES TO BE PAINTED SHALL BE CLEAN, DRY AND FREE OF OIL, GREASE, PRE-EXISTING PAINT AND CORROSION BY-PRODUCTS.
 - b. APPLY ZINC RICH PAINT IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS IN A SINGLE APPLICATION, EMPLOYING MULTIPLE PASSES TO ACHIEVE A DRY FILM THICKNESS OF NO LESS THAN 6 MILS.



SECTION A - A



ELEVATION VIEW "NW" FACE

PREPARED BY	JMR	3/24/21
CHECKED BY	GH	4/12/21
ENGINEER REVIEW	AV	4/14/2021
PROJECT NUMBER	350819	
DRAWING NUMBER	D05.03	

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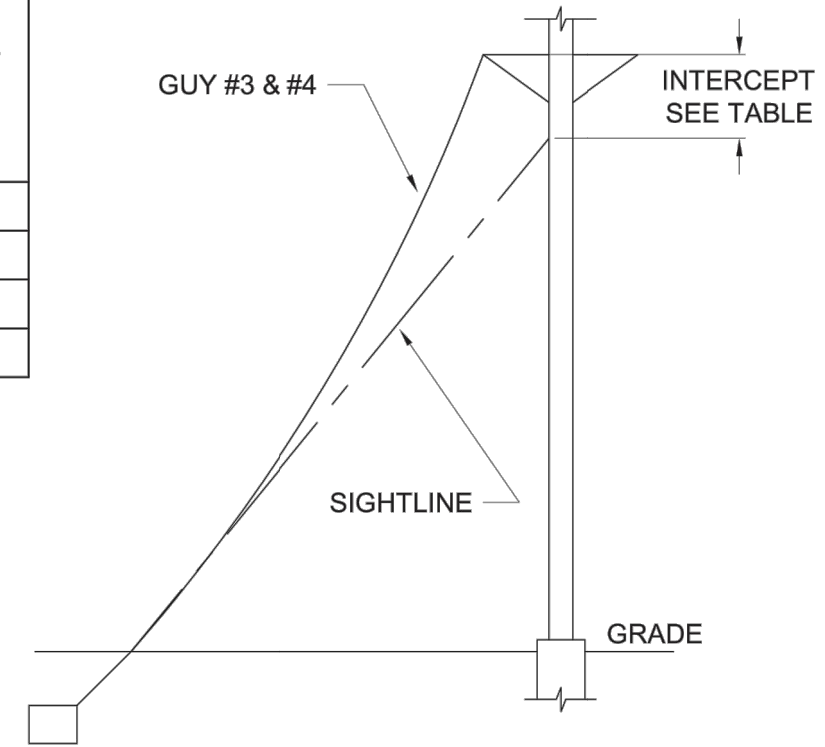
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SUB BRACE DETAILS "NW" FACE
WATERBURY, CT

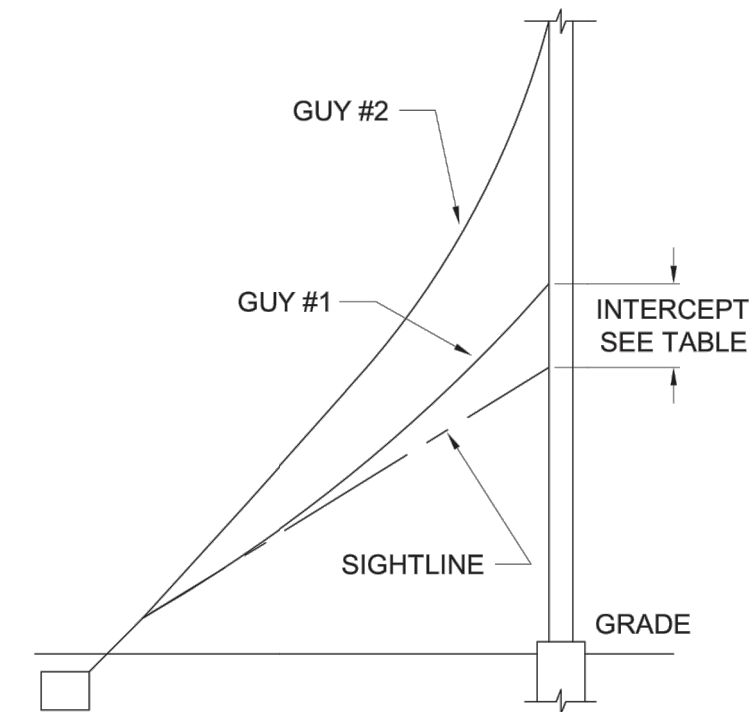
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	0 DEG. F		20 DEG. F		40 DEG. F		60 DEG. F		80 DEG. F		100 DEG. F	
	ERECT. TENSION (LBS)	INTERCEPT (FT)	ERECT. TENSION (LBS)	INTERCEPT (FT)	ERECT. TENSION (LBS)	INTERCEPT (FT)	ERECT. TENSION (LBS)	INTERCEPT (FT)	ERECT. TENSION (LBS)	INTERCEPT (FT)	ERECT. TENSION (LBS)	INTERCEPT (FT)
1A	5875	1.4	5448	1.5	5023	1.6	4600	1.8	4181	2.0	3768	2.2
2A	5674	3.8	5238	4.1	4813	4.5	4400	4.9	4006	5.3	3631	5.9
3A	4901	4.2	4734	4.4	4567	4.5	4400	4.7	4235	4.9	4070	5.0
4A	2810	10.5	2705	10.9	2602	11.3	2500	11.7	2402	12.2	2304	12.7



ELEVATION VIEW - GUY #3 & #4



ELEVATION VIEW - GUY #1 & #2

NOTES:

1. DURING THE INITIAL GUY TENSIONING PROCEDURES AND AT THE TIME OF INSPECTION, THE GUY TENSIONS AND/OR INTERCEPTS SHOULD BE IN ACCORDANCE WITH THE VALUES SHOWN ABOVE. USE THE TEMPERATURE WHICH ACTUALLY EXISTS AT THE TIME THE TENSION IS BEING CHECKED. FOR TEMPERATURES OTHER THAN THOSE SHOWN ABOVE, INTERPOLATE OR EXTRAPOLATE OTHER VALUES.
2. TOWER PLUMBING AND INITIAL TENSIONING OF GUYS SHOULD BE DONE ONLY IN CALM WEATHER AND WITH NO ICE ON GUYS.
3. INTERCEPTS AND TENSIONS ARE SHOWN IN GUY DIRECTION "A" ONLY. ADJUST ALL DIRECTIONS ACCORDINGLY.
4. GUY #1 IS BOTTOM GUY; GUY #2 IS NEXT, ETC.
5. USE SIGHT BAR FOR DETERMINING GUY INTERCEPTS.
6. TENSION AND/OR INTERCEPT TOLERANCES +/- 5%.

PREPARED BY	JMR	3/24/21	CHECKED BY	GH	4/12/21	ENGINEER REVIEW	AV	4/14/2021	PROJECT NUMBER	350819	DRAWING NUMBER	D08.00
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INTERCEPTS & ERECTION TENSIONS
WATERBURY, CT

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PROFESSIONAL ENGINEER
No. 82975
04-15-2021

Exhibit D



REPORT 350819

DATE: 4/14/2021

RIGOROUS STRUCTURAL ANALYSIS
 FOR A 276' G-48 GUYED TOWER
 WATERBURY, CT
 SITE LOCATION: 41 °31'4.7" N, 73 °01'6.4" W

Analysis Results

Tower Components	99.8%	Sufficient
Foundations	91.8%	Sufficient

PREPARED BY: AV

APPROVED: KP

CHECKED BY: CA



Date	Pages	Remarks
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Rev.	Date	Description
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<u>SECTION</u>	<u>PAGE</u>
A. AUTHORIZATION/PURPOSE	1
B. TOWER HISTORY	1
C. CONDITIONS INVESTIGATED	3
D. LOADS AND STRESSES	5
E. METHOD OF ANALYSIS	5
F. RESULTS	5
G. CONCLUSIONS AND RECOMMENDATIONS	7
H. PROVISIONS OF ANALYSIS.....	7

APPENDIX

GENERAL ARRANGEMENT	E-1
LINEAR APPURTENANCES	A-2
DESIGN DRAWINGS 350819	A-3

Rev.	Date	Description
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A. AUTHORIZATION/PURPOSE

As authorized by Sheldon Freinicle of Northeast Site Solutions, a rigorous structural analysis was performed to investigate the adequacy of a 276' G-48 guyed tower in Naugatuck, Connecticut to support specified equipment.

B. TOWER HISTORY

The tower was originally designed and furnished in 1991 by Stainless, Inc. It was designed in accordance with ANSI/EIA-222-D for a basic wind speed of 80 mph with no ice and 69.3 mph with 1/2" of uniform radial ice while supporting the following equipment:

1. Sixty (60) square feet of flat wind area at the 271' level and 20" width of linear wind area to the 276' level.
 2. Two (2) Andrew HMD16HD TV antennas, top mounted, fed by one (1) 1-5/8" line to each antenna.
 3. Four (4) 8' parabolic antennas with radomes at the 271' level, fed by one (1) EW 77 waveguide to each antenna (future).
 4. Two (2) 8' parabolic antennas with radomes at the 221' level, fed by one (1) EW 77 waveguide to each antenna.
 5. Two (2) 6' parabolic antennas with radomes at the 216' level, fed by one (1) EW 77 waveguide to each antenna.
 6. Two (2) 6' Mark grid dishes at the 121' level, fed by one (1) 7/8" line to each antenna.
 7. Two (2) 4' parabolic antennas with radomes at the 106' level, fed by one (1) EW 127 waveguide to each antenna.
 8. Two (2) 18" dishes at the 111' level, fed by one (1) RG59 line to each antenna.
 9. Two (2) 24" dishes at the 106' level, fed by one (1) RG59 line to each antenna.
 10. Four (4) 4' parabolic antennas with radomes at the 101' level, fed by one (1) EW 127 waveguide to each antenna.
 11. Two (2) 4' parabolic antennas with radomes at the 96' level, fed by one (1) EW 127 waveguide to each antenna.
 12. One (1) inside climbing ladder with cable type safety device for the full height of the tower.
- ❖ In 2005, the tower was modified by Paul J. Ford and Company. The scope of the modifications was obtained from:
- Dewberry drawing titled 'Modified 276' Guyed Tower, Sheet S-1' dated 06/14/2005.
 - Stainless LLC Report No. 350802 dated 11/2005, providing connection assembly material for the Level 3 guy replacement.

The modifications were as follows:

- a. Replaced existing 1/2" EHS guys at Level 3 with new 9/16" EHS guy wires.
- b. Adjusted initial guy tensions in all guy levels.

Rev.	Date	Description
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- c. Replaced existing diagonal members with new higher capacity members at the following bays:

Location	No. of bays
141.0' – 193.0'	13

- ❖ The tower was modified per Stainless LLC Report 350804 dated 04/05/2013, and the modifications were as follows:

- a. Replaced existing 9/16" EHS guys at Level 2 with new 5/8" EHS guy wires.
- b. Installed concrete thrust blocks in front of each anchor and connected the blocks to the anchor arms to resist anchor arm bending.
- c. Adjusted initial guy tensions in all guy levels.

- ❖ The tower was analyzed per Stainless Report 350806 dated 6/25/2016, and tower modification design drawings prepared per Stainless Design Drawings Report 350812 dated 8/10/2017. The modifications consisted of the following:

- a. Replace existing guy wires at Levels 1 (bottom) and 2 with new higher capacity guy wires.
- b. Adjust initial tensions in all guy levels.
- c. Install additional horizontal sub-bracing members at the midpoints of the following bays:

Location	No. of bays
153.0' – 185.0'	8
5.0' – 133.0'	32

- d. Replace or reinforce existing diagonal braces with new higher capacity members at the following bays:

Location	No. of bays
129.0' – 149.0'	5
45.0' – 77.0'	8

- ❖ Tower and foundation modifications per Stainless Design Drawing package 350819 dated 4/14/2021 were based upon the recommended modifications per Stainless failing analysis Report 350818 dated 3/19/2021. These modifications are assumed to have been correctly installed for the purpose of this analysis. The modifications are as follows:

- a. Adjust initial guy tensions at all guy levels.
- b. Install additional horizontal sub-bracing at the midpoints of the following bays:

Location	No. of bays
229' – 241'	3

- c. Replace the existing diagonal members with new, higher capacity members at the following locations:

Rev.	Date	Description
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Location	No. of bays
221' – 225'	1
205' – 209'	1
149' – 153'	1
129' – 141'	3
37' – 45'	2
5' – 9'	1

- d. Reinforce the tower base foundation. It is assumed there are no physical obstructions preventing the tower base remediation.

Stainless has no record of any other modifications to the tower or its foundations. If there have been other modifications, Stainless should be notified in order to determine the effect on the structural integrity of the tower.

C. CONDITIONS INVESTIGATED

The analysis was performed for the tower supporting specified equipment based upon the following sources:

- Stainless Proposal P21_350818_001 dated 3/23/2021.
- FDH Infrastructure Services Feedline & Appurtenance Mapping Report dated 7/26/2019
- Stainless Report 350818 dated 3/19/2021.
- CTNH305B_Anchor_4_draft_2021-01-27.pdf
- Loading email from Sheldon Freinle of Northeast Site Solutions dated 3/15/2021.
- Stainless Design Drawing package 350819 dated 4/14/2021

APPURTENANCE	ELEVATION, ft.	FEED LINES
5/8" diameter x 4.3' lightning rod	276	--
Beacon w/ ice shield	276	5/8" cable
(2) 6' x 6' ice shield	270	--
(2) 6' diameter MW dishes w/radome	265	(4) EW63
Scala grid dish	255	7/8"
(3) Andrew DBXNH-6565A-A2M (To Be Removed) (3) Ericsson RRUS11 B12 (To Be Removed) (4) RFS ATMA3P4-1A20 (To Be Removed) (2) RFS ATMA4P4-1A20 (To Be Removed)	236	(12) 1-5/8" lines (To Be Removed) (3) 1-5/8" fiber cable (Existing) (3) 1-5/8" Hybrid Cable (Proposed)

Rev.	Date	Description
		<p>(3) T-Arm Mounts (To Be Removed)</p> <p>(3) Ericsson AIR32 KRD901146-1_B66A_B2A (Existing)</p> <p>(3) RFS-APXVAARR24_43-U-NA20 (Proposed)</p> <p>(3) Ericsson AIR6449 B41 (Proposed)</p> <p>(3) Ericsson Radio 4449 B71+B85 (Proposed)</p> <p>(3) Radio 4415 B25 (Proposed)</p> <p>(3) 12.5' Sector Frames [SitePro1 P/N: VFA12-SD-S] (Proposed)</p>
	210	<p>(6) Alcatel-Lucent RRH 2x50-800 RRUs</p> <p>(3) RRH 8x20-25-FEU 8T8R RRUs</p> <p>(6) RRH 1900-4x45 RRUs</p> <p>(3) 70"x12"x8" panels</p> <p>(3) Andrew DT465B-2XR-V2 panels</p> <p>(3) Sector mounts</p>
	195	15' whip antenna w/ (3) elements
	174	6' x 6' ice shield
	171	10' dipole w/(2) elements
	169	(1) Mark 4' diameter grid dish
	164	(1) 9-1/2" x 2-1/2" x 2-1/2" ODU Diamond D-130N
	153	<p>(3) Raycap DC6-48-60-18-8C SPDs</p> <p>(6) Ericsson RRUS 32 B30 RRUs</p> <p>(3) Powerwave 7770.00J1 panels</p> <p>(6) Ericsson KRC 161 689/3 RRUs</p> <p>(6) CCI TPX-070821 diplexers</p> <p>(6) Powerwave LGP 21401 TMAs</p> <p>(6) Ericsson KRC 161 472/3 RRUs</p> <p>(3) Kathrein 80010965 panels</p> <p>(3) CCI HPA-65R-BW-H6 panels</p> <p>(3) Quintel QS665122E53617881 panels</p> <p>(3) Ericsson RRUS 11 B12</p> <p>(3) T-arm mounts</p>
	133	(3) L-810 side markers
	52	12" stand off (unused)
	17	3-1/2" diameter x 9" Omni
	236	--
	Full height of the tower	Inside climbing ladder with safety cable
		(1) 1-1/2" Fiber
		(3) 1-1/4" hybrid
		(1) 1/2" coax
		--
		7/8"
		1/4" coax
		7/8"
		(2) 1" cables
		(1) RET cable
		(4) 3/4" cables
		(2) 3/8" fiber cables
		(12) 1-5/8" coax
		3/8" cable
		--
		1/4" coax
		3/8" grounding cable
		3/8"

Rev.	Date	Description
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The locations of the transmission lines have been based upon the cross section from Stainless Report 350818 dated 3/19/2021 and the FDH Infrastructure Services Mapping report dated 7/26/2019 and shown on Page A-2 of this Report. Proposed transmission lines have been located to minimize the wind load on the tower. Deviating from the line arrangement as shown may invalidate the results of this analysis.

D. LOADS AND STRESSES

The analysis was performed using the following design parameters in accordance with the 2018 Connecticut Building Code (referencing the 2015 IBC) and ANSI/TIA-222-G, Structural Standard for Antenna Supporting Structures and Antennas, including Addenda 1 & 2, dated 2007 and 2009 respectively.

- Risk Category II
- 125 mph ultimate 3-second gust wind speed with no ice.
- 50 mph basic design wind speed with 3/4" design ice thickness.
- Exposure Category B
- Topographic Category 5 (H = 360', 2Lh = 2880', and x = 370')
- 0.19 earthquake spectral response acceleration at short periods (S_s)
- Earthquake Site Class D

The ultimate design wind speed is converted to a nominal design wind speed for use in ANSI/TIA 222-G based upon the following formula:

$$\begin{aligned} V_{\text{asd}} &= V_{\text{ult}} * (0.6)^{1/2} \\ &= 125 * (0.6)^{1/2} \\ &= 97 \text{ mph} \end{aligned}$$

Seismic effects need not be considered as the value of S_s is less than 1.0 per Section 2.7.3 of ANSI/TIA-222-G. Load and resistance factors used to evaluate the adequacy of the structure were in accordance with ANSI/TIA-222-G.

E. METHOD OF ANALYSIS

The analysis was performed using tnxTower, a commercial computer-aided finite element tower program for the non-linear analysis of towers subject to simultaneous lateral and axial loads.

F. RESULTS

The results of the analysis show the following ratings:

Rev.	Date	Description
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Section No.	Elevations (ft)	Component	Span	Capacity %	Pass/Fail
T1 - T4	276 - 261	Leg	5	14.7	Pass
T5 - T19	261 - 201	Leg	4	99.4	Pass
T20 - T37	201 - 129	Leg	3	98	Pass
T38 - T54	129 - 61	Leg	2	75.8	Pass
T55 - T69	61 - 2	Leg	1	94.2	Pass
T1 - T4	276 - 261	Diagonal	5	44.2	Pass
T5 - T19	261 - 201	Diagonal	4	97.5	Pass
T20 - T37	201 - 129	Diagonal	3	96.3	Pass
T38 - T54	129 - 61	Diagonal	2	80.4	Pass
T55 - T69	61 - 2	Diagonal	1	99.8	Pass
T10 - T12	241 - 229	Secondary Horizontal	4	9.4	Pass
T24 - T37	185 - 129	Secondary Horizontal	3	8.6	Pass
T38 - T54	129 - 61	Secondary Horizontal	2	9.1	Pass
T55 - T68	61 - 5	Secondary Horizontal	1	9.2	Pass
T1 - T4	276 - 261	Top Girt	5	10.5	Pass
T7 - T19	253 - 201	Top Girt	4	22.9	Pass
T22 - T37	193 - 129	Top Girt	3	32.8	Pass
T39 - T54	125 - 61	Top Girt	2	6.2	Pass
T56 - T69	57 - 2	Top Girt	1	5.6	Pass
T5	261 - 257	Guy A@261	4	71.2	Pass
T20	201 - 197	Guy A@201	3	95.8	Pass
T38	129 - 125	Guy A@129	2	88.4	Pass
T55	61 - 57	Guy A@61	1	68.7	Pass
T5	261 - 257	Guy B@261	4	69.6	Pass
T20	201 - 197	Guy B@201	3	95	Pass
T38	129 - 125	Guy B@129	2	92	Pass
T55	61 - 57	Guy B@61	1	71.8	Pass
T5	261 - 257	Guy C@261	4	70.8	Pass
T20	201 - 197	Guy C@201	3	96.2	Pass
T38	129 - 125	Guy C@129	2	96.4	Pass
T55	61 - 57	Guy C@61	1	79.5	Pass
T5	261 - 257	Top Guy Pull-Off@261	4	32.4	Pass
T20	201 - 197	Top Guy Pull-Off@201	3	67	Pass
T38	129 - 125	Top Guy Pull-Off@129	2	44.2	Pass
T55	61 - 57	Top Guy Pull-Off@61	1	26	Pass

	Rev.	Date	Description		
T6	257 - 253	Bottom Guy Pull-Off@261	4	16.2	Pass
T21	197 - 193	Bottom Guy Pull-Off@201	3	14.5	Pass
T5	261 - 257	Torque Arm Top@261	4	12.2	Pass
T20	201 - 197	Torque Arm Top@201	3	16.9	Pass
T5	261 - 257	Torque Arm Bottom@261	4	38.4	Pass
T20	201 - 197	Torque Arm Bottom@201	3	50.4	Pass
Foundations		Tower base		91.8	Pass
		Guy anchors		90.4	Pass

The rating is defined as the percentage of the component design capacity that is used up in supporting itself and the loading from the antennas and transmission lines under the design wind and ice loading conditions. Ratings of up to 100% are considered acceptable based on the state of Connecticut requirements, and the tower has been reviewed based on 100% maximum rating.

G. CONCLUSIONS AND RECOMMENDATIONS

Based on the preceding results, the following conclusions may be drawn:

1. With the modifications per Stainless Design Drawings package 350819 dated 4/14/2021 installed, the tower supporting equipment as specified in Section C of this report is adequate to achieve an ultimate 3-second gust wind speed of 125 mph with no ice and a nominal design wind speed of 50 mph with 3/4" design ice thickness in accordance with the 2018 Connecticut Building Code (referencing the 2015 IBC), and ANSI/TIA-222-G with the analysis parameters of Section D.

H. PROVISIONS OF ANALYSIS

The analysis performed and the conclusions contained herein are based on the assumption that the tower has been properly installed and maintained, including, but not limited to the following:

1. Proper alignment and plumbness.
2. Correct guy tensions.
3. Correct bolt tightness.
4. No significant deterioration or damage to any component.

Furthermore, the information and conclusions contained in this Report were determined by application of the current "state-of-the-arts" engineering and analysis procedures and formulae, and Stainless assumes no obligations to revise any of the information or conclusions contained in this Report in the event that such engineering and analysis procedures and formulae are hereafter modified or revised. In addition, under no circumstances will Stainless have any obligation or responsibility whatsoever for or on account of consequential or incidental damages sustained by any person, firm or organization as a result of any information or conclusions

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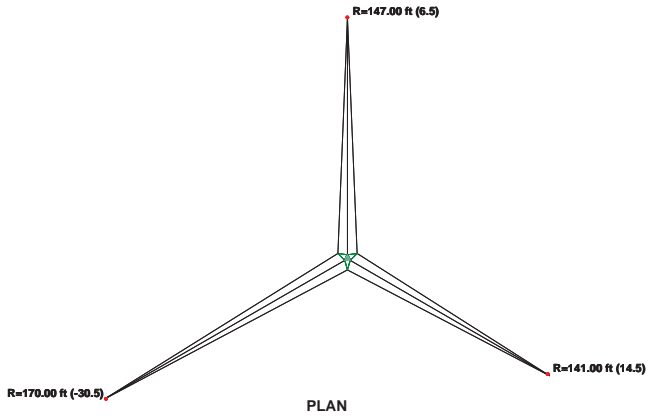
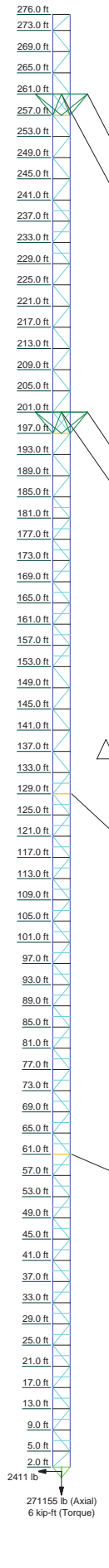
contained in the Report, and the maximum liability of Stainless, if any, pursuant to this Report shall be limited to the total funds actually received by Stainless for preparation of this Report.

Customer has requested Stainless to prepare and submit to Customer an engineering analysis with respect to the Subject Tower and has further requested Stainless to make appropriate recommendations regarding suggested structural modifications and changes to the Subject Tower. In making such request of Stainless, Customer has informed Stainless that Customer will make a determination as to whether or not to implement any of the changes or modifications which may be suggested by Stainless and that Customer will have any such changes or modifications made by riggers, erectors and other subcontractors of Customer's choice.

Customer hereby agrees and acknowledges that Stainless shall have no liability whatsoever to Customer or to others for any work or services performed by any persons other than Stainless in connection with the implementation of any structural changes or modifications recommended by Stainless including but not limited to any services rendered for Customer or for others by riggers, erectors or other subcontractors. Customer acknowledges and agrees that any riggers, erectors or subcontractors retained or employed by Customer shall be solely responsible to Customer and to others for the quality of work performed by them and that Stainless shall have no liability or responsibility whatsoever as a result of any negligence or breach of contract by any such rigger, erector or subcontractor.

Section

276.0 ft
273.0 ft
269.0 ft
265.0 ft
261.0 ft
257.0 ft
253.0 ft
249.0 ft
245.0 ft
241.0 ft
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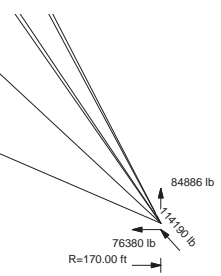


DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
lighting Rod and beacon	276	6'x6' ice shield	174
6'x6' ice shield	270	4-bay Dipole Antenna	171
6'x6' ice shield	270	9-1/2"x2-1/2"x2-1/2" ODU	169
6' dish with radome	265	4' Mark Grid dish	169
6' dish with radome	265	Diamond D-130N	164
Scala PR-450	255	DC6-48-60-18-8C	153
APXVAARR24_43-U-NA20 w/ Mount Pipe	236	DC6-48-60-18-8C	153
APXVAARR24_43-U-NA20 w/ Mount Pipe	236	DC6-48-60-18-8C	153
APXVAARR24_43-U-NA20 w/ Mount Pipe	236	(2) RRUS 32 B30	153
APXVAARR24_43-U-NA20 w/ Mount Pipe	236	(2) RRUS 32 B30	153
APXVAARR24_43-U-NA20 w/ Mount Pipe	236	(2) RRUS 32 B30	153
AIR6449 B41 w/ Mount Pipe	236	7700.00 w/Mount Pipe	153
AIR6449 B41 w/ Mount Pipe	236	7700.00 w/Mount Pipe	153
AIR6449 B41 w/ Mount Pipe	236	7700.00 w/Mount Pipe	153
RADIO 4449 B71/B85A	236	(2) KRC 161 472/3 RRUs	153
RADIO 4449 B71/B85A	236	(2) KRC 161 472/3 RRUs	153
RADIO 4449 B71/B85A	236	(2) KRC 161 472/3 RRUs	153
4415 B25	236	(2) TPX-070821	153
4415 B25	236	(2) TPX-070821	153
4415 B25	236	(2) TPX-070821	153
Sector Frame Mount	236	(2) LGP21401 TMA	153
Sector Frame Mount	236	(2) LGP21401 TMA	153
Sector Frame Mount	236	(2) LGP21401 TMA	153
AIR 32 B32 901146-1_B66a_B2A (Octa) w/Mount Pipe	236	(2) KRC 161 689/3 RRUs	153
AIR 32 B32 901146-1_B66a_B2A (Octa) w/Mount Pipe	236	(2) KRC 161 689/3 RRUs	153
AIR 32 B32 901146-1_B66a_B2A (Octa) w/Mount Pipe	236	800 10965 w/ Mount Pipe	153
AIR 32 B32 901146-1_B66a_B2A (Octa) w/Mount Pipe	236	800 10965 w/ Mount Pipe	153
(2) 800MHZ 2x50W RRH	210	HPA-65R-BUU-H6 w/ 5.5' Mount Pipe	153
(2) 800MHZ 2x50W RRH	210	HPA-65R-BUU-H6 w/ 5.5' Mount Pipe	153
(2) 800MHZ 2x50W RRH	210	HPA-65R-BUU-H6 w/ 5.5' Mount Pipe	153
TD-RRH8x20-25	210	OS66512-2 w/ Mount Pipe	153
TD-RRH8x20-25	210	OS66512-2 w/ Mount Pipe	153
TD-RRH8x20-25	210	OS66512-2 w/ Mount Pipe	153
(2) 1900MHz 4x45 RRH	210	RRUS 11 B12	153
(2) 1900MHz 4x45 RRH	210	RRUS 11 B12	153
(2) 1900MHz 4x45 RRH	210	RRUS 11 B12	153
APXVSP18-C-A20 w/ Mount Pipe	210	T-Arm Mount	153
APXVSP18-C-A20 w/ Mount Pipe	210	T-Arm Mount	153
APXVSP18-C-A20 w/ Mount Pipe	210	T-Arm Mount	153
DT465B-2XR-V2	210	L-810 side markers	153
DT465B-2XR-V2	210	L-810 side markers	133
DT465B-2XR-V2	210	L-810 side markers	133
Sector Frame Mount	210	Subdiagonal bracing correction	129 - 125
Sector Frame Mount	210	Subdiagonal bracing correction	105 - 5
Sector Frame Mount	210	Unused mount	52
15' Whip with elements	195	1'-4" x 3/4" Omni	17

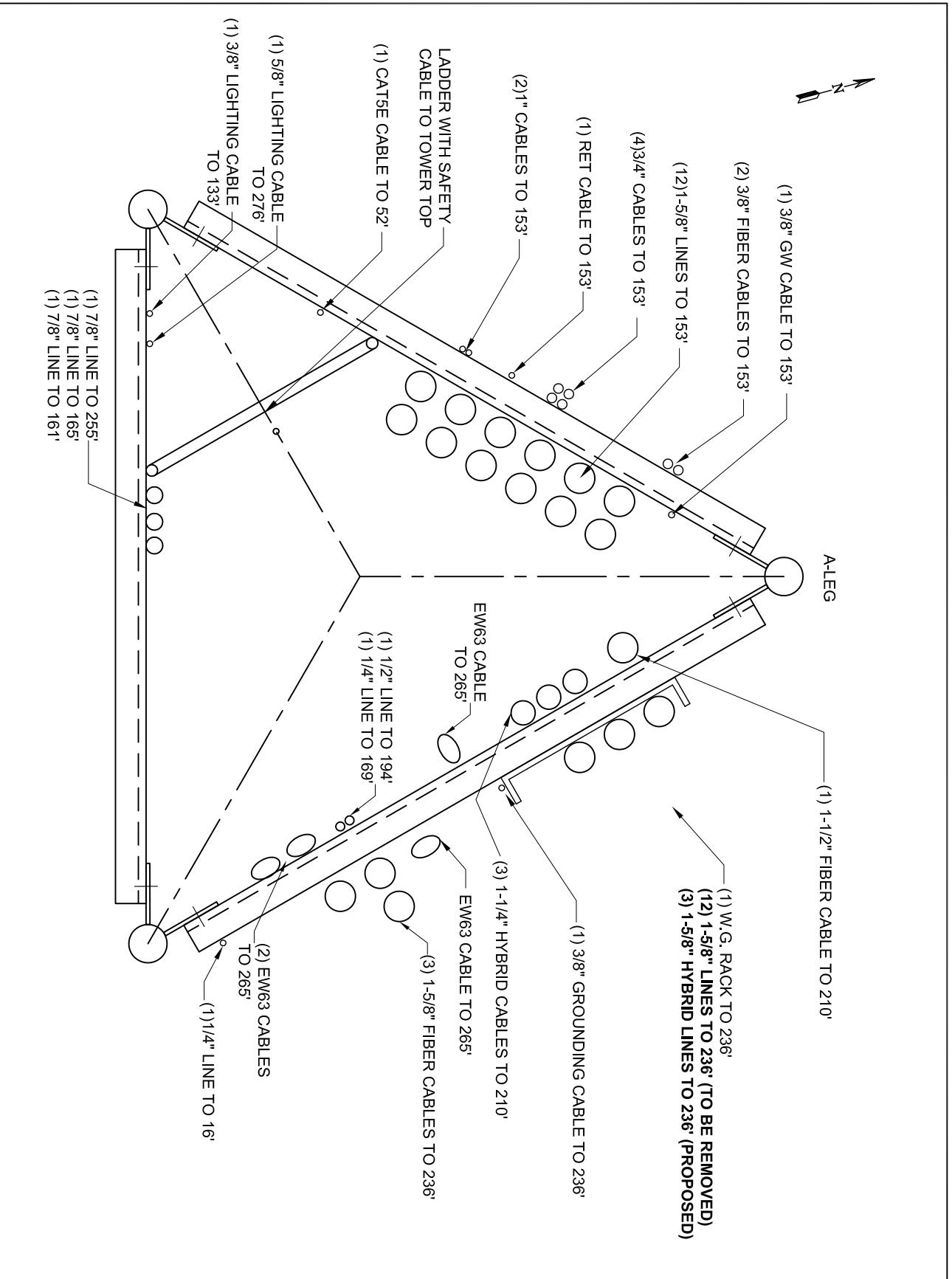
TOWER DESIGN NOTES


1. Tower designed for Exposure B to the TIA-222-G Standard.
2. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 5 with Crest Height of 360.00 ft.



ALL REACTIONS ARE FACTORED

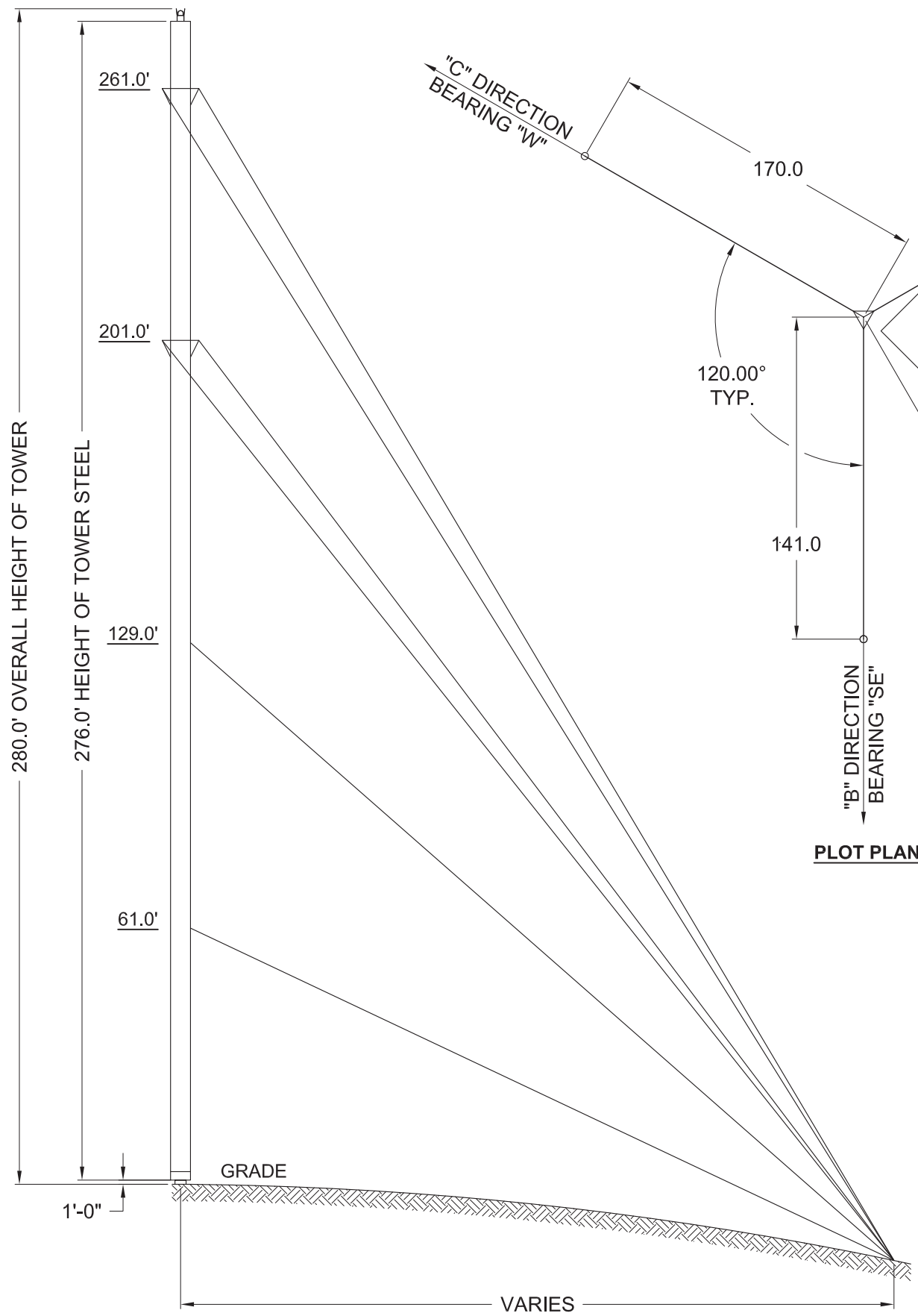
<p>FDH Infrastructure Services ENGINEERING INNOVATION</p> <p>6521 Meriden Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031</p>	<p>Job: 350819 Waterbury CT</p>
	<p>Project: 276' Stainless G-48 guyed tower</p>
	<p>Client: Northeast Site Solutions LLC</p>
	<p>Code: TIA-222-G</p>
<p>Drawn by: AVago</p>	<p>Date: 04/14/21</p>
<p>App'd:</p>	<p>Scale: NTS</p>
<p>Path:</p>	<p>Dwg No: E-1</p>



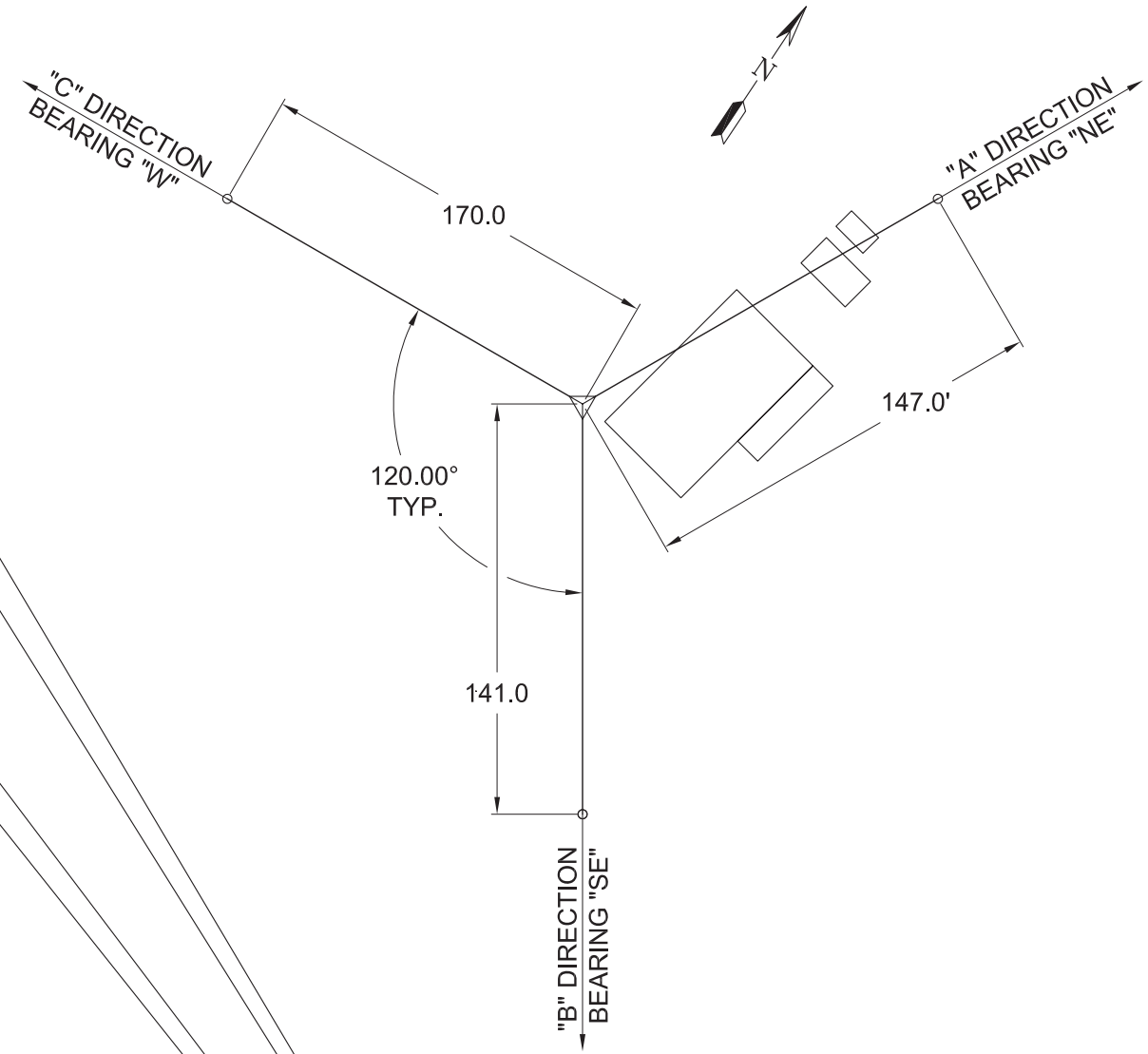
 <p>STAINLESS A Business of FDH INFRASTRUCTURE SERVICES 100 West Main Street, Suite 400 Lansdale, PA 19446</p>		<table border="1"> <tr> <td>PREPARED BY</td> <td>AV</td> <td>4/7/2021</td> </tr> <tr> <td>CHECKED BY</td> <td></td> <td></td> </tr> <tr> <td>ENGINEER REVIEW</td> <td></td> <td></td> </tr> <tr> <td>PROJECT NUMBER</td> <td colspan="2">350819</td> </tr> <tr> <td>DRAWING NUMBER</td> <td colspan="2">A-2</td> </tr> </table>		PREPARED BY	AV	4/7/2021	CHECKED BY			ENGINEER REVIEW			PROJECT NUMBER	350819		DRAWING NUMBER	A-2																																		
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<p>LINEAR APPURTENANCES WATERBURY, CT</p>		<table border="1"> <thead> <tr> <th>REV</th> <th>BY</th> <th>DATE</th> <th>REVISION DESCRIPTION</th> <th>D,CK</th> <th>DATE</th> <th>E,CK</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		REV	BY	DATE	REVISION DESCRIPTION	D,CK	DATE	E,CK	DATE	*								*								*								*								*							
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Rev.	Date	Description
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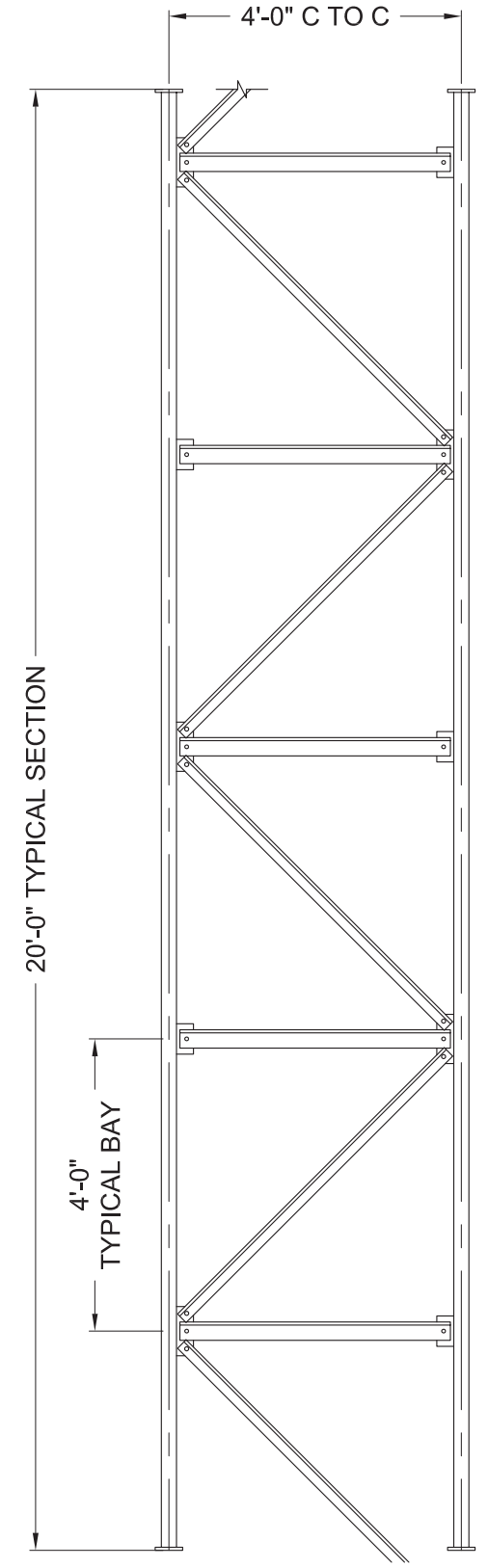
A-3 DESIGN DRAWINGS 350819



ELEVATION VIEW



PLOT PLAN



TOWER DETAIL

NOTE:
1. SEE SHEETS D01.01 & D01.02 FOR GENERAL NOTES.

PREPARED BY	JMR	3/24/21	PROJECT NUMBER	350819
CHECKED BY	GH	4/12/21	DRAWING NUMBER	D01.00
ENGINEER REVIEW	AV	4/14/2021		
<p>STAINLESS A BUSINESS OF FDH INFRASTRUCTURE SERVICES 100 West Main Street, Suite 400 Lansdale, PA 19446</p> <p>GENERAL ARRANGEMENT WATERBURY, CT</p> <p>THIS DRAWING IS THE PROPERTY OF STAINLESS AND TRANSMITTED IN CONFIDENCE. AND THE REPRODUCTION, USE OR DISCLOSURE, IN WHOLE OR IN PART, OF THE DESIGN AND DETAILS CONTAINED HEREIN IS PROHIBITED WITHOUT THE PRIOR WRITTEN PERMISSION OF STAINLESS.</p>				
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7. Contractor shall observe safe construction practices and shall be responsible for all methods of construction, including proper and adequate bracing to the tower and excavation work during the installation process. Adequately designed temporary support shall be installed before any tower member is removed and replaced. All means and methods of construction, including construction and soil pressure loads, shall be properly calculated and documented by the Contractor.
8. If the construction activities require a rigging plan per the requirements of ANSI/TIA-322 and ANSI/ASSE A10.48, the Contractor shall be responsible for a rigging plan to be developed by a qualified engineer and implemented by a competent rigger. A properly detailed rigging plan shall include, as a minimum, a review of the following:
 - Operational and non-operational construction loads.
 - Equipment used, and Supporting structure
 - Construction sequence and durations
9. Contractor shall also be responsible for all means and methods for the installation of all proposed equipment and tower modifications, including the design, supply, and installation of adequate temporary bracing for structural member replacements.
10. All shop fabrication drawings and material certificates of the successful contractor shall be approved in writing by Stainless prior to fabrication. The approval is to ensure the design requirements and proper fabrication practices are implemented, but does not include fit-up checks which shall be the responsibility of the Contractor.
11. Stainless assumes no responsibility for the structural adequacy of the tower if non-conforming modification materials are supplied and/or installed by others, and shall have no liability whatsoever to Owner or to others for any work performed by any persons other than Stainless in connection with the implementation of any structural changes or modifications not specifically addressed within this design drawing package. Owner acknowledges and agrees that any riggers, erectors or subcontractors retained or employed by owner shall be solely responsible to owner and to others for the quality of work performed by them and that Stainless shall have no liability or responsibility whatsoever as a result of any negligence or breach of contract by such rigger, erector or subcontractor.
12. The modification drawings contained herein are based on the assumption that the tower has been properly installed and maintained, including, but not limited to the following.
 - a. Proper alignment and plumbness.
 - b. Correct guy tensions.
 - c. Correct bolt tightness.
 - d. No significant deterioration or damage to any component.

APPLICABLE CODES AND STANDARDS

Use latest editions of the following Codes and Standards unless noted otherwise.

1. ANSI/TIA-222-G 2005 Structural Standards for Antenna Supporting Structures and Antennas including Addenda 1 & 2, dated 2007 and 2009.
2. ANSI/TIA-322, Standard for Loading, Analysis, and Design Criteria Related to Installation, Altercation and Maintenance of Communication Structures..
3. ANSI/ASSE A10.48 Criteria for Safety Practices Related to the Installation, Alteration, and Maintenance of Communication Structures. ANSI/TIA-322 Loading, Analysis and Design Criteria Related to the Installation, Alteration and Maintenance Communication Structures.
4. AISC Manual of Steel Construction.
5. RCSC Specification for Structural Joints Using ASTM A325 or A490 Bolts.
6. ACI 301 Specifications for Structural Concrete.
7. ACI 318 Building Code Requirements for Structural Concrete.
8. ACI 315 Details and Detailing of Concrete Reinforcement.
9. CRSI Manual of Standard Practice.
10. ASTM C260 Standard Specification for Air-Entraining Admixtures for Concrete.
11. ASTM C494 Standard Specification for Chemical Admixtures for Concrete.
12. ASTM A36 Standard Specification for Carbon Structural Steel.
13. ASTM A572 Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
14. ASTM A325 Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
15. ASTM A194 Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both.

16. ASTM F436 Standard Specification for Hardened Steel Washers.
17. ASTM A123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and products.
18. ASTM A153 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
19. ASTM A780 Standard Practice for Repair of Damage and Uncoated Areas of Hot-Dip Galvanized Coatings.
20. ASTM A615 Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement.

STRUCTURAL STEEL

1. The fabrication and erection of structural steel shall conform to the latest edition of the AISC Manual of Steel Construction.
2. Connections shall be detailed by the steel fabricator in accordance with the AISC Manual of Steel Construction. Connections and connecting elements shall develop the strength capacities as indicated on the design drawings. Some connection details are suggested in the drawings however, Contractor is free to provide any design and details at Contractor's discretion.
3. Hot-dip galvanize all items unless otherwise noted, after fabrication in accordance with ASTM A123 and/or ASTM A153.
4. Repair all damaged or uncoated areas of galvanized coatings in accordance with ASTM A780.
5. Locking ANCO style nuts shall be installed on all proposed and/or replaced bolts.
6. ASTM A325 bolts shall not be reused.
7. All A325 high strength bolts shall be tightened by the "snug tightening" method as specified in the RCSC Specification for Structural Joints Using ASTM A325 or A490 Bolts unless noted otherwise on the design drawings.
8. Material grades shall be as follows, unless noted otherwise:
 - a. Plates and angles – A36
 - b. Bolts – A325X
 - c. U-Bolts – A307 min.

PLUMBING LINES

1. The tower is designed for initial tension as specified in the erection drawings. It is important that the guys be tensioned accurately to assure the stiffness of the tower.
2. Uneven terrain, temperature, plumbness of tower and wind are factors which affect guy tensions. If the tower site is level and anchor distances are equal, the tensions in all three guys at a level will be equal when the tower is plumb. If the terrain of the tower site is uneven, the guys are not perfectly symmetrical and tensions in guys vary in the three directions. For this reason initial guy tensions are specified in one direction only. The tower should be plumbed with the specified tensions in the given guy direction.
3. Wind load on tower and guys changes the tension in all guys; therefore, plumb the tower in calm weather only.
4. The plumbing of a tower or checking alignment of a tower should be performed in accordance with Annex J of ANSI/TIA/EIA 222G.

REINFORCED CONCRETE

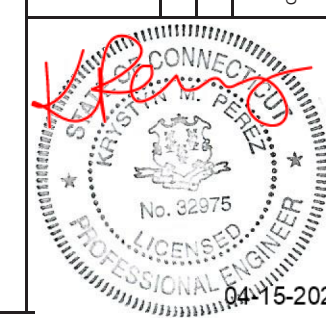
1. All concrete shall be in accordance with ACI 318 and ACI 301 and have a minimum compressive strength of 4000 psi after 28 days.
2. All concrete shall be sampled and tested in accordance with ACI 301. Testing shall be carried out by an independent testing laboratory.
3. Concrete shall not contain calcium chloride or any admixtures that contain chlorides. All admixtures used shall conform t ASTM C260 (air-entraining) and ASTM C494 (water reducing and/or accelerating)
4. All reinforcing bars shall be Grade 60 deformed bars in accordance with ASTM A615, and shall be fabricated and placed in accordance with ASTM 315, ACI 318 and CRSI's Manual of Standard Practice.
5. See page D02.01 for foundation notes.

PREPARED BY	JMR	3/24/21
CHECKED BY	GH	4/12/21
ENGINEER REVIEW	AV	4/14/2021
PROJECT NUMBER	350819	
DRAWING NUMBER	D01.02	
DATE		
E.CK		
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REVISION DESCRIPTION		
REV		
BY		
DATE		

STAINLESS
 A DIVISION OF THE INFORMATION SERVICE GROUP
 100 PENNSYLVANIA PLAZA
 PITTSBURGH, PA 15222

GENERAL NOTES
 WATERBURY, CT

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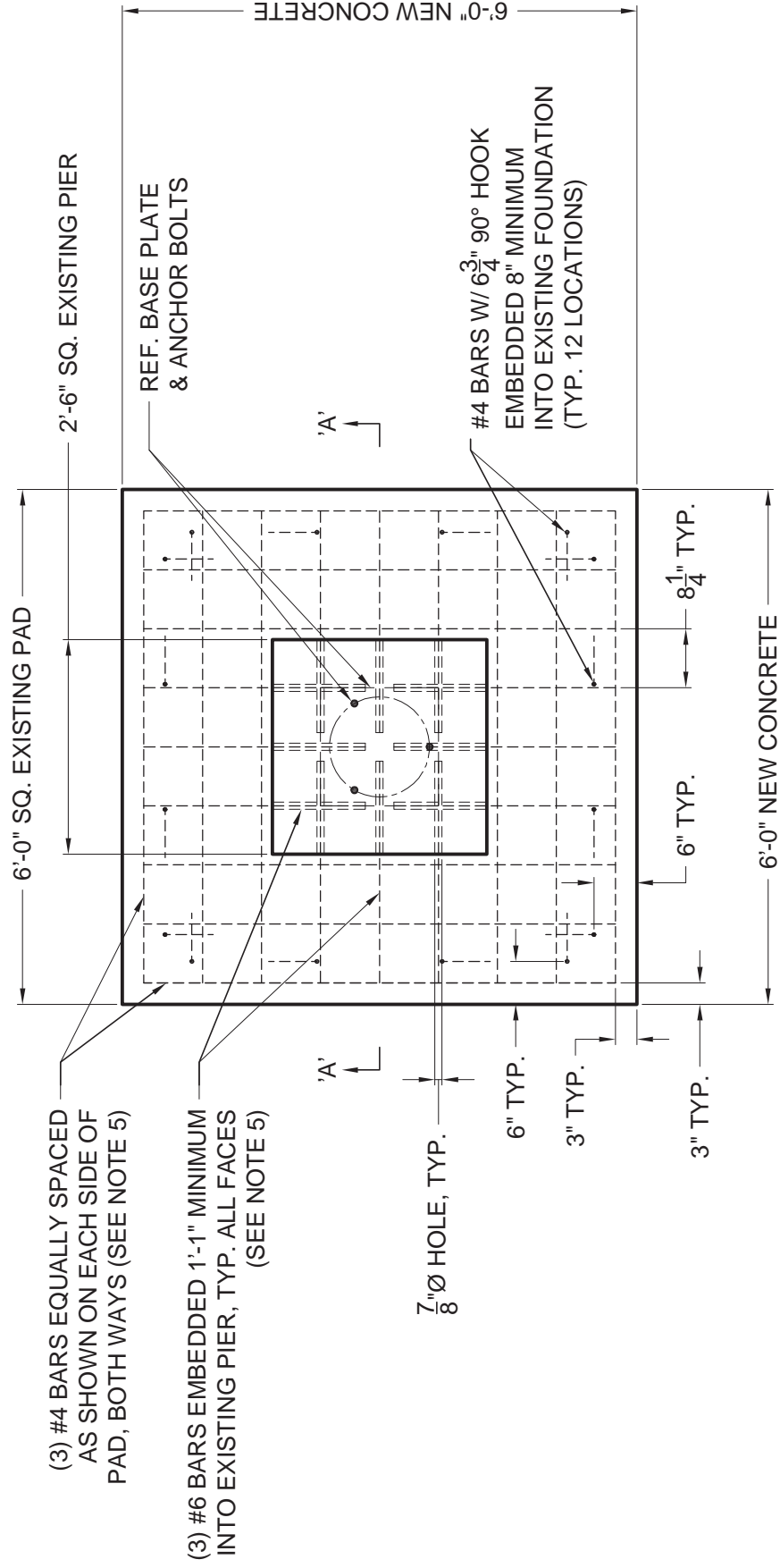
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NOTES:

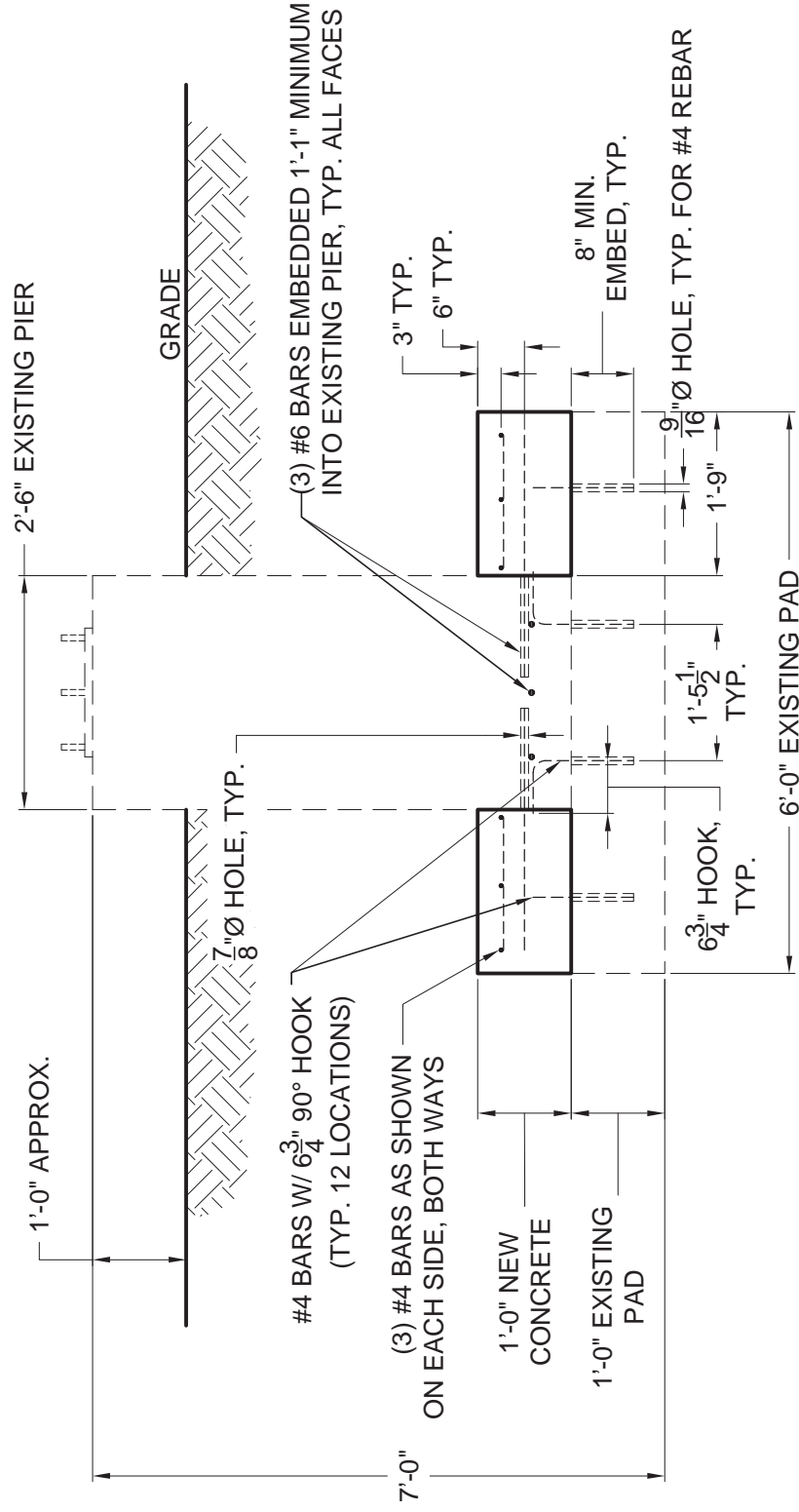
- SEE PAGE D02.01 FOR FOUNDATION NOTES.
- EXCAVATE AROUND PERIMETER OF EXISTING BASE PIER.
- CLEAN AND ROUGHEN ALL INTERFACES BETWEEN OLD AND NEW CONCRETE. APPLY BONDING AGENT SIKADUR 32, HI-MOD LPL OR EQUIVALENT BONDING AGENT PRIOR TO NEW CONCRETE PLACEMENT. BONDING AGENT SHALL BE APPLIED IN ACCORDANCE WITH MANUFACTURER APPLICATION SPECIFICATIONS AND GUIDELINES.
- SECURE DOWELED IN REBAR WITH REBAR ADHESIVE (HILTI-HIT HY 200 INJECTION ADHESIVE OR EQUIVALENT).
- FIELD LOCATE EXISTING REBAR PRIOR TO DRILLING. DO NOT DAMAGE EXISTING REBAR DURING INSTALLATION OF EPOXY DOWELS.
- REINFORCING SHALL BE POSITIONED AS SHOWN AND ADEQUATELY SUPPORTED AGAINST DISPLACEMENT. TACK WELDING IS NOT PERMITTED.
- BEND ALL REINFORCING COLD AND REMOVE ALL SCALE.
- MINIMUM COVER FOR REINFORCING BARS IS 3" UNLESS NOTED OTHERWISE.
- BACKFILL NEAR AND AROUND ALL FOUNDATIONS WITH A REASONABLE WELL GRADED FILL AND COMPACT TO WITHIN 95% OF MAXIMUM DRY UNIT DENSITY.
- FOUNDATION DESIGN IS BASED ON A GROSS ALLOWABLE BEARING PRESSURE OF 8000 PSF.
- BILL OF MATERIAL IS APPROXIMATE AND FOR REFERENCE ONLY. CONTRACTOR MUST VERIFY ALL QUANTITIES.

BILL OF MATERIAL

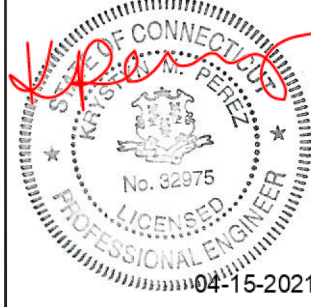
QTY.	NAME	DESCRIPTION
100 FT.	REINFORCING BARS	#4 - ASTM A615 GRADE 60
35 FT.	REINFORCING BARS	#6 - ASTM A615 GRADE 60
1.5 CU. YDS.	CONCRETE	4000 PSI AFTER 28 DAYS
AS REQUIRED	HILTI-HIT-HY 200 ADHESIVE	----



PLAN VIEW



SECTION "A-A"

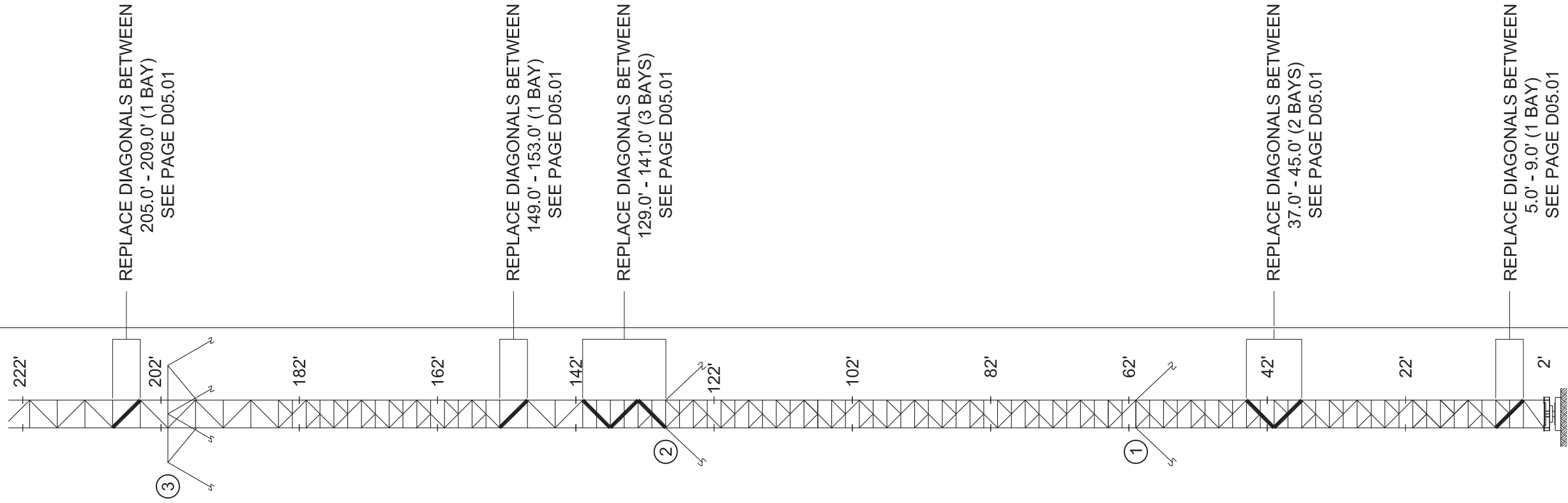


BASE FOUNDATION MODIFICATION
WATERBURY, CT

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CHECKED BY	GH	4/12/21
ENGINEER REVIEW	AV	4/14/2021
PROJECT NUMBER	350819	
DRAWING NUMBER	D02.00	



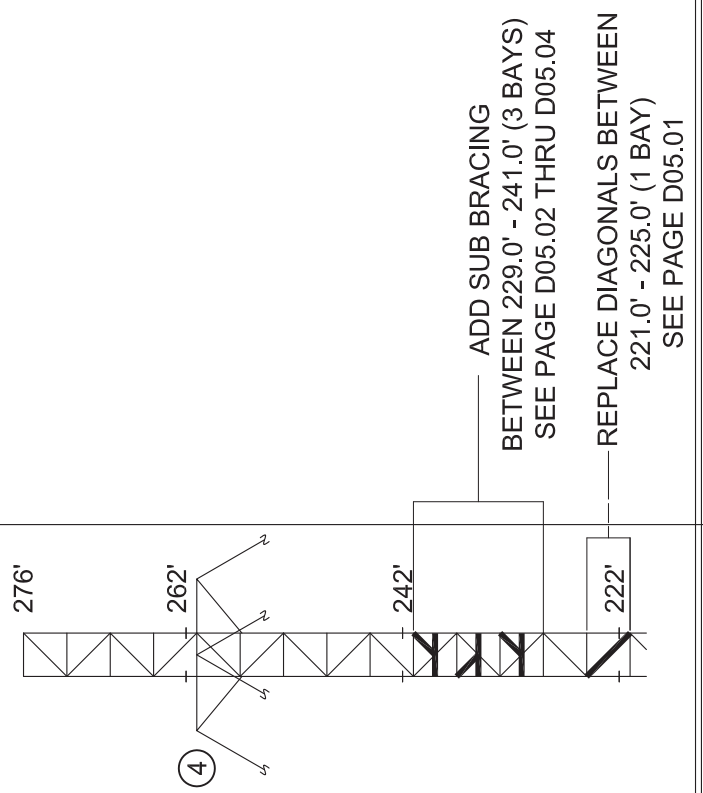
REPLACE DIAGONALS BETWEEN
205.0' - 209.0' (1 BAY)
SEE PAGE D05.01

REPLACE DIAGONALS BETWEEN
149.0' - 153.0' (1 BAY)
SEE PAGE D05.01

REPLACE DIAGONALS BETWEEN
129.0' - 141.0' (3 BAYS)
SEE PAGE D05.01

REPLACE DIAGONALS BETWEEN
37.0' - 45.0' (2 BAYS)
SEE PAGE D05.01


REPLACE DIAGONALS BETWEEN
5.0' - 9.0' (1 BAY)
SEE PAGE D05.01



ADD SUB BRACING
BETWEEN 229.0' - 241.0' (3 BAYS)
SEE PAGE D05.02 THRU D05.04

REPLACE DIAGONALS BETWEEN
221.0' - 225.0' (1 BAY)
SEE PAGE D05.01

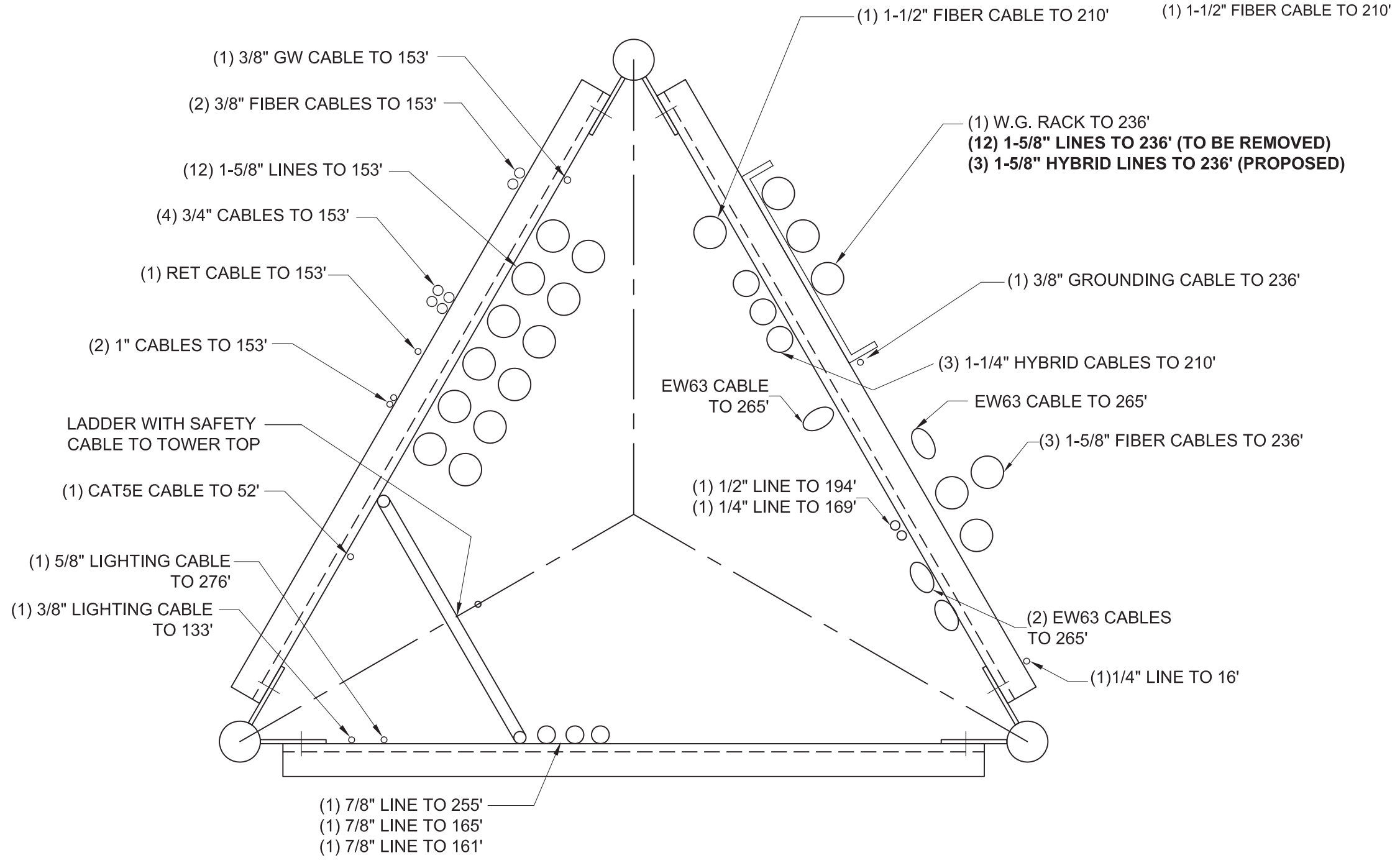
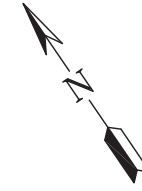
TOWER ELEVATION		TOWER MODIFICATIONS		TOWER ELEVATION		TOWER MODIFICATIONS	
REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE
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 <p>STAINLESS A BUSINESS OF FDH INFRASTRUCTURE SERVICES 100 West Main Street, Suite 400 Lansdale, PA 19446</p>		<p>PREPARED BY: JMR 3/24/21</p> <p>CHECKED BY: GH 4/12/21</p> <p>ENGINEER REVIEW: AV 4/14/2021</p>
<p>TOWER PROFILE WATERBURY, CT</p>		<p>PROJECT NUMBER: 350819</p>
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NOTE:

1. THE TOWER MODIFICATION IS BASED ON THE LINEAR APPURTENANCES (LADDER, TRANSMISSION LINES, CONDUITS, ETC.) BEING INSTALLED IN THE POSITION SHOWN ON THE CROSS SECTION. DEVIATING FROM THIS APPURTENANCE ARRANGEMENT COULD AFFECT THE STRUCTURAL INTEGRITY OF THE TOWER.



PREPARED BY	JMR	3/24/21
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ENGINEER REVIEW	AV	4/14/2021
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DRAWING NUMBER	D05.00	

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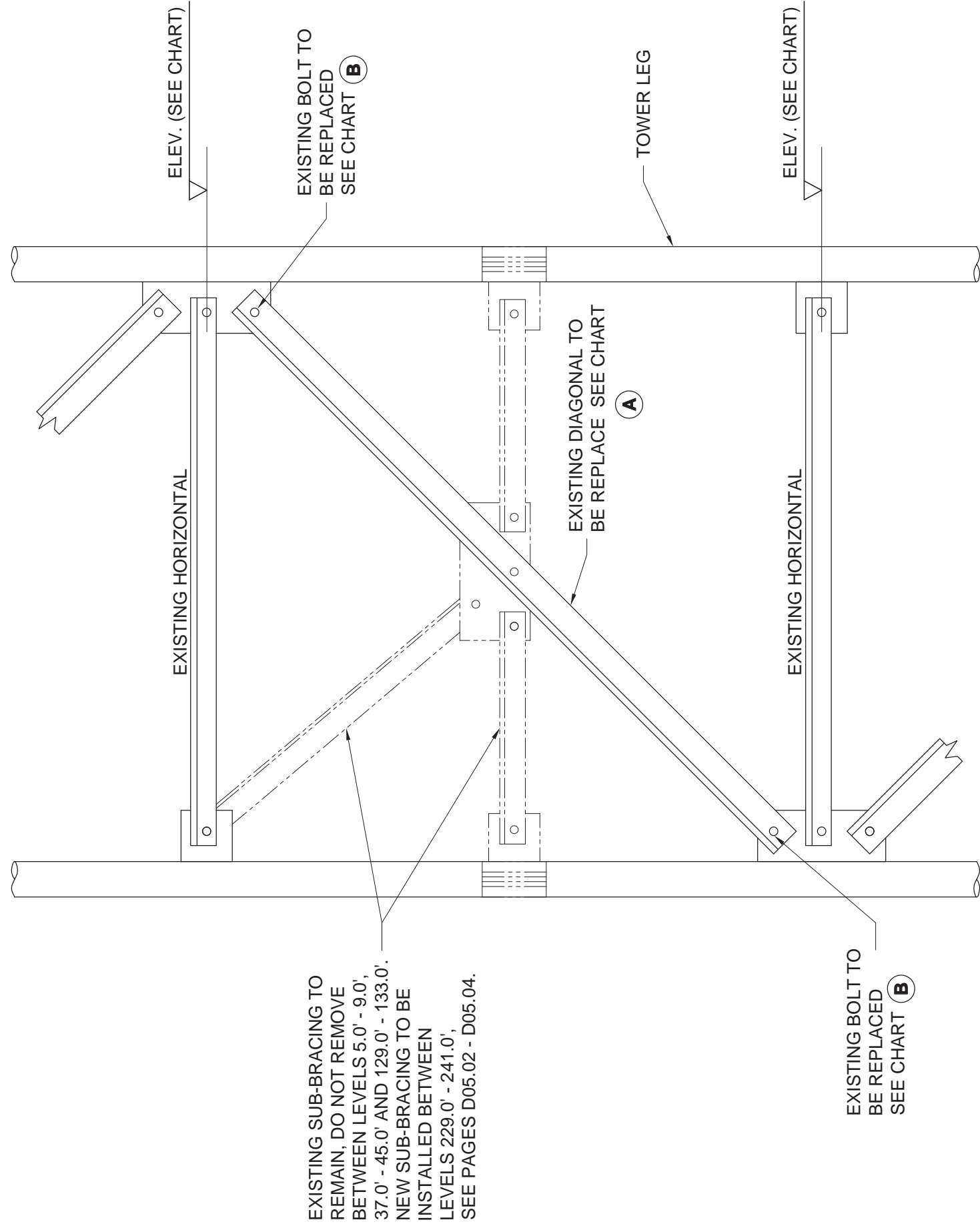
LINEAR APPURTENANCES
 WATERBURY, CT

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04-15-2021

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ELEVATION VIEW

TOWER MUST BE ADEQUATELY BRACED BEFORE REMOVING ANY EXISTING TOWER MEMBERS. IN PARTICULAR CONTRACTOR IS ALERTED TO THE FACT THAT TEMPORARILY REMOVING EXISTING SUB BRACING TO THE LEGS WILL INCREASE THE BUCKLING LENGTH OF THE LEGS, HENCE REDUCING THE COMPRESSION LOAD CARRYING STRENGTH OF THE LEGS. THIS MUST BE CHECKED BY CONTRACTOR AS PART OF HIS 'MEANS AND METHODS' OF CONSTRUCTION.

ELEVATION	BAYS	DIAGONAL REPLACEMENTS		MAX. IMPOSED LOAD IN MEMBER
		(A)	(B)	
5.0' - 9.0'	1	L 2 x 2 x 1/4 (A36)	5/8" DIA. BOLT (A325X)	4.8 KIPS
37.0' - 45.0'	2	L 2 x 2 x 1/4 (A36)	5/8" DIA. BOLT (A325X)	4.6 KIPS
129.0' - 141.0'	3	L 2 1/2 x 2 1/2 x 3/8 (A36)	5/8" DIA. BOLT (A325X)	12.9 KIPS
149.0' - 153.0'	1	L 2 1/2 x 2 1/2 x 3/8 (A36)	5/8" DIA. BOLT (A325X)	10.0 KIPS
205.0' - 209.0'	1	L 2 1/2 x 2 1/2 x 3/8 (A36)	5/8" DIA. BOLT (A325X)	9.9 KIPS
221.0' - 225.0'	1	L 2 x 2 x 1/4 (A36)	5/8" DIA. BOLT (A325X)	4.5 KIPS



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DIAGONAL REPLACEMENT DETAILS
 WATERBURY, CT

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CHECKED BY	GH	4/12/21				
ENGINEER REVIEW	AV	4/14/2021				
PROJECT NUMBER	350819					
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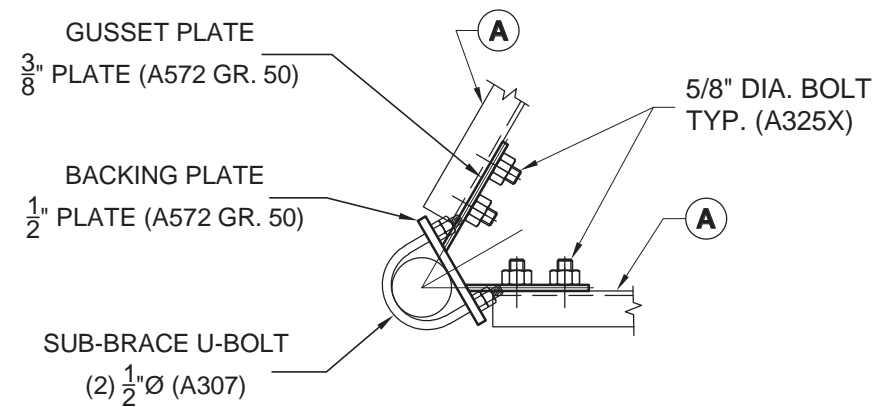
ELEVATION	BAYS	LEG DIA.	SUB BRACING		MAX. FACTORED COMPRESSION LEG LOADS
			A	B	
229.0' - 241.0'	3	1-3/4" Ø	L 2 x 2 x 1/4 (A36)	L 2 x 2 x 1/4 (A36)	86.9 KIPS

TOWER MUST BE ADEQUATELY BRACED BEFORE REMOVING ANY EXISTING TOWER BOLTS

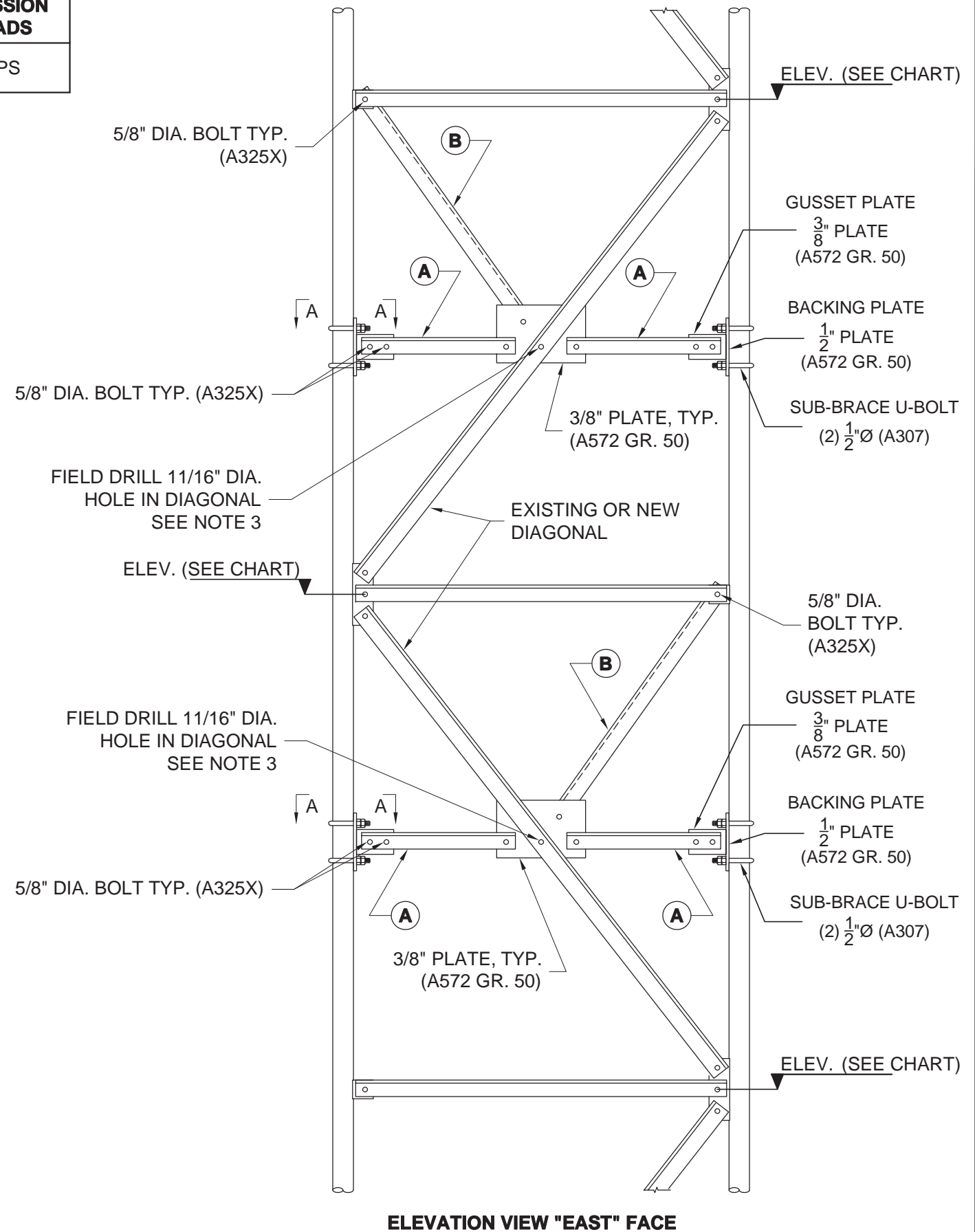
SEE PAGES D05.03 & D05.04 FOR SUB DIAGONAL CONFIGURATION WHERE SUB DIAGONAL INTERFERES WITH INSIDE CLIMBING LADDER ON THE "NW" AND "SW" FACES.

NOTES:

- CONTRACTOR IS ADVISED TO REMOVE AND REPLACE ONE HORIZONTAL BOLT, AT ONE LEVEL, AND ON ONE FACE, AT A TIME.
- DESIGN SUB BRACING CONNECTIONS PER ANSI/TIA 222-G BASED UPON THE MAXIMUM COMPRESSION LEG LOADS SHOWN.
- TOUCH-UP DAMAGED GALVANIZING IN ACCORDANCE WITH ASTM A780.
 - SURFACES TO BE PAINTED SHALL BE CLEAN, DRY AND FREE OF OIL, GREASE, PRE-EXISTING PAINT AND CORROSION BY-PRODUCTS.
 - APPLY ZINC RICH PAINT IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS IN A SINGLE APPLICATION, EMPLOYING MULTIPLE PASSES TO ACHIEVE A DRY FILM THICKNESS OF NO LESS THAN 6 MILS.



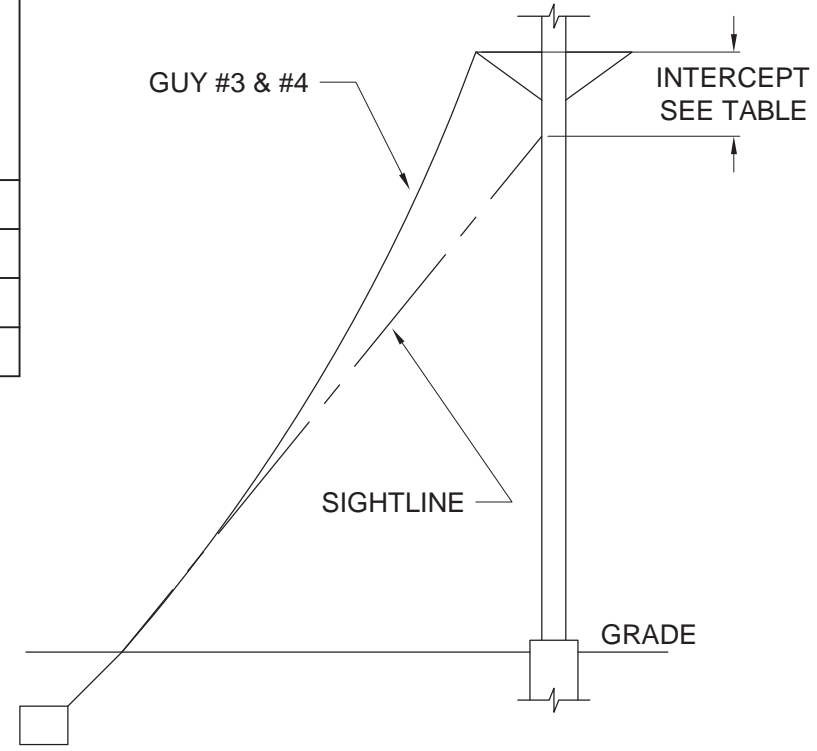
SECTION A - A



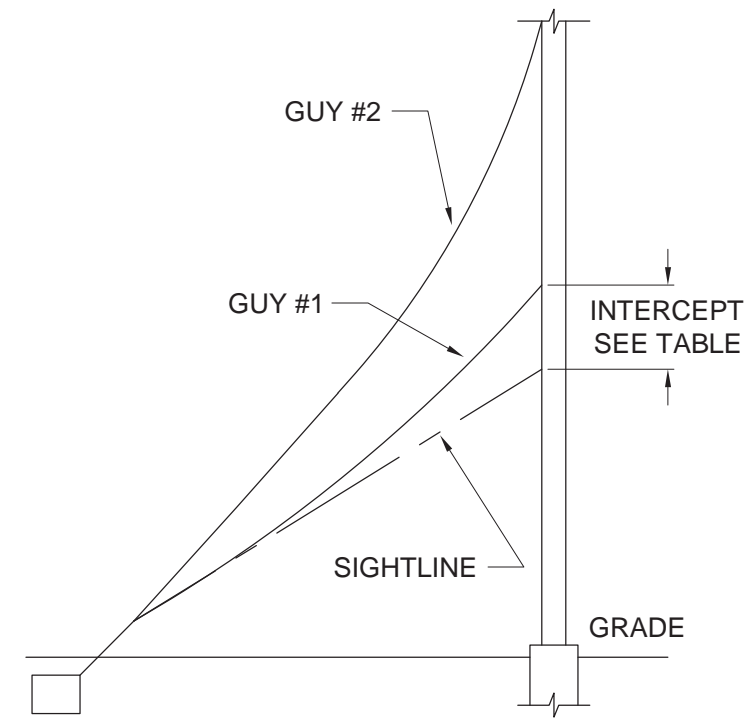
ELEVATION VIEW "EAST" FACE

PREPARED BY	JMR	3/24/21	CHECKED BY	GH	4/12/21	ENGINEER REVIEW	AV	4/14/2021	PROJECT NUMBER	350819	DRAWING NUMBER	D05.02
REVISION DESCRIPTION	DATE	E.C.K	DATE	D.C.K	DATE	REV	BY	DATE	K:\350819\dwg\350819_D05.02-04_Sub_Brace_Details.dwg			
SUB BRACE DETAILS "EAST" FACE WATERBURY, CT												
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	0 DEG. F		20 DEG. F		40 DEG. F		60 DEG. F		80 DEG. F		100 DEG. F	
	ERECT. TENSION (LBS)	INTER-CEPT (FT)	ERECT. TENSION (LBS)	INTER-CEPT (FT)	ERECT. TENSION (LBS)	INTER-CEPT (FT)	ERECT. TENSION (LBS)	INTER-CEPT (FT)	ERECT. TENSION (LBS)	INTER-CEPT (FT)	ERECT. TENSION (LBS)	INTER-CEPT (FT)
1A	5875	1.4	5448	1.5	5023	1.6	4600	1.8	4181	2.0	3768	2.2
2A	5674	3.8	5238	4.1	4813	4.5	4400	4.9	4006	5.3	3631	5.9
3A	4901	4.2	4734	4.4	4567	4.5	4400	4.7	4235	4.9	4070	5.0
4A	2810	10.5	2705	10.9	2602	11.3	2500	11.7	2402	12.2	2304	12.7



ELEVATION VIEW - GUY #3 & #4



ELEVATION VIEW - GUY #1 & #2

NOTES:

1. DURING THE INITIAL GUY TENSIONING PROCEDURES AND AT THE TIME OF INSPECTION, THE GUY TENSIONS AND/OR INTERCEPTS SHOULD BE IN ACCORDANCE WITH THE VALUES SHOWN ABOVE. USE THE TEMPERATURE WHICH ACTUALLY EXISTS AT THE TIME THE TENSION IS BEING CHECKED. FOR TEMPERATURES OTHER THAN THOSE SHOWN ABOVE, INTERPOLATE OR EXTRAPOLATE OTHER VALUES.
2. TOWER PLUMBING AND INITIAL TENSIONING OF GUYS SHOULD BE DONE ONLY IN CALM WEATHER AND WITH NO ICE ON GUYS.
3. INTERCEPTS AND TENSIONS ARE SHOWN IN GUY DIRECTION "A" ONLY. ADJUST ALL DIRECTIONS ACCORDINGLY.
4. GUY #1 IS BOTTOM GUY; GUY #2 IS NEXT, ETC.
5. USE SIGHT BAR FOR DETERMINING GUY INTERCEPTS.
6. TENSION AND/OR INTERCEPT TOLERANCES +/- 5%.

PREPARED BY	JMR	3/24/21	CHECKED BY	GH	4/12/21	ENGINEER REVIEW	AV	4/14/2021	PROJECT NUMBER	350819	DRAWING NUMBER	D08.00
REVISION DESCRIPTION	DATE	E.C.K	DATE	D.C.K	DATE	REV BY	DATE					

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INTERCEPTS & ERECTION TENSIONS
WATERBURY, CT

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STATE OF CONNECTICUT
KRIEGER PEREZ
No. 32975
PROFESSIONAL ENGINEER

04-15-2021

Exhibit E

**Mount Structural Analysis for
Northeast Site Solutions**

276' Guyed Tower (278' AGL)

**Site Name: NH305/Channel 20_ET
Site ID: CTNH305B
Site Address: 103 East Side Blvd, Naugatuck, CT 06706
Site Location: Latitude: 41.51797 Longitude: -73.01846**

**FDH Infrastructure Services LLC, Project Number Project Number PR-005376
Stainless # 350818**

Analysis Results

Mount Components	90.7%	Sufficient
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Prepared By:

Anne E. Vago, EI
Project Engineer

Reviewed By:

Krystyn M. Perez, P.E.
Vice President, Structural Engineering
CT License No. 32975

Stainless
100 W Main St Ste 400
Lansdale PA 19446
(919) 755-1012
Structural@fdh-is.com



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TABLE OF CONTENTS

EXECUTIVE SUMMARY 3

 Conclusions..... 3

 Recommendation(s)..... 3

APPURTENANCE LISTING 4

RESULTS..... 5

GENERAL COMMENTS 6

LIMITATIONS..... 6

APPENDIX 7

EXECUTIVE SUMMARY

At the request of Northeast Site Solutions, Stainless performed a structural analysis of the existing Mount(s) and the proposed loading for T-Mobile at the 276' Guyed Tower located in Naugatuck, CT to determine whether the structure is structurally adequate to support both the existing and proposed loads pursuant to the *Structural Standard for Antenna Supporting Structures and Antennas, ANSI/TIA-222-G* and the *2018 Connecticut Building Code (2015 IBC)*. Information pertaining to the existing/proposed antenna loading, Mount geometry, and member sizes was obtained from:

Source	Document Type	Reference	Date
SitePro1	Mount Assembly Drawings	Part No. VFA12-SD-S	7/13/2017
Stainless	Stainless Proposal	P21_3508_001	2/19/2021
FDH Infrastructure Services, LLC	Tower Mapping Report	Project No. 19BHC1500	7/26/2019
Northeast Site Solutions	RFDS	CTNH305B_Anchor_4_draft_2021-01-27.pdf	1/27/2021
T-Mobile	Emails	Correspondence with Sheldon Freinle	3/15/2021
Northeast Site Solutions			

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 and a *basic design wind speed* of 50 mph with 3/4" radial ice. This 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 1.194 at mount elevation and Risk Category II were used in this analysis.

Conclusions

With the existing and proposed antennas from T-Mobile outlined in **Table 1**, we have determined the Mount(s) stress level to be **Sufficient** pursuant to the requirements of the *ANSI/TIA-222-G* standard and the *2018 Connecticut Building Code (2015 IBC)* provided the **Recommendation(s)** listed below are satisfied. For a more detailed description of the analysis of the Mount(s), see the **Results** section of this report.

Our assessment has been made assuming all information provided to Stainless is accurate and that the Mount(s) have been properly erected and maintained.

Recommendation(s)

To ensure the requirements of the current analysis standards are met with the loading in place per **Table 1**, we have the following recommendation(s):

- The existing and proposed equipment may be installed as shown in **Table 1** on the proposed mount(s). The proposed panel antennas should be installed on new 2SCH 40 (2.4" dia. x 0.154" thk.) pipe mounts. A total of (9) 10' long pipe mounts should be installed evenly across the face of the mount, (3) per sector.
- All existing and proposed TMAs and RRHs should be installed behind the existing and proposed panel antennas. This equipment was not shielded when considering wind loads in this analysis.
- We recommend that all bolts be checked for tightness prior to the installation of the proposed loading and that all rusted hardware be replaced with galvanized hardware.

APPURTENANCE LISTING

The antennas and equipment, with their corresponding feed lines, considered for this analysis are shown in **Table 1**. *If the actual layout determined in the field deviates from the layout, Stainless should be contacted to perform a revised analysis.*

Table 1 - Appurtenance Loading

Existing Carrier Mount Loading:

Antenna Elevation (ft.)	Description	Feed Lines	Carrier	Mount Centerline Elevation (ft.)	Mount Type
236	(3) Andrew DBXNH-6565A-A2M (3) Ericsson RRUS11 B12 (4) RFS ATMA3P4-1A20 (2) RFS ATMA4P4-1A202 (3) Ericsson AIR32 KRD901146-1_B66A_B2A	(12) 1-5/8" (3) 1-5/8" Fiber	T-Mobile	236	(3) T-arm Mounts

Proposed Carrier Final Mount Loading:

Antenna Elevation (ft.)	Description	Feed Lines	Carrier	Mount Centerline Elevation (ft.)	Mount Type
236	(3) Ericsson AIR32 KRD901146-1_B66A_B2A (3) RFS-APXVAARR24_43-U-NA20 (3) Ericsson AIR6449 B41 (3) Ericsson Radio 4449 B71+B85 (3) Radio 4415 B25	(3) 1-5/8" Fiber (3) 1-5/8" Hybrid	T-Mobile	236	(3) 12.5' Sector Frames [SitePro1 P/N: VFA12-SD-S]

RESULTS

The following member material grades were utilized in the analysis:

Table 2 - Member Material Grade

Member Type	Steel Grade
Pipe	A53 Gr. B
Rectangular HSS	A500 Gr. B (F _y = 46 ksi)
Round HSS	A500 Gr. B (F _y = 42 ksi)
Cold Formed	A570 Gr. 33
U-bolt	J429 Gr. 2
Bolt	A325
Threaded Rods	J429 Gr. 2
All Other Members	Q235 Gr. B

The following load combinations were used to analyze the Mount(s):

Table 3 – Load Combinations

Load Case	Factored Combination
Dead	1.4 D
Dead + Wind	1.2 D + 1.6 W ₀
Dead + Dead (ice) + Wind (ice)	1.2 D + 1.0 D _i + 1.0 W _i
Dead + Wind (maintenance) + Man (500 lbs)	1.2 D + 1.0 W _m + 1.5 L _m
Dead + Man (250 lbs)	1.2 D + 1.5 L _v

Table 4 displays the summary of the ratio (as a percentage) of force in the member to their capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. *Note:* Capacities of up to 105% are typically considered acceptable based on analysis methods used. Notwithstanding, ratings shall not exceed 100% as stipulated by the tower owner. **Table 5** displays the maximum tilt and twist at maintenance wind speeds (30 mph) relative to tower deflections. Values in this table represent the expected displacements during operations coinciding with maintenance work performed by crew members.

If the assumptions outlined in this report differ from actual field conditions, Stainless should be contacted to perform a revised analysis. Furthermore, as no information pertaining to the allowable tilt and twist requirements for the appurtenances was provided, deflection and rotation were not taken into consideration when performing this analysis.

See the **Appendix** for detailed calculations and modeling information.

Table 4 - Mount Component Stresses vs. Capacity

Component	Capacity (%)	Pass / Fail
Pipe Mount(s)	66.6	Pass
Horizontal(s)	90.7	Pass
Standoff(s)	72.6	Pass
Bracing	49.3	Pass
Tower Connection(s)	27.9	Pass

Table 5 – Maximum Mount Deflections and Rotations at Maintenance Wind Speeds (30 mph)

Mount Elevation (ft.)	Vertical Deflection* (in.)	Tilt* (degrees)	Twist* (degrees)
236	0.751	0.754	0.258

* Deflections provided are relative to the deflection of the supporting tower or structure. Allowable deflection and rotation values to be reviewed by the client.

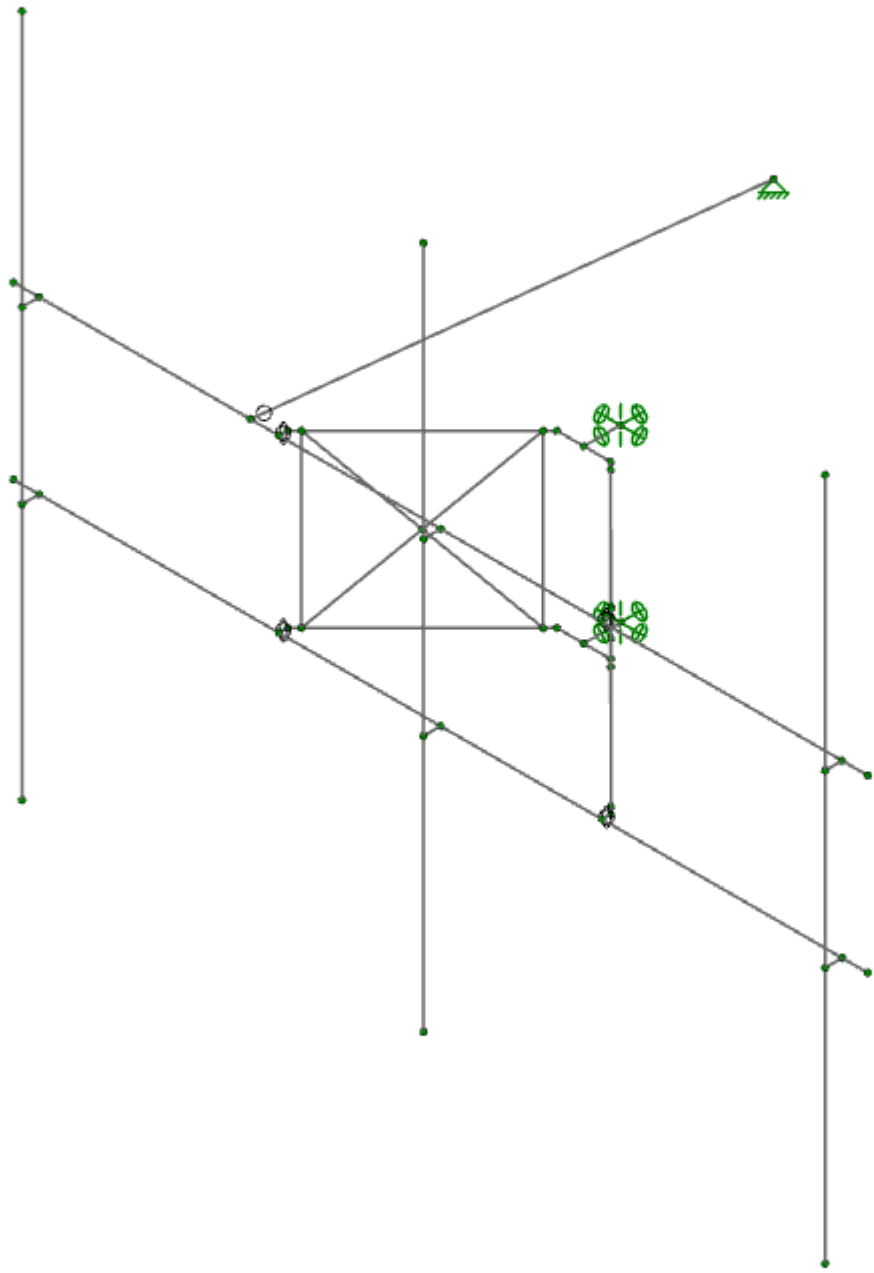
GENERAL COMMENTS

This engineering analysis is based upon the theoretical capacity of the Mount. It is not a condition assessment of the Mount. It is the responsibility of the client to verify that the Mount modeled and analyzed is the correct structure (with accurate antenna loading information) modeled. If substantial modifications are to be made or the assumptions made in this analysis are not accurate, Stainless should be notified immediately to perform a revised analysis.

LIMITATIONS

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of this report. All opinions and conclusions are subject to revision based upon receipt of new or additional/updated information. All services are provided exercising a level of care and diligence equivalent to the standard and care of our profession. No other warranty or guarantee, expressed or implied, is offered. Our services are confidential in nature and we will not release this report to any other party without the client's consent. The use of this engineering work is limited to the express purpose for which it was commissioned and it may not be reused, copied, or distributed for any other purpose without the written consent of Stainless.

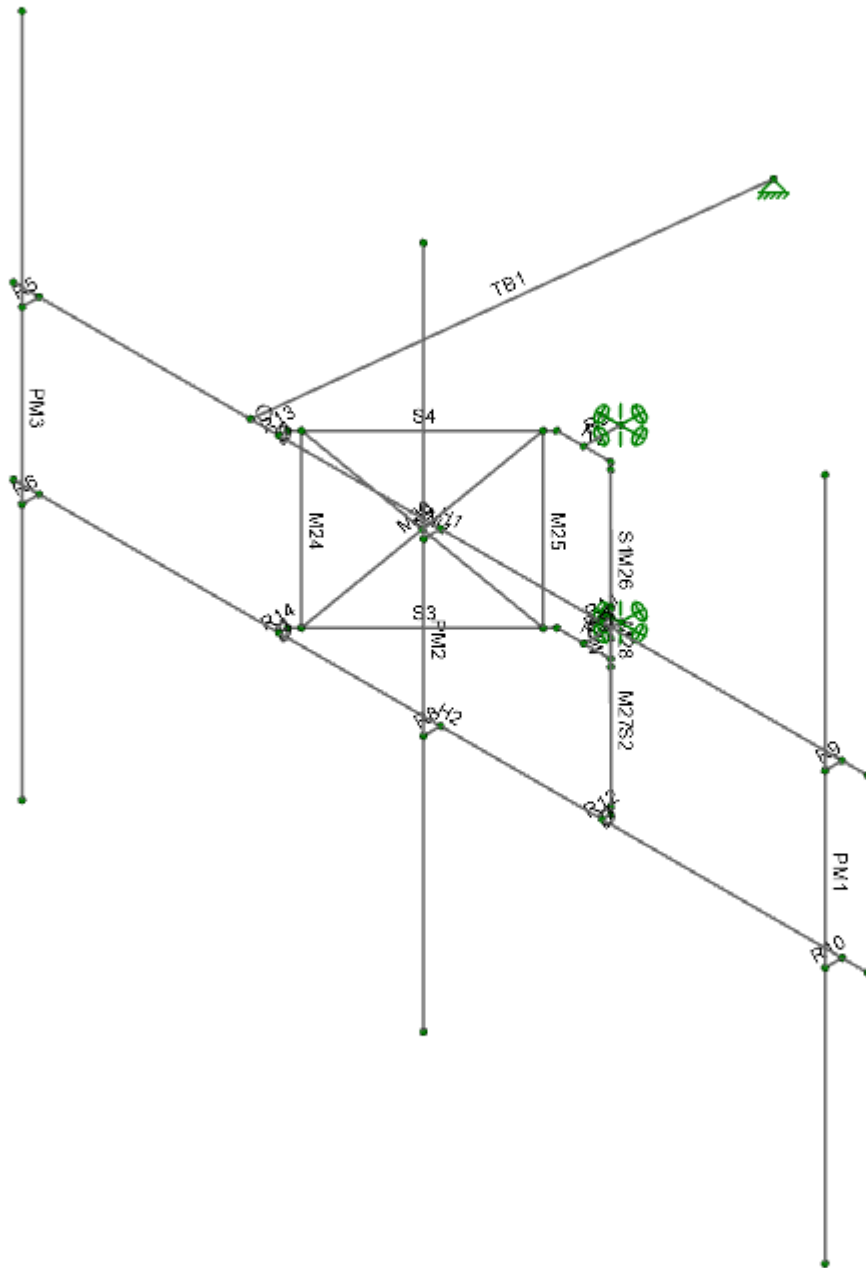
APPENDIX



FDH
AEV
350818

350818_Waterbury, CT

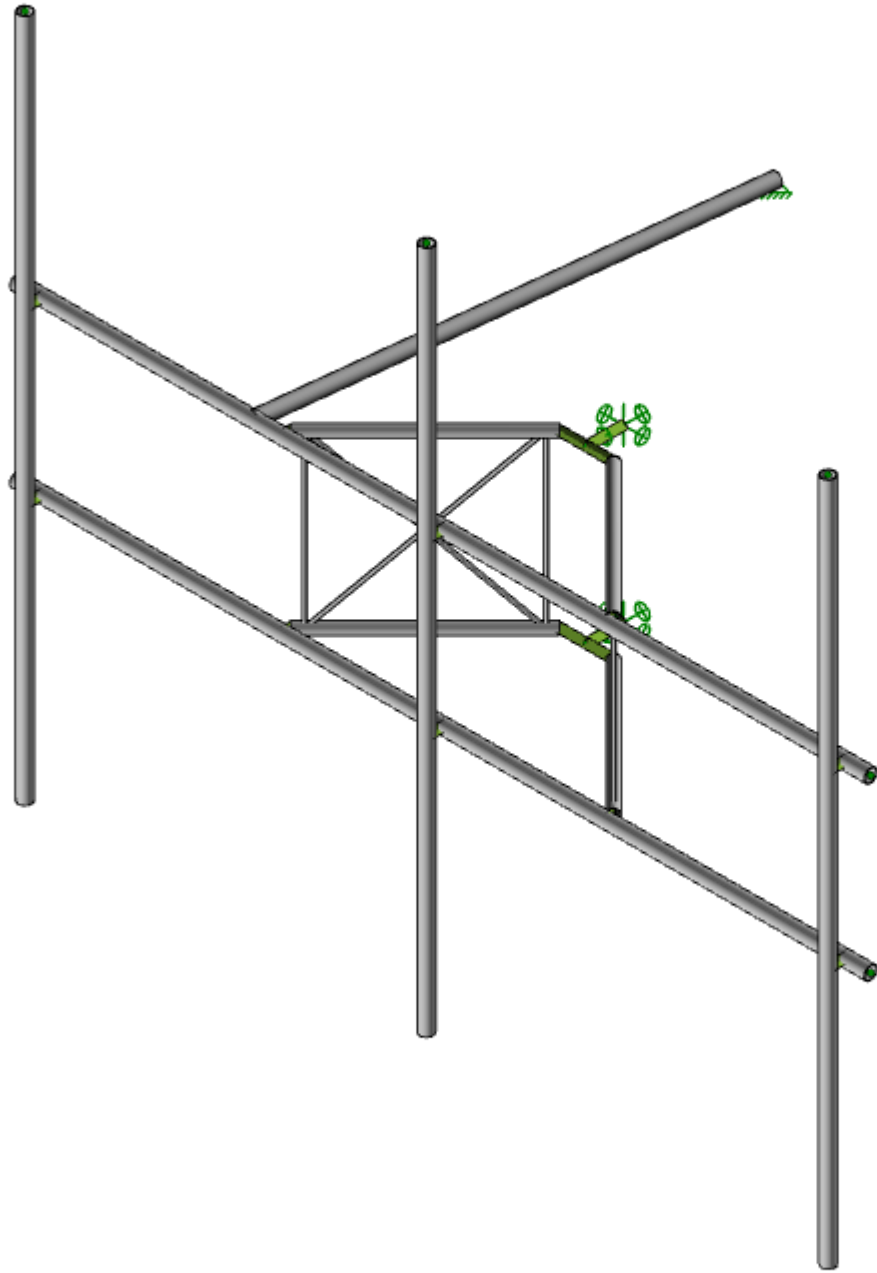
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350818_Waterbury, CT

SK-2
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 350818_Waterbury, CT (03-17-20...



FDH	350818_Waterbury, CT	SK-3
AEV		Mar 17, 2021
350818		350818_Waterbury, CT (03-17-20...

Mount Analysis

Project Information	
Project Number:	350818_Waterbury, CT
Site Name:	NH305/Channel 20_ET
Site Number:	3508

Analysis Parameters			
Tower Type:	<i>TowerType</i>	Guyed	-
Mount Status:	<i>MountStatus</i>	Proposed	-
Mount Type:	<i>MountType</i>	Sector Frame	-
Analysis Code:	<i>Code</i>	TIA-222-G	-
IBC Code:	<i>IbcCode</i>	2015 IBC	-
Max Stress Ratio:	<i>MaxStressRatio</i>	100%	-
Tower Height:	<i>TwrHeight</i>	276	ft
Effective Mount Centerline Height:	<i>MntHeight</i>	236	ft
RISA Y-Coordinate of Mount CL:	<i>MountY</i>	0	in
Basic/Nominal Wind Speed:	<i>WindSpeed</i>	97	mph
Maintenance Wind Speed:	<i>MaintWind</i>	30	mph
Design Ice Wind Speed:	<i>IceWind</i>	50	mph
Nominal Ice Thickness:	<i>IceThickness</i>	0.75	in
Risk Category:	<i>RiskCat</i>	II	-
Exposure Category:	<i>Exposure</i>	B	-
Topographic Factor K_{zt} :	<i>Kzt</i>	1.194	-
Ss:	<i>Ss</i>		-
S ₁ :	<i>S_1</i>		-
Site Class:	<i>SiteClass</i>		-
Ground Elevation at Base of Structure:	<i>zs</i>		ft
Roof Speed Up Factor:	<i>Ks</i>		-

Wind Parameters			
Wind Speed:			
Shielding Factor K_a :	<i>Ka</i>	1.00	-
Gust Factor G_H :	<i>Gh</i>	1.00	-
Velocity Pressure Factor K_z :	<i>Kz</i>	1.26	-
Wind Importance Factor I :	<i>I</i>	1.00	-
Exist. Structure Reduction Factor F_w :	<i>Fw</i>	-	-
Direction Probability Factor K_d :	<i>Kd</i>	0.95	-
Wind Pressure q_z :	<i>qz</i>	34.51	psf
Maint. Wind Pressure q_{mz} :	<i>q mz</i>	3.30	psf
Ice Wind Speed:			
Design Ice Thickness t_{iz} :	<i>tiz</i>	1.94	in
Ice Height Escalation Factor K_{iz} :	<i>Kiz</i>	1.22	-
Ice Importance Factor I :	<i>I</i>	1.00	-

Load Combinations
1.2D + 1.6Wo
1.2D + 1.0Di + 1.0Wi
1.4D
1.2D + 1.5Lm + 1.0Wm
1.2D + 1.5Lv

Considered Wind Directions
0°, 30°, 60°, 90°, 120°, 150°, 180°, 210°, 240°, 270°, 300°, 330°

Maintenance Loads	
Pipe Mounts, L_M (lbs):	500
Horizontals, L_V (lbs):	250

Maximum Deflections		
Vertical (in)	Tilt (deg)	Twist (deg)
0.751	0.754	0.258

Tie-Back End Reactions		
Member Label	Joint Label at BC	Resultant (lbs)
TB1	TJ1	1963.9

Overall Max Stress Ratio	
90.7%	Pass

Connection Summary										
Node Label	Bolt Quantity	Bolt Diameter (in)	Bolt Type	Tu (kips)	ΦT_n (kips)	Vu (kips)	ΦV_n (kips)	Controlling LC	Stress Ratio	Pass/Fail
N6	4	0.5	Threaded Rod	4.18	74.00	1.07	3.84	31	27.9%	Pass

Section Sets Summary						
Section Set	Member	Member Label	Controlling	LC	Stress Ratio	Pass/Fail
Pipe Mount	Pipe_2.0 STD	PM1	Bending	15	66.6%	Pass
Horizontals	Pipe_2.0 STD	H1	Bending	7	90.7%	Pass
Standoffs	Pipe_1.5 STD	S1	Bending	7	72.6%	Pass
Vertical Bracing	SR 5/8	M27	Bending	21	49.3%	Pass
Diagonals	SR 5/8	M28	Bending	13	47.6%	Pass
Tie-back	Pipe_2.0 STD	TB1	Bending	8	10.3%	Pass

Site Specific Appurtenances:

	Include Loading (Yes/No)	Manufacturer	Model	Member Label	Type	#	Absolute Azimuth (deg)	Centerline Elevation (ft)	Height (in)	Width (in)	Depth (in)	Weight (lbs)	Ice Weight (lbs)	CaAa Front No Ice (ft ²)	CaAa Front Ice (ft ²)	CaAa Side No Ice (ft ²)	CaAa Side Ice (ft ²)
1	Yes	ericsson	AIR 32 B32 901146-1_B66a_B2A (Octa)	PM3	Antenna	1	0.00	236.00	58.1	15.7	9.4	132.0	377.511	7.939	9.479	5.172	6.552
2	Yes	ericsson	Air 6449 B41	PM2	Antenna	1	0.00	236.00	33.1	20.5	8.3	103.0	277.178	5.655	6.869	2.416	3.304
3	Yes	rfs celwave	APXVAARR24_43-U-NA20	PM1	Antenna	1	0.00	236.00	95.9	24.0	8.7	153.3	640.331	14.670	17.719	5.320	8.000
4	Yes	ericsson	RADIO 4449 B71/B85A	PM1	Other	1	0.00	236.00	15.0	13.2	10.5	75.0	158.220	1.644	2.309	1.310	1.917
5	Yes	ericsson	4415 B25	PM1	Other	1	0.00	236.00	18.1	13.4	8.3	59.4	144.598	2.021	2.758	1.252	1.879

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	M28	N59C	N56A		Diagonals	VBrace	BAR	Q235 Gr. B	Typical
2	M29	N55A	N60A		Diagonals	VBrace	BAR	Q235 Gr. B	Typical
3	M30	N62A	N57A		Diagonals	VBrace	BAR	Q235 Gr. B	Typical
4	M31	N58B	N61A		Diagonals	VBrace	BAR	Q235 Gr. B	Typical
5	H1	N11	N14		Horizontals	Beam	Pipe	A53 Gr.B	Typical
6	H2	N18	N15		Horizontals	Beam	Pipe	A53 Gr.B	Typical
7	PM1	N54	N55		Pipe Mount	Column	Pipe	A53 Gr.B	Typical
8	PM2	N46	N48A		Pipe Mount	Column	Pipe	A53 Gr.B	Typical
9	PM3	N47	N49A		Pipe Mount	Column	Pipe	A53 Gr.B	Typical
10	R1	N9	N2		RIGID	None	None	RIGID	Typical
11	R2	N3	N8		RIGID	None	None	RIGID	Typical
12	R3	N58A	N6		RIGID	None	None	RIGID	Typical
13	R4	N59A	N5		RIGID	None	None	RIGID	Typical
14	R5	N48	N44		RIGID	None	None	RIGID	Typical
15	R6	N49	N45		RIGID	None	None	RIGID	Typical
16	R7	N58	N42		RIGID	None	None	RIGID	Typical
17	R8	N59	N43		RIGID	None	None	RIGID	Typical
18	R9	N50	N52		RIGID	None	None	RIGID	Typical
19	R10	N51	N53		RIGID	None	None	RIGID	Typical
20	S1	N60	N9		Standoffs	Beam	Pipe	A53 Gr.B	Typical
21	S2	N61	N8		Standoffs	Beam	Pipe	A53 Gr.B	Typical
22	S3	N62	N3		Standoffs	Beam	Pipe	A53 Gr.B	Typical
23	S4	N59B	N2		Standoffs	Beam	Pipe	A53 Gr.B	Typical
24	TB1	T11	TJ1		Tie-back	Beam	Pipe	A53 Gr.B	Typical
25	M24	N58B	N57A		Vertical Bracing	VBrace	BAR	Q235 Gr. B	Typical
26	M25	N62A	N61A		Vertical Bracing	VBrace	BAR	Q235 Gr. B	Typical
27	M26	N59C	N60A		Vertical Bracing	VBrace	BAR	Q235 Gr. B	Typical
28	M27	N55A	N56A		Vertical Bracing	VBrace	BAR	Q235 Gr. B	Typical
29	R11	N13	N60	90	RIGID	None	None	RIGID	Typical
30	R12	N16	N61	90	RIGID	None	None	RIGID	Typical
31	R13	N12	N59B	90	RIGID	None	None	RIGID	Typical
32	R14	N17	N62	90	RIGID	None	None	RIGID	Typical

Member Advanced Data

	Label	I Release	T/C Only	Physical	Deflection Ratio Options	Seismic DR
1	M28			Yes	** NA **	None
2	M29		Tension Only	Yes	** NA **	None
3	M30			Yes	** NA **	None
4	M31		Tension Only	Yes	** NA **	None
5	H1			Yes	Default	None
6	H2			Yes	Default	None
7	PM1			Yes	** NA **	None
8	PM2			Yes	** NA **	None
9	PM3			Yes	** NA **	None
10	R1			Yes	** NA **	None
11	R2			Yes	** NA **	None
12	R3			Yes	** NA **	None
13	R4			Yes	** NA **	None
14	R5			Yes	** NA **	None
15	R6			Yes	** NA **	None
16	R7			Yes	** NA **	None
17	R8			Yes	** NA **	None
18	R9			Yes	** NA **	None
19	R10			Yes	** NA **	None
20	S1			Yes		None
21	S2			Yes		None
22	S3			Yes		None
23	S4			Yes		None

Member Advanced Data (Continued)

	Label	I Release	T/C Only	Physical	Deflection Ratio Options	Seismic DR
24	TB1	BenPIN		Yes	Default	None
25	M24			Yes	** NA **	None
26	M25			Yes	** NA **	None
27	M26			Yes	** NA **	None
28	M27			Yes	** NA **	None
29	R11	OOOXXO		Yes	** NA **	None
30	R12	OOOXXO		Yes	** NA **	None
31	R13	OOOXXO		Yes	** NA **	None
32	R14	OOOXXO		Yes	** NA **	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	K y-y	K z-z	Function
1	M28	Diagonals	42.426			Lbyy		0.65	0.65	Lateral
2	M29	Diagonals	42.426			Lbyy		0.65	0.65	Lateral
3	M30	Diagonals	42.426			Lbyy		0.65	0.65	Lateral
4	M31	Diagonals	42.426			Lbyy		0.65	0.65	Lateral
5	H1	Horizontals	150		56.74	Lbyy	56.74			Lateral
6	H2	Horizontals	150		56.74	Lbyy	56.74			Lateral
7	PM1	Pipe Mount	120	45	45	Lbyy				Lateral
8	PM2	Pipe Mount	120	45	45	Lbyy				Lateral
9	PM3	Pipe Mount	120	45	45	Lbyy				Lateral
10	S1	Standoffs	33.432			Lbyy		0.65	0.65	Lateral
11	S2	Standoffs	33.432			Lbyy		0.65	0.65	Lateral
12	S3	Standoffs	33.432			Lbyy		0.65	0.65	Lateral
13	S4	Standoffs	33.432			Lbyy		0.65	0.65	Lateral
14	TB1	Tie-back	82.961			Lbyy				Lateral
15	M24	Vertical Bracing	30			Lbyy		0.65	0.65	Lateral
16	M25	Vertical Bracing	30			Lbyy		0.65	0.65	Lateral
17	M26	Vertical Bracing	30			Lbyy		0.65	0.65	Lateral
18	M27	Vertical Bracing	30			Lbyy		0.65	0.65	Lateral

Material Take-Off

	Material	Size	Pieces	Length[in]	Weight[K]
1	General Members				
2	RIGID		14	55.8	0
3	Total General		14	55.8	0
4					
5	Hot Rolled Steel				
6	A53 Gr.B	Pipe_1.5 STD	4	133.7	0.03
7	A53 Gr.B	Pipe_2.0 STD	6	743	0.227
8	Q235 Gr. B	SR 5/8	8	289.7	0.025
9	Total HR Steel		18	1166.4	0.282

Basic Load Cases

	BLC Description	Category	Y Gravity	Point	Distributed
1	Wind 0 Deg - No Ice	None		8	21
2	Wind 30 Deg - No Ice	None		16	36
3	Wind 60 Deg - No Ice	None		16	36
4	Wind 90 Deg - No Ice	None		8	18
5	Wind 120 Deg - No Ice	None		16	36
6	Wind 150 Deg - No Ice	None		16	36
7	Wind 180 Deg - No Ice	None		8	21
8	Wind 210 Deg - No Ice	None		16	36
9	Wind 240 Deg - No Ice	None		16	36
10	Wind 270 Deg - No Ice	None		8	18
11	Wind 300 Deg - No Ice	None		16	36
12	Wind 330 Deg - No Ice	None		16	36

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Point	Distributed
13	Wind 0 Deg - Ice	None		8	21
14	Wind 30 Deg - Ice	None		16	36
15	Wind 60 Deg - Ice	None		16	36
16	Wind 90 Deg - Ice	None		8	18
17	Wind 120 Deg - Ice	None		16	36
18	Wind 150 Deg - Ice	None		16	36
19	Wind 180 Deg - Ice	None		8	21
20	Wind 210 Deg - Ice	None		16	36
21	Wind 240 Deg - Ice	None		16	36
22	Wind 270 Deg - Ice	None		8	18
23	Wind 300 Deg - Ice	None		16	36
24	Wind 330 Deg - Ice	None		16	36
25	Wind 0 Deg - Maintenance	None		8	21
26	Wind 30 Deg - Maintenance	None		16	36
27	Wind 60 Deg - Maintenance	None		16	36
28	Wind 90 Deg - Maintenance	None		8	18
29	Wind 120 Deg - Maintenance	None		16	36
30	Wind 150 Deg - Maintenance	None		16	36
31	Wind 180 Deg - Maintenance	None		8	21
32	Wind 210 Deg - Maintenance	None		16	36
33	Wind 240 Deg - Maintenance	None		16	36
34	Wind 270 Deg - Maintenance	None		8	18
35	Wind 300 Deg - Maintenance	None		16	36
36	Wind 330 Deg - Maintenance	None		16	36
37	Dead	None	-1	8	
38	Dead - Ice	None		8	18
39	Maint. Pipe Load 1	None		1	
40	Maint. Pipe Load 2	None		1	
41	Maint. Pipe Load 3	None		1	
42	Maint. Horz. Load 1	None		1	
43	Maint. Horz. Load 2	None		1	
44	Maint. Horz. Load 3	None		1	
45	Maint. Horz. Load 4	None		1	
46	Maint. Horz. Load 5	None		1	
47	Maint. Horz. Load 6	None		1	
48	Maint. Horz. Load 7	None		1	
49	Maint. Horz. Load 8	None		1	
50	Maint. Horz. Load 9	None		1	
51	Maint. Horz. Load 10	None		1	
52	Maint. Horz. Load 11	None		1	
53	Maint. Horz. Load 12	None		1	
54	Maint. Horz. Load 13	None		1	
55	Maint. Horz. Load 14	None		1	
56	Maint. Horz. Load 15	None		1	
57	Maint. Horz. Load 16	None		1	
58	Maint. Horz. Load 17	None		1	
59	Maint. Horz. Load 18	None		1	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	N6	Reaction	Reaction	Reaction	Reaction	Reaction
2	N5	Reaction	Reaction	Reaction	Reaction	Reaction
3	TJ1	Reaction	Reaction	Reaction		

Node Coordinates

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
1	N2	-4.73	15	6.42	
2	N3	-4.73	-15	6.42	
3	N5	0	-15	0	
4	N6	0	15	0	
5	N8	4.73	-15	6.42	
6	N9	4.73	15	6.42	
7	N11	-75	15	31.56	
8	N12	-28.375	15	31.56	
9	N13	28.375	15	31.56	
10	N14	75	15	31.56	
11	N15	75	-15	31.56	
12	N16	28.375	-15	31.56	
13	N17	-28.375	-15	31.56	
14	N18	-75	-15	31.56	
15	N23	26.76197	15	28.442328	
16	N58	0	15	31.56	
17	N59	0	-15	31.56	
18	N48	-70.5	15	31.56	
19	N49	-70.5	-15	31.56	
20	N42	0	15	34.56	
21	N43	0	-15	34.56	
22	N44	-70.5	15	34.56	
23	N45	-70.5	-15	34.56	
24	N46	0	60	34.56	
25	N47	-70.5	60	34.56	
26	N48A	0	-60	34.56	
27	N49A	-70.5	-60	34.56	
28	N50	70.5	15	31.56	
29	N51	70.5	-15	31.56	
30	N52	70.5	15	34.56	
31	N53	70.5	-15	34.56	
32	N54	70.5	60	34.56	
33	N55	70.5	-60	34.56	
34	TJ1	-24	15	-50.869219	
35	T11	-33.375	15	31.56	
36	N58A	0	15	6.42	
37	N59A	0	-15	6.42	
38	N59B	-28.375	15	30.054652	
39	N60	28.375	15	30.054652	
40	N61	28.375	-15	30.054652	
41	N62	-28.375	-15	30.054652	
42	N55A	27.161339	15	28.841522	
43	N56A	27.161339	-15	28.841522	
44	N57A	-27.161339	-15	28.841522	
45	N58B	-27.161339	15	28.841522	
46	N59C	5.943493	15	7.632962	
47	N60A	5.943493	-15	7.632962	
48	N61A	-5.943493	-15	7.632962	
49	N62A	-5.943493	15	7.632962	
50	N50A	16.552416	0	18.237242	
51	N51A	-16.552416	0	18.237242	

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e ⁵ F ⁻¹]	Density [k/ft ³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
3	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3

Hot Rolled Steel Properties (Continued)

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [$1e^{-5}F^{-1}$]	Density [k/ft ³]	Yield [ksi]	Ry	Fu [ksi]	Rt
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	58	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
8	A500 Gr.42	29000	11154	0.3	0.65	0.49	42	1.3	58	1.1
9	A500 Gr.46	29000	11154	0.3	0.65	0.49	46	1.2	58	1.1
10	Q235 Gr. B	29000	11154	0.3	0.65	0.49	35	1.5	55	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in ²]	Iyy [in ⁴]	Izz [in ⁴]	J [in ⁴]
1	Pipe Mount	Pipe_2.0 STD	Column	Pipe	A53 Gr.B	Typical	1.077	0.67	0.67	1.34
2	Horizontals	Pipe_2.0 STD	Beam	Pipe	A53 Gr.B	Typical	1.077	0.67	0.67	1.34
3	Standoffs	Pipe_1.5 STD	Beam	Pipe	A53 Gr.B	Typical	0.799	0.31	0.31	0.62
4	Vertical Bracing	SR 5/8	VBrace	BAR	Q235 Gr. B	Typical	0.307	0.007	0.007	0.015
5	Diagonals	SR 5/8	VBrace	BAR	Q235 Gr. B	Typical	0.307	0.007	0.007	0.015
6	Tie-back	Pipe_2.0 STD	Beam	Pipe	A53 Gr.B	Typical	1.077	0.67	0.67	1.34

Load Combinations

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor
1	1.2 Dead + 1.6 Wind 0 deg	Yes	Y	37	1.2	1	1.6		
2	1.2 Dead + 1.6 Wind 30 deg	Yes	Y	37	1.2	2	1.6		
3	1.2 Dead + 1.6 Wind 60 deg	Yes	Y	37	1.2	3	1.6		
4	1.2 Dead + 1.6 Wind 90 deg	Yes	Y	37	1.2	4	1.6		
5	1.2 Dead + 1.6 Wind 120 deg	Yes	Y	37	1.2	5	1.6		
6	1.2 Dead + 1.6 Wind 150 deg	Yes	Y	37	1.2	6	1.6		
7	1.2 Dead + 1.6 Wind 180 deg	Yes	Y	37	1.2	7	1.6		
8	1.2 Dead + 1.6 Wind 210 deg	Yes	Y	37	1.2	8	1.6		
9	1.2 Dead + 1.6 Wind 240 deg	Yes	Y	37	1.2	9	1.6		
10	1.2 Dead + 1.6 Wind 270 deg	Yes	Y	37	1.2	10	1.6		
11	1.2 Dead + 1.6 Wind 300 deg	Yes	Y	37	1.2	11	1.6		
12	1.2 Dead + 1.6 Wind 330 deg	Yes	Y	37	1.2	12	1.6		
13	1.2 Dead + 1.0 Ice + 1.0 Ice Wind 0 deg	Yes	Y	37	1.2	38	1	13	1
14	1.2 Dead + 1.0 Ice + 1.0 Ice Wind 30 deg	Yes	Y	37	1.2	38	1	14	1
15	1.2 Dead + 1.0 Ice + 1.0 Ice Wind 60 deg	Yes	Y	37	1.2	38	1	15	1
16	1.2 Dead + 1.0 Ice + 1.0 Ice Wind 90 deg	Yes	Y	37	1.2	38	1	16	1
17	1.2 Dead + 1.0 Ice + 1.0 Ice Wind 120 deg	Yes	Y	37	1.2	38	1	17	1
18	1.2 Dead + 1.0 Ice + 1.0 Ice Wind 150 deg	Yes	Y	37	1.2	38	1	18	1
19	1.2 Dead + 1.0 Ice + 1.0 Ice Wind 180 deg	Yes	Y	37	1.2	38	1	19	1
20	1.2 Dead + 1.0 Ice + 1.0 Ice Wind 210 deg	Yes	Y	37	1.2	38	1	20	1
21	1.2 Dead + 1.0 Ice + 1.0 Ice Wind 240 deg	Yes	Y	37	1.2	38	1	21	1
22	1.2 Dead + 1.0 Ice + 1.0 Ice Wind 270 deg	Yes	Y	37	1.2	38	1	22	1
23	1.2 Dead + 1.0 Ice + 1.0 Ice Wind 300 deg	Yes	Y	37	1.2	38	1	23	1
24	1.2 Dead + 1.0 Ice + 1.0 Ice Wind 330 deg	Yes	Y	37	1.2	38	1	24	1
25	1.4 Dead Only	Yes	Y	37	1.4				
26	1.2 Dead + 1.5 Maint. Pipe Load 1 + 1.0 Maint. Wind 0 deg	Yes	Y	37	1.2	39	1.5	25	1
27	1.2 Dead + 1.5 Maint. Pipe Load 1 + 1.0 Maint. Wind 30 deg	Yes	Y	37	1.2	39	1.5	26	1
28	1.2 Dead + 1.5 Maint. Pipe Load 1 + 1.0 Maint. Wind 60 deg	Yes	Y	37	1.2	39	1.5	27	1
29	1.2 Dead + 1.5 Maint. Pipe Load 1 + 1.0 Maint. Wind 90 deg	Yes	Y	37	1.2	39	1.5	28	1
30	1.2 Dead + 1.5 Maint. Pipe Load 1 + 1.0 Maint. Wind 120 deg	Yes	Y	37	1.2	39	1.5	29	1
31	1.2 Dead + 1.5 Maint. Pipe Load 1 + 1.0 Maint. Wind 150 deg	Yes	Y	37	1.2	39	1.5	30	1
32	1.2 Dead + 1.5 Maint. Pipe Load 1 + 1.0 Maint. Wind 180 deg	Yes	Y	37	1.2	39	1.5	31	1
33	1.2 Dead + 1.5 Maint. Pipe Load 1 + 1.0 Maint. Wind 210 deg	Yes	Y	37	1.2	39	1.5	32	1
34	1.2 Dead + 1.5 Maint. Pipe Load 1 + 1.0 Maint. Wind 240 deg	Yes	Y	37	1.2	39	1.5	33	1
35	1.2 Dead + 1.5 Maint. Pipe Load 1 + 1.0 Maint. Wind 270 deg	Yes	Y	37	1.2	39	1.5	34	1
36	1.2 Dead + 1.5 Maint. Pipe Load 1 + 1.0 Maint. Wind 300 deg	Yes	Y	37	1.2	39	1.5	35	1
37	1.2 Dead + 1.5 Maint. Pipe Load 1 + 1.0 Maint. Wind 330 deg	Yes	Y	37	1.2	39	1.5	36	1
38	1.2 Dead + 1.5 Maint. Pipe Load 2 + 1.0 Maint. Wind 0 deg	Yes	Y	37	1.2	40	1.5	25	1
39	1.2 Dead + 1.5 Maint. Pipe Load 2 + 1.0 Maint. Wind 30 deg	Yes	Y	37	1.2	40	1.5	26	1

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor
40	1.2 Dead + 1.5 Maint. Pipe Load 2 + 1.0 Maint. Wind 60 deg	Yes	Y	37	1.2	40	1.5	27	1
41	1.2 Dead + 1.5 Maint. Pipe Load 2 + 1.0 Maint. Wind 90 deg	Yes	Y	37	1.2	40	1.5	28	1
42	1.2 Dead + 1.5 Maint. Pipe Load 2 + 1.0 Maint. Wind 120 deg	Yes	Y	37	1.2	40	1.5	29	1
43	1.2 Dead + 1.5 Maint. Pipe Load 2 + 1.0 Maint. Wind 150 deg	Yes	Y	37	1.2	40	1.5	30	1
44	1.2 Dead + 1.5 Maint. Pipe Load 2 + 1.0 Maint. Wind 180 deg	Yes	Y	37	1.2	40	1.5	31	1
45	1.2 Dead + 1.5 Maint. Pipe Load 2 + 1.0 Maint. Wind 210 deg	Yes	Y	37	1.2	40	1.5	32	1
46	1.2 Dead + 1.5 Maint. Pipe Load 2 + 1.0 Maint. Wind 240 deg	Yes	Y	37	1.2	40	1.5	33	1
47	1.2 Dead + 1.5 Maint. Pipe Load 2 + 1.0 Maint. Wind 270 deg	Yes	Y	37	1.2	40	1.5	34	1
48	1.2 Dead + 1.5 Maint. Pipe Load 2 + 1.0 Maint. Wind 300 deg	Yes	Y	37	1.2	40	1.5	35	1
49	1.2 Dead + 1.5 Maint. Pipe Load 2 + 1.0 Maint. Wind 330 deg	Yes	Y	37	1.2	40	1.5	36	1
50	1.2 Dead + 1.5 Maint. Pipe Load 3 + 1.0 Maint. Wind 0 deg	Yes	Y	37	1.2	41	1.5	25	1
51	1.2 Dead + 1.5 Maint. Pipe Load 3 + 1.0 Maint. Wind 30 deg	Yes	Y	37	1.2	41	1.5	26	1
52	1.2 Dead + 1.5 Maint. Pipe Load 3 + 1.0 Maint. Wind 60 deg	Yes	Y	37	1.2	41	1.5	27	1
53	1.2 Dead + 1.5 Maint. Pipe Load 3 + 1.0 Maint. Wind 90 deg	Yes	Y	37	1.2	41	1.5	28	1
54	1.2 Dead + 1.5 Maint. Pipe Load 3 + 1.0 Maint. Wind 120 deg	Yes	Y	37	1.2	41	1.5	29	1
55	1.2 Dead + 1.5 Maint. Pipe Load 3 + 1.0 Maint. Wind 150 deg	Yes	Y	37	1.2	41	1.5	30	1
56	1.2 Dead + 1.5 Maint. Pipe Load 3 + 1.0 Maint. Wind 180 deg	Yes	Y	37	1.2	41	1.5	31	1
57	1.2 Dead + 1.5 Maint. Pipe Load 3 + 1.0 Maint. Wind 210 deg	Yes	Y	37	1.2	41	1.5	32	1
58	1.2 Dead + 1.5 Maint. Pipe Load 3 + 1.0 Maint. Wind 240 deg	Yes	Y	37	1.2	41	1.5	33	1
59	1.2 Dead + 1.5 Maint. Pipe Load 3 + 1.0 Maint. Wind 270 deg	Yes	Y	37	1.2	41	1.5	34	1
60	1.2 Dead + 1.5 Maint. Pipe Load 3 + 1.0 Maint. Wind 300 deg	Yes	Y	37	1.2	41	1.5	35	1
61	1.2 Dead + 1.5 Maint. Pipe Load 3 + 1.0 Maint. Wind 330 deg	Yes	Y	37	1.2	41	1.5	36	1
62	1.2 Dead + 1.5 Maint. Horz. Load 1	Yes	Y	37	1.2	42	1.5		
63	1.2 Dead + 1.5 Maint. Horz. Load 2	Yes	Y	37	1.2	43	1.5		
64	1.2 Dead + 1.5 Maint. Horz. Load 3	Yes	Y	37	1.2	44	1.5		
65	1.2 Dead + 1.5 Maint. Horz. Load 4	Yes	Y	37	1.2	45	1.5		
66	1.2 Dead + 1.5 Maint. Horz. Load 5	Yes	Y	37	1.2	46	1.5		
67	1.2 Dead + 1.5 Maint. Horz. Load 6	Yes	Y	37	1.2	47	1.5		
68	1.2 Dead + 1.5 Maint. Horz. Load 7	Yes	Y	37	1.2	48	1.5		
69	1.2 Dead + 1.5 Maint. Horz. Load 8	Yes	Y	37	1.2	49	1.5		
70	1.2 Dead + 1.5 Maint. Horz. Load 9	Yes	Y	37	1.2	50	1.5		
71	1.2 Dead + 1.5 Maint. Horz. Load 10	Yes	Y	37	1.2	51	1.5		
72	1.2 Dead + 1.5 Maint. Horz. Load 11	Yes	Y	37	1.2	52	1.5		
73	1.2 Dead + 1.5 Maint. Horz. Load 12	Yes	Y	37	1.2	53	1.5		
74	1.2 Dead + 1.5 Maint. Horz. Load 13	Yes	Y	37	1.2	54	1.5		
75	1.2 Dead + 1.5 Maint. Horz. Load 14	Yes	Y	37	1.2	55	1.5		
76	1.2 Dead + 1.5 Maint. Horz. Load 15	Yes	Y	37	1.2	56	1.5		
77	1.2 Dead + 1.5 Maint. Horz. Load 16	Yes	Y	37	1.2	57	1.5		
78	1.2 Dead + 1.5 Maint. Horz. Load 17	Yes	Y	37	1.2	58	1.5		
79	1.2 Dead + 1.5 Maint. Horz. Load 18	Yes	Y	37	1.2	59	1.5		

Exhibit F

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

T-Mobile Existing Facility

Site ID: CTNH305B

NH305/Channel 20_ET
103 East Side Blvd aka Clark Hill Road
Naugatuck, Connecticut 06712

April 23, 2021

EBI Project Number: 6221001946

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	7.18%

April 23, 2021

T-Mobile

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

Emissions Analysis for Site: CTNH305B - NH305/Channel 20_ET

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **103 East Side Blvd aka Clark Hill Road in Naugatuck, 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 103 East Side Blvd aka Clark Hill Road in Naugatuck, 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) 2 UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

- 6) 4 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 7) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 8) 1 LTE channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.
- 9) 1 NR channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.
- 10) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 11) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 12) The antennas used in this modeling are the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector A, the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector B, the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative

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

- 13) The antenna mounting height centerline of the proposed antennas is 236 feet above ground level (AGL).
- 14) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 15) All calculations were done with respect to uncontrolled / general population threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXVAARR24_43- U-NA20	Make / Model:	RFS APXVAARR24_43- U-NA20	Make / Model:	RFS APXVAARR24_43- U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd
Height (AGL):	236 feet	Height (AGL):	236 feet	Height (AGL):	236 feet
Channel Count:	9	Channel Count:	9	Channel Count:	9
Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts
ERP (W):	10,670.10	ERP (W):	10,670.10	ERP (W):	10,670.10
Antenna A1 MPE %:	1.11%	Antenna B1 MPE %:	1.11%	Antenna C1 MPE %:	1.11%
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	17.3 dBd / 17.3 dBd	Gain:	17.3 dBd / 17.3 dBd	Gain:	17.3 dBd / 17.3 dBd
Height (AGL):	236 feet	Height (AGL):	236 feet	Height (AGL):	236 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 A2 MPE %:	0.88%	Antenna B2 MPE %:	0.88%	Antenna C2 MPE %:	0.88%
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd
Height (AGL):	236 feet	Height (AGL):	236 feet	Height (AGL):	236 feet
Channel Count:	10	Channel Count:	10	Channel Count:	10
Total TX Power (W):	480 Watts	Total TX Power (W):	480 Watts	Total TX Power (W):	480 Watts
ERP (W):	16,954.74	ERP (W):	16,954.74	ERP (W):	16,954.74
Antenna A3 MPE %:	1.15%	Antenna B3 MPE %:	1.15%	Antenna C3 MPE %:	1.15%

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	3.14%
Prospect Police	0.03%
AT&T	2.81%
Sprint	1.2%
Site Total MPE % :	7.18%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	3.14%
T-Mobile Sector B Total:	3.14%
T-Mobile Sector C Total:	3.14%
Site Total MPE % :	7.18%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 600 MHz LTE	2	591.73	236.0	0.80	600 MHz LTE	400	0.20%
T-Mobile 600 MHz NR	1	1577.94	236.0	1.07	600 MHz NR	400	0.27%
T-Mobile 700 MHz LTE	2	648.82	236.0	0.88	700 MHz LTE	467	0.19%
T-Mobile 1900 MHz UMTS	2	1101.85	236.0	1.50	1900 MHz UMTS	1000	0.15%
T-Mobile 1900 MHz LTE	2	2203.69	236.0	3.00	1900 MHz LTE	1000	0.30%
T-Mobile 2500 MHz LTE	1	6444.38	236.0	4.38	2500 MHz LTE	1000	0.44%
T-Mobile 2500 MHz NR	1	6444.38	236.0	4.38	2500 MHz NR	1000	0.44%
T-Mobile 1900 MHz GSM	4	1028.30	236.0	2.80	1900 MHz GSM	1000	0.28%
T-Mobile 1900 MHz LTE	4	2056.61	236.0	5.59	1900 MHz LTE	1000	0.56%
T-Mobile 2100 MHz LTE	2	2307.55	236.0	3.14	2100 MHz LTE	1000	0.31%
						Total:	3.14%

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

Summary

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


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

T-Mobile Sector	Power Density Value (%)
Sector A:	3.14%
Sector B:	3.14%
Sector C:	3.14%
T-Mobile Maximum MPE % (Sector A):	3.14%
Site Total:	7.18%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **7.18%** 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



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P

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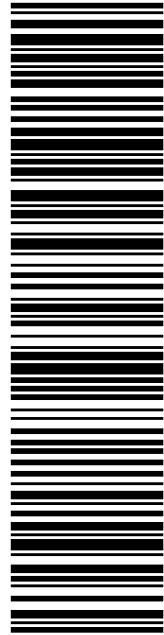
05/31/2021 Mailed from 01566

PRIORITY MAIL 2-DAY™

Expected Delivery Date: 06/04/21
 Ref#: NH305-ANL6
0006

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

USPS TRACKING #



9405 5036 9930 0400 2014 95

Electronic Rate Approved #038555749



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

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USPS TRACKING # :
9405 5036 9930 0400 2014 95

Trans. #: 534755570	Priority Mail® Postage: \$7.95
Print Date: 05/28/2021	Total: \$7.95
Ship Date: 05/31/2021	
Expected Delivery Date: 06/04/2021	

From: DEBORAH CHASE Ref#: NH305-ANL6
 NORTHEAST SITE SOLUTIONS, LLC
 420 MAIN ST STE 2
 STURBRIDGE MA 01566-1359

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

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Exhibit H

Deborah Chase

From: Deborah Chase
Sent: Friday, May 28, 2021 3:20 PM
To: 'NWwhess@naugatuck-ct.gov'
Subject: 103 EAST BLVD. AKA CLARK HILL ROAD NAUGATUCK CT 0677 T-MOBILE EM APPLICATION (CTNH305B_ANCHOR-L600)
Attachments: 103 EAST BLVD. AKA CLARK HILL ROAD, NAUGATUCK, CT 06770 T-MOBILE EM APPLICATION (CTNH305B-ANCHOR-L600).pdf

Dar Mayor Hess

Attached please find T-Mobile's exempt modification application that is being submitted to the Connecticut Siting Council today, May 28, 2021 for the above referenced address.

In light of the present circumstances with Covid-19, the Council has advised that electronic notification of this filing is acceptable.

If you could kindly confirm receipt.

Thank you very much

Deborah Chase

Senior Project Coordinator & Analyst

Mobile: 860-490-8839



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

Deborah Chase

From: Deborah Chase
Sent: Friday, May 28, 2021 3:23 PM
To: 'Cialfi, Nando'
Subject: 103 EAST BLVD. AKA CLARK HILL ROAD NAUGATUCK CT 06770 T-MOBILE EM APPLICATION (CTNH305B_ANCHOR-L600)
Attachments: 103 EAST BLVD. AKA CLARK HILL ROAD, NAUGATUCK, CT 06770 T-MOBILE EM APPLICATION (CTNH305B-ANCHOR-L600).pdf

Dear Mr. Cialfi,

Attached please find T-Mobile's exempt modification application that is being submitted to the Connecticut Siting Council today, May 28, 2021 for the above referenced address.

In light of the present circumstances with Covid-19, the Council has advised that electronic notification of this filing is acceptable.

If you could kindly confirm receipt.

Thank you very much

Deborah Chase

Senior Project Coordinator & Analyst

Mobile: 860-490-8839



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Deborah Chase

From: Deborah Chase
Sent: Monday, June 14, 2021 6:10 PM
To: 'LRotella@naugatuck-ct.gov'
Subject: 103 EAST BLVD. AKA CLARK HILL ROAD, NAUGATUCK, CT 06770 T-MOBILE EM APPLICATION
Attachments: 103 EAST BLVD. AKA CLARK HILL ROAD, NAUGATUCK, CT 06770 T-MOBILE EM APPLICATION (CTNH305B-ANCHOR-L600).pdf

Dear Ms. Rotella,

Attached please find T-Mobile's exempt modification application that was submitted to the Connecticut Siting Council May 28, 2021 for the above referenced address.

In light of the present circumstances with Covid-19, the Council has advised that electronic notification of this filing is acceptable.

If you could kindly confirm receipt.

Thank you very much

Deborah Chase

Senior Project Coordinator & Analyst

Mobile: 860-490-8839



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