NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

November 12, 2020

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

RE: Notice of Exempt Modification
103 East Street AKA- 0 Clark Street, Naugatuck CT 06770
Latitude: 41.51780
Longitude: -73.01890
T-Mobile Site#: CTNH305B_Anchor

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas 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 install three (3) new 2500 MHz antenna, three (3) new 2100 MHz antenna, and replace three (3) existing antenna with three (3) new 600/700/1900/2100 MHz antenna. The new antennas would be installed at the 236-foot level of the tower. Please note the proposed tower reinforcement modifications as shown in the enclosed drawings.
T-Mobile also intends to make the following modifications.
Planned Modifications: Remove: (6) 1-5/8" coax
(3) T-Arm Mounts
(3) RRUS11 B12
(2) Diplexer
(4) TMA

Remove and Replace:
(3) DBXNH-6565A Antenna (Remove) – APXVAARR24_43U-NA20 Antenna (600/700/1900/2100 MHz Replacement)

Install New:
(3) SitePro VFA12-SD Mounts
(3) APXV18 – 206516S-CA20 Antenna 2100 MHz
(3) AIR6449 B41 Antenna 2500 MHz
(3) RRU4449 B71+B85
(3) RRU4415 B25
(3) Twin TMA
(6) Hybrid lines
(3) Smart Bias Tees

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Existing to Remain:
(3) AIR32 B66 Aa/B2a Antenna 1900/2100 MHz
(6) 1-5/8" Coax
(3) Fiber Lines
(3) KRY-112-489/2 TMA
(3) KRY-112-114 TMA

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.SA. § 16-SOj-73, a copy of this letter is being sent to Mayor N. Warren "Pete" Hess III, Elected Official, and 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
Email: victoria@northeastsitesolutions.com

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Attachments

cc: N. Warren "Pete" Hess III- Mayor - as elected official
Lori Rotella, Town Planner - Naugatuck Zoning Department
Channel 20 Inc c/o WTIC TV - as tower owner & property owner

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 (DAY), July 17, 1991 (DATE).

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

SIGNED: Robert Wagner (c/h) Zoning Commission Chairman

Michael Monnile 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 87° 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

ZONING ENFORCEMENT OFFICER

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.

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

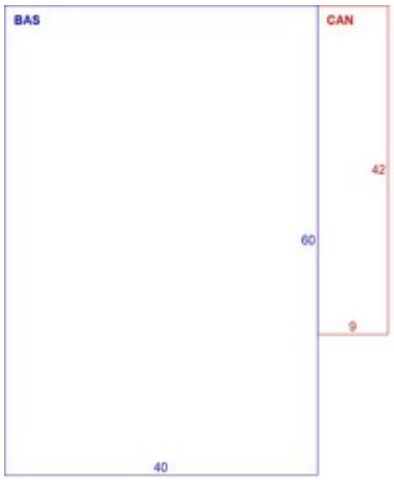
Property Information

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-finsh 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

Report Created On 11/11/2020

Town of Naugatuck, CT

Property Listing Report | Map Block Lot **K-20E138-A** | Building # **1** | PID **1697** | Account **011-3060**

Valuation Summary (Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	258640	181050
Extras	0	0
Improvements		
Outbuildings	393320	275330
Land	219000	153300
Total	870960	609680

Outbuilding and Extra Features

Type	Description
CELL BLDG	140 S.F.
CELL BLDG	170 S.F.
CELL BLDG	360 S.F.
Fence 6 ft	500 L.F.
TV TOWER	280 HEIGHT
TV TOWER	980 HEIGHT
CELL BLDG	264 S.F.

Sub Areas

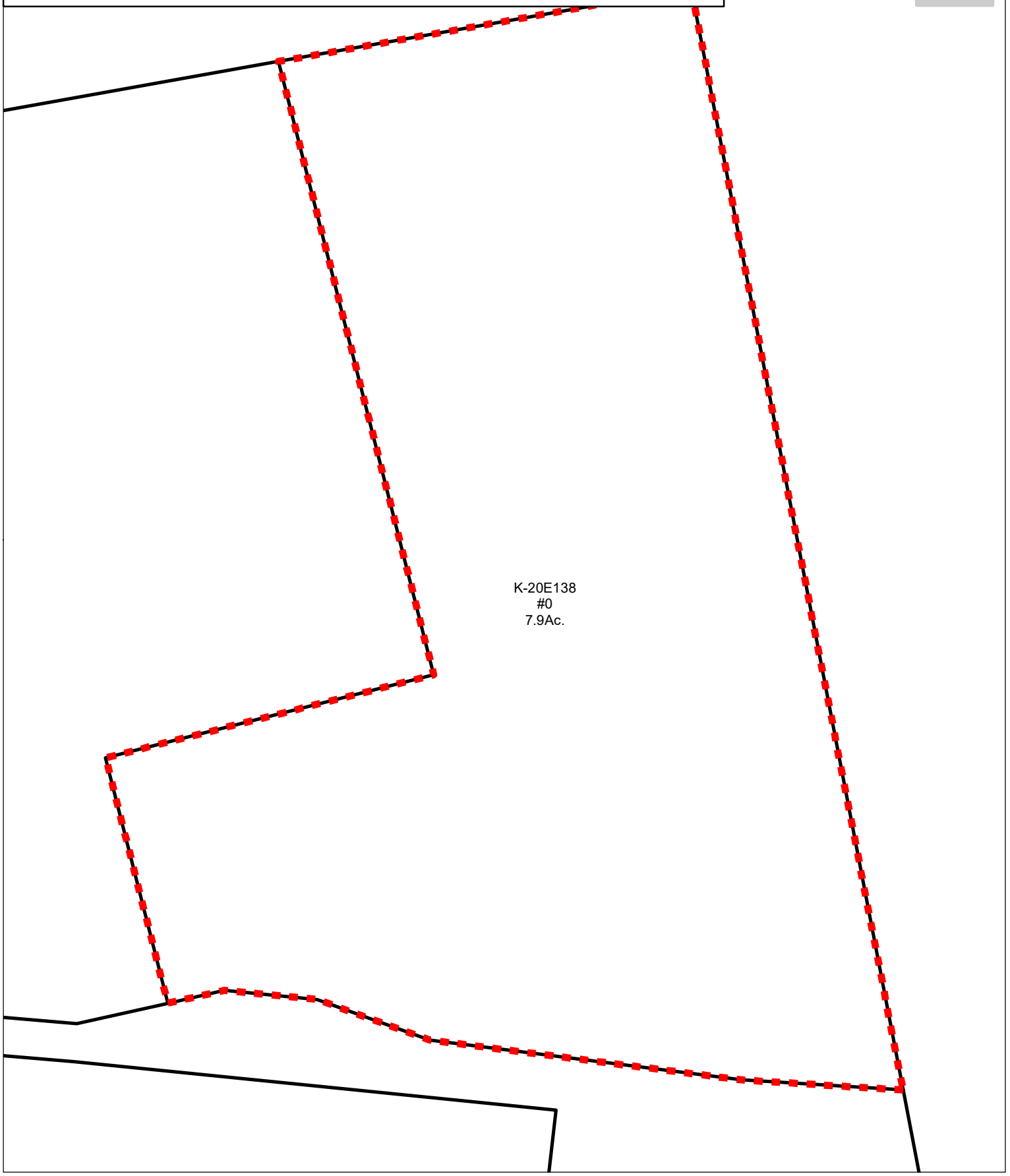
Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	2400	2400
Canopy	378	0
Total Area	2778	2400

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
TRIBUNE BROADCASTING COMPANY LLC	1034/883	2019-09-30	0
CT-WTIC LLC	1034/896	2019-09-30	10
TEGNA BROADCAST HOLDINGS LLC	1035/1	2019-09-30	611632
CHANNEL 20 INC C/O WTIC TV	0328/0466	1989-03-03	1800000

Report Created On **11/11/2020**

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



0 25 50 75 100 Feet

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

WIRELESS FACILITY UPGRADES BY

T-Mobile

T-MOBILE NORTHEAST LLC

PROJECT TITLE: ANCHOR

SITE NUMBER: CTNH305B

SITE NAME: NH305/CHANNEL 20_ET

SITE ADDRESS: 103 EAST SIDE BOULEVARD
NAUGATUCK, CT 06770

(RF CONFIGURATION: 67D5994DB HYBRID)

PROJECT NOTES:

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

STRUCTURAL NOTES:

REFER THE MOUNT STRUCTURAL ANALYSIS REPORT DATED 06/23/2020, TOWER STRUCTURAL ANALYSIS REPORT DATED 9/21/2020 AND TOWER MODIFICATION DESIGN DRAWINGS DATED 8/24/2020, ALL PREPARED BY FDH INFRASTRUCTURE SERVICES.

CODE COMPLIANCE:

ALL WORK SHALL COMPLY WITH THE CURRENT NATIONAL AND CONNECTICUT STATE BUILDING AND LIFE SAFETY CODES, SUPPLEMENTS AND AMENDMENTS INCLUDING BUT NOT LIMITED TO THE LATEST EDITION OF:
CONNECTICUT STATE BUILDING CODE (CSBC).
ANSI/TIA-222-G STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.
NATIONAL ELECTRICAL CODE (NEC) FOR POWER AND GROUNDING REQUIREMENTS.
OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA).
NFPA - NATIONAL FIRE PROTECTION ASSOCIATION.

811 Know what's below. Call before you dig.

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

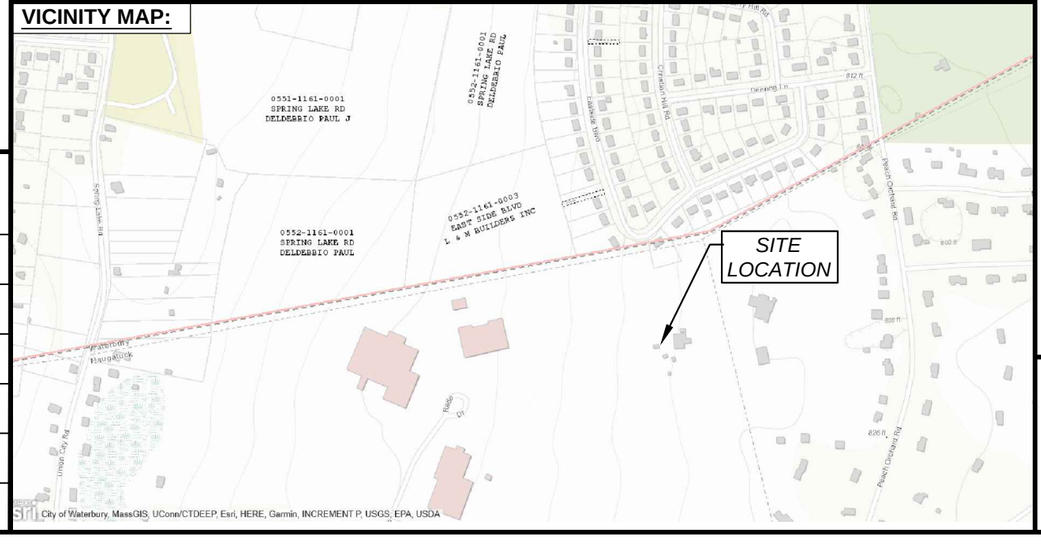
Advance Notice:
Minimum of 2 working days in advance, no more than 30 days in advance

APPROVALS:

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

SITE IMAGE:

VICINITY MAP:



PROJECT SCOPE:

UPGRADE OF EXISTING WIRELESS FACILITY AS FOLLOWS:

UPGADE EXISTING RBS 6102 CABINET INTERNALLY.
ADD (1) 6160 AND (1) B160 CABINETS ON EXISTING CONCRETE PAD.
REPLACE EXISTING (2) ANTENNA T-ARM MOUNTS WITH (4) ANTENNA SECTOR MOUNTS.
REPLACE (3) OF (6) EXISTING ANTENNAS AND ADD (6) NEW ANTENNAS FOR A TOTAL OF (12) ON EXISTING TOWER.
REMOVE (3) OF (6) EXISTING TMAS AND REPLACE THE REMAINING (3) TMAS.
REPLACE (3) EXISTING REMOTE RADIO UNITS AND ADD (3) FOR A TOTAL OF (6) AT ANTENNAS.
REMOVE ALL (6) EXISTING DIPLEXER.
REMOVE (6) OF (12) EXISTING COAX, ADD (6) 6X12 HCS FOR FINAL COUNT OF (6) 6X12 HCS, (3) 9X18 HCS AND (6) 1-5/8" COAX.

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
ZONING DISTRICT:	R-15
AVERAGE GROUND ELEV:	740'± (AMSL)

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:

APPLICANT:

T-Mobile

T-MOBILE NORTHEAST LLC

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

PROJECT MANAGER

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development
www.northeastsitesolutions.com

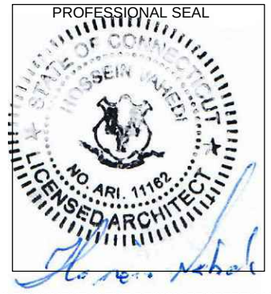
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
203-275-6669

CONSULTANT:

FORESITE LLC
Architects . Engineers . Surveyors

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

PROFESSIONAL SEAL



DRAWING SCALES ARE INTENDED FOR 11"x17" SIZE PRINTED MEDIA ONLY. ALL OTHER PRINTED SIZES ARE DEEMED "NOT TO SCALE".

REV	DESCRIPTION	DATE
A	PRELIMINARY	10/13/20
0	FINAL ISSUED	11/06/20

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

SHEET TITLE:

T-1: TITLE SHEET

GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

11. BOLTING:

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

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

C. ALL CONNECTIONS SHALL BE 2 BOLTS MINIMUM.

12. FABRICATION:

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

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

13. ERECTION OF STEEL:

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

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

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

14. 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

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

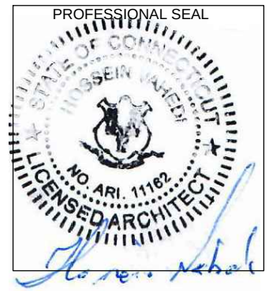
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
203-275-6669

CONSULTANT:

FORESITE LLC
Architects . Engineers . Surveyors

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

PROFESSIONAL SEAL



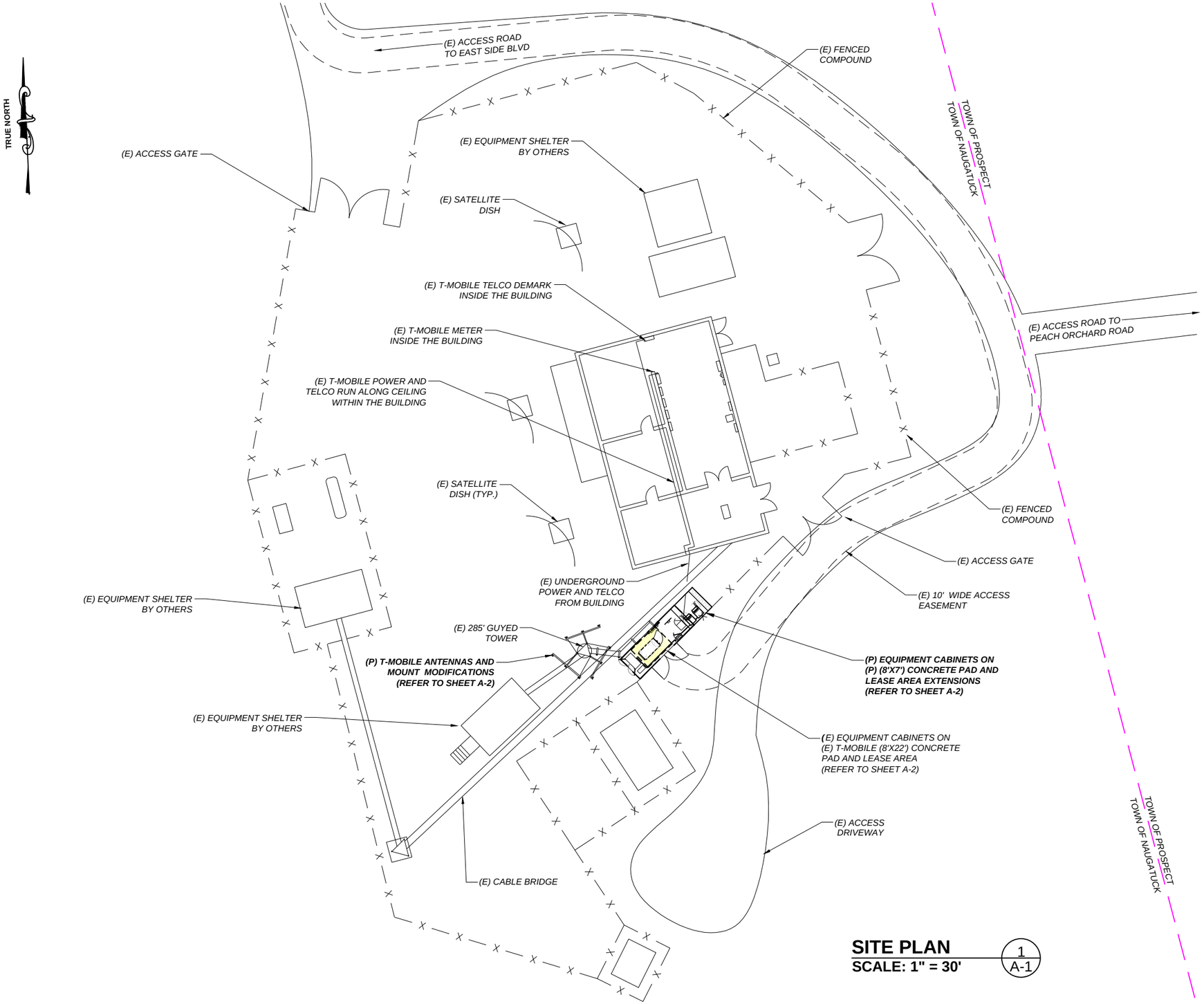
DRAWING SCALES ARE INTENDED FOR 11"x17" SIZE PRINTED MEDIA ONLY. ALL OTHER PRINTED SIZES ARE DEEMED "NOT TO SCALE".

REV	DESCRIPTION	DATE
A	PRELIMINARY	10/13/20
0	FINAL ISSUED	11/06/20

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

SHEET TITLE:

N-1: GENERAL NOTES



SITE PLAN
SCALE: 1" = 30'

1
A-1

APPLICANT:

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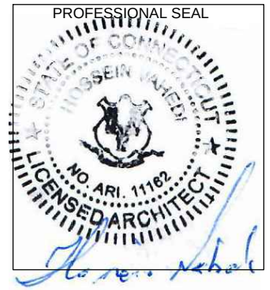

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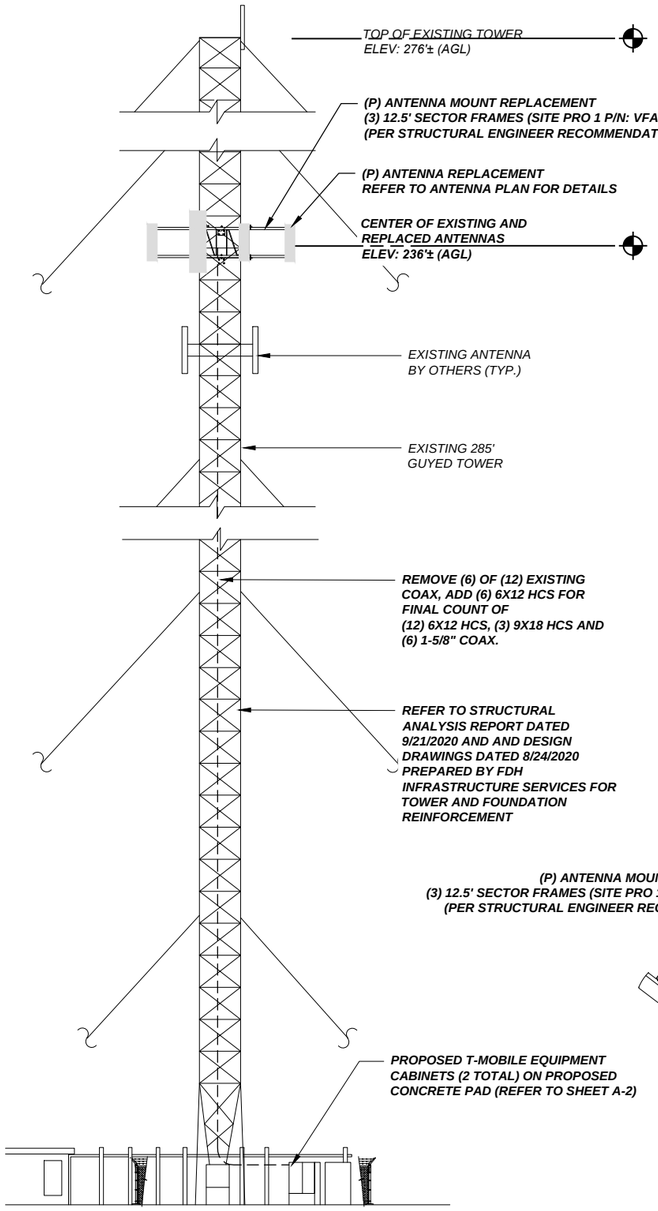
NAUGATUCK, CT 06770

SHEET TITLE:

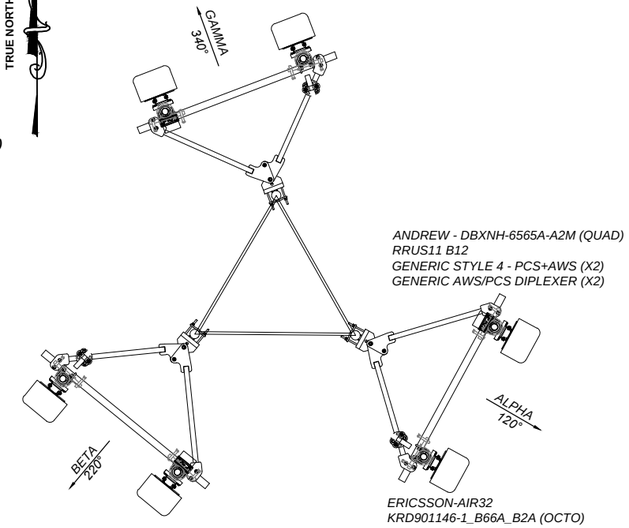
A-1: SITE PLAN



ELEVATION 1
N.T.S. A-2

TRUE NORTH

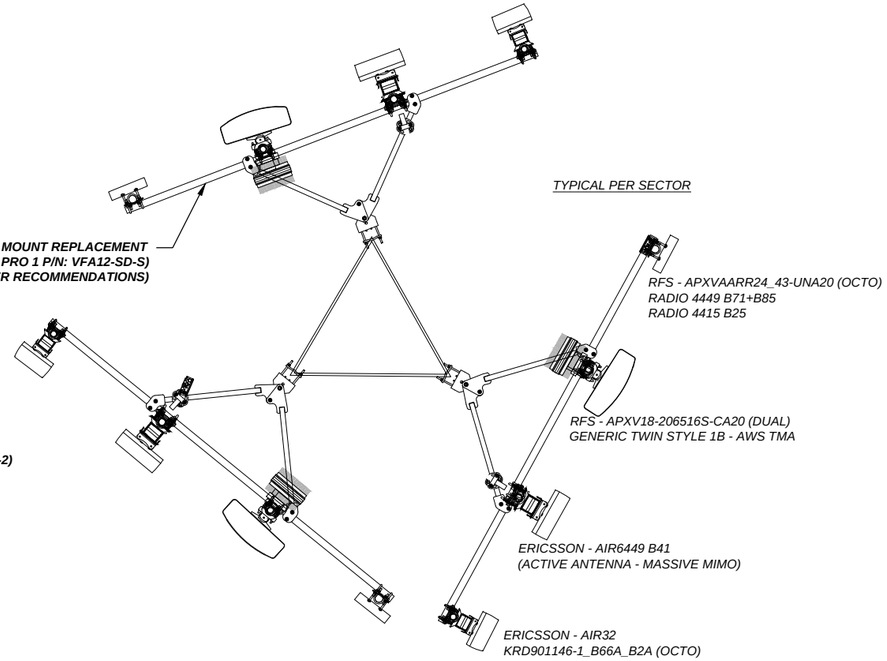
TYPICAL PER SECTOR



ANDREW - DBXNH-6565A-A2M (QUAD)
RRUS11 B12
GENERIC STYLE 4 - PCS+AWS (X2)
GENERIC AWS/PCS DIPLEXER (X2)

ERICSSON-AIR32
KRD901146-1_B66A_B2A (OCTO)

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



RFS - APXVAARR24_43-UNA20 (OCTO)
RADIO 4449 B71+B85
RADIO 4415 B25

RFS - APXV18-206516S-CA20 (DUAL)
GENERIC TWIN STYLE 1B - AWS TMA

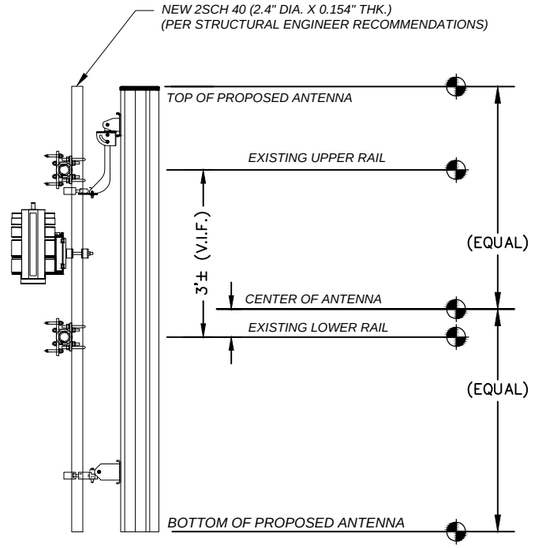
ERICSSON - AIR6449 B41
(ACTIVE ANTENNA - MASSIVE MIMO)

ERICSSON - AIR32
KRD901146-1_B66A_B2A (OCTO)

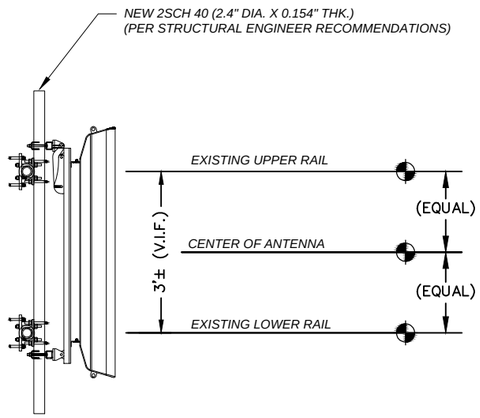
FINAL ANTENNA PLAN 3
N.T.S. A-2

STRUCTURAL NOTES:

PRIOR TO INSTALLATION OF THE PROPOSED EQUIPMENT CONTRACTOR SHOULD REVIEW THE MOUNT STRUCTURAL ANALYSIS REPORT DATED 06/23/2020, TOWER STRUCTURAL ANALYSIS REPORT DATED 9/21/2020 AND TOWER MODIFICATION DESIGN DRAWINGS DATED 8/24/2020, ALL PREPARED BY FDH INFRASTRUCTURE SERVICES, AND ADHERE TO THE REPORTS FULLY AND ALL THE RECOMMENDATIONS THEREIN, INCLUDING BUT NOT LIMITED TO ANTENNA PLACEMENT, COAX ROUTING, STRUCTURAL IMPROVEMENTS, ETC.



APXVAAR24_43-U-NA20 ANTENNA MOUNTING 4
N.T.S. A-2



ANTENNA MOUNTING (OTHERS) 5
N.T.S. A-2

APPLICANT:
T-MOBILE NORTHEAST LLC
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CONSULTANT:
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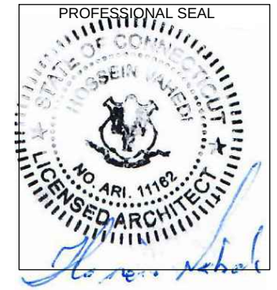
PROFESSIONAL SEAL



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

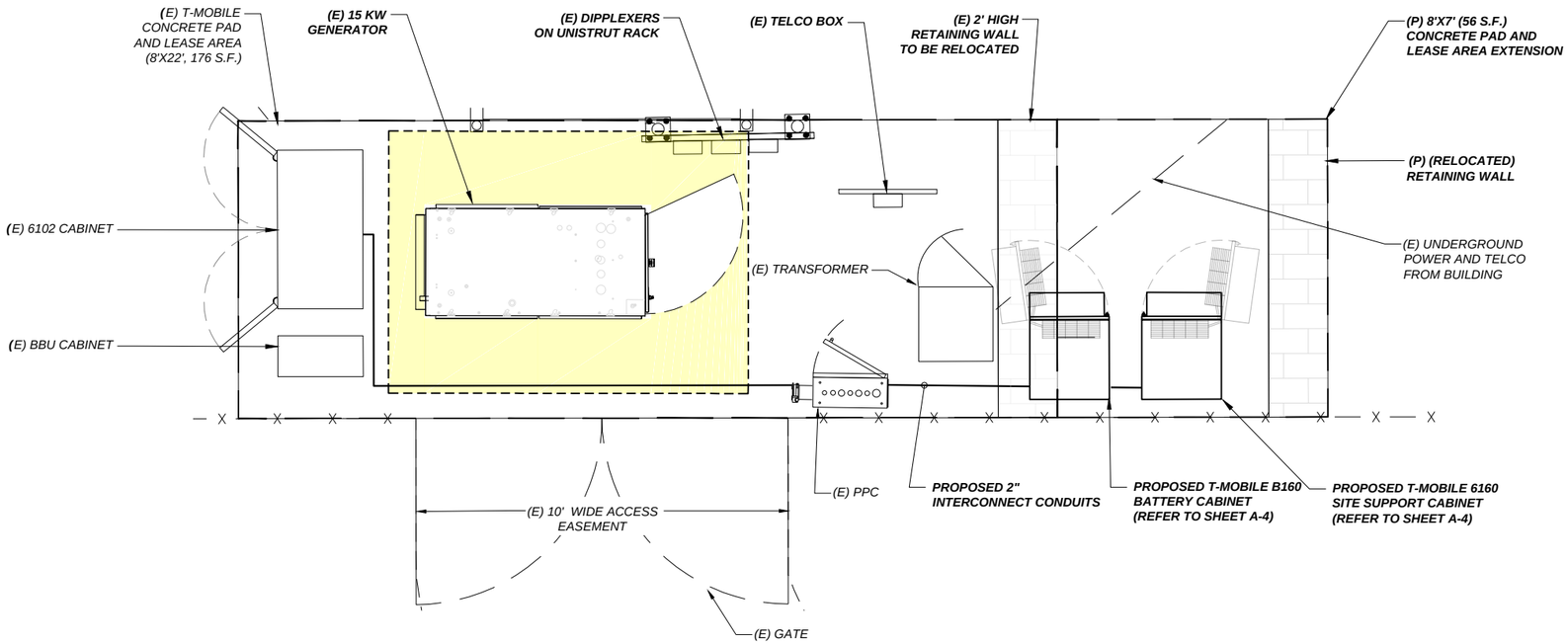
SHEET TITLE:
A-2: ELEVATIONS, ANTENNA PLANS AND DETAILS

CONSTRUCTION NOTES:

(HAND-DUG UTILITY TRENCH EXCAVATION REQUIRED):

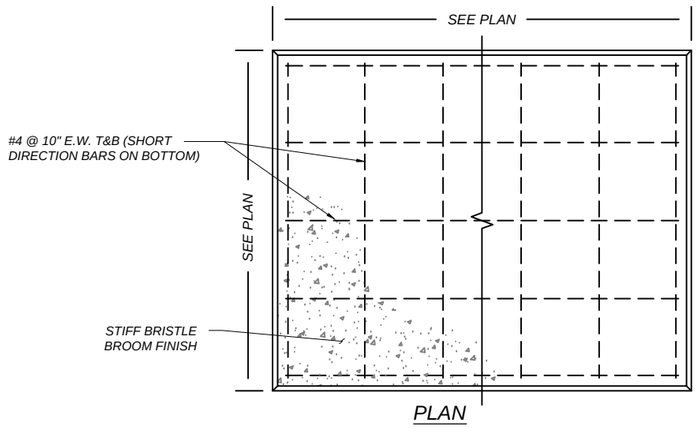
EXISTING UNDERGROUND UTILITY LOCATIONS ARE UNKNOWN. GENERAL CONTRACTOR SHALL HAND-EXCAVATE TO REQUIRED SUB-GRADE DEPTH, SUFFICIENT TEST HOLES.
ALL PROPOSED UNDERGROUND UTILITY TRENCHES SHALL BE HAND-EXCAVATE AS REQUIRED.

GENERAL CONTRACTOR IS RESPONSIBLE FOR ANY REQUIRED SPECIAL TEMPORARY PROTECTION OF, PHYSICAL DAMAGE TO, OR REPAIR OF EXISTING UNDERGROUND CONDUIT INCLUDING RESTORATION OF SERVICE.

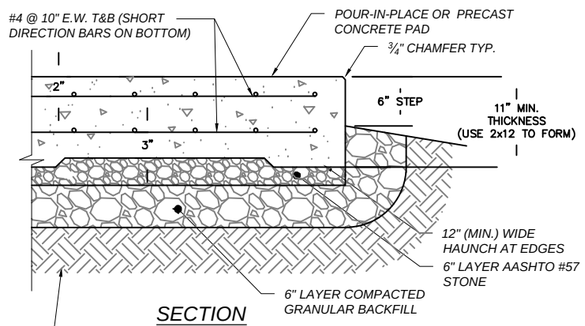


ENLARGED SITE PLAN
SCALE: 1/4" = 1'-0"

1 / A-3

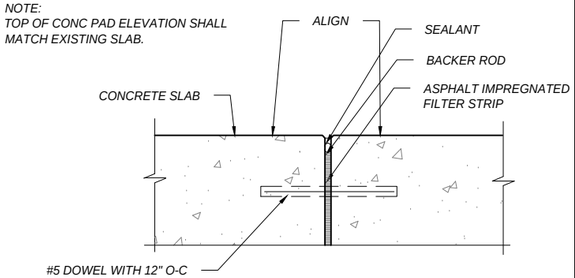


PLAN



SECTION

NOTE:
TOP OF CONC PAD ELEVATION SHALL MATCH EXISTING SLAB.



ISOLATION JOINT

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.*

CONCRETE PAD DETAILS
N.T.S.

2 / A-3

APPLICANT:
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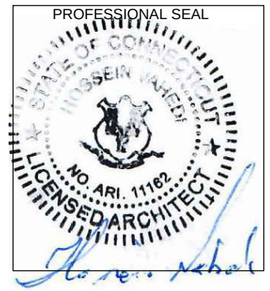
617-212-3123

PROFESSIONAL SEAL



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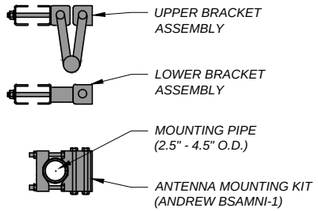
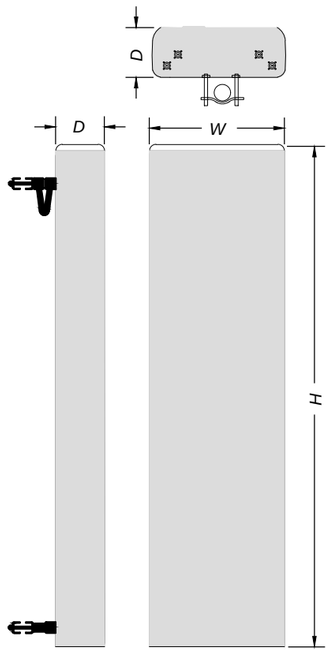
SITE NAME: NH305/CHANNEL 20_ET
SITE ADDRESS: 103 EAST SIDE BOULEVARD
NAUGATUCK, CT 06770

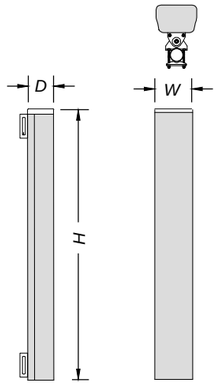
SHEET TITLE:
A-3: ENLARGED PLAN AND CONCRETE PAD DETAILS





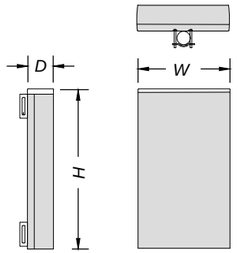
RFS ANTENNA SPECIFICATIONS	
MODEL #	APXVAARR24_43-U-NA20
MANUF.	RFS
HEIGHT	95.9"
WIDTH	24.0"
DEPTH	8.7"
WEIGHT	128 LB

RFS APX ANTENNA
N.T.S.
1 A-4



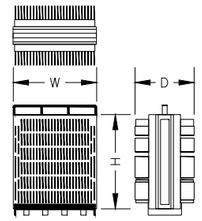
RFS ANTENNA SPECIFICATIONS	
MODEL #	APXV18-206516S-CA20
MANUF.	RFS
HEIGHT	53.1"
WIDTH	6.9"
DEPTH	3.15"
WEIGHT	18.7 LB

RFS APX ANTENNA
N.T.S.
2 A-4



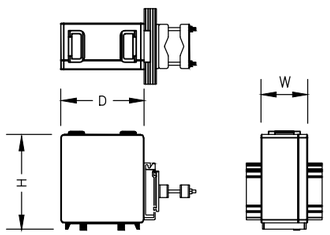
ERICSON ANTENNA SPECIFICATIONS	
MODEL #	AIR6449 B41
MANUF.	ERICSSON
HEIGHT	34.8"
WIDTH	20.5"
DEPTH	7.2"
WEIGHT	128 LB

AIR6488 ANTENNA
N.T.S.
3 A-4



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

REMOTE RADIO UNIT
N.T.S.
4 A-4

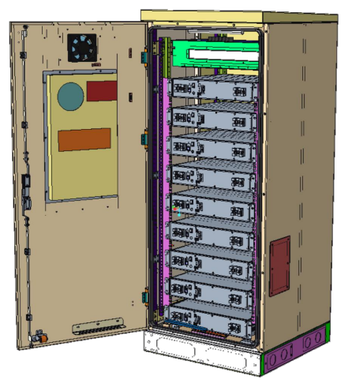


REMOTE RADIO UNIT SPECIFICATIONS	
MODEL #	RADIO 4415 B25
MANUF.	ERICSSON
HEIGHT	14.9"
WIDTH	13.2"
DEPTH	5.4"
WEIGHT	46.3 LB

REMOTE RADIO UNIT
N.T.S.
5 A-4

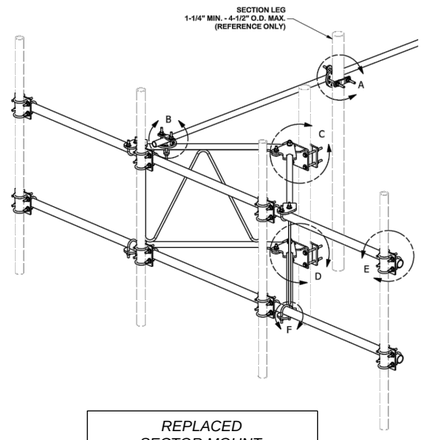
SITE SUPPORT CABINET SPECIFICATIONS	
MODEL #	6160
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	25.6"
DEPTH	25.6"
WEIGHT	605 LBS

SITE SUPPORT CABINET
N.T.S.
6 A-4



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

BATTERY CABINET
N.T.S.
7 A-4



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

NEW SECTOR MOUNT
N.T.S.
8 A-4

APPLICANT:
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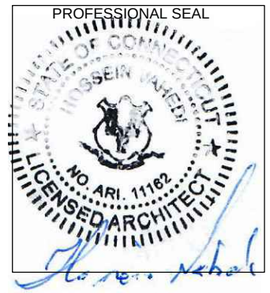
PROFESSIONAL SEAL



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

SHEET TITLE:
A-4: ANTENNA AND EQUIPMENT SPECIFICATIONS

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.

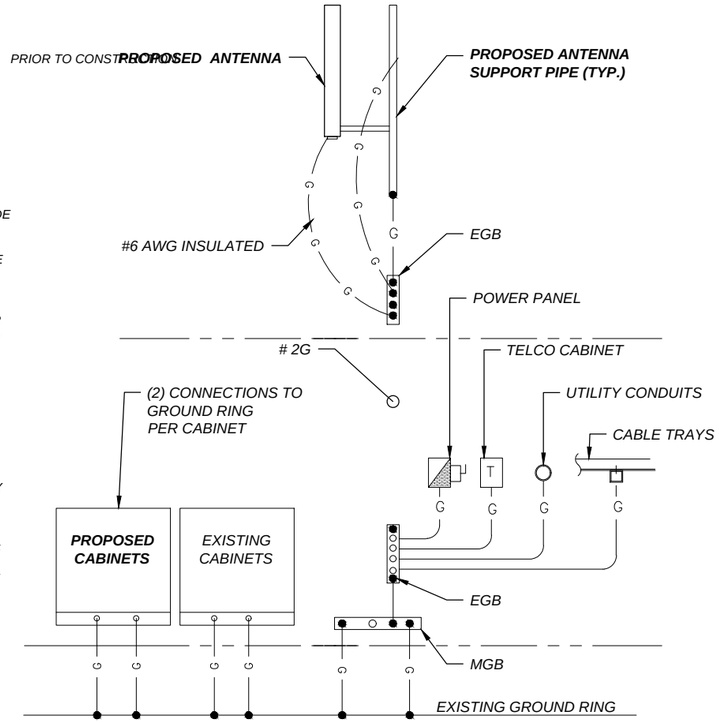
19. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.

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

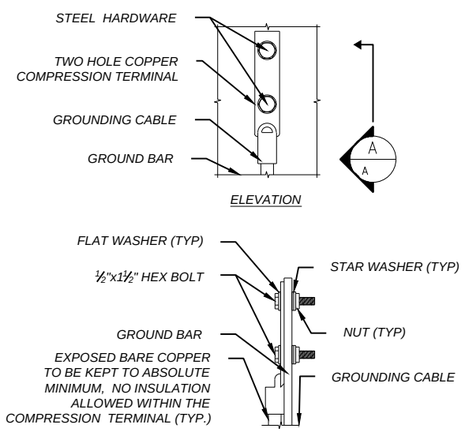
21. TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.

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

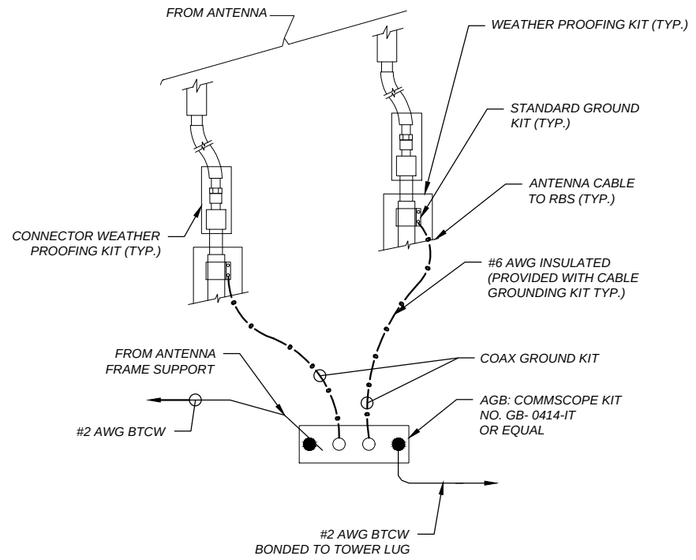


GROUNDING RISER DIAGRAM 1/E-1
N.T.S.



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

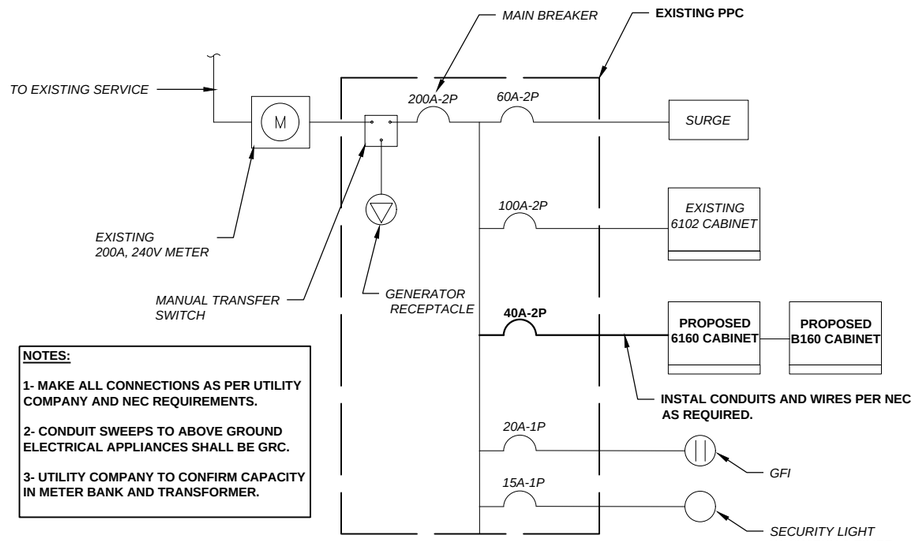
GROUND BAR CONNECTIONS 3/E-1
N.T.S.



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

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

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

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

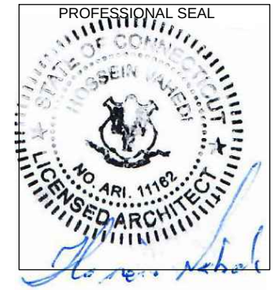
TYPICAL ONE LINE DIAGRAM 4/E-1
N.T.S.

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

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

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

PROFESSIONAL SEAL



DRAWING SCALES ARE INTENDED FOR 11"x17" SIZE PRINTED MEDIA ONLY. ALL OTHER PRINTED SIZES ARE DEEMED "NOT TO SCALE".

REV	DESCRIPTION	DATE
A	PRELIMINARY	10/13/20
0	FINAL ISSUED	11/06/20

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

A BUSINESS OF FDH INFRASTRUCTURE SERVICES
100 West Main Street, Suite 400
Lansdale, PA 19446

DESIGN DRAWINGS
EXISTING G48 TOWER
WATERBURY, CT

INDEX

Rev	Description	Drawn by	Checked by	Reviewed by	Approved by
--	Initial Release	RE	GH	GH	AV
	Date	7/24/2020	8/13/2020	8/13/2020	8/24/2020

Project No.: 350816

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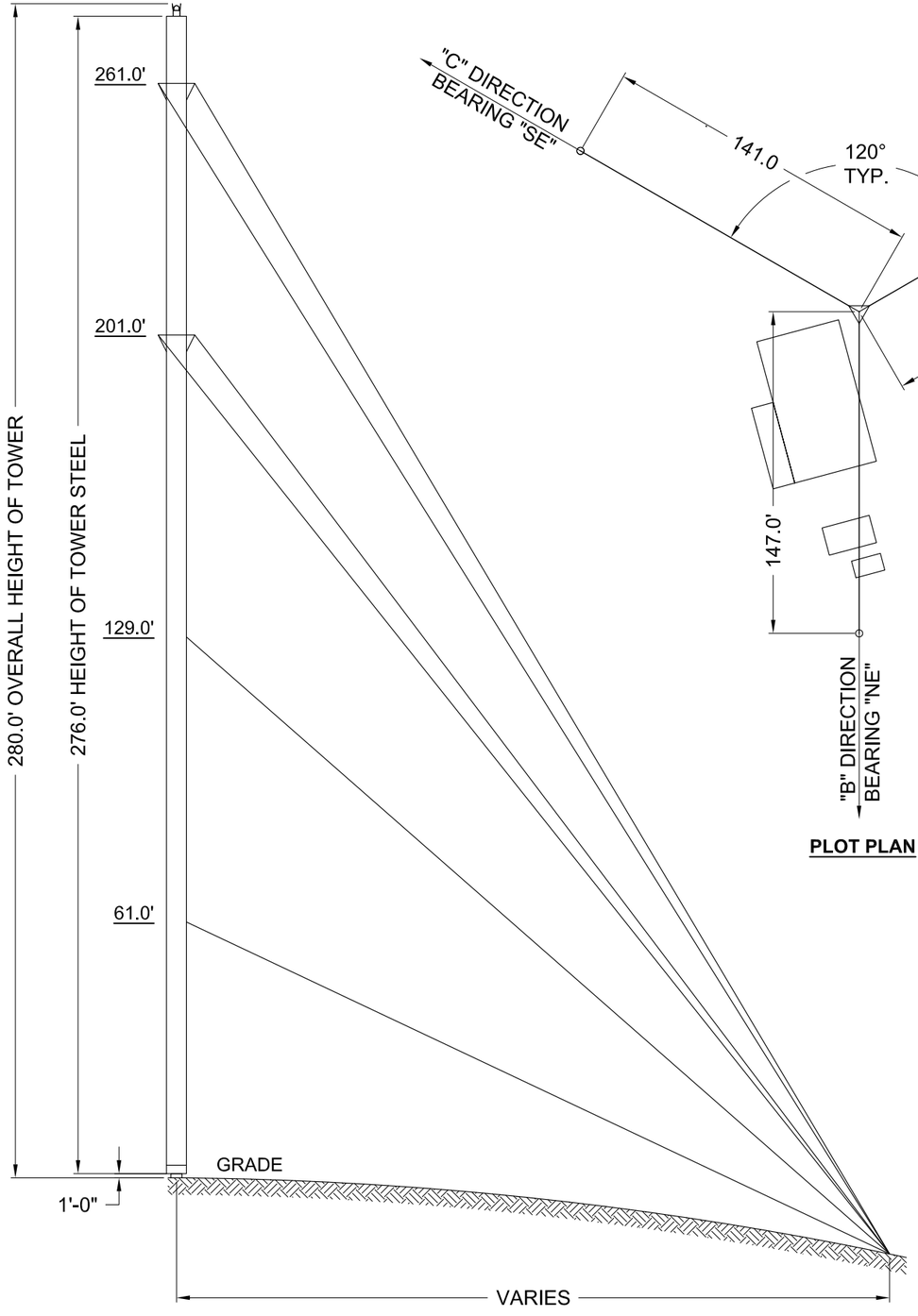
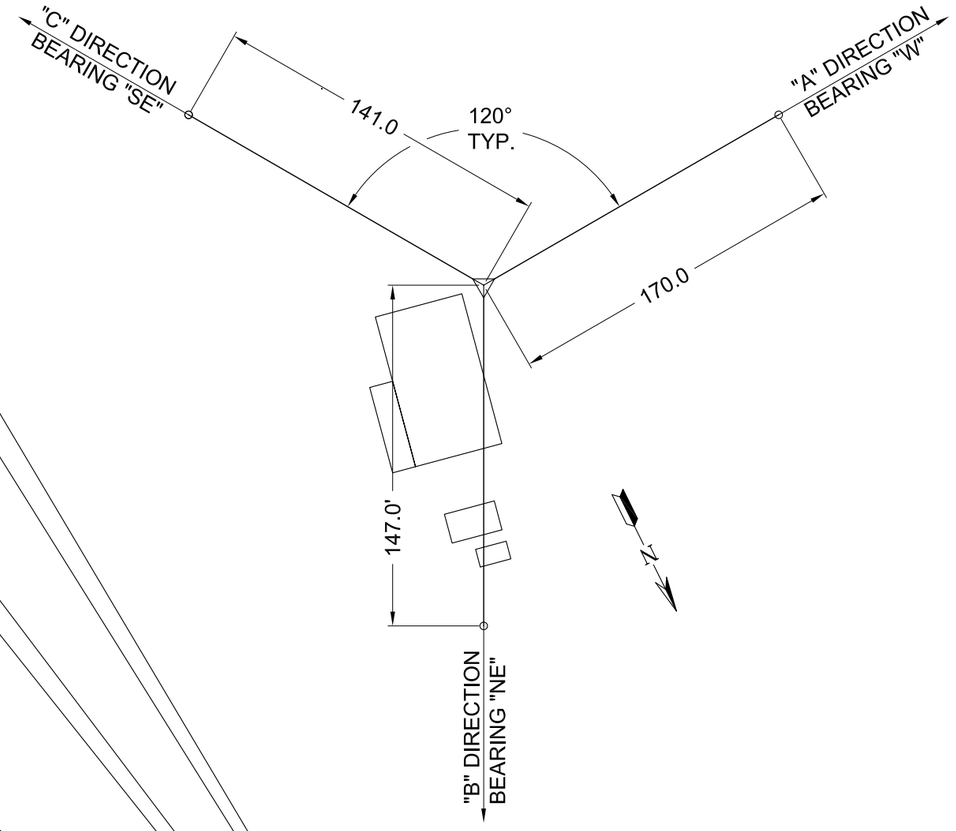
STATE OF CONNECTICUT
KRISTYN M. PEREZ
No. 32975
LICENSED
PROFESSIONAL ENGINEER

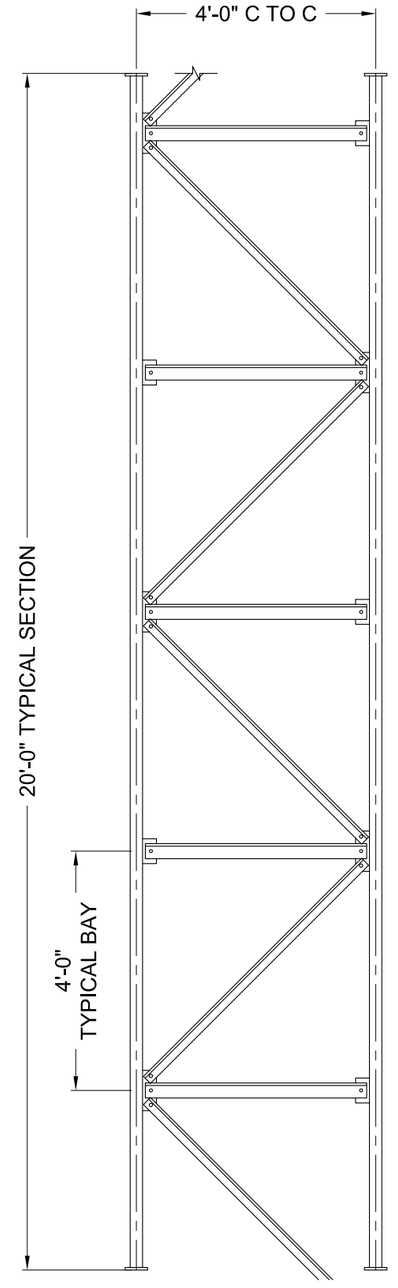
08/24/2020



ELEVATION VIEW



PLOT PLAN



TOWER DETAIL

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

PREPARED BY	RE
CHECKED BY	GH
ENGINEER REVIEW	AV
PROJECT NUMBER	350816
DRAWING NUMBER	D01.00

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							E.CK	DATE

REV	BY	DATE	REVISION DESCRIPTION
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GENERAL ARRANGEMENT
WATERBURY, CT

STATE OF CONNECTICUT
GREGORY M. PEREZ
No. 32975
LICENSED
PROFESSIONAL ENGINEER
08/24/2020

1. The tower is a guyed, triangular, non-insulated, open face structure.

2. The tower was analyzed per Stainless Rigorous Structural Analysis Report 350815 dated 6/30/20. It was analyzed in accordance with the 2018 Connecticut Building Code, referencing the 2015 IBC and ANSI/TIA-222-G 2005, Structural Standard for Antenna Supporting Structures and Antennas, including addenda 1 and 2 dated 2007 and 2009 for the following parameters to support equipment as listed below:

- Risk Category II
- 125 mph ultimate 3-second gust wind speed with no ice.
- 50 mph nominal 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

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)** (3) T-Arm Mounts **(To Be Removed)** (3) Ericsson AIR32 KRD901146-1_B66Z_B2A **(3) RFS-APXVAARR24_43-U-NA20 (Proposed)** **(3) RFS-APXV18-206516S-CA20 (Proposed)** **(3) Ericsson AIR6449 B41 (Proposed)** **(3) Ericsson Radio 4449 B71+B85 (Proposed)** **(3) Radio 4415 B25 (Proposed)** **(3) Generic Twin Style 1B-AWS TMA (Proposed)** **(3) 12.5' Sector Frames [SitePro1 P/N: VFA12-SD-S] (Proposed)**	236	(6) 1-5/8" lines **(To Be Removed)** (6) 1-5/8" lines (3) 1-5/8" fiber cable **(6) 1-5/8" Hybrid Cable (Proposed)**
(6) Alcatel-Lucent RRH 2x50-800 RRUs (3) RRH 8x20-25-FEU 8T8R RRUs (6) RRH 1900-4x45 RRUs (3) 70"x12"x8" panels (3) Andrew DT465B-2XR-V2 panels (3) Sector mounts	210	(1) 1-1/2" Fiber (3) 1-1/4" hybrid
15' whip antenna w/ (3) elements	195	(1) 1/2" coax
6' x 6' ice shield	174	--
10' dipole w/(2) elements	171	7/8"
(1) Mark 4' diameter grid dish (1) 9-1/2" x 2-1/2" x 2-1/2" ODU	169	1/4" coax
Diamond D-130N	164	7/8"
(3) Raycap DC6-48-60-18-8C SPDs (6) Ericsson RRUS 32 B30 RRUs (3) Powerwave 7770.00J1 panels (6) Ericsson KRC 161 689/3 RRUs (6) CCI TPX-070821 diplexers (6) Powerwave LGP 21401 TMAs (6) Ericsson KRC 161 472/3 RRUs (3) Kathrein 80010965 panels (3) CCI HPA-65R-BW-H6 panels (3) Quintel QS665122E53617881 panels (3) Ericsson RRUS 11 B12 (3) T-arm mounts	153	(2) 1" cables (1) RET cable (4) 3/4" cables (2) 3/8" fiber cables (12) 1-5/8" coax
(3) L-810 side markers	133	3/8" cable
12" stand off (unused)	52	--
3-1/2" diameter x 9" Omni	17	1/4" coax
--	236	3/8" grounding cable
Inside climbing ladder with safety cable	Full height of the tower	3/8"

3. In order for the tower to achieve an 125 mph ultimate 3-second gust wind speed with no ice and 50 mph nominal design wind speed with 3/4" design ice thickness in accordance with 2015 IBC and ANSI/TIA 222-G, the following modifications are required:

   a. Reinforce the tower base foundation.

   b. Replace existing guy wires at Level 3 with new, higher capacity guy wires.

   c. Adjust the initial guy tensions to the following values at 60 degrees F:

Level	Tension (kips)
1A	5080
2A	5980
3A	4200
4A (Top)	3320

   d. Install additional horizontal sub-bracing members at the midpoints of the following bays:

Location	No. of bays
2.0' – 5.0'	1
133.0' – 141.0'	2
221.0' – 249.0'	7

   e. Replace existing diagonal braces with new, higher capacity members at the following bays:

Location	No. of bays
2.0' – 17.0'	4
37.0' – 45.0'	2
129.0' – 145.0'	4
149.0' – 153.0'	1
205.0' – 209.0'	1
221.0' – 225.0'	1
237.0' – 241.0'	1
245.0' – 253.0'	2

4. The design of the tower modifications above has been based upon Stainless Report 350815 dated 6/30/2020. The details contained within this design drawing package are included for information and are not intended to be used as shop or final fabrication drawings. The Contractor shall field verify all dimensions, elevations and existing site conditions and notify Stainless immediately of any site discrepancies or variances. Contractor shall not scale dimensions from the design drawings.

5. All work shown on this design drawing package shall be performed by qualified contractor (s) with a minimum of 5 years experience in tower and foundation construction.

6. All fabricated elements shall be in accordance with the notes, specifications and drawings. All deviations and substitutions must be approved by a registered Professional Engineer in the state where the work is being done and submitted to Stainless for approval prior to installation. The Contractor shall furnish satisfactory evidence as to the kind and quality of the materials and equipment being substituted. Contractor shall also be responsible for obtaining all necessary permits, licenses and any other requirements for the construction. Submit calculations for connection details based upon the design loads shown on the drawings.

PREPARED BY	RE	7/24/20
CHECKED BY	GH	8/13/20
ENGINEER REVIEW	AV	8/24/2020
PROJECT NUMBER	350816	
DRAWING NUMBER	D01.01	

DATE	E. CK	DATE	D.CK	REVISION DESCRIPTION	DATE	BY	REV

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STAINLESS

GENERAL NOTES
WATERBURY, CT

STATE OF CONNECTICUT · KRISTYN M. PERRY · No. 32975 · LICENSED PROFESSIONAL ENGINEER

08/24/2020

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-1019-A, a rigging plan shall be developed by a qualified engineer, submitted to the Owner for review 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. 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.

10. 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.

11. 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/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.
3. AISC Manual of Steel Construction.
4. RCSC Specification for Structural Joints Using ASTM A325 or A490 Bolts.
5. ACI 301 Specifications for Structural Concrete.
6. ACI 318 Building Code Requirements for Structural Concrete.
7. ACI 315 Details and Detailing of Concrete Reinforcement.
8. CRSI Manual of Standard Practice.
9. ASTM C260 Standard Specification for Air-Entraining Admixtures for Concrete.
10. ASTM C494 Standard Specification for Chemical Admixtures for Concrete.
11. ASTM A36 Standard Specification for Carbon Structural Steel.
12. ASTM A572 Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
13. ASTM A325 Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
14. ASTM A194 Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both.
15. ASTM F436 Standard Specification for Hardened Steel Washers.
16. ASTM A123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and products.
17. ASTM A153 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
18. ASTM A780 Standard Practice for Repair of Damage and Uncoated Areas of Hot-Dip Galvanized Coatings.
19. 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 are not fully detailed on these plans and 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.
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:
   a. Plates and angles – A36
   b. Bolts – A325X
   c. Extra High Strength Guy strands – ASTM A475 Class A

INSTALLING GUYS AND 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. In changing out guys, work should proceed in one guy direction at a time. A temporary guy must be installed before removing existing guy. It is the contractor's responsibility to insure the temporary guy and its connections are adequately designed for the loads imposed on it.
5. 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	CHECKED BY	ENGINEER REVIEW	PROJECT NUMBER	DRAWING NUMBER
RE 7/24/20	GH 8/13/20	AV 8/24/2020	350816	D01.02

REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E. CK	DATE

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100 West Main Street, Suite 400
Lansdale, PA 19446

GENERAL NOTES
WATERBURY, CT

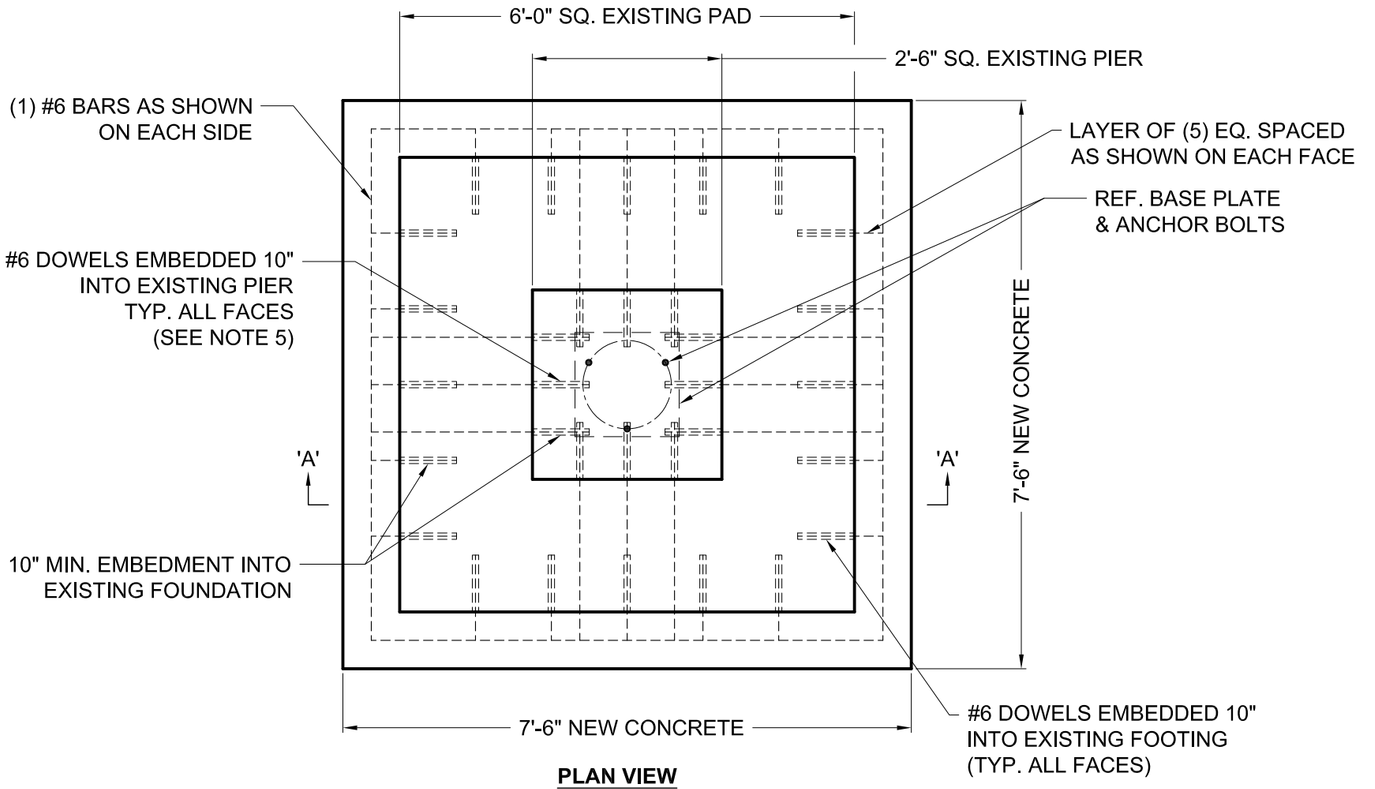
STATE OF CONNECTICUT
KRYSTYN M. PERE
No. 32975
LICENSED PROFESSIONAL ENGINEER
08/24/2020

NOTES:

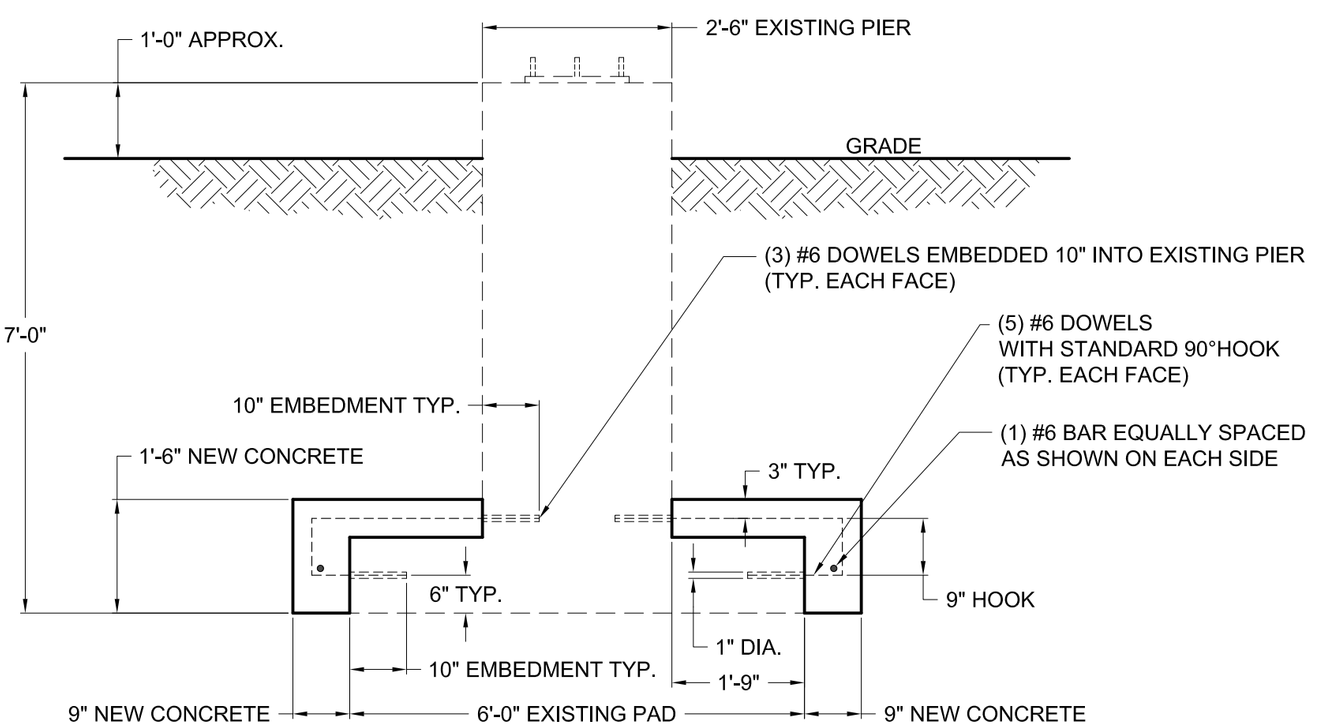
1. SEE PAGE D02.01 FOR FOUNDATION NOTES.
2. EXCAVATE AROUND PERIMETER OF EXISTING BASE PIER.
3. CLEAN AND ROUGHEN ALL INTERFACES BETWEEN OLD AND NEW CONCRETE. APPLY BONDING AGENT SIKADUR 32, HI-MOD LPL OR EQUIVALENT BONDING AGENT PRIOR TO NEW CONCRETE PLACEMENT. BONDING AGENT SHALL BE APPLIED IN ACCORDANCE WITH MANUFACTURER APPLICATION SPECIFICATIONS AND GUIDELINES.
4. SECURE DOWELED IN REBAR WITH REBAR ADHESIVE (HILTI-HIT HY 200 ADHESIVE OR EQUIVALENT).
5. FIELD LOCATE EXISTING REBAR PRIOR TO DRILLING. DO NOT DAMAGE EXISTING REBAR DURING INSTALLATION OF EPOXY DOWELS.
6. FOUNDATION HAS BEEN DESIGNED FOR A GROSS ALLOWABLE BEARING PRESSURE OF 8000 PSF.

BILL OF MATERIAL

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



PLAN VIEW



SECTION "A-A"

STATE OF CONNECTICUT — KRISTYN M. PERRY — No. 32975 — LICENSED PROFESSIONAL ENGINEER
08/24/2020

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BASE FOUNDATION MODIFICATION
WATERBURY, CT

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PREPARED BY	MM	7/22/20
CHECKED BY	GH	8/13/20
ENGINEER REVIEW	AV	8/24/2020
PROJECT NUMBER	350816	
DRAWING NUMBER	D02.00	

FOUNDATION NOTES

1. No rough lumber to be used where concrete surface is visible.
2. All exposed concrete corners shall be beveled neatly with approximately 1” chamfer.
3. Reinforcing shall be positioned as shown and adequately supported against displacement. Tack welding is not permitted.
4. Bend all reinforcing cold and remove all scale.
5. Minimum cover for reinforcing bars is 3”.
6. The foundation must rest on undisturbed soil.
7. Backfill near and around all foundations with a reasonable well graded fill and compact to within 95% of maximum dry unit density.
8. Elevation and flatness of base foundation top to be within plus or minus 1/4”.
9. Foundation design is based on a gross allowable bearing pressure of 8000 psf.
10. Bill of Material is approximate and for reference only. Contractor must verify all quantities.

PREPARED BY	RE
CHECKED BY	GH
ENGINEER REVIEW	AV
PROJECT NUMBER	350816
DRAWING NUMBER	D02.01

REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE

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FOUNDATION NOTES
WATERBUDY, CT

STATE OF CONNECTICUT
KRYSTYN M. PEREZ
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LICENSED
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08/24/2020

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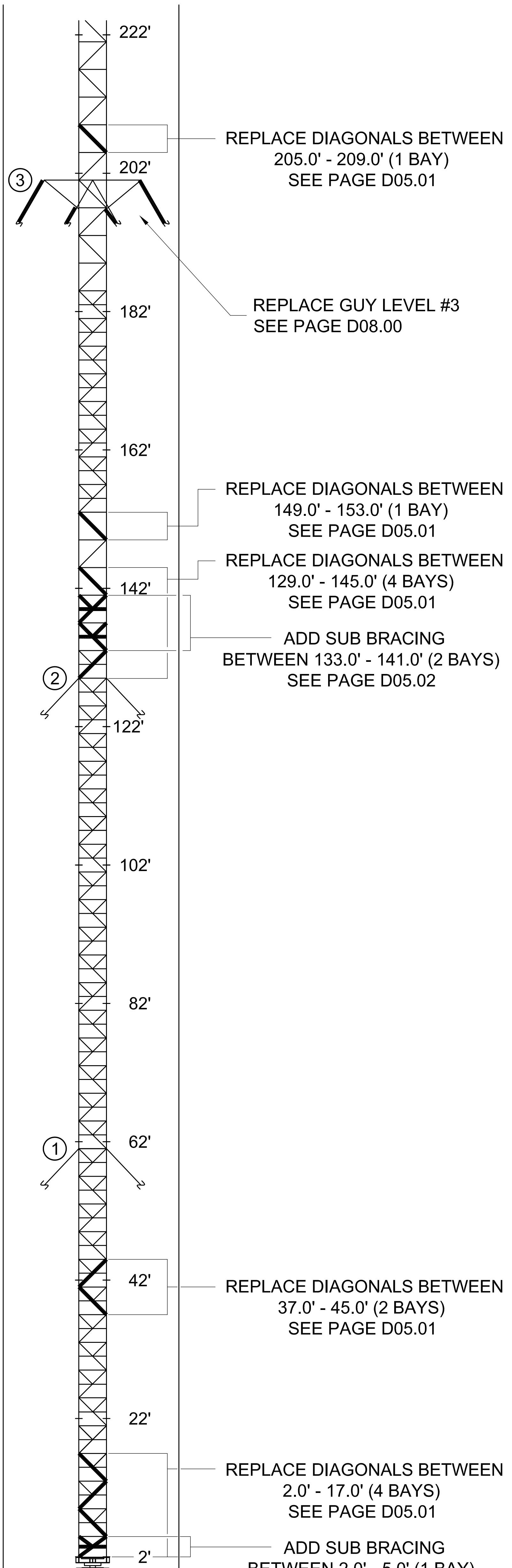

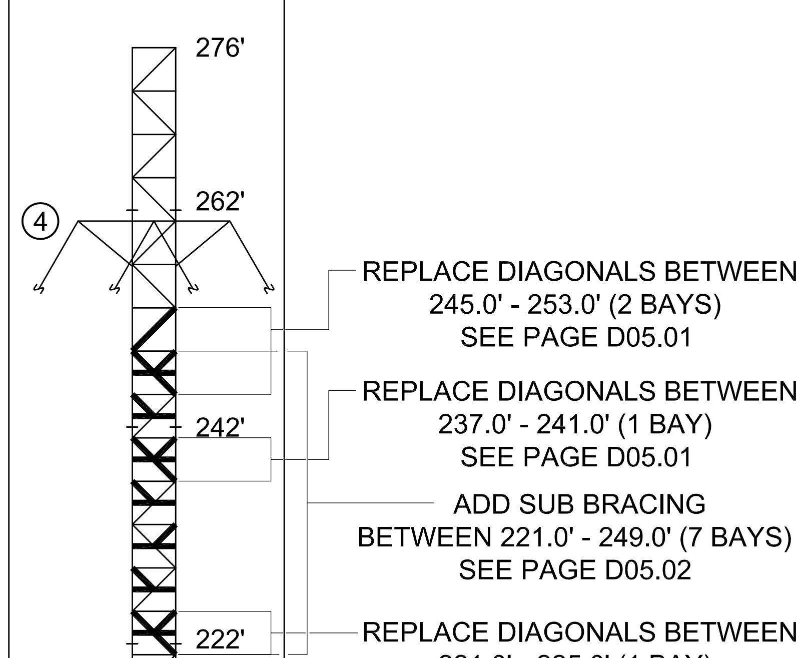

TOWER ELEVATION	TOWER MODIFICATIONS	TOWER ELEVATION	TOWER MODIFICATIONS

STATE OF CONNECTICUT · KRISTYN M. PEREZ · No. 32975 · LICENSED PROFESSIONAL ENGINEER
08/24/2020

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TOWER PROFILE
WATERBURY, CT

REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE
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PREPARED BY	RE	7/24/20
CHECKED BY	GH	8/13/20
ENGINEER REVIEW	AV	8/24/2020
PROJECT NUMBER	350816	
DRAWING NUMBER	D04.00	

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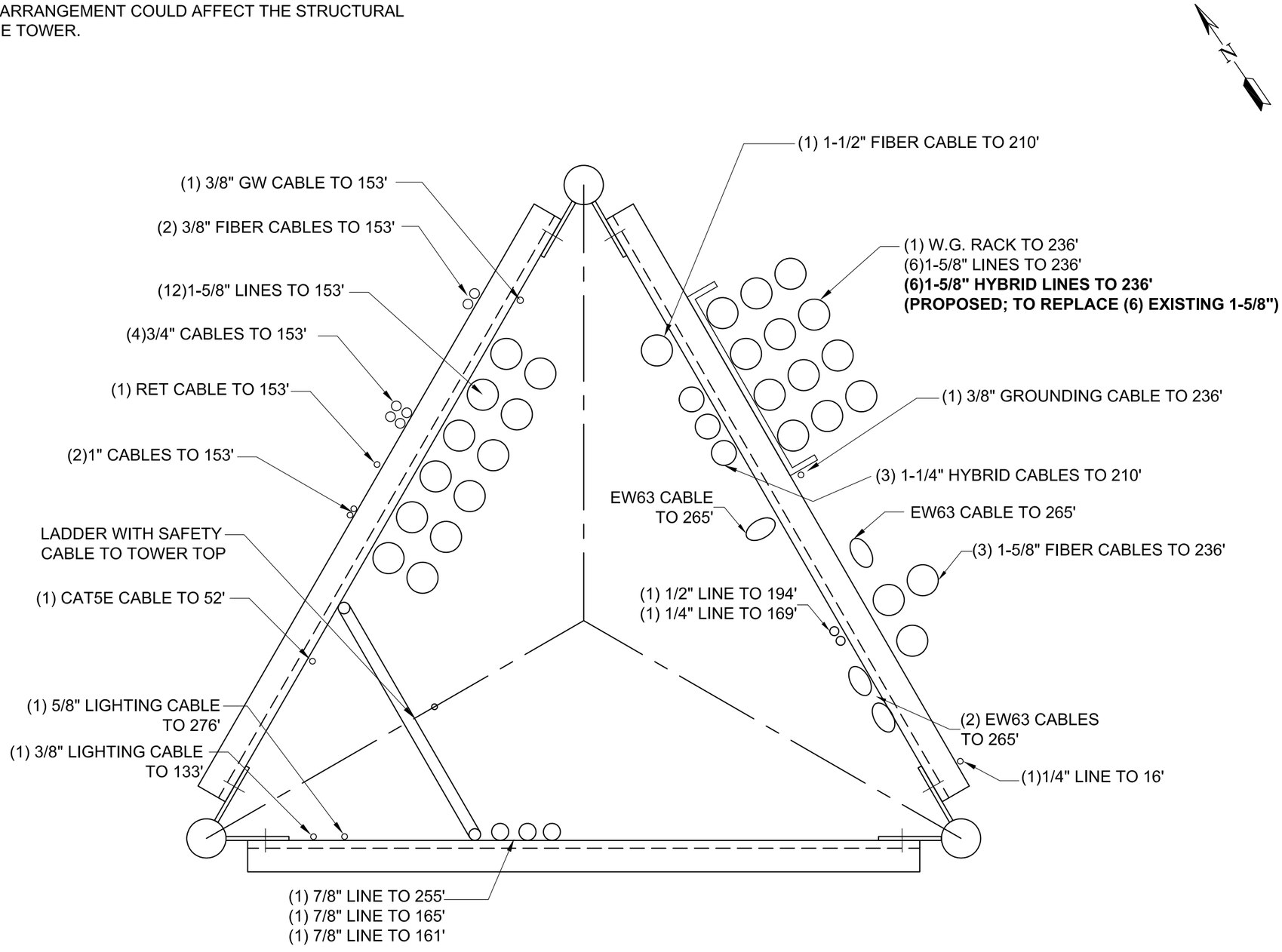
NOTE:

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	CHECKED BY	ENGINEER REVIEW	PROJECT NUMBER	DRAWING NUMBER
RE	GH	AV	350816	D05.00
7/24/20	8/13/20	8/24/2020		

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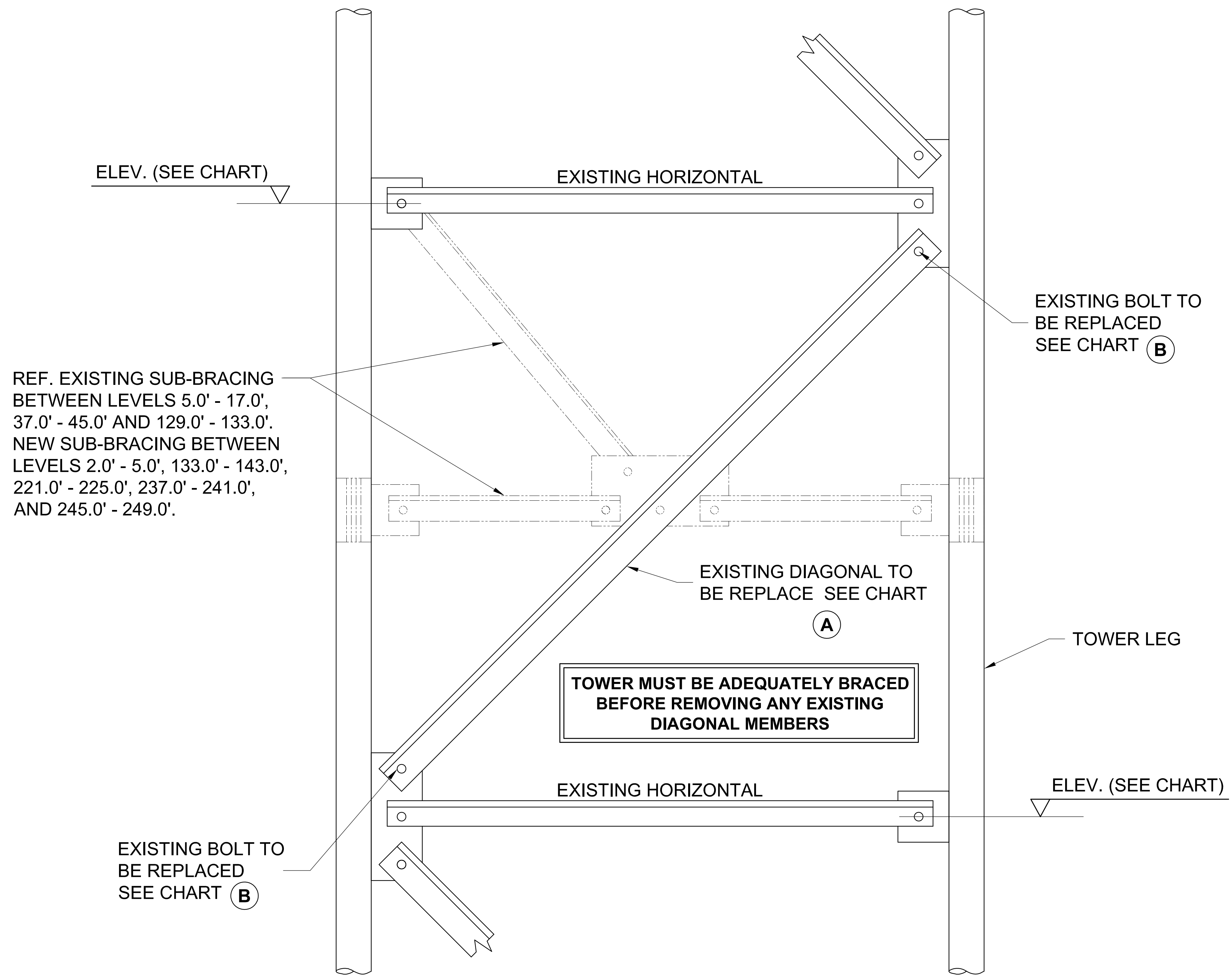
LINEAR APPURTENANCES
WATERBURY, CT

STATE OF CONNECTICUT
KRYSTYN M. PEREZ
No. 32975
LICENSED PROFESSIONAL ENGINEER

08/24/2020



ELEVATION VIEW

ELEVATION	BAYS	DIAGONAL REPLACEMENTS (A)	DIAGONAL REPLACEMENTS (B)	MAX DESIGN LOAD IN MEMBER
2.0' - 17.0'	4	L 2 x 2 x 1/4 (A36)	5/8" DIA. BOLT (A325X)	24.5 KIPS
37.0' - 45.0'	2	L 2 x 2 x 1/4 (A36)	5/8" DIA. BOLT (A325X)	24.5 KIPS
129.0' - 145.0'	4	L 2 1/2 x 2 1/2 x 3/8 (A36)	5/8" DIA. BOLT (A325X)	47.3 KIPS
149.0' - 153.0'	1	L 2 1/2 x 2 1/2 x 3/8 (A36)	5/8" DIA. BOLT (A325X)	47.3 KIPS
205.0' - 209.0'	1	L 2 1/2 x 2 1/2 x 3/8 (A36)	5/8" DIA. BOLT (A325X)	47.3 KIPS
221.0' - 225.0'	1	L 2 x 2 x 1/4 (A36)	5/8" DIA. BOLT (A325X)	24.5 KIPS
237.0' - 241.0'	1	L 2 x 2 x 1/4 (A36)	5/8" DIA. BOLT (A325X)	24.5 KIPS
245.0' - 253.0'	2	L 2 x 2 x 1/4 (A36)	5/8" DIA. BOLT (A325X)	24.5 KIPS

NOTES:

1. ADEQUATE TEMPORARY BRACING MUST BE DESIGNED TO MAINTAIN THE STRUCTURAL INTEGRITY OF THE TOWER. THE BRACING SHALL BE INSTALLED PRIOR TO REMOVING ANY TOWER MEMBER UTILIZING THE FOLLOWING PROCEDURE:
   a. INSTALL TEMPORARY BRACING AT THE LOCATION THE DIAGONAL IS TO BE REPLACED.
   b. REMOVE AND REPLACE DIAGONAL ON FACE AND IN BAY THAT THE TEMPORARY BRACING IS INSTALLED.
   c. REMOVE AND REPLACE ONLY ONE MEMBER AT A TIME.
   d. REPEAT THIS PROCEDURE FOR EACH TOWER FACE.
2. REPEAT THIS PROCEDURE AT ALL LOCATIONS WHERE DIAGONALS ARE TO BE REPLACED.
3. FIELD VERIFY DIMENSIONS AND END CONNECTION DETAILS PRIOR TO FABRICATION OF REPLACEMENT DIAGONALS. SEE NOTE 4 ON DRAWING D01.01.

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DIAGONAL REPLACEMENT
WATERBURY, CT

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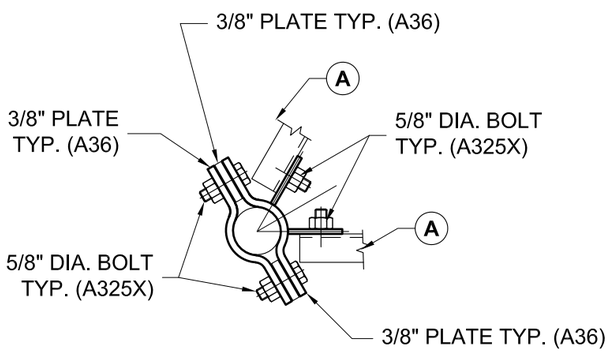
PREPARED BY	RE	7/24/20
CHECKED BY	GH	8/13/20
ENGINEER REVIEW	AV	8/24/2020
PROJECT NUMBER	350816	
DRAWING NUMBER	D05.01	

ELEVATION	BAYS	LEG DIA.	SUB BRACING A	SUB BRACING B	MAX. FACTORED COMPRESSION LEG LOADS
2.0' - 5.0'	1	2" Ø	L 2 x 2 x 1/4 (A36)	L 2 x 2 x 1/4 (A36)	128.6 KIPS
133.0' - 141.0'	2	2" Ø	L 2 x 2 x 1/4 (A36)	L 2 x 2 x 1/4 (A36)	119.5 KIPS
221.0' - 249.0'	7	1-3/4" Ø	L 2 x 2 x 1/4 (A36)	L 2 x 2 x 1/4 (A36)	86.9 KIPS

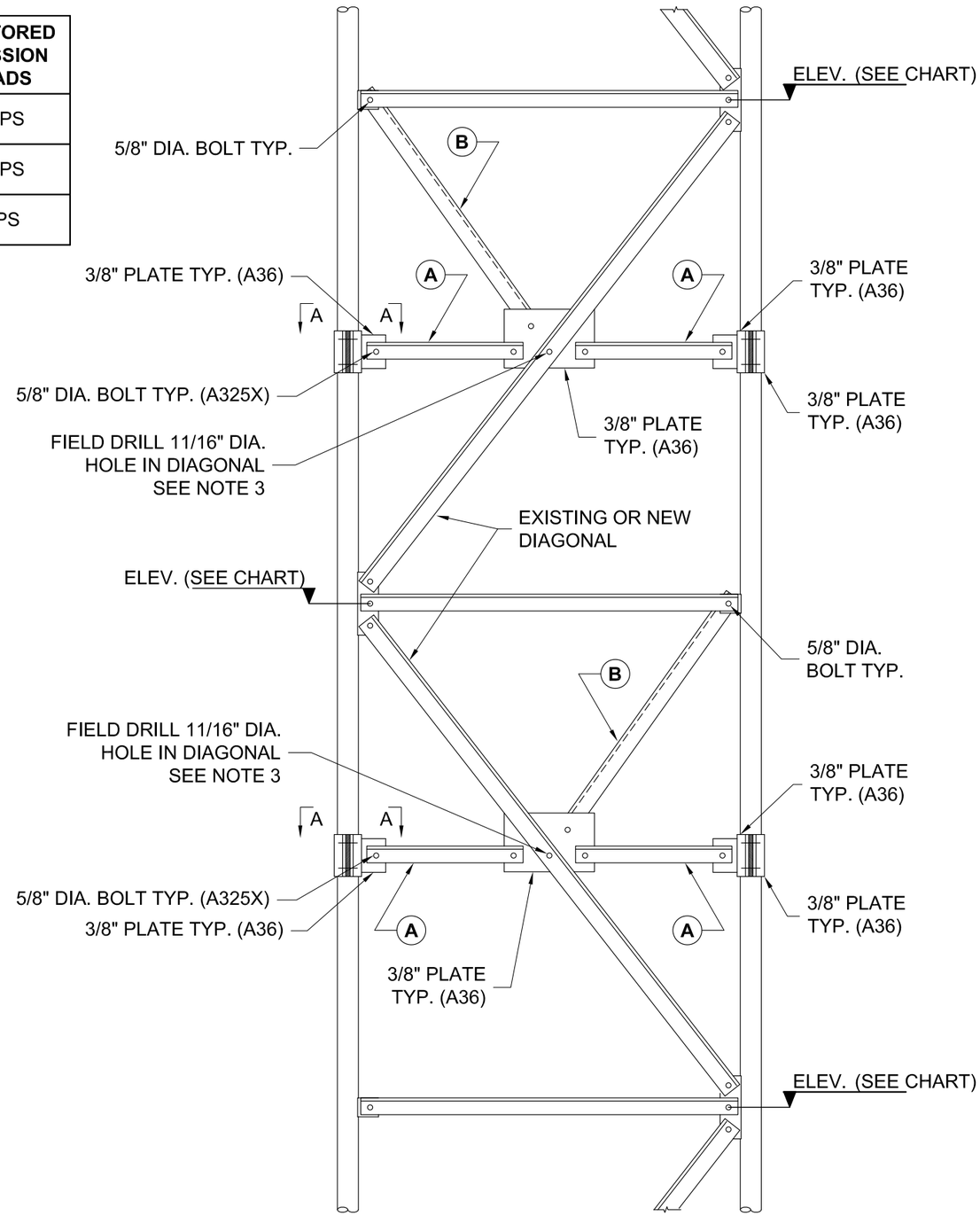
TOWER MUST BE ADEQUATELY BRACED BEFORE REMOVING ANY EXISTING TOWER BOLTS

NOTES:

1. ADEQUATE TEMPORARY BRACING MUST BE INSTALLED PRIOR TO REMOVING ANY TOWER BOLTS TO MAINTAIN THE STRUCTURAL INTEGRITY OF THE TOWER.
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

	PREPARED BY	CHECKED BY	ENGINEER REVIEW	PROJECT NUMBER	DRAWING NUMBER
	RE	GH	AY	350816	D05.02
	7/24/20	8/13/20	8/24/2020		

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SUB BRACING DETAILS
WATERBURY, CT

STATE OF CONNECTICUT
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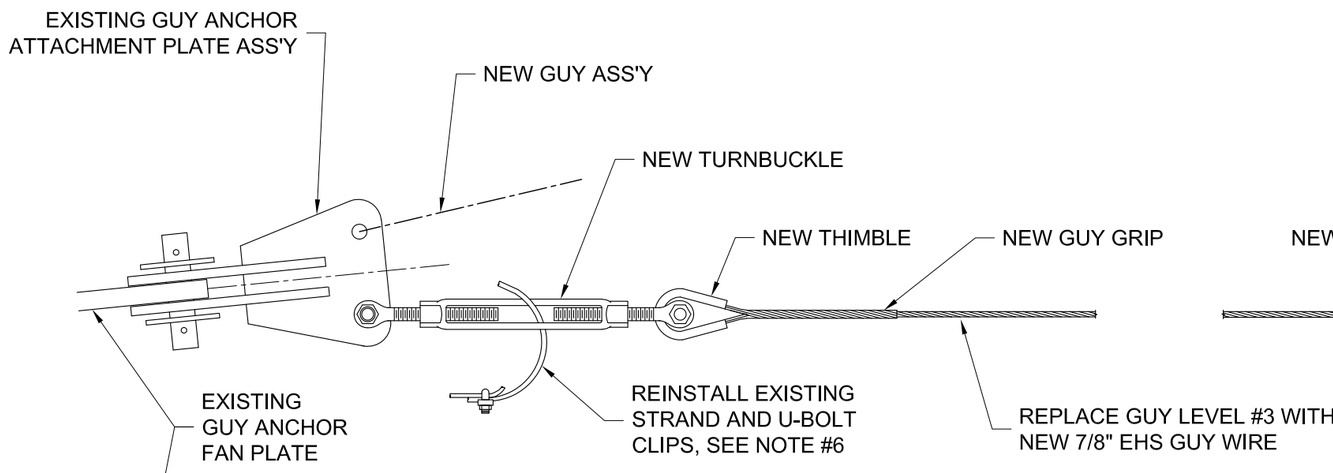
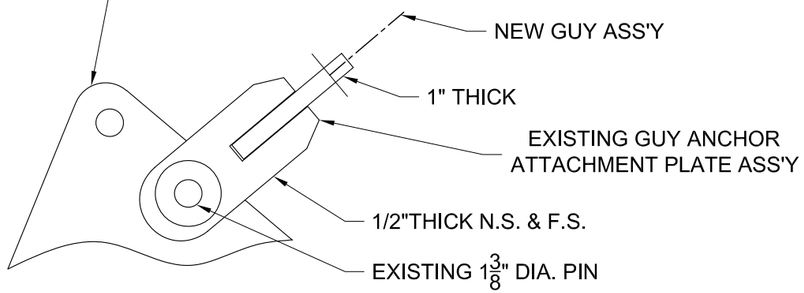
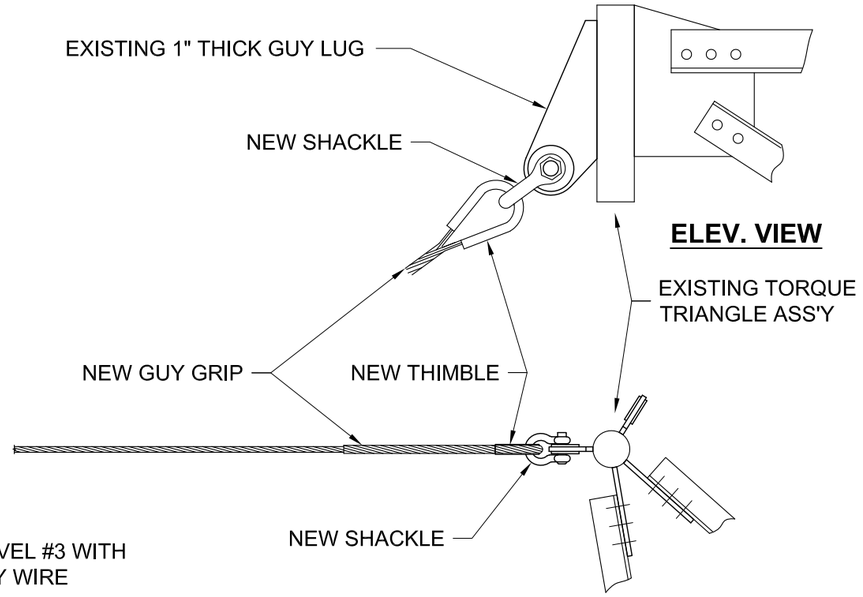


PLAN VIEW



DETAIL AT ANCHOR
ELEVATION VIEW



DETAIL AT TOWER
PLAN VIEW

NOTES:

1. NEW GUY WIRE HARDWARE SHALL DEVELOP THE MAXIMUM ALLOWABLE LOAD OF THE GUY STRAND AS DETERMINED PER ANSI/TIA 222-G.
2. (6) GUY WIRE ASSEMBLIES REQUIRED FOR GUY LEVEL #3.
3. APPROXIMATELY 20 FT. SHOULD BE ADDED TO GUY WIRE LENGTH FOR TAKE-UP IN ERECTION.
4. CUT EXCESS GUY WIRE AFTER THE GUYS HAVE BEEN TENSIONED.
5. SEE PAGE D08.01 FOR TENSIONS AND INTERCEPTS.
6. WIRE TURNBUCKLES TO PREVENT ROTATION.

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DRAWING NUMBER	D08.00
	7/24/20
	8/13/20
	8/24/2020

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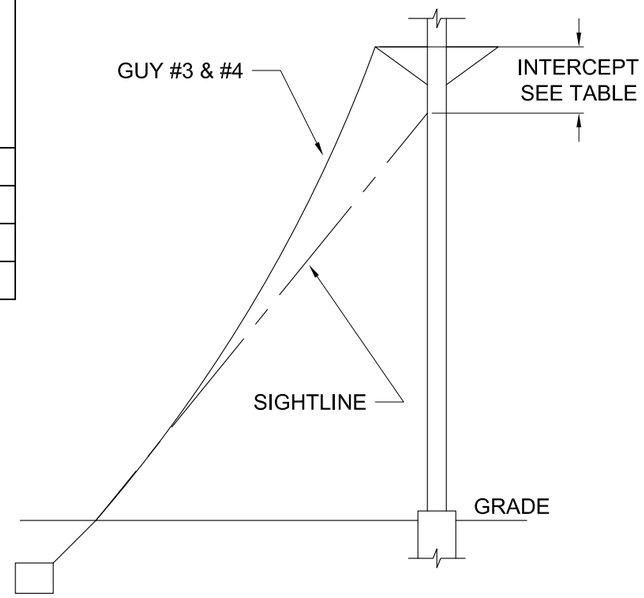
GUY ASSEMBLIES FOR GUY LEVEL 3
WATERBURY, CT

STATE OF CONNECTICUT
KRISTYN M. PEREZ
No. 32975
LICENSED PROFESSIONAL ENGINEER

08/24/2020

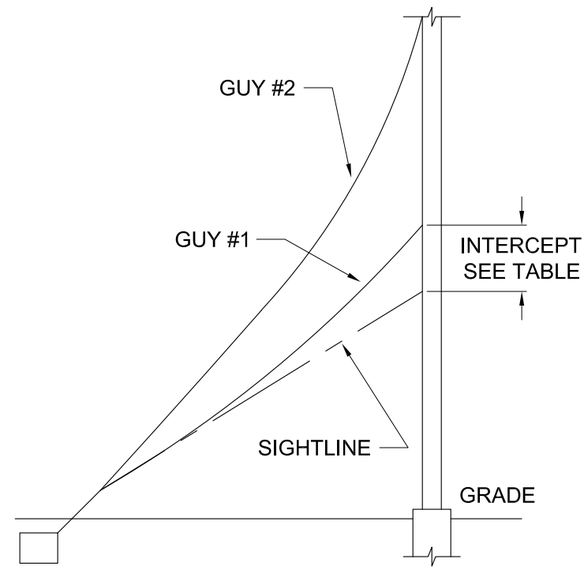
	0 DEG. F		20 DEG. F		40 DEG. F		60 DEG. F		80 DEG. F		100 DEG. F	
	ERECT. TENSION (LBS)	INTER-CEPT (FT)	ERECT. TENSION (LBS)	INTER-CEPT (FT)	ERECT. TENSION (LBS)	INTER-CEPT (FT)	ERECT. TENSION (LBS)	INTER-CEPT (FT)	ERECT. TENSION (LBS)	INTER-CEPT (FT)	ERECT. TENSION (LBS)	INTER-CEPT (FT)
1A	6274	1.9	5874	2.0	5478	2.2	5080	2.3	4688	2.5	4299	2.8
2A	7291	4.0	6852	4.3	6414	4.6	5980	4.9	5559	5.3	5143	5.7
3A	5047	11.6	4751	12.3	4467	13.1	4200	13.9	3954	14.8	3725	15.7
4A	3682	9.1	3560	9.5	3440	9.8	3320	10.2	3203	10.6	3087	11.0



ELEVATION VIEW - GUY #3 & #4

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. USE INTERCEPTS AND TENSIONS IN GUY DIRECTION "A" ONLY.
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%.
7. AFTER INSTALLING FINAL SET OF GUYS GO BACK AND RECHECK ALL LEVELS, RETENSIONING WHERE REQUIRED.



ELEVATION VIEW - GUY #1 & #2

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7/24/20	8/13/20	8/24/2020		

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INTERCEPTS & ERECTION TENSIONS
WATERBURY, CT

STATE OF CONNECTICUT
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LICENSED
PROFESSIONAL ENGINEER
08/24/2020

Exhibit D

REPORT 350817

DATE: 9/21/2020

RIGOROUS STRUCTURAL ANALYSIS

FOR A 276’ G-48 GUYED TOWER

WATERBURY, CT

CAPACITY – 98%

PREPARED BY: AV APPROVED: KP

CHECKED BY: AP

Date	Pages	Remarks

Rev.	Date	Description

SECTION PAGE

APPENDIX

Rev.	Date	Description

A. AUTHORIZATION/PURPOSE

As authorized by Sheldon Freincle of Northeast Site Solutions, a rigorous structural analysis was performed to investigate the adequacy of a 276' 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 ½" 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 ½" EHS guys at Level 3 with new 9/16" EHS guy wires.
b. Adjusted initial guy tensions in all guy levels.

Rev.	Date	Description

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 350816 dated 8/24/2020 were based upon the recommended modifications per Stainless failing analysis Report 350815 dated 6/30/2020. 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
221' – 249'	7
133' – 141'	2
2' – 5'	1

c. Replace existing level 3 guy wires with new higher capacity guy wires.

Rev.	Date	Description

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

Location	No. of bays
245' – 253'	2
237' – 241'	1
221' – 225'	1
205' – 209'	1
149' – 153'	1
129' – 145'	4
37' – 45'	2
2' – 17'	4

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

C. CONDITIONS INVESTIGATED

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

- Stainless Proposal P20_3508_002, dated 08/27/2020.
- FDH Infrastructure Services Feedline & Appurtenance Mapping Report dated 7/26/2019
- Stainless Report 350815 dated 6/30/2020
- Stainless Design Drawing package 350816 dated 8/24/2020.

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)** (3) T-Arm Mounts **(To Be Removed)** (3) Ericsson AIR32 KRD901146-1_B66Z_B2A	236	(6) 1-5/8" lines **(To Be Removed)** (6) 1-5/8" lines (3) 1-5/8" fiber cable **(6) 1-5/8" Hybrid Cable (Proposed)**

Rev.	Date	Description

(3) RFS-APXVAARR24_43-U-NA20 (Proposed) **(3) RFS-APXV18-206516S-CA20 (Proposed)** **(3) Ericsson AIR6449 B41 (Proposed)** **(3) Ericsson Radio 4449 B71+B85 (Proposed)** **(3) Radio 4415 B25 (Proposed)** **(3) Generic Twin Style 1B-AWS TMA (Proposed)** **(3) 12.5' Sector Frames [SitePro1 P/N: VFA12-SD-S] (Proposed)**		
(6) Alcatel-Lucent RRH 2x50-800 RRUs (3) RRH 8x20-25-FEU 8T8R RRUs (6) RRH 1900-4x45 RRUs (3) 70"x12"x8" panels (3) Andrew DT465B-2XR-V2 panels (3) Sector mounts	210	(1) 1-1/2" Fiber (3) 1-1/4" hybrid
15' whip antenna w/ (3) elements	195	(1) ½" coax
6' x 6' ice shield	174	--
10' dipole w/(2) elements	171	7/8"
(1) Mark 4' diameter grid dish (1) 9-1/2" x 2-1/2" x 2-1/2" ODU	169	¼" coax
Diamond D-130N	164	7/8"
(3) Raycap DC6-48-60-18-8C SPDs (6) Ericsson RRUS 32 B30 RRUs (3) Powerwave 7770.00J1 panels (6) Ericsson KRC 161 689/3 RRUs (6) CCI TPX-070821 diplexers (6) Powerwave LGP 21401 TMAs (6) Ericsson KRC 161 472/3 RRUs (3) Kathrein 80010965 panels (3) CCI HPA-65R-BW-H6 panels (3) Quintel QS665122E53617881 panels (3) Ericsson RRUS 11 B12 (3) T-arm mounts	153	(2) 1" cables (1) RET cable (4) ¾" cables (2) 3/8" fiber cables (12) 1-5/8" coax
(3) L-810 side markers	133	3/8" cable
12" stand off (unused)	52	--
3-1/2" diameter x 9" Omni	17	¼" coax
--	236	3/8" grounding cable
Inside climbing ladder with safety cable	Full height of the tower	3/8"

Rev.	Date	Description

The locations of the transmission lines have been based upon the cross section from Stainless Report 350815 dated 6/30/2020 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 nominal design wind speed with ¾" 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:

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

Seismic effects need not be considered as the value of Ss 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:

LOCATION	SPAN	RATING %
Leg compression	Cantilever	15
	4	94

Rev.	Date	Description

	3	94
	2	98
	1	84
Leg tension	Cantilever	19
	4	87
	3	33
	2	--
	1	--
Diagonals	Cantilever	44
	4	93
	3	98
	2	96
	1	96
Horizontals	Cantilever	11
	4	42
	3	65
	2	54
	1	26
Guys	4	77
	3	96
	2	85
	1	77
Foundations	Tower base	90
	Guy anchors	97

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 350816 dated 8/24/2020 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.

2. The modifications as shown in the Appendix of this report must be correctly installed for this analysis to be considered valid.

Rev.	Date	Description

H. PROVISIONS OF ANALYSIS

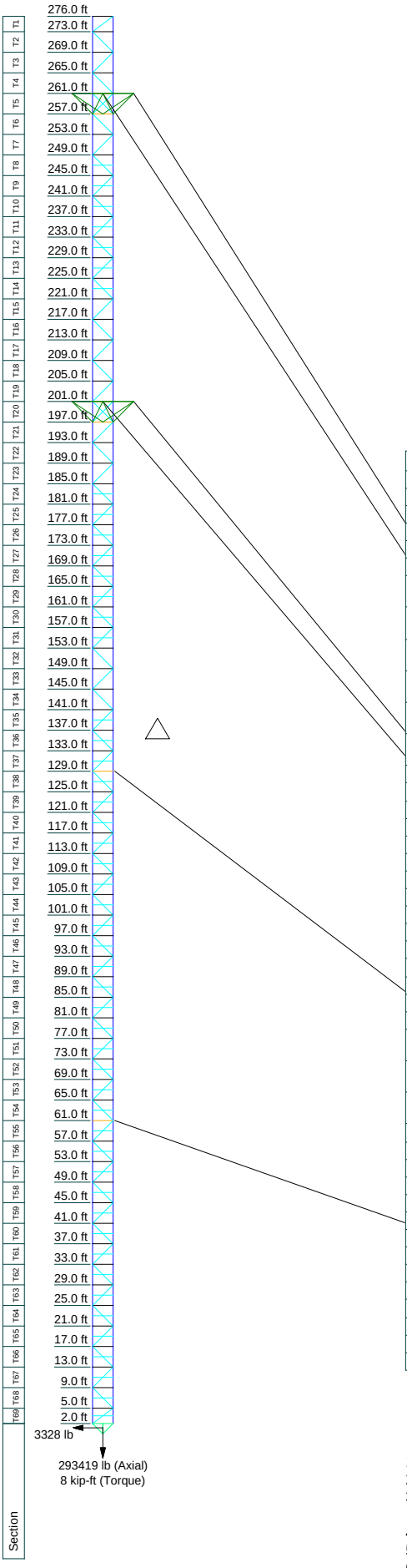
The analysis performed and the conclusions contained herein are based on the assumption that the tower has been properly installed and maintained, including, but not limited to the following:

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 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.



PLAN

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
lighting Rod and beacon	276	DT465B-2XR-V2	210
6'x6' ice shield	270	Sector Frame Mount	210
6'x6' ice shield	270	Sector Frame Mount	210
6' dish with radome	265	Sector Frame Mount	210
6' dish with radome	265	15' Whip with elements	195
Scala PR-450	255	6'x6' ice shield	174
APXVAARR24_43-U-NA20 w/ Mount Pipe	236	4-bay Dipole Antenna	171
APXVAARR24_43-U-NA20 w/ Mount Pipe	236	9-1/2"x2-1/2"x2-1/2" ODU	169
APXVAARR24_43-U-NA20 w/ Mount Pipe	236	4' Mark Grid dish	169
APXV18-206516S-C-A20 w/ Mount Pipe	236	Diamond D-130N	164
APXV18-206516S-C-A20 w/ Mount Pipe	236	DC6-48-60-18-8C	153
APXV18-206516S-C-A20 w/ Mount Pipe	236	DC6-48-60-18-8C	153
AIR6449 B41 w/ Mount Pipe	236	DC6-48-60-18-8C	153
AIR6449 B41 w/ Mount Pipe	236	(2) RRUS 32 B30	153
AIR6449 B41 w/ Mount Pipe	236	(2) RRUS 32 B30	153
RADIO 4449 B71/B85A	236	(2) RRUS 32 B30	153
RADIO 4449 B71/B85A	236	7700.00 w/Mount Pipe	153
RADIO 4449 B71/B85A	236	7700.00 w/Mount Pipe	153
4415 B25	236	7700.00 w/Mount Pipe	153
4415 B25	236	(2) KRC 161 472/3 RRUs	153
4415 B25	236	(2) KRC 161 472/3 RRUs	153
Generic 1B-AWS TMA	236	(2) KRC 161 472/3 RRUs	153
Generic 1B-AWS TMA	236	(2) TPX-070821	153
Generic 1B-AWS TMA	236	(2) TPX-070821	153
Sector Frame Mount	236	(2) TPX-070821	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) 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
(2) 800MHZ 2x50W RRH	210	(2) KRC 161 689/3 RRUs	153
(2) 800MHZ 2x50W RRH	210	800 10965 w/ Mount Pipe	153
(2) 800MHZ 2x50W RRH	210	800 10965 w/ Mount Pipe	153
TD-RRH8x20-25	210	800 10965 w/ Mount Pipe	153
TD-RRH8x20-25	210	HPA-65R-BUU-H6 w/ 5.5' Mount Pipe	153
TD-RRH8x20-25	210	HPA-65R-BUU-H6 w/ 5.5' Mount Pipe	153
(2) 1900MHz 4x45 RRH	210	HPA-65R-BUU-H6 w/ 5.5' Mount Pipe	153
(2) 1900MHz 4x45 RRH	210	QS66512-2 w/ Mount Pipe	153
(2) 1900MHz 4x45 RRH	210	QS66512-2 w/ Mount Pipe	153
APXVSPP18-C-A20 w/ Mount Pipe	210	QS66512-2 w/ Mount Pipe	153
APXVSPP18-C-A20 w/ Mount Pipe	210	RRUS 11 B12	153
APXVSPP18-C-A20 w/ Mount Pipe	210	RRUS 11 B12	153
DT465B-2XR-V2	210	RRUS 11 B12	153
DT465B-2XR-V2	210	Sector Frame Mount	153
		Sector Frame Mount	153
		Sector Frame Mount	153
		L-810 side markers	133
		L-810 side markers	133
		L-810 side markers	133
		Subdiagonal bracing correction	129 - 125
		Subdiagonal bracing correction	105 - 5
		Unused mount	52
		1'-4" x 3/4" Omni	17

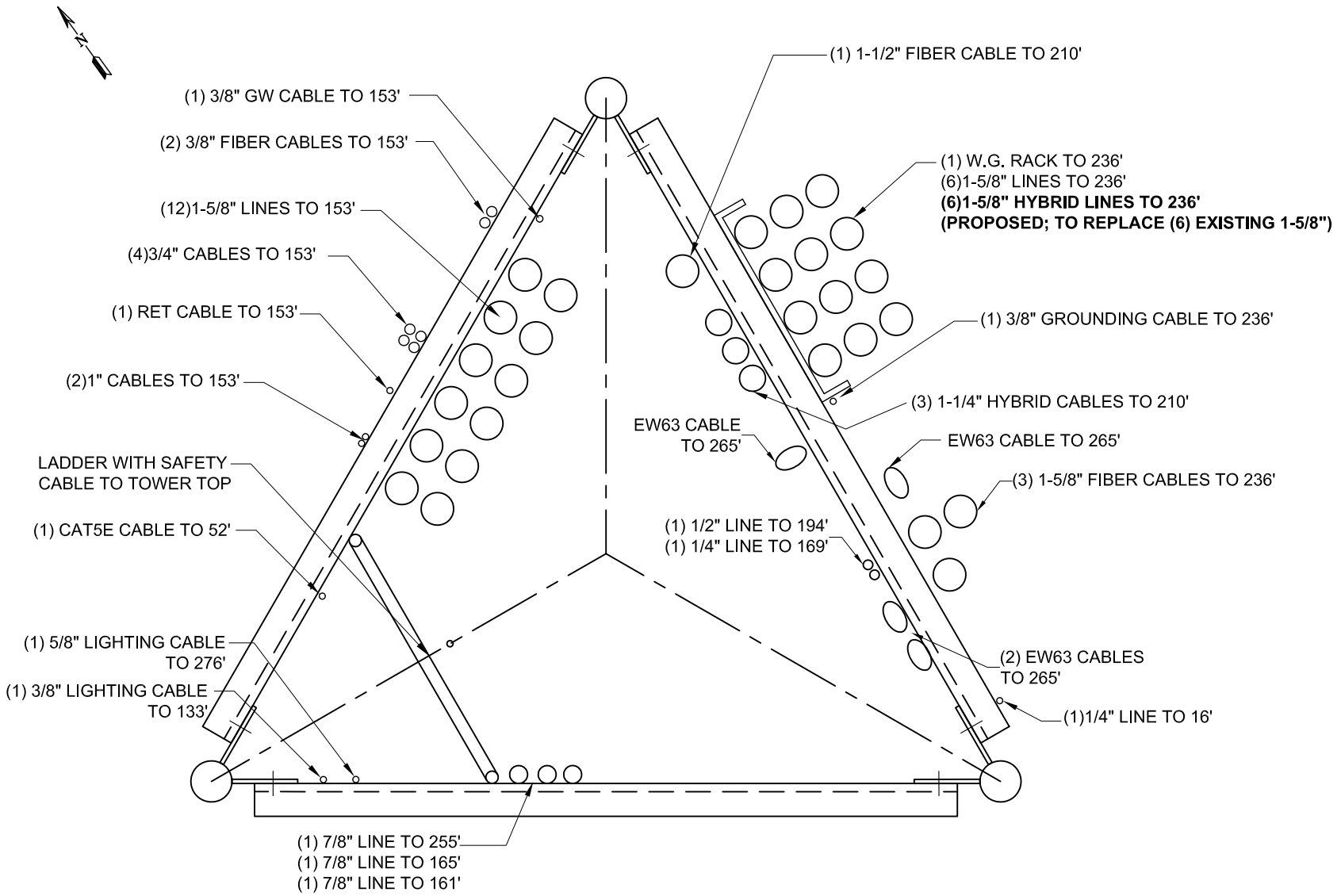
TOWER DESIGN NOTES

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

FDH-IS_Logo

Stainless
6521 Meridien Drive
Raleigh, NC 27616
Phone: (919) 755-1012
FAX: (919) 755-1031

Job: ***350817 Waterbury CT***			
Project: ***276' Stainless G-48 guyed tower***			
Client: Northeast Site Solutions LLC	Drawn by: AVago	App'd:	
Code: TIA-222-G	Date: 09/14/20	Scale: NTS	
Path: E:\AEVSTAINLESS\PROJECTS\2020\09 SEP\350817_Waterbury, CT_WTIC WTXX (PR-003839)\350817\engineTower\350817.eri		Dwg No. E-1	



PREPARED BY	AV
CHECKED BY	
ENGINEER REVIEW	
PROJECT NUMBER	350817
DRAWING NUMBER	A-2

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LINEAR APPURTENANCES
WATERBURY, CT

A-3 DESIGN DRAWINGS 350816

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DESIGN DRAWINGS
EXISTING G48 TOWER
WATERBURY, CT

INDEX

Rev	Description	Drawn by	Checked by	Reviewed by	Approved by
--	Initial Release	RE	GH	GH	AV
		7/24/2020	8/13/2020	8/13/2020	8/24/2020
		Date	Date	Date	Date

Project No.: 350816

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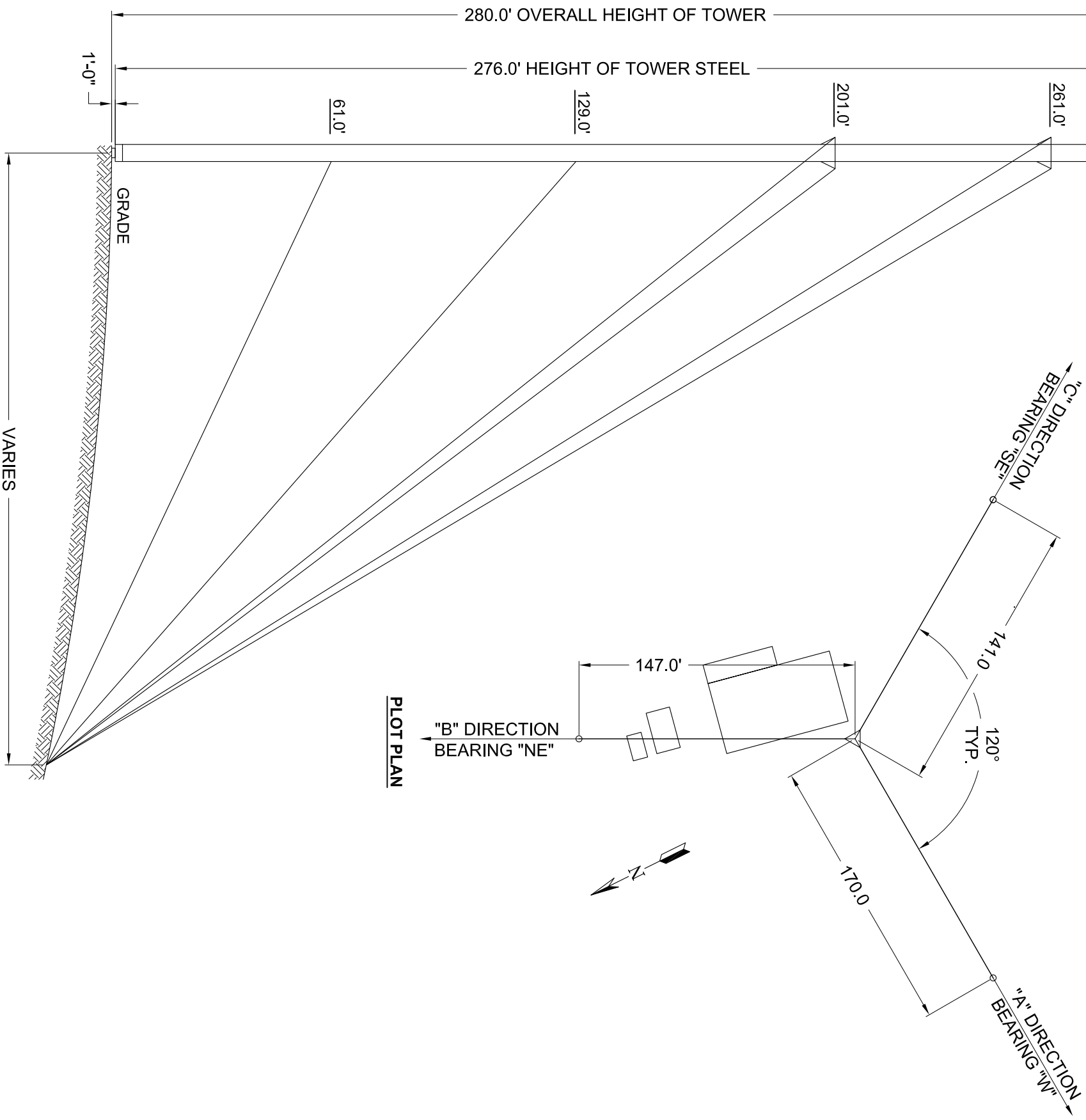
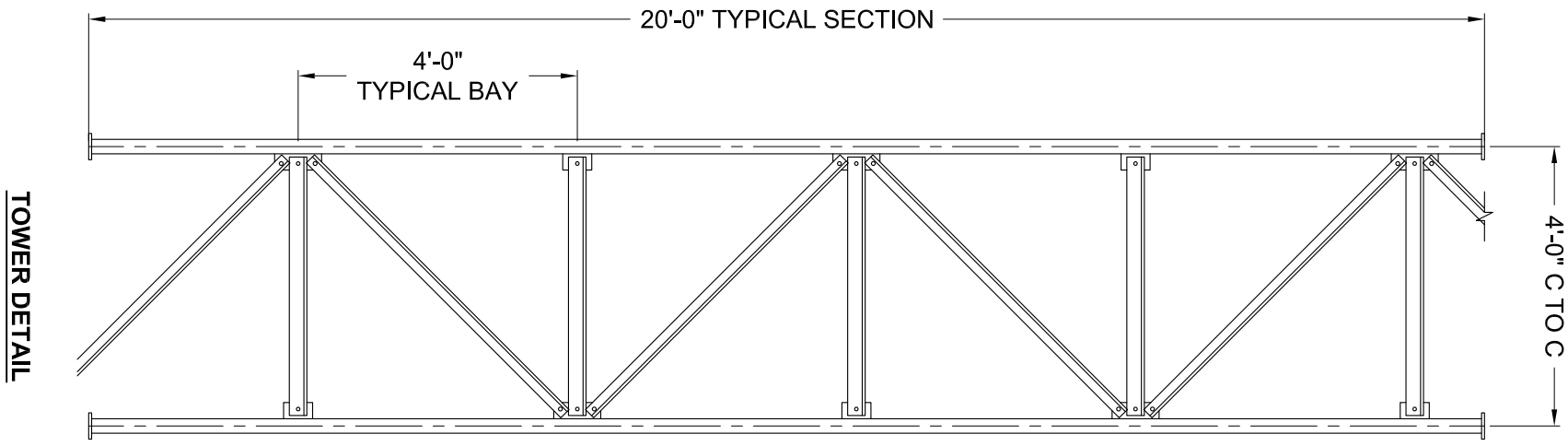
STATE OF CONNECTICUT
KRISTYN M. PEREZ
No. 32975
LICENSED
PROFESSIONAL ENGINEER

08/24/2020



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



TOWER DETAIL

STATE OF CONNECTICUT
BRYSTIN M. REED
No. 32975
LICENSED PROFESSIONAL ENGINEER
08/24/2020

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GENERAL ARRANGEMENT
WATERBURY, CT

REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE
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PREPARED BY	RE	7/24/20
CHECKED BY	GH	8/13/20
ENGINEER REVIEW	AV	8/24/2020
PROJECT NUMBER	350816	
DRAWING NUMBER	D01.00	

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1. The tower is a guyed, triangular, non-insulated, open face structure.

2. The tower was analyzed per Stainless Rigorous Structural Analysis Report 350815 dated 6/30/20. It was analyzed in accordance with the 2018 Connecticut Building Code, referencing the 2015 IBC and ANSI/TIA-222-G 2005, Structural Standard for Antenna Supporting Structures and Antennas, including addenda 1 and 2 dated 2007 and 2009 for the following parameters to support equipment as listed below:

- Risk Category II
- 125 mph ultimate 3-second gust wind speed with no ice.
- 50 mph nominal 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

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)** (3) T-Arm Mounts **(To Be Removed)** (3) Ericsson AIR32 KRD901146-1_B66Z_B2A **(3) RFS-APXVAARR24_43-U-NA20 (Proposed)** **(3) RFS-APXV18-206516S-CA20 (Proposed)** **(3) Ericsson AIR6449 B41 (Proposed)** **(3) Ericsson Radio 4449 B71+B85 (Proposed)** **(3) Radio 4415 B25 (Proposed)** **(3) Generic Twin Style 1B-AWS TMA (Proposed)** **(3) 12.5' Sector Frames [SitePro1 P/N: VFA12-SD-S] (Proposed)**	236	(6) 1-5/8" lines **(To Be Removed)** (6) 1-5/8" lines (3) 1-5/8" fiber cable **(6) 1-5/8" Hybrid Cable (Proposed)**
(6) Alcatel-Lucent RRH 2x50-800 RRUs (3) RRH 8x20-25-FEU 8T8R RRUs (6) RRH 1900-4x45 RRUs (3) 70"x12"x8" panels (3) Andrew DT465B-2XR-V2 panels (3) Sector mounts	210	(1) 1-1/2" Fiber (3) 1-1/4" hybrid
15' whip antenna w/ (3) elements	195	(1) 1/2" coax
6' x 6' ice shield	174	--
10' dipole w/(2) elements	171	7/8"
(1) Mark 4' diameter grid dish (1) 9-1/2" x 2-1/2" x 2-1/2" ODU	169	1/4" coax
Diamond D-130N	164	7/8"
(3) Raycap DC6-48-60-18-8C SPDs (6) Ericsson RRUS 32 B30 RRUs (3) Powerwave 7770.00J1 panels (6) Ericsson KRC 161 689/3 RRUs (6) CCI TPX-070821 diplexers (6) Powerwave LGP 21401 TMAs (6) Ericsson KRC 161 472/3 RRUs (3) Kathrein 80010965 panels (3) CCI HPA-65R-BW-H6 panels (3) Quintel QS665122E53617881 panels (3) Ericsson RRUS 11 B12 (3) T-arm mounts	153	(2) 1" cables (1) RET cable (4) 3/4" cables (2) 3/8" fiber cables (12) 1-5/8" coax
(3) L-810 side markers	133	3/8" cable
12" stand off (unused)	52	--
3-1/2" diameter x 9" Omni	17	1/4" coax
--	236	3/8" grounding cable
Inside climbing ladder with safety cable	Full height of the tower	3/8"

3. In order for the tower to achieve an 125 mph ultimate 3-second gust wind speed with no ice and 50 mph nominal design wind speed with 3/4" design ice thickness in accordance with 2015 IBC and ANSI/TIA 222-G, the following modifications are required:

a. Reinforce the tower base foundation.

b. Replace existing guy wires at Level 3 with new, higher capacity guy wires.

c. Adjust the initial guy tensions to the following values at 60 degrees F:

Level	Tension (kips)
1A	5080
2A	5980
3A	4200
4A (Top)	3320

d. Install additional horizontal sub-bracing members at the midpoints of the following bays:

Location	No. of bays
2.0' – 5.0'	1
133.0' – 141.0'	2
221.0' – 249.0'	7

e. Replace existing diagonal braces with new, higher capacity members at the following bays:

Location	No. of bays
2.0' – 17.0'	4
37.0' – 45.0'	2
129.0' – 145.0'	4
149.0' – 153.0'	1
205.0' – 209.0'	1
221.0' – 225.0'	1
237.0' – 241.0'	1
245.0' – 253.0'	2

4. The design of the tower modifications above has been based upon Stainless Report 350815 dated 6/30/2020. The details contained within this design drawing package are included for information and are not intended to be used as shop or final fabrication drawings. The Contractor shall field verify all dimensions, elevations and existing site conditions and notify Stainless immediately of any site discrepancies or variances. Contractor shall not scale dimensions from the design drawings.

5. All work shown on this design drawing package shall be performed by qualified contractor (s) with a minimum of 5 years experience in tower and foundation construction.

6. All fabricated elements shall be in accordance with the notes, specifications and drawings. All deviations and substitutions must be approved by a registered Professional Engineer in the state where the work is being done and submitted to Stainless for approval prior to installation. The Contractor shall furnish satisfactory evidence as to the kind and quality of the materials and equipment being substituted. Contractor shall also be responsible for obtaining all necessary permits, licenses and any other requirements for the construction. Submit calculations for connection details based upon the design loads shown on the drawings.

PREPARED BY	RE	7/24/20
CHECKED BY	GH	8/13/20
ENGINEER REVIEW	AV	8/24/2020
PROJECT NUMBER	350816	
DRAWING NUMBER	D01.01	

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GENERAL NOTES
WATERBURY, CT

STATE OF CONNECTICUT · KRISTYN M. PEREZ · No. 32975 · LICENSED · PROFESSIONAL ENGINEER

08/24/2020

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-1019-A, a rigging plan shall be developed by a qualified engineer, submitted to the Owner for review 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. 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.

10. 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.

11. 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/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.
3. AISC Manual of Steel Construction.
4. RCSC Specification for Structural Joints Using ASTM A325 or A490 Bolts.
5. ACI 301 Specifications for Structural Concrete.
6. ACI 318 Building Code Requirements for Structural Concrete.
7. ACI 315 Details and Detailing of Concrete Reinforcement.
8. CRSI Manual of Standard Practice.
9. ASTM C260 Standard Specification for Air-Entraining Admixtures for Concrete.
10. ASTM C494 Standard Specification for Chemical Admixtures for Concrete.
11. ASTM A36 Standard Specification for Carbon Structural Steel.
12. ASTM A572 Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
13. ASTM A325 Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
14. ASTM A194 Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both.
15. ASTM F436 Standard Specification for Hardened Steel Washers.
16. ASTM A123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and products.
17. ASTM A153 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
18. ASTM A780 Standard Practice for Repair of Damage and Uncoated Areas of Hot-Dip Galvanized Coatings.
19. 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 are not fully detailed on these plans and 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.
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:
   a. Plates and angles – A36
   b. Bolts – A325X
   c. Extra High Strength Guy strands – ASTM A475 Class A

INSTALLING GUYS AND 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. In changing out guys, work should proceed in one guy direction at a time. A temporary guy must be installed before removing existing guy. It is the contractor's responsibility to insure the temporary guy and its connections are adequately designed for the loads imposed on it.
5. 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.

REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE

PREPARED BY	CHECKED BY	ENGINEER REVIEW	PROJECT NUMBER	DRAWING NUMBER
RE	GH	AV	350816	D01.02
7/24/20	8/13/20	8/24/2020		

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GENERAL NOTES
WATERBURY, CT

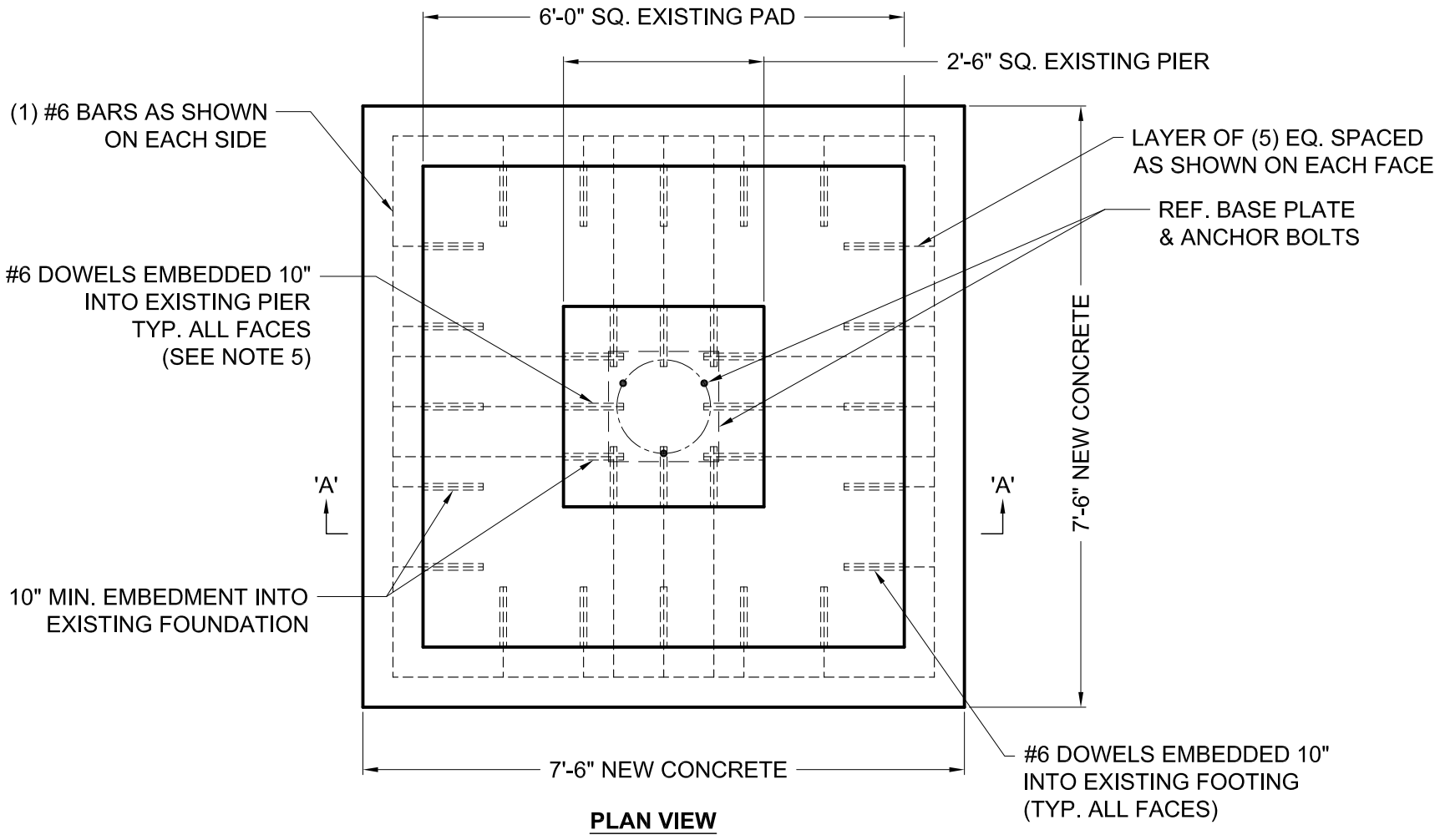
STATE OF CONNECTICUT
KRISTYN M. PERRY
No. 32975
LICENSED PROFESSIONAL ENGINEER
08/24/2020

NOTES:

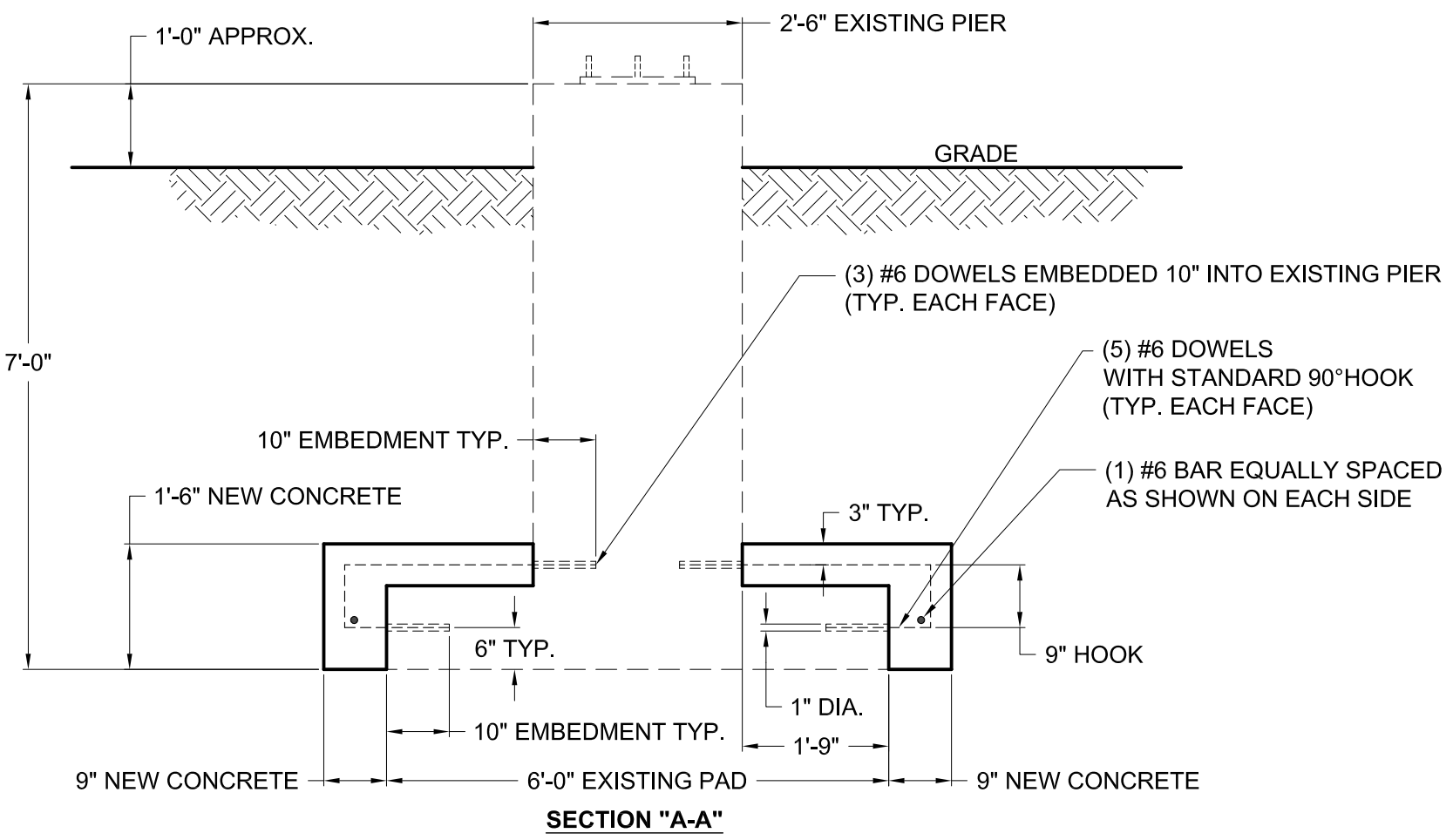
1. SEE PAGE D02.01 FOR FOUNDATION NOTES.
2. EXCAVATE AROUND PERIMETER OF EXISTING BASE PIER.
3. CLEAN AND ROUGHEN ALL INTERFACES BETWEEN OLD AND NEW CONCRETE. APPLY BONDING AGENT SIKADUR 32, HI-MOD LPL OR EQUIVALENT BONDING AGENT PRIOR TO NEW CONCRETE PLACEMENT. BONDING AGENT SHALL BE APPLIED IN ACCORDANCE WITH MANUFACTURER APPLICATION SPECIFICATIONS AND GUIDELINES.
4. SECURE DOWELED IN REBAR WITH REBAR ADHESIVE (HILTI-HIT HY 200 ADHESIVE OR EQUIVALENT).
5. FIELD LOCATE EXISTING REBAR PRIOR TO DRILLING. DO NOT DAMAGE EXISTING REBAR DURING INSTALLATION OF EPOXY DOWELS.
6. FOUNDATION HAS BEEN DESIGNED FOR A GROSS ALLOWABLE BEARING PRESSURE OF 8000 PSF.

BILL OF MATERIAL

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



PLAN VIEW



SECTION "A-A"

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08/24/2020

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BASE FOUNDATION MODIFICATION
WATERBURY, CT

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PREPARED BY	MM	7/22/20
CHECKED BY	GH	8/13/20
ENGINEER REVIEW	AV	8/24/2020
PROJECT NUMBER	350816	
DRAWING NUMBER	D02.00	

FOUNDATION NOTES

1. No rough lumber to be used where concrete surface is visible.
2. All exposed concrete corners shall be beveled neatly with approximately 1” chamfer.
3. Reinforcing shall be positioned as shown and adequately supported against displacement. Tack welding is not permitted.
4. Bend all reinforcing cold and remove all scale.
5. Minimum cover for reinforcing bars is 3”.
6. The foundation must rest on undisturbed soil.
7. Backfill near and around all foundations with a reasonable well graded fill and compact to within 95% of maximum dry unit density.
8. Elevation and flatness of base foundation top to be within plus or minus 1/4”.
9. Foundation design is based on a gross allowable bearing pressure of 8000 psf.
10. Bill of Material is approximate and for reference only. Contractor must verify all quantities.

PREPARED BY	RE 7/23/20
CHECKED BY	GH 8/13/20
ENGINEER REVIEW	AV 8/24/2020
PROJECT NUMBER	350816
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FOUNDATION NOTES
WATERBUDY, CT

STATE OF CONNECTICUT
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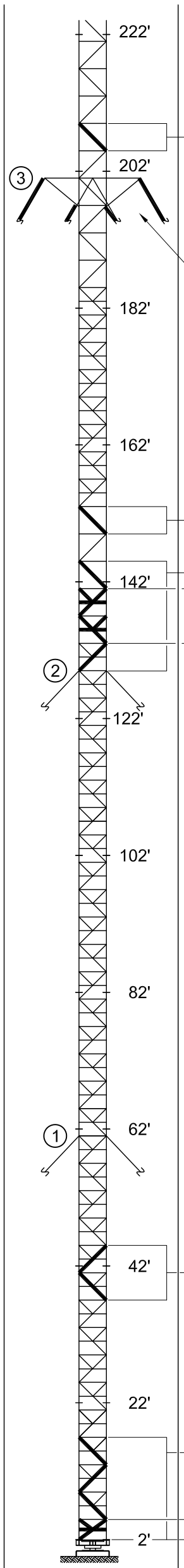
No. 32975
LICENSED
PROFESSIONAL ENGINEER
08/24/2020



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

REPLACE GUY LEVEL #3
SEE PAGE D08.00

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

REPLACE DIAGONALS BETWEEN
129.0' - 145.0' (4 BAYS)
SEE PAGE D05.01

ADD SUB BRACING
BETWEEN 133.0' - 141.0' (2 BAYS)
SEE PAGE D05.02

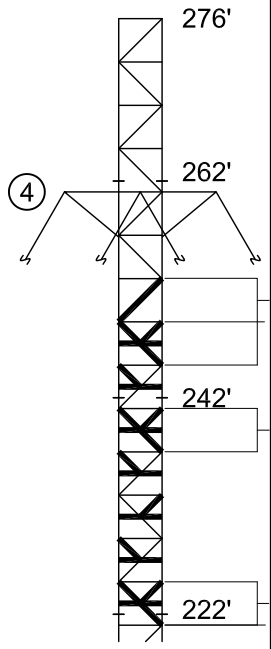
REPLACE DIAGONALS BETWEEN
37.0' - 45.0' (2 BAYS)
SEE PAGE D05.01

REPLACE DIAGONALS BETWEEN
2.0' - 17.0' (4 BAYS)
SEE PAGE D05.01

ADD SUB BRACING
BETWEEN 2.0' - 5.0' (1 BAY)
SEE PAGE D05.02

TOWER ELEVATION

TOWER MODIFICATIONS



REPLACE DIAGONALS BETWEEN
245.0' - 253.0' (2 BAYS)
SEE PAGE D05.01

REPLACE DIAGONALS BETWEEN
237.0' - 241.0' (1 BAY)
SEE PAGE D05.01

ADD SUB BRACING
BETWEEN 221.0' - 249.0' (7 BAYS)
SEE PAGE D05.02

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

TOWER ELEVATION

TOWER MODIFICATIONS

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TOWER PROFILE
WATERBURY, CT

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ENGINEER REVIEW	AV	8/24/2020
PROJECT NUMBER	350816	
DRAWING NUMBER	D04.00	

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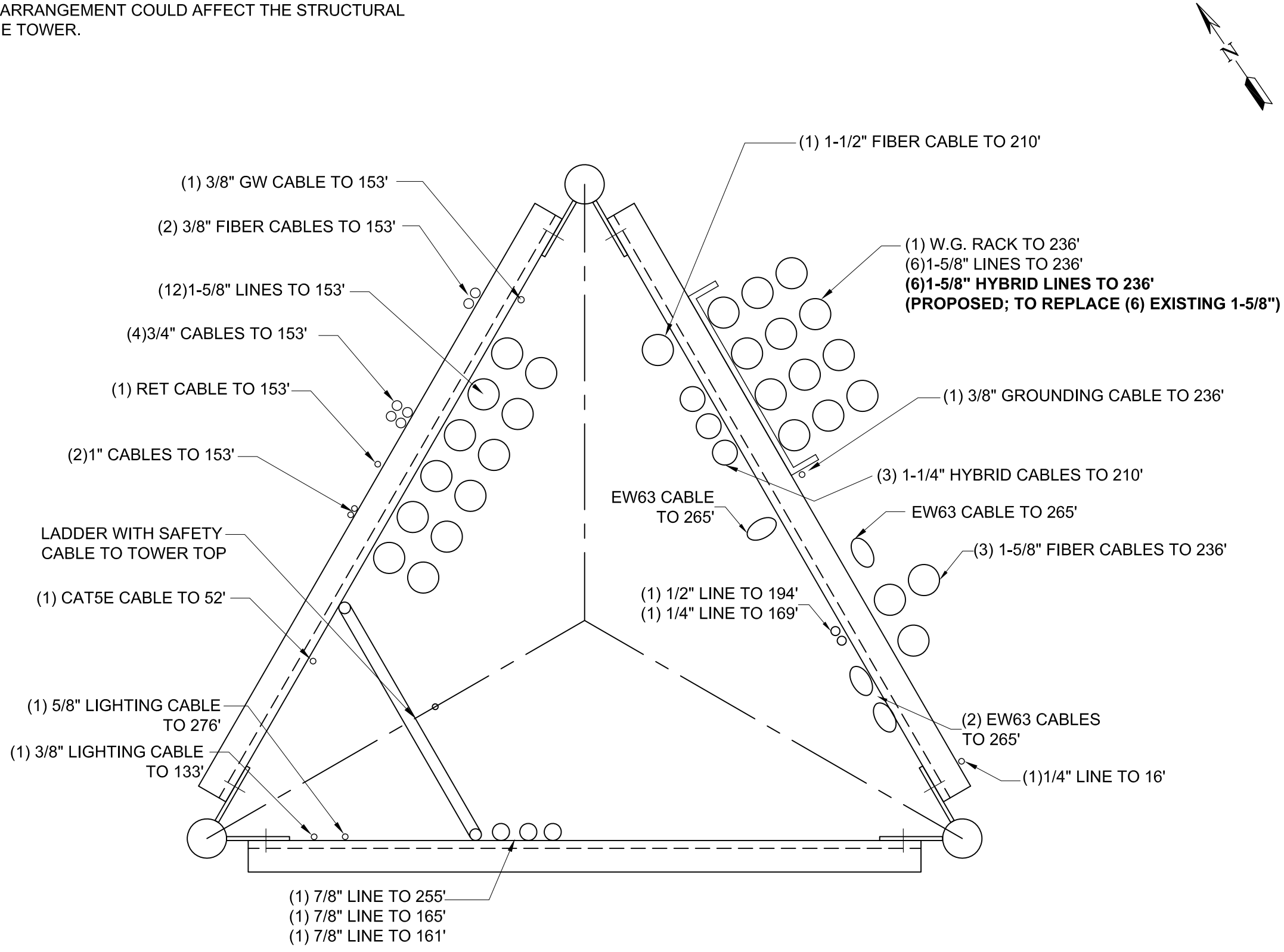
NOTE:

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.



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LINEAR APPURTENANCES
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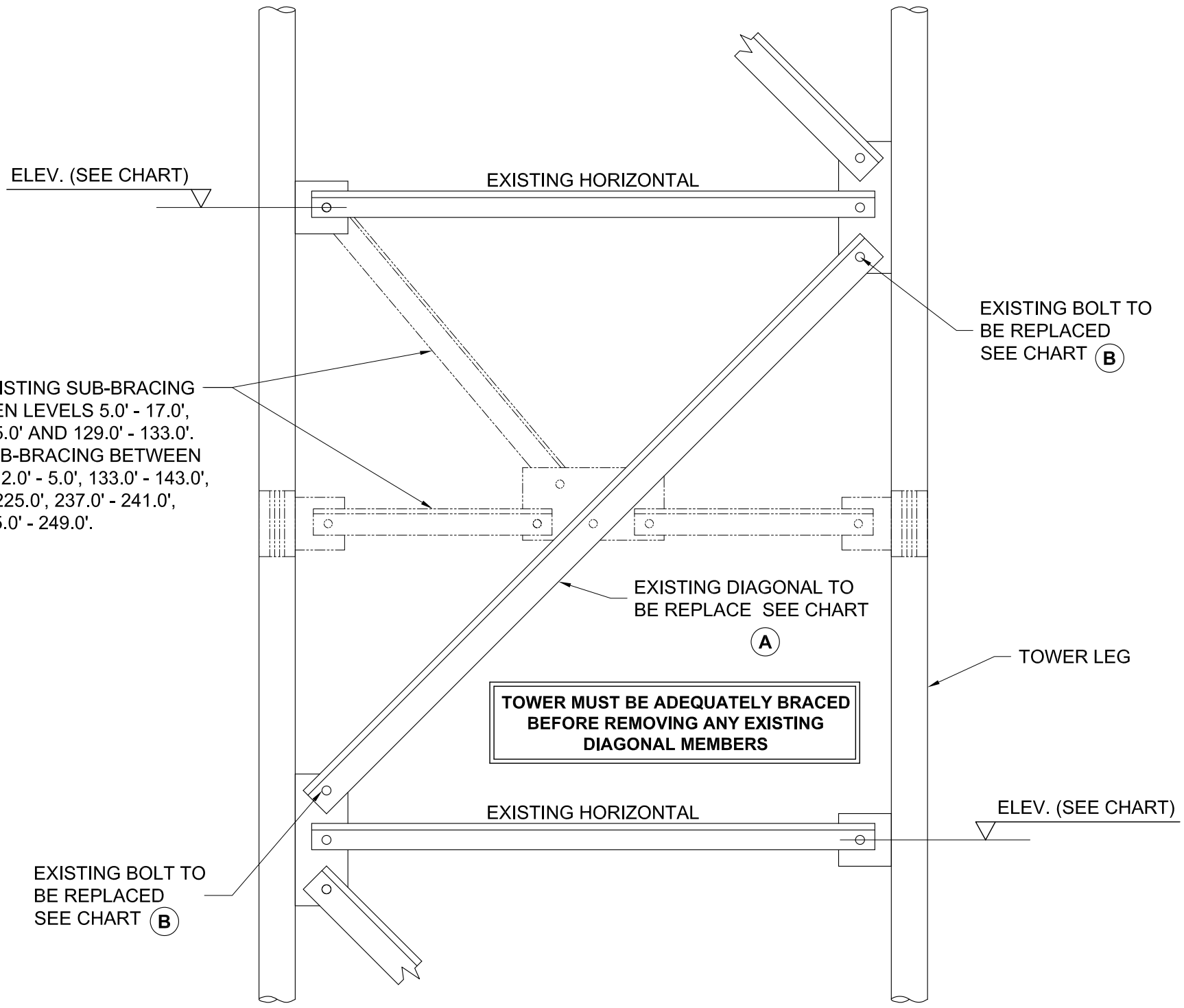

ELEVATION VIEW

ELEVATION	BAYS	DIAGONAL REPLACEMENTS A	DIAGONAL REPLACEMENTS B	MAX DESIGN LOAD IN MEMBER
2.0' - 17.0'	4	L 2 x 2 x 1/4 (A36)	5/8" DIA. BOLT (A325X)	24.5 KIPS
37.0' - 45.0'	2	L 2 x 2 x 1/4 (A36)	5/8" DIA. BOLT (A325X)	24.5 KIPS
129.0' - 145.0'	4	L 2 1/2 x 2 1/2 x 3/8 (A36)	5/8" DIA. BOLT (A325X)	47.3 KIPS
149.0' - 153.0'	1	L 2 1/2 x 2 1/2 x 3/8 (A36)	5/8" DIA. BOLT (A325X)	47.3 KIPS
205.0' - 209.0'	1	L 2 1/2 x 2 1/2 x 3/8 (A36)	5/8" DIA. BOLT (A325X)	47.3 KIPS
221.0' - 225.0'	1	L 2 x 2 x 1/4 (A36)	5/8" DIA. BOLT (A325X)	24.5 KIPS
237.0' - 241.0'	1	L 2 x 2 x 1/4 (A36)	5/8" DIA. BOLT (A325X)	24.5 KIPS
245.0' - 253.0'	2	L 2 x 2 x 1/4 (A36)	5/8" DIA. BOLT (A325X)	24.5 KIPS

NOTES:

1. ADEQUATE TEMPORARY BRACING MUST BE DESIGNED TO MAINTAIN THE STRUCTURAL INTEGRITY OF THE TOWER. THE BRACING SHALL BE INSTALLED PRIOR TO REMOVING ANY TOWER MEMBER UTILIZING THE FOLLOWING PROCEDURE:
   a. INSTALL TEMPORARY BRACING AT THE LOCATION THE DIAGONAL IS TO BE REPLACED.
   b. REMOVE AND REPLACE DIAGONAL ON FACE AND IN BAY THAT THE TEMPORARY BRACING IS INSTALLED.
   c. REMOVE AND REPLACE ONLY ONE MEMBER AT A TIME.
   d. REPEAT THIS PROCEDURE FOR EACH TOWER FACE.
2. REPEAT THIS PROCEDURE AT ALL LOCATIONS WHERE DIAGONALS ARE TO BE REPLACED.
3. FIELD VERIFY DIMENSIONS AND END CONNECTION DETAILS PRIOR TO FABRICATION OF REPLACEMENT DIAGONALS. SEE NOTE 4 ON DRAWING D01.01.

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DIAGONAL REPLACEMENT
WATERBURY, CT

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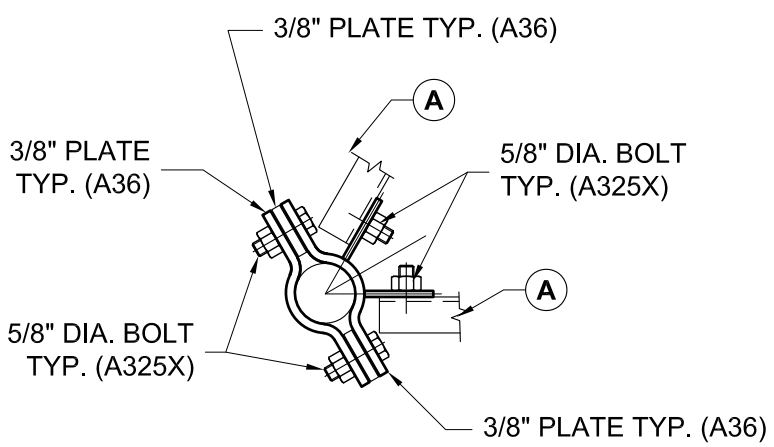
ELEVATION	BAYS	LEG DIA.	SUB BRACING A	SUB BRACING B	MAX. FACTORED COMPRESSION LEG LOADS
2.0' - 5.0'	1	2" Ø	L 2 x 2 x 1/4 (A36)	L 2 x 2 x 1/4 (A36)	128.6 KIPS
133.0' - 141.0'	2	2" Ø	L 2 x 2 x 1/4 (A36)	L 2 x 2 x 1/4 (A36)	119.5 KIPS
221.0' - 249.0'	7	1-3/4" Ø	L 2 x 2 x 1/4 (A36)	L 2 x 2 x 1/4 (A36)	86.9 KIPS

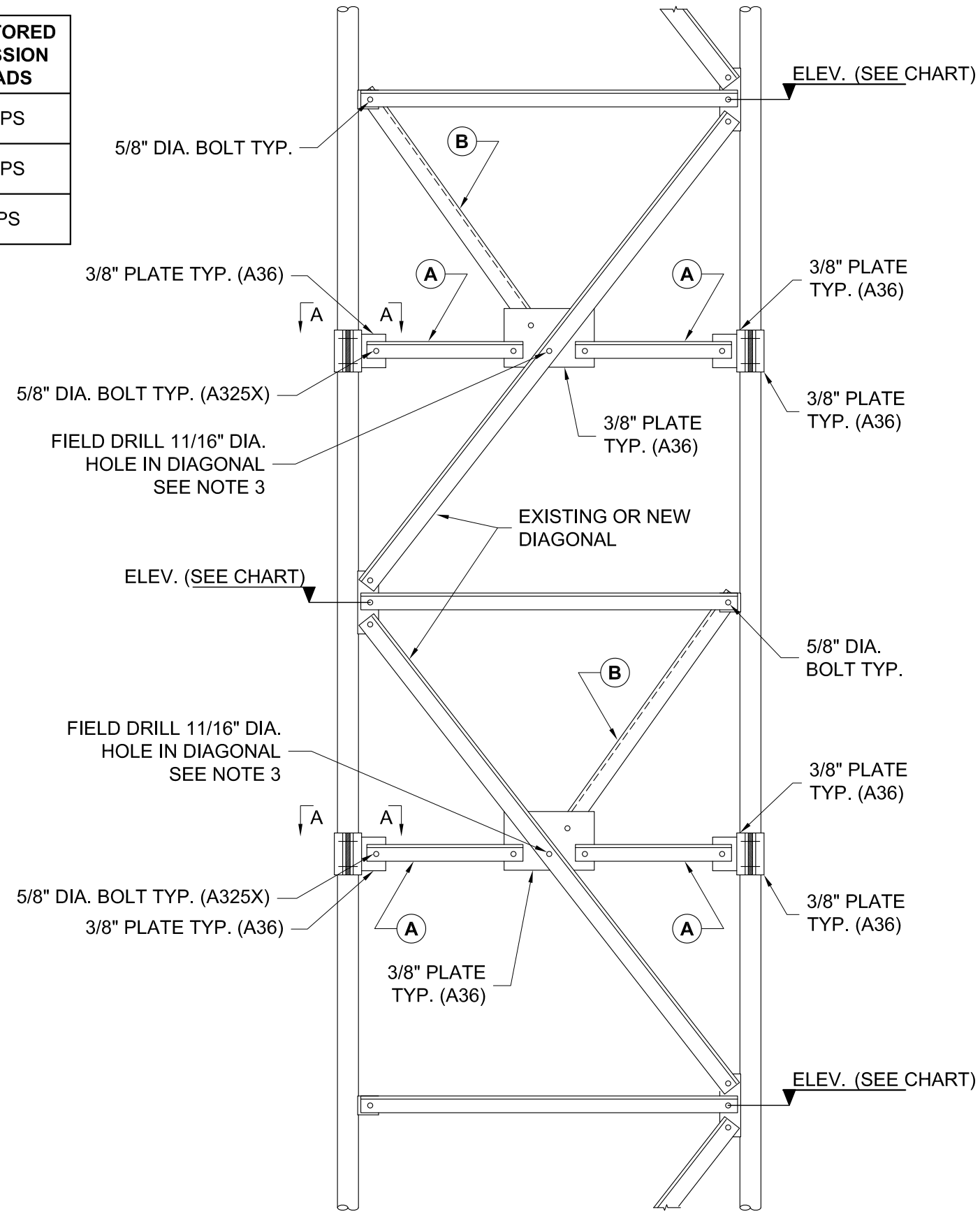
TOWER MUST BE ADEQUATELY BRACED BEFORE REMOVING ANY EXISTING TOWER BOLTS

NOTES:

1. ADEQUATE TEMPORARY BRACING MUST BE INSTALLED PRIOR TO REMOVING ANY TOWER BOLTS TO MAINTAIN THE STRUCTURAL INTEGRITY OF THE TOWER.
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

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SUB BRACING DETAILS
WATERBURY, CT

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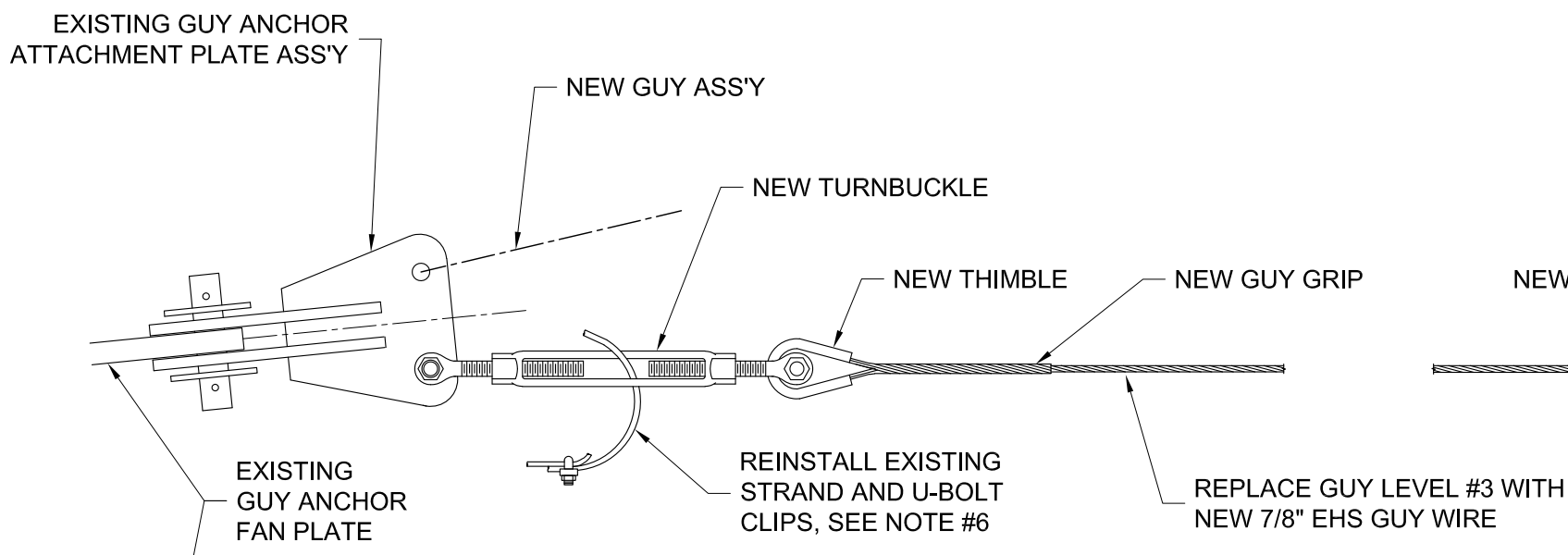
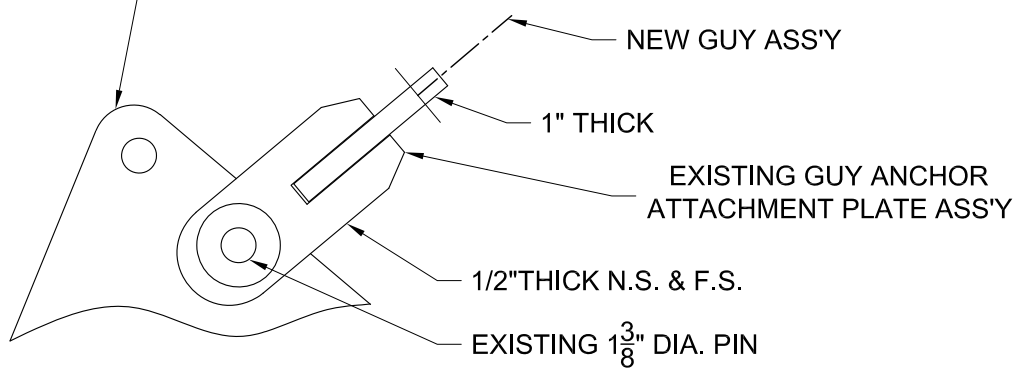
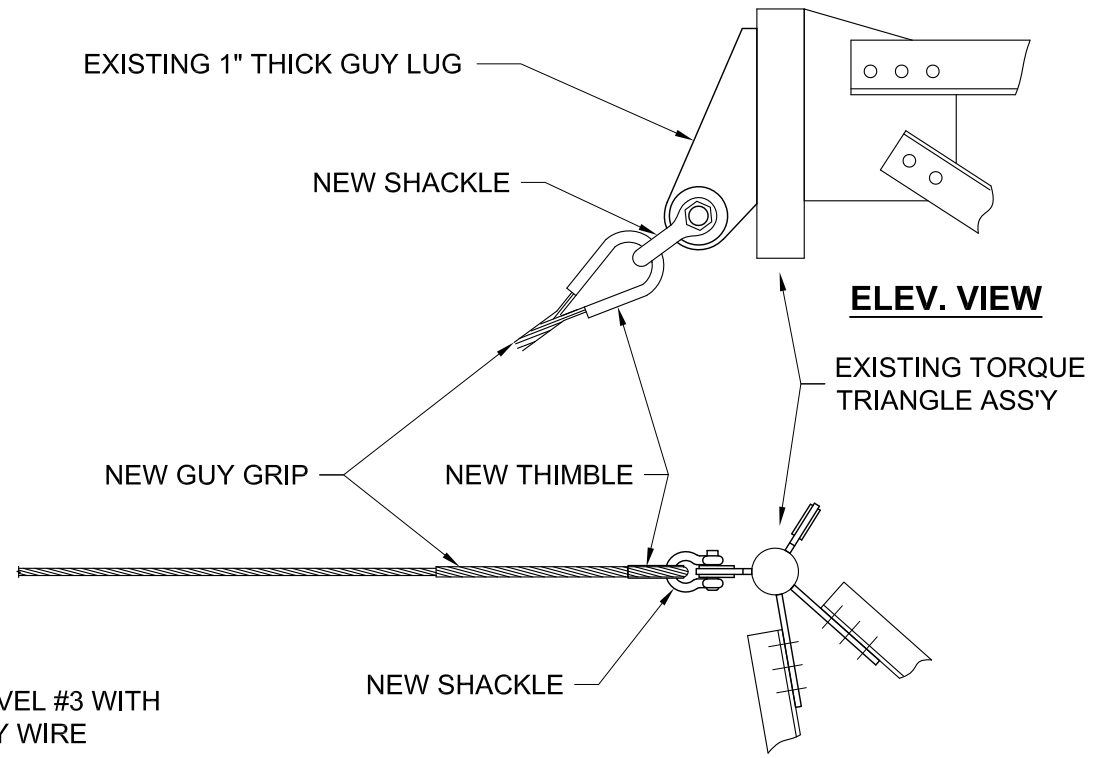


PLAN VIEW



DETAIL AT ANCHOR
ELEVATION VIEW



DETAIL AT TOWER
PLAN VIEW

NOTES:

1. NEW GUY WIRE HARDWARE SHALL DEVELOP THE MAXIMUM ALLOWABLE LOAD OF THE GUY STRAND AS DETERMINED PER ANSI/TIA 222-G.
2. (6) GUY WIRE ASSEMBLIES REQUIRED FOR GUY LEVEL #3.
3. APPROXIMATELY 20 FT. SHOULD BE ADDED TO GUY WIRE LENGTH FOR TAKE-UP IN ERECTION.
4. CUT EXCESS GUY WIRE AFTER THE GUYS HAVE BEEN TENSIONED.
5. SEE PAGE D08.01 FOR TENSIONS AND INTERCEPTS.
6. WIRE TURNBUCKLES TO PREVENT ROTATION.

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PROJECT NUMBER	350816
DRAWING NUMBER	D08.00

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GUY ASSEMBLIES FOR GUY LEVEL 3

WATERBURY, CT

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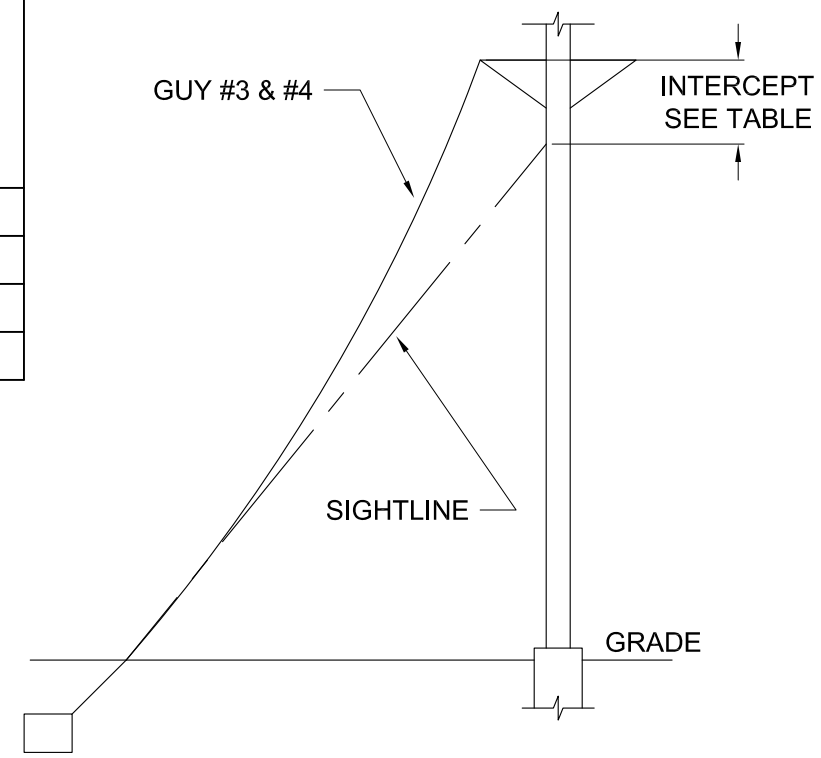
08/24/2020

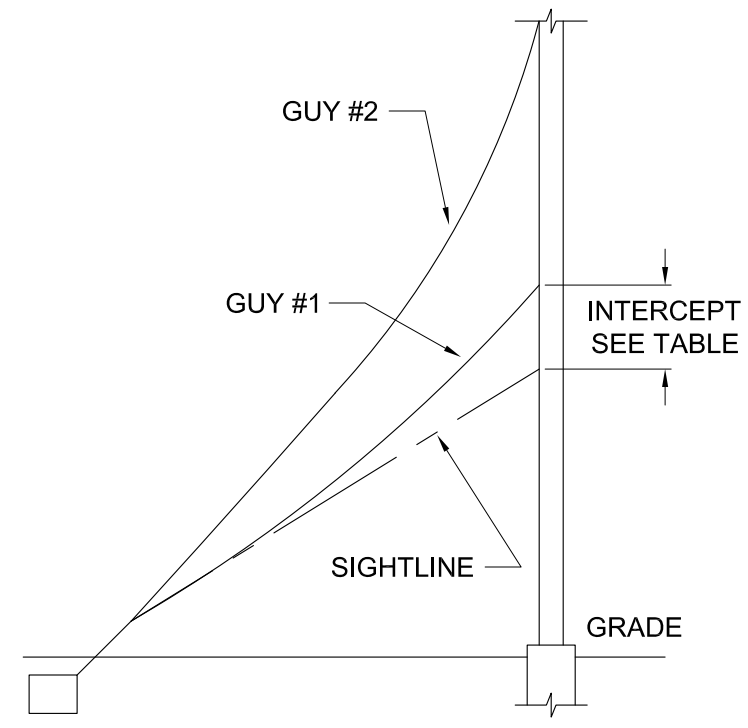
	0 DEG. F		20 DEG. F		40 DEG. F		60 DEG. F		80 DEG. F		100 DEG. F	
	ERECT. TENSION (LBS)	INTER-CEPT (FT)	ERECT. TENSION (LBS)	INTER-CEPT (FT)	ERECT. TENSION (LBS)	INTER-CEPT (FT)	ERECT. TENSION (LBS)	INTER-CEPT (FT)	ERECT. TENSION (LBS)	INTER-CEPT (FT)	ERECT. TENSION (LBS)	INTER-CEPT (FT)
1A	6274	1.9	5874	2.0	5478	2.2	5080	2.3	4688	2.5	4299	2.8
2A	7291	4.0	6852	4.3	6414	4.6	5980	4.9	5559	5.3	5143	5.7
3A	5047	11.6	4751	12.3	4467	13.1	4200	13.9	3954	14.8	3725	15.7
4A	3682	9.1	3560	9.5	3440	9.8	3320	10.2	3203	10.6	3087	11.0



ELEVATION VIEW - GUY #3 & #4

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. USE INTERCEPTS AND TENSIONS IN GUY DIRECTION "A" ONLY.
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%.
7. AFTER INSTALLING FINAL SET OF GUYS GO BACK AND RECHECK ALL LEVELS, RETENSIONING WHERE REQUIRED.



ELEVATION VIEW - GUY #1 & #2

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INTERCEPTS & ERECTION TENSIONS
WATERBURY, CT

STATE OF CONNECTICUT
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08/24/2020

Exhibit E

Mount Structural Analysis for
Northeast Site Solutions

276' Guyed Tower (276.0'AGL)

Site Name: NH305/Channel 20_ET
Site ID: CTNH305B
Site Address: 103 East Side Blvd., Naugatuck, CT 06706

FDH Infrastructure Services LLC, Project Number PR-003857 (R.1)
Stainless # 350815

Analysis Results

Mount Components	92.7%	Sufficient

Prepared By:

Mahir A. Mohamed, EI
Project Engineer I

Reviewed By:

Krystyn Perez, PE
Vice President, Structural Engineering
CT License No. 32975

FDH Infrastructure Services, LLC
6521 Meridien Drive
Raleigh, NC 27616
(919) 755-1012
Structural@fdh-is.com

06-23-2020

June 23, 2020

Prepared pursuant to ANSI/TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas and the 2018 Connecticut State Building Code (2015 IBC)

TABLE OF CONTENTS

EXECUTIVE SUMMARY

At the request of Northeast Site Solutions, FDH Infrastructure Services, LLC performed a structural analysis of the proposed 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 State 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
Site Pro 1	Mount Assembly Drawings	Drawing No. VFA12-SD-S	July 22, 2017
FDH Infrastructure Services, LLC	Tower Mapping Report	Project No. 19BNHC1500	July 26, 2019
T-Mobile	RFDS	Site ID: CTNH305B	May 5, 2020
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 S*ection 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 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 State 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 FDH Infrastructure Services, LLC 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 (12) 10' long pipe mounts should be installed evenly across the face of the mount, (4) 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, FDH Infrastructure Services, LLC 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
236.0	(3) EricssonAir32 KRD901146-1_B66A_B2A (3) Andrew DBXNH-6565A-A2M (4) RFS ATMA3P4-1A20 (2) RFS ATMA4P4-1A20 (3) Ericsson RRUS-11 B12	(12) 1-5/8" (3) 1-5/8" Fiber	T-Mobile	236.0	(3) T-Arms

Proposed Carrier Final Mount Loading:

Antenna Elevation (ft.)	Description	Feed Lines	Carrier	Mount Centerline Elevation (ft.)	Mount Type
236.0	(3) RFS APXV18-206516S-C-A20 (3) RFS APXVAARR24_43-U-NA20 (3) Ericsson AIR6449 B41 (3) Ericsson AIR32 KRD901146-1_B66A_B2A (3) AWS TMA (3) Ericsson 4449 B71 + B85 (3) Ericsson RRUS 4415 B25	(6) 1-5/8" (6) 1-5/8" Hybrid (3) 1-5/8" Fiber	T-Mobile	236.0	(3) 12.5' Sector Frames (Site Pro 1 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	A36
All Other Members	A36

* Steel grade assumed unless otherwise noted.

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

Table 3 – Load Combinations

Load Case	Factored Combination
Dead + Wind	1.2 D + 1.6 W_o
Reduced Dead + Wind	0.9 D + 1.6 W_o
Dead + Dead (Ice) + Wind (ice)	1.2 D + 1.0 D_i + 1.0 W_i
Dead + Live (maintenance)	1.2 D + 1.5 L_v
Dead + Live (Pipe maintenance) +Wind (maintenance)	1.2D + 1.5Lm + 1.0Wm

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 up to 105% are considered acceptable.* **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, FDH Infrastructure Services, LLC 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 Mounts(s)	59.1	Pass
Horizontal(s)	92.7	Pass
Standoff(s)	43.3	Pass
Bracing	41.8	Pass
Tie Back	36.4	Pass
Tower Connection	22.8	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	0.548	0.707	0.315

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

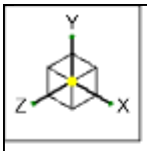
GENERAL COMMENTS

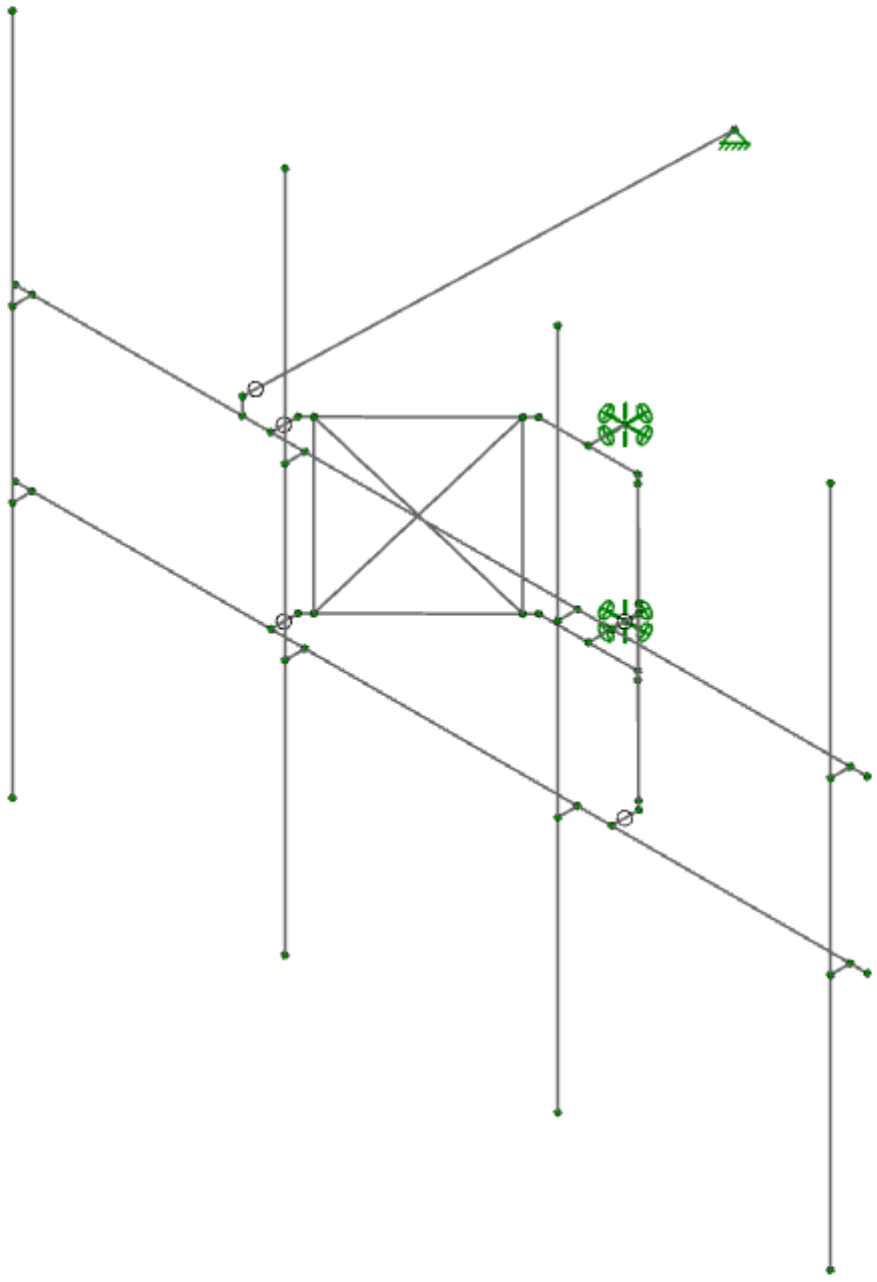
This engineering analysis is based upon the theoretical capacity of the mount. It is not a condition assessment of the mount. It is the responsibility of Northeast Site Solutions to verify that the mount modeled and analyzed is the correct structure (with accurate antenna loading information) modeled. If substantial modifications are to be made or the assumptions made in this analysis are not accurate, FDH Infrastructure Services, LLC 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 FDH Infrastructure Services, LLC.

APPENDIX





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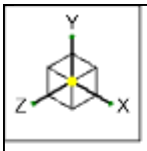
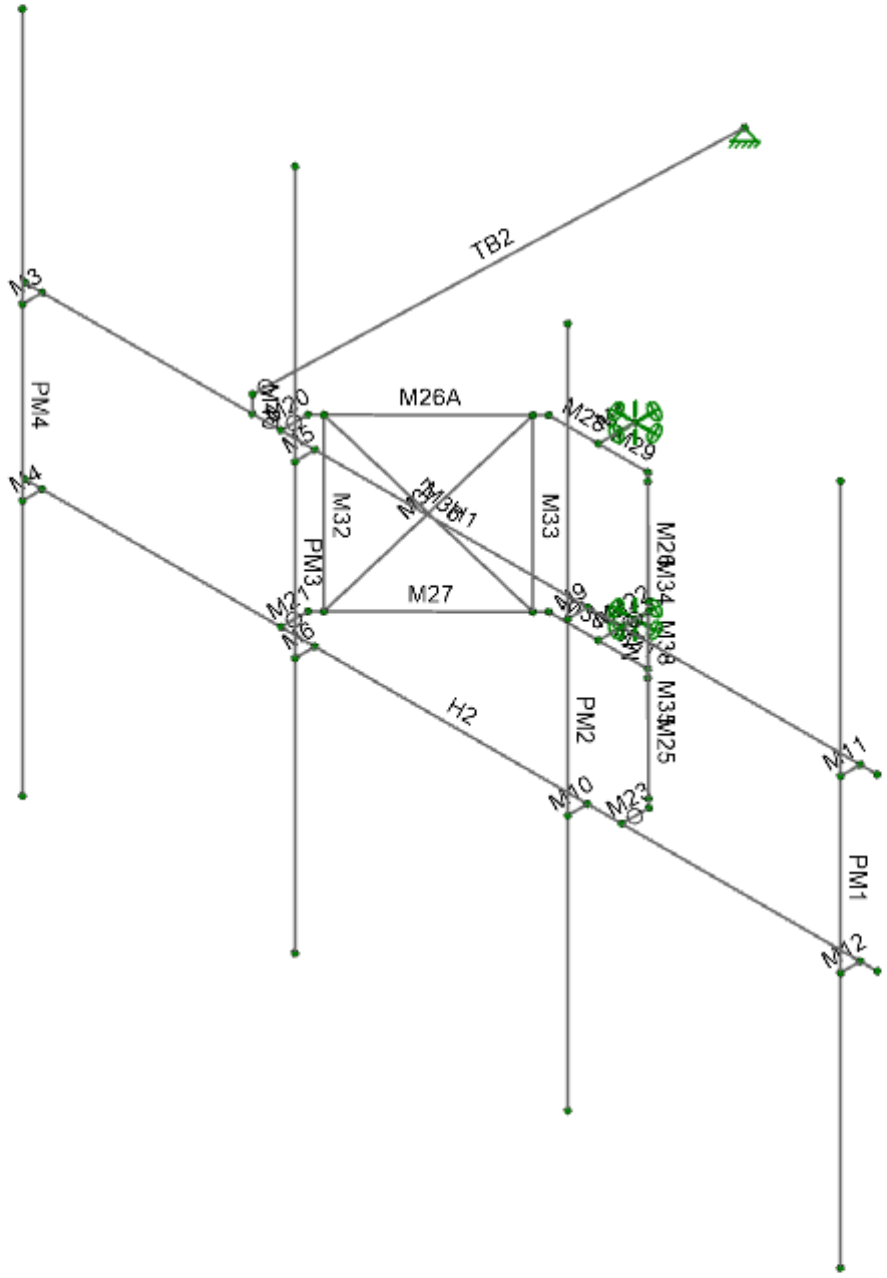
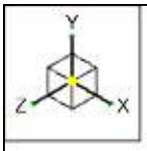
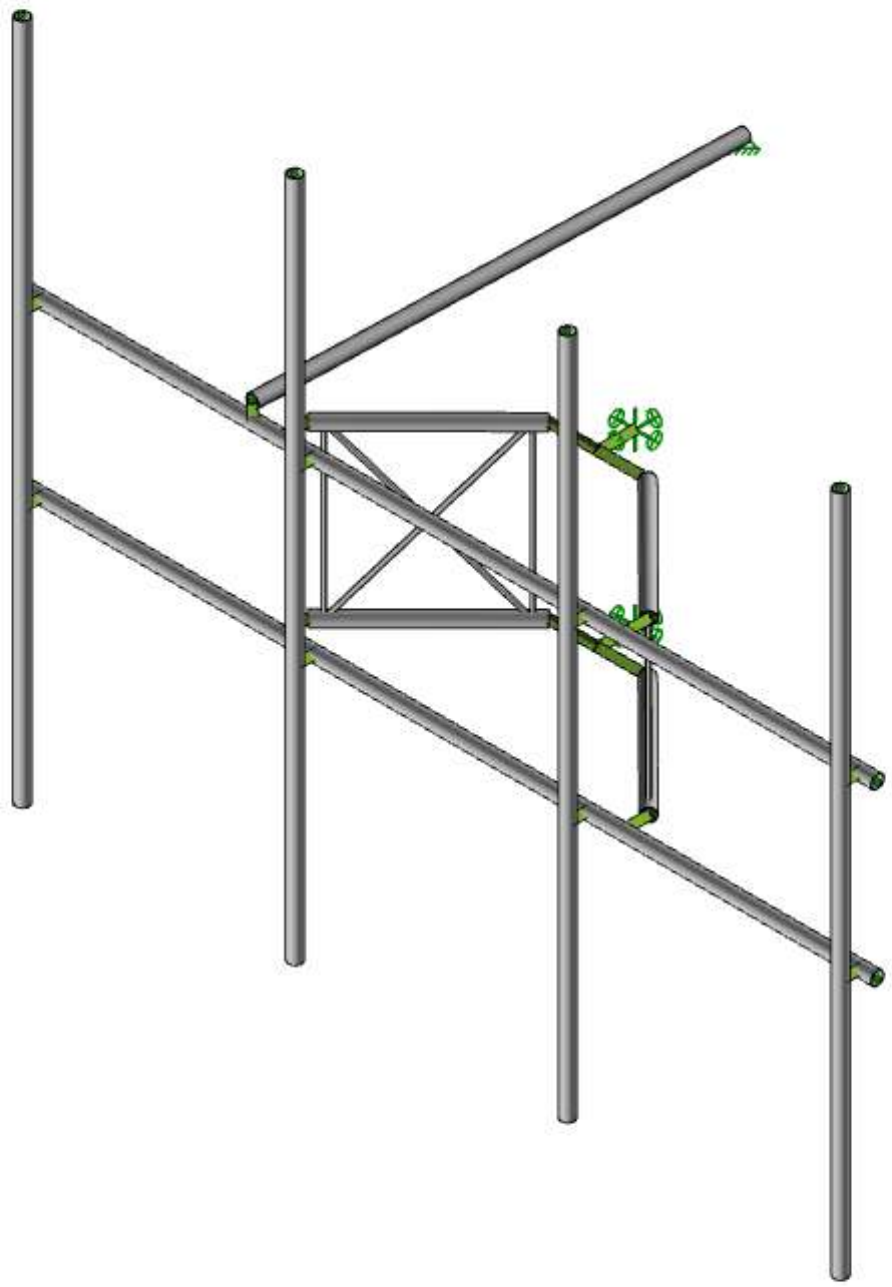
MM		Jun 23, 2020
PR-003857 R.1		Channel 20_ET (06-02-2020 04 1…





FDH Infrastructure Services, LLC	CTNH305B-NH305/Channel 20_ET	SK-2
MM		Jun 23, 2020
PR-003857 R.1		Channel 20_ET (06-02-2020 04 1…





FDH Infrastructure Services, LLC	CTNH305B-NH305/Channel 20_ET	SK-3
MM		Jun 23, 2020
PR-003857 R.1		Channel 20_ET (06-02-2020 04 1…

Mount Analysis

Project Information	
Project Number:	PR-003857 R.1
Site Name:	NH305/Channel 20_ET
Site Number:	3508

Analysis Parameters			
Tower Type:	*TowerType*	Guyed	-
Mount Status:	*MountStatus*	Proposed	-
Mount Type:	*MountType*	Sector Frame	-
Analysis Code:	*Code*	TIA-222-G	-
IBC Code:	*IbcCode*	2015 IBC	-
Max Stress Ratio:	*MaxStressRatio*	105%	-
Tower Height:	*TwrHeight*	276	ft
Effective Mount Centerline Height:	*MntHeight*	236	ft
RISA Y-Coordinate of Mount CL:	*MountY*	0	in
Basic/Nominal Wind Speed:	*WindSpeed*	97	mph
Maintenance Wind Speed:	*MaintWind*	30	mph
Design Ice Wind Speed:	*IceWind*	50	mph
Nominal Ice Thickness:	*IceThickness*	0.75	in
Risk Category:	*RiskCat*	II	-
Exposure Category:	*Exposure*	B	-
Topographic Factor K_{zt}:	*Kzt*	1.194	-
Ss:	*Ss*		-
S_1:	*S_1*		-
Site Class:	*SiteClass*		-
Ground Elevation at Base of Structure:	*zs*		ft
Roof Speed Up Factor:	*Ks*		-

Wind Parameters			
Wind Speed:			
Sheilding Factor K_a:	*Ka*	0.90	-
Gust Factor G_H:	*Gh*	1.00	-
Velocity Pressure Factor K_z:	*Kz*	1.26	-
Wind Importance Factor I:	*I*	1.00	-
Exist. Structure Reduction Factor Fw:	*Fw*	-	-
Direction Probability Factor K_d:	*Kd*	0.95	-
Wind Pressure q_z:	*qz*	34.51	psf
Maint. Wind Pressure q_{mz}:	*qmz*	3.30	psf
Ice Wind Speed:			
Design Ice Thickness t_{iz}:	*tiz*	1.94	in
Ice Height Escalation Factor K_{iz}:	*Kiz*	1.22	-
Ice Importance Factor I:	*I*	1.00	-

Load Combinations
1.2D + 1.6Wo
0.9D + 1.6Wo
1.2D + 1.0Di + 1.0Wi
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)
0.548	0.707	0.315

Tie-Back End Reactions		
Member Label	Joint Label at BC	Resultant (lbs)
TB2	N64	1877.6

Overall Max Stress Ratio	
92.7%	**Pass**

Connection Summary										
Node Label	Bolt Quantity	Bolt Diameter (in)	Bolt Type	Tu (kips)	ΦTn (kips)	Vu (kips)	ΦVn (kips)	Controlling LC	Stress Ratio	Pass/Fail
N1	4	0.5	Threaded Rod	1.41	6.18	0.70	3.84	32	22.8%	Pass

Section Sets Summary						
Section Set	Member	Member Label	Controlling	LC	Stress Ratio	Pass/Fail
Pipe Mounts	PIPE_2.0	PM1	Bending	1	59.1%	Pass
Horizontals	PIPE_2.0	H1	Bending	7	92.7%	Pass
Standoffs	PIPE_2.0	M26A	Bending	2	43.3%	Pass
Diagonal Bracing	SR_3/4	M39	Bending	35	41.8%	Pass
Vertical Bracing	SR_5/8	M35	Bending	35	14.4%	Pass
Tie Backs	PIPE_2.0	TB2	Bending	85	36.4%	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	rfs celwave	APXVAARR24_43-U-NA20	PM1	Antenna	1	0.00	236.00	95.9	24.0	8.7	128.0	649.163	20.243	24.115	8.889	12.480
2	Yes	ericsson	RADIO 4449 B71+B85	PM1	Other	1	0.00	236.00	15.0	13.2	10.4	75.0	130.631	1.650	2.689	1.300	2.248
3	Yes	ericsson	RADIO 4415 B25	PM1	Other	1	0.00	236.00	14.9	13.2	5.4	46.3	94.065	1.639	2.675	0.677	1.454
4	Yes	rfs celwave	APXV18-206516S-C-A20	PM2	Antenna	1	0.00	236.00	53.1	6.9	3.2	18.7	118.787	3.621	5.650	2.008	4.000
5	Yes	rfs	AWS	PM2	Other	1	0.00	236.00	10.1	8.7	2.8	8.4	30.543	0.732	1.467	0.245	0.779
6	Yes	ericsson	AIR 6449 B41	PM3	Antenna	1	0.00	236.00	33.1	20.5	8.3	103.0	260.541	5.655	7.516	2.416	3.830
7	Yes	ericsson	AIR 32 B2a/B66A	PM4	Antenna	1	0.00	236.00	56.6	12.9	8.7	132.2	328.173	6.510	8.807	4.712	6.886

Primary Member Properties

	Label	I Node	J Node	K Node	Rotate(deg)	Section/S...	Type	Design List	Material	Design Rule
1	M1	N2	N1			RIGID	None	None	RIGID	Typical
2	M2	N4	N3			RIGID	None	None	RIGID	Typical
3	M3	N29	N15			RIGID	None	None	RIGID	Typical
4	M4	N30	N16			RIGID	None	None	RIGID	Typical
5	M5	N27	N13			RIGID	None	None	RIGID	Typical
6	M6	N28	N14			RIGID	None	None	RIGID	Typical
7	M9	N25	N11			RIGID	None	None	RIGID	Typical
8	M10	N26	N12			RIGID	None	None	RIGID	Typical
9	M11	N31	N17			RIGID	None	None	RIGID	Typical
10	M12	N32	N18			RIGID	None	None	RIGID	Typical
11	H1	N21	N19			Horizontals	Beam	Pipe	A53 Gr.B	Typical
12	H2	N22	N20			Horizontals	Beam	Pipe	A53 Gr.B	Typical
13	PM1	N37	N42			Pipe Mounts	Column	Pipe	A53 Gr.B	Typical
14	PM2	N34	N39			Pipe Mounts	Column	Pipe	A53 Gr.B	Typical
15	PM3	N35	N40			Pipe Mounts	Column	Pipe	A53 Gr.B	Typical
16	PM4	N36	N41			Pipe Mounts	Column	Pipe	A53 Gr.B	Typical
17	M20	N9	N45			RIGID	None	None	RIGID	Typical
18	M21	N10	N46			RIGID	None	None	RIGID	Typical
19	M22	N7	N43			RIGID	None	None	RIGID	Typical
20	M23	N8	N44			RIGID	None	None	RIGID	Typical
21	M26	N43	N49			Standoffs	Beam	Pipe	A53 Gr.B	Typical
22	M25	N44	N51			Standoffs	Beam	Pipe	A53 Gr.B	Typical
23	M26A	N45	N53			Standoffs	Beam	Pipe	A53 Gr.B	Typical
24	M27	N46	N54			Standoffs	Beam	Pipe	A53 Gr.B	Typical
25	M28	N2	N53			RIGID	None	None	RIGID	Typical
26	M29	N2	N49			RIGID	None	None	RIGID	Typical
27	M30	N4	N54			RIGID	None	None	RIGID	Typical
28	M31	N4	N51			RIGID	None	None	RIGID	Typical
29	M32	N51A	N53A			Vertical Br...	Beam	BAR	A36 Gr.36	Typical
30	M33	N52	N54A			Vertical Br...	Beam	BAR	A36 Gr.36	Typical
31	M34	N56	N58			Vertical Br...	Beam	BAR	A36 Gr.36	Typical
32	M35	N55	N57			Vertical Br...	Beam	BAR	A36 Gr.36	Typical
33	M36	N51A	N54A			Diagonal...	Beam	BAR	A36 Gr.36	Typical
34	M37	N52	N53A			Diagonal...	Beam	BAR	A36 Gr.36	Typical
35	M38	N56	N57			Diagonal...	Beam	BAR	A36 Gr.36	Typical
36	M39	N55	N58			Diagonal...	Beam	BAR	A36 Gr.36	Typical
37	M40	N59	N61			RIGID	None	None	RIGID	Typical
38	TB2	N59	N64			Tie Backs	Beam	Pipe	A53 Gr.B	Typical

Advanced Member Properties

	Label	I Release	J Release	I Offset [in]	J Offset [in]	T/C Only	Physical	Deflectio...	Analysis...	Activation	Seismic...
1	M1						Yes	** NA **			None
2	M2						Yes	** NA **			None
3	M3						Yes	** NA **			None
4	M4						Yes	** NA **			None
5	M5						Yes	** NA **			None
6	M6						Yes	** NA **			None
7	M9						Yes	** NA **			None
8	M10						Yes	** NA **			None
9	M11						Yes	** NA **			None
10	M12						Yes	** NA **			None
11	H1						Yes	Default			None
12	H2						Yes	Default			None
13	PM1						Yes	** NA **			None
14	PM2						Yes	** NA **			None
15	PM3						Yes	** NA **			None
16	PM4						Yes	** NA **			None
17	M20	BenPIN					Yes	** NA **			None

Advanced Member Properties (Continued)

	Label	I Release	J Release	I Offset [in]	J Offset [in]	T/C Only	Physical	Deflectio...	Analysis...	Activation	Seismic...
18	M21	BenPIN					Yes	** NA **			None
19	M22	BenPIN					Yes	** NA **			None
20	M23	BenPIN					Yes	** NA **			None
21	M26						Yes	Default			None
22	M25						Yes	Default			None
23	M26A						Yes	Default			None
24	M27						Yes	Default			None
25	M28						Yes	** NA **			None
26	M29						Yes	** NA **			None
27	M30						Yes	** NA **			None
28	M31						Yes	** NA **			None
29	M32						Yes				None
30	M33						Yes				None
31	M34						Yes				None
32	M35						Yes				None
33	M36						Yes				None
34	M37						Yes	Default			None
35	M38						Yes				None
36	M39						Yes	Default			None
37	M40						Yes	** NA **			None
38	TB2	BenPIN					Yes	Default			None

Hot Rolled Member Properties

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp t...	Lcomp...	L-Torqu...	K y-y	K z-z	Cb	Function
1	H1	Horizon...	150	150	60				0	0		Lateral
2	H2	Horizon...	150	150	60				0	0		Lateral
3	PM1	Pipe Mo...	120	45	45				0	0		Lateral
4	PM2	Pipe Mo...	120	45	45				0	0		Lateral
5	PM3	Pipe Mo...	120	45	45				0	0		Lateral
6	PM4	Pipe Mo...	120	45	45				0	0		Lateral
7	M26	Standoffs	30						0	0		Lateral
8	M25	Standoffs	30						0	0		Lateral
9	M26A	Standoffs	30						0	0		Lateral
10	M27	Standoffs	30						0	0		Lateral
11	M32	Vertical...	30						0.65	0.65		Lateral
12	M33	Vertical...	30						0.65	0.65		Lateral
13	M34	Vertical...	30						0.65	0.65		Lateral
14	M35	Vertical...	30						0.65	0.65		Lateral
15	M36	Diagon...	39.699						0.65	0.65		Lateral
16	M37	Diagon...	39.699						0.65	0.65		Lateral
17	M38	Diagon...	39.699						0.65	0.65		Lateral
18	M39	Diagon...	39.699						0.65	0.65		Lateral
19	TB2	Tie Backs	84.006						0	0		Lateral

Material Take-Off

	Material	Size	Pieces	Length [in]	Weight [k]
1	General				
2	RIGID		19	97.9	0
3	Total General		19	97.9	0
4					
5	Hot Rolled Steel				
6	A36 Gr.36	SR_5/8	4	120	0.01
7	A36 Gr.36	SR_3/4	4	158.8	0.02
8	A53 Gr.B	PIPE_2.0	11	984	0.285
9	Total HR Steel		19	1262.8	0.315

Basic Load Cases

	BLC Desc...	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed	Area(Me...	Surface(P...
1	Wind 0 D...	None					11	23		
2	Wind 30...	None					22	38		
3	Wind 60...	None					22	38		
4	Wind 90...	None					11	19		
5	Wind 120...	None					22	38		
6	Wind 150...	None					22	38		
7	Wind 180...	None					11	23		
8	Wind 210...	None					22	38		
9	Wind 240...	None					22	38		
10	Wind 270...	None					11	19		
11	Wind 300...	None					22	38		
12	Wind 330...	None					22	38		
13	Wind 0 D...	None					11	23		
14	Wind 30...	None					22	38		
15	Wind 60...	None					22	38		
16	Wind 90...	None					11	19		
17	Wind 120...	None					22	38		
18	Wind 150...	None					22	38		
19	Wind 180...	None					11	23		
20	Wind 210...	None					22	38		
21	Wind 240...	None					22	38		
22	Wind 270...	None					11	19		
23	Wind 300...	None					22	38		
24	Wind 330...	None					22	38		
25	Wind 0 D...	None					11	23		
26	Wind 30...	None					22	38		
27	Wind 60...	None					22	38		
28	Wind 90...	None					11	19		
29	Wind 120...	None					22	38		
30	Wind 150...	None					22	38		
31	Wind 180...	None					11	23		
32	Wind 210...	None					22	38		
33	Wind 240...	None					22	38		
34	Wind 270...	None					11	19		
35	Wind 300...	None					22	38		
36	Wind 330...	None					22	38		
37	Dead	None		-1			11			
38	Dead - Ice	None					11	19		
39	Maint. Pip...	None					1			
40	Maint. Pip...	None					1			
41	Maint. Pip...	None					1			
42	Maint. Pip...	None					1			
43	Maint. Ho...	None					1			
44	Maint. Ho...	None					1			

Stresses

No Data to Print...

Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	N1	Reaction	Reaction	Reaction	Reaction		Reaction
2	N3	Reaction	Reaction	Reaction	Reaction		Reaction
3	N64	Reaction	Reaction	Reaction			

Nodes

	Label	X [in]	Y [in]	Z [in]	Temp [deg F]	Detach From Dia...
1	N1	0	15	36		
2	N2	0	15	42.499974		
3	N3	0	-15	36		
4	N4	0	-15	42.499974		
5	N7	30	15	68.389		
6	N8	30	-15	68.389		
7	N9	-30	15	68.389		
8	N10	-30	-15	68.389		
9	N11	24	15	68.389		
10	N12	24	-15	68.389		
11	N13	-24	15	68.389		
12	N14	-24	-15	68.389		
13	N15	-72	15	68.389		
14	N16	-72	-15	68.389		
15	N17	72	15	68.389		
16	N18	72	-15	68.389		
17	N19	75	15	68.389		
18	N20	75	-15	68.389		
19	N21	-75	15	68.389		
20	N22	-75	-15	68.389		
21	N25	24	15	71.889		
22	N26	24	-15	71.889		
23	N27	-24	15	71.889		
24	N28	-24	-15	71.889		
25	N29	-72	15	71.889		
26	N30	-72	-15	71.889		
27	N31	72	15	71.889		
28	N32	72	-15	71.889		
29	N34	24	60	71.889		
30	N35	-24	60	71.889		
31	N36	-72	60	71.889		
32	N37	72	60	71.889		
33	N39	24	-60	71.889		
34	N40	-24	-60	71.889		
35	N41	-72	-60	71.889		
36	N42	72	-60	71.889		
37	N43	30	15	63.639		
38	N44	30	-15	63.639		
39	N45	-30	15	63.639		
40	N46	-30	-15	63.639		
41	N49	8.712878	15	42.499974		
42	N51	8.712878	-15	42.499974		
43	N53	-8.712878	15	42.499974		
44	N54	-8.712878	-15	42.499974		
45	N51A	-28.580859	15	62.229732		
46	N52	-10.132019	15	43.909242		
47	N53A	-28.580859	-15	62.229732		
48	N54A	-10.132019	-15	43.909242		
49	N55	28.580859	15	62.229732		
50	N56	10.132019	15	43.909242		
51	N57	28.580859	-15	62.229732		
52	N58	10.132019	-15	43.909242		
53	N59	-35	18	68.389		
54	N61	-35	15	68.389		
55	N64	-32.33502	18	-15.57467		

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. C...	Density [k...	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr....	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr....	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	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	Pipe Mounts	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
2	Horizontals	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
3	Standoffs	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
4	Diagonal...	SR_3/4	Beam	BAR	A36 Gr.36	Typical	0.442	0.016	0.016	0.031
5	Vertical Br...	SR_5/8	Beam	BAR	A36 Gr.36	Typical	0.307	0.007	0.007	0.015
6	Tie Backs	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25

Load Combinations

	De...	So...	PD...	SR...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
1	1.2...	Yes	Y		37	1.2	1	1.6																
2	1.2...	Yes	Y		37	1.2	2	1.6																
3	1.2...	Yes	Y		37	1.2	3	1.6																
4	1.2...	Yes	Y		37	1.2	4	1.6																
5	1.2...	Yes	Y		37	1.2	5	1.6																
6	1.2...	Yes	Y		37	1.2	6	1.6																
7	1.2...	Yes	Y		37	1.2	7	1.6																
8	1.2...	Yes	Y		37	1.2	8	1.6																
9	1.2...	Yes	Y		37	1.2	9	1.6																
10	1.2...	Yes	Y		37	1.2	10	1.6																
11	1.2...	Yes	Y		37	1.2	11	1.6																
12	1.2...	Yes	Y		37	1.2	12	1.6																
13	0.9...	Yes	Y		37	0.9	1	1.6																
14	0.9...	Yes	Y		37	0.9	2	1.6																
15	0.9...	Yes	Y		37	0.9	3	1.6																
16	0.9...	Yes	Y		37	0.9	4	1.6																
17	0.9...	Yes	Y		37	0.9	5	1.6																
18	0.9...	Yes	Y		37	0.9	6	1.6																
19	0.9...	Yes	Y		37	0.9	7	1.6																
20	0.9...	Yes	Y		37	0.9	8	1.6																
21	0.9...	Yes	Y		37	0.9	9	1.6																
22	0.9...	Yes	Y		37	0.9	10	1.6																
23	0.9...	Yes	Y		37	0.9	11	1.6																
24	0.9...	Yes	Y		37	0.9	12	1.6																
25	1.2...	Yes	Y		37	1.2	38	1	13	1														
26	1.2...	Yes	Y		37	1.2	38	1	14	1														
27	1.2...	Yes	Y		37	1.2	38	1	15	1														
28	1.2...	Yes	Y		37	1.2	38	1	16	1														
29	1.2...	Yes	Y		37	1.2	38	1	17	1														
30	1.2...	Yes	Y		37	1.2	38	1	18	1														
31	1.2...	Yes	Y		37	1.2	38	1	19	1														
32	1.2...	Yes	Y		37	1.2	38	1	20	1														
33	1.2...	Yes	Y		37	1.2	38	1	21	1														
34	1.2...	Yes	Y		37	1.2	38	1	22	1														
35	1.2...	Yes	Y		37	1.2	38	1	23	1														
36	1.2...	Yes	Y		37	1.2	38	1	24	1														
37	1.2...	Yes	Y		37	1.2	39	1.5	25	1														
38	1.2...	Yes	Y		37	1.2	39	1.5	26	1														

Load Combinations (Continued)

	De...	So...	PD...	SR...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
39	1.2...	Yes	Y		37	1.2	39	1.5	27	1														
40	1.2...	Yes	Y		37	1.2	39	1.5	28	1														
41	1.2...	Yes	Y		37	1.2	39	1.5	29	1														
42	1.2...	Yes	Y		37	1.2	39	1.5	30	1														
43	1.2...	Yes	Y		37	1.2	39	1.5	31	1														
44	1.2...	Yes	Y		37	1.2	39	1.5	32	1														
45	1.2...	Yes	Y		37	1.2	39	1.5	33	1														
46	1.2...	Yes	Y		37	1.2	39	1.5	34	1														
47	1.2...	Yes	Y		37	1.2	39	1.5	35	1														
48	1.2...	Yes	Y		37	1.2	39	1.5	36	1														
49	1.2...	Yes	Y		37	1.2	40	1.5	25	1														
50	1.2...	Yes	Y		37	1.2	40	1.5	26	1														
51	1.2...	Yes	Y		37	1.2	40	1.5	27	1														
52	1.2...	Yes	Y		37	1.2	40	1.5	28	1														
53	1.2...	Yes	Y		37	1.2	40	1.5	29	1														
54	1.2...	Yes	Y		37	1.2	40	1.5	30	1														
55	1.2...	Yes	Y		37	1.2	40	1.5	31	1														
56	1.2...	Yes	Y		37	1.2	40	1.5	32	1														
57	1.2...	Yes	Y		37	1.2	40	1.5	33	1														
58	1.2...	Yes	Y		37	1.2	40	1.5	34	1														
59	1.2...	Yes	Y		37	1.2	40	1.5	35	1														
60	1.2...	Yes	Y		37	1.2	40	1.5	36	1														
61	1.2...	Yes	Y		37	1.2	41	1.5	25	1														
62	1.2...	Yes	Y		37	1.2	41	1.5	26	1														
63	1.2...	Yes	Y		37	1.2	41	1.5	27	1														
64	1.2...	Yes	Y		37	1.2	41	1.5	28	1														
65	1.2...	Yes	Y		37	1.2	41	1.5	29	1														
66	1.2...	Yes	Y		37	1.2	41	1.5	30	1														
67	1.2...	Yes	Y		37	1.2	41	1.5	31	1														
68	1.2...	Yes	Y		37	1.2	41	1.5	32	1														
69	1.2...	Yes	Y		37	1.2	41	1.5	33	1														
70	1.2...	Yes	Y		37	1.2	41	1.5	34	1														
71	1.2...	Yes	Y		37	1.2	41	1.5	35	1														
72	1.2...	Yes	Y		37	1.2	41	1.5	36	1														
73	1.2...	Yes	Y		37	1.2	42	1.5	25	1														
74	1.2...	Yes	Y		37	1.2	42	1.5	26	1														
75	1.2...	Yes	Y		37	1.2	42	1.5	27	1														
76	1.2...	Yes	Y		37	1.2	42	1.5	28	1														
77	1.2...	Yes	Y		37	1.2	42	1.5	29	1														
78	1.2...	Yes	Y		37	1.2	42	1.5	30	1														
79	1.2...	Yes	Y		37	1.2	42	1.5	31	1														
80	1.2...	Yes	Y		37	1.2	42	1.5	32	1														
81	1.2...	Yes	Y		37	1.2	42	1.5	33	1														
82	1.2...	Yes	Y		37	1.2	42	1.5	34	1														
83	1.2...	Yes	Y		37	1.2	42	1.5	35	1														
84	1.2...	Yes	Y		37	1.2	42	1.5	36	1														
85	1.2...	Yes	Y		37	1.2	43	1.5																
86	1.2...	Yes	Y		37	1.2	44	1.5																

Exhibit F

EBI Consulting

environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CTNH305B

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

July 10, 2020

EBI Project Number: 6220002992

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**8.16%**

July 10, 2020

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is 1000 $\mu W/cm^2$. Because

each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 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 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 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

8) 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.

9) 2 LTE channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

10) 2 NR channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

11) 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.

12) 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.

13) 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 RFS APXV18-206516S-C-A20 for the 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector A, the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the RFS APXV18-206516S-C-A20 for the 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector B, the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the RFS APXV18-206516S-C-A20 for the 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz

channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector C.

14) The antenna mounting height centerline of the proposed antennas is 236 feet above ground level (AGL).

15) 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.

16) 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 %:	**1.05%**	Antenna B1 MPE %:	**1.05%**	Antenna C1 MPE %:	**1.05%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXV18-206516S-C-A20	Make / Model:	RFS APXV18-206516S-C-A20	Make / Model:	RFS APXV18-206516S-C-A20
Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz
Gain:	16.3 dBd	Gain:	16.3 dBd	Gain:	16.3 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):	60 Watts	Total TX Power (W):	60 Watts	Total TX Power (W):	60 Watts
ERP (W):	2,559.48	ERP (W):	2,559.48	ERP (W):	2,559.48
Antenna A2 MPE %:	**0.17%**	Antenna B2 MPE %:	**0.17%**	Antenna C2 MPE %:	**0.17%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd
Height (AGL):	236 feet	Height (AGL):	236 feet	Height (AGL):	236 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts
ERP (W):	25,651.93	ERP (W):	25,651.93	ERP (W):	25,651.93
Antenna A3 MPE %:	**1.66%**	Antenna B3 MPE %:	**1.66%**	Antenna C3 MPE %:	**1.66%**
Antenna #:	**4**	Antenna #:	**4**	Antenna #:	**4**
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:	8	Channel Count:	8	Channel Count:	8

Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts
ERP (W):	12,841.53	ERP (W):	12,841.53	ERP (W):	12,841.53
Antenna A4 MPE %:	**0.83%**	Antenna B4 MPE %:	**0.83%**	Antenna C4 MPE %:	**0.83%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	3.70%
Prospect Police	0.03%
AT&T	2.81%
Sprint	1.2%
Verizon	0.23%
Metro PCS	0.16%
WTXX	0.03%
Site Total MPE % :	8.16%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	3.70%
T-Mobile Sector B Total:	3.70%
T-Mobile Sector C Total:	3.70%
Site Total MPE % :	8.16%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 600 MHz LTE	2	591.73	236.0	0.76	600 MHz LTE	400	0.19%
T-Mobile 600 MHz NR	1	1577.94	236.0	1.02	600 MHz NR	400	0.25%
T-Mobile 700 MHz LTE	2	648.82	236.0	0.84	700 MHz LTE	467	0.18%
T-Mobile 1900 MHz UMTS	2	1101.85	236.0	1.42	1900 MHz UMTS	1000	0.14%
T-Mobile 1900 MHz LTE	2	2203.69	236.0	2.84	1900 MHz LTE	1000	0.28%
T-Mobile 2100 MHz UMTS	2	1279.74	236.0	1.65	2100 MHz UMTS	1000	0.17%
T-Mobile 2500 MHz LTE	2	6412.98	236.0	8.28	2500 MHz LTE	1000	0.83%
T-Mobile 2500 MHz NR	2	6412.98	236.0	8.28	2500 MHz NR	1000	0.83%
T-Mobile 1900 MHz GSM	4	1028.30	236.0	2.66	1900 MHz GSM	1000	0.27%
T-Mobile 1900 MHz LTE	2	2056.61	236.0	2.66	1900 MHz LTE	1000	0.27%
T-Mobile 2100 MHz LTE	2	2307.55	236.0	2.98	2100 MHz LTE	1000	0.30%
						Total:	**3.70%**

• 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.

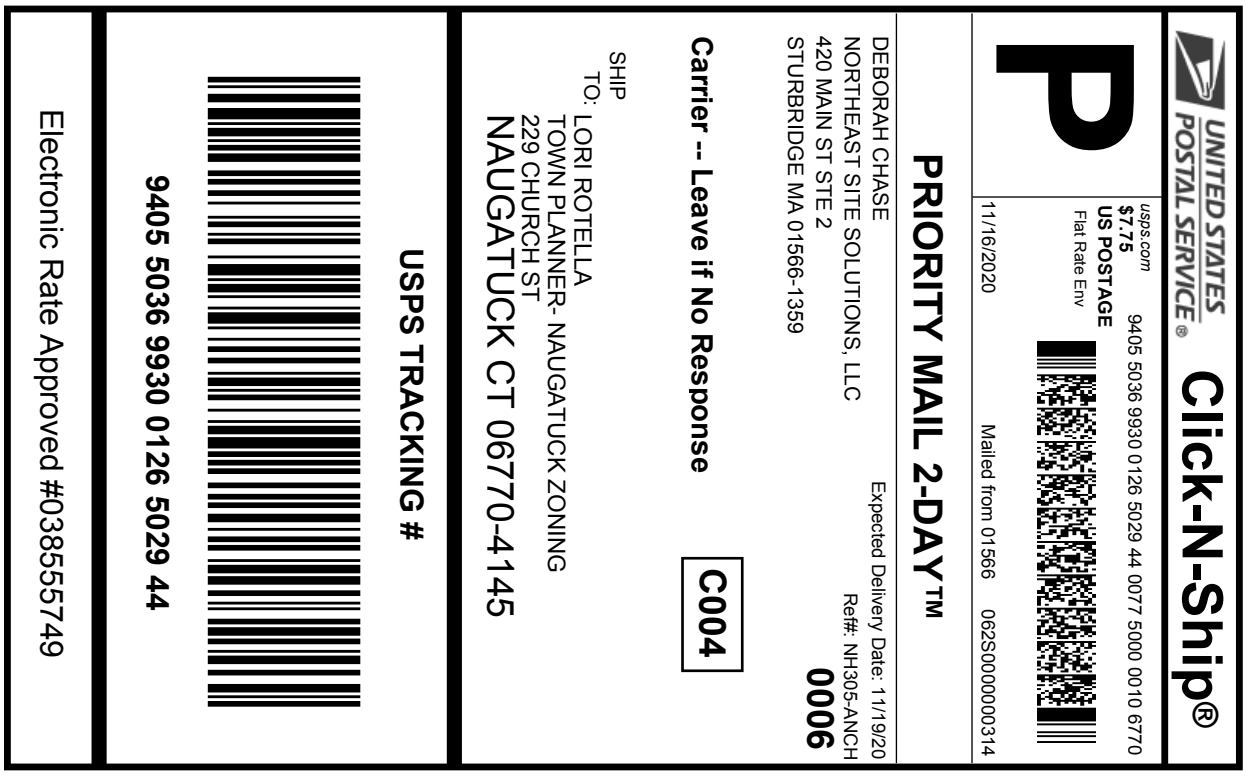
The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector A:	3.70%
Sector B:	3.70%
Sector C:	3.70%
T-Mobile Maximum MPE % (Sector A):	3.70%
Site Total:	8.16%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **8.16%** 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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Priority Mail® Postage:	**$7.75**
Total:	**$7.75**

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

To: LORI ROTELLA
TOWN PLANNER- NAUGATUCK ZONING DEPARTMENT
229 CHURCH ST
NAUGATUCK CT 06770-4145

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

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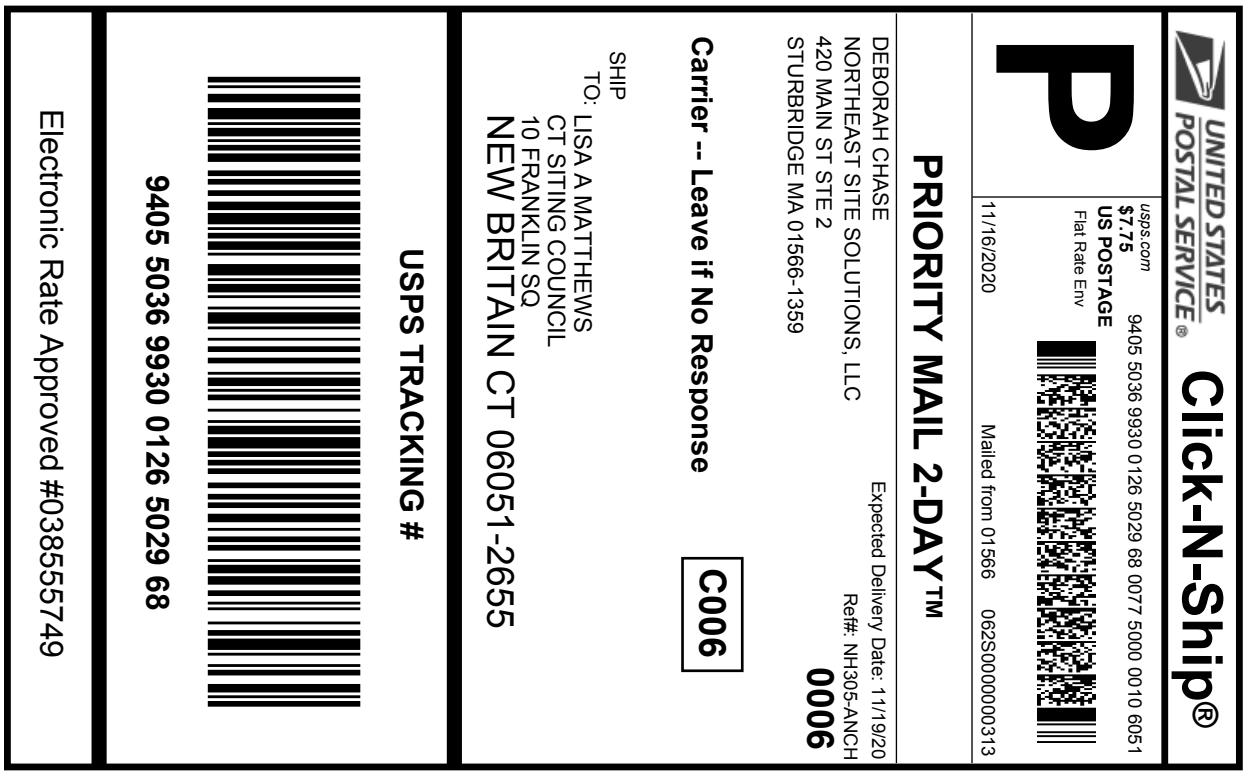

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Trans. #:	513839014
Print Date:	11/13/2020
Ship Date:	11/16/2020
Expected Delivery Date:	11/19/2020

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

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

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

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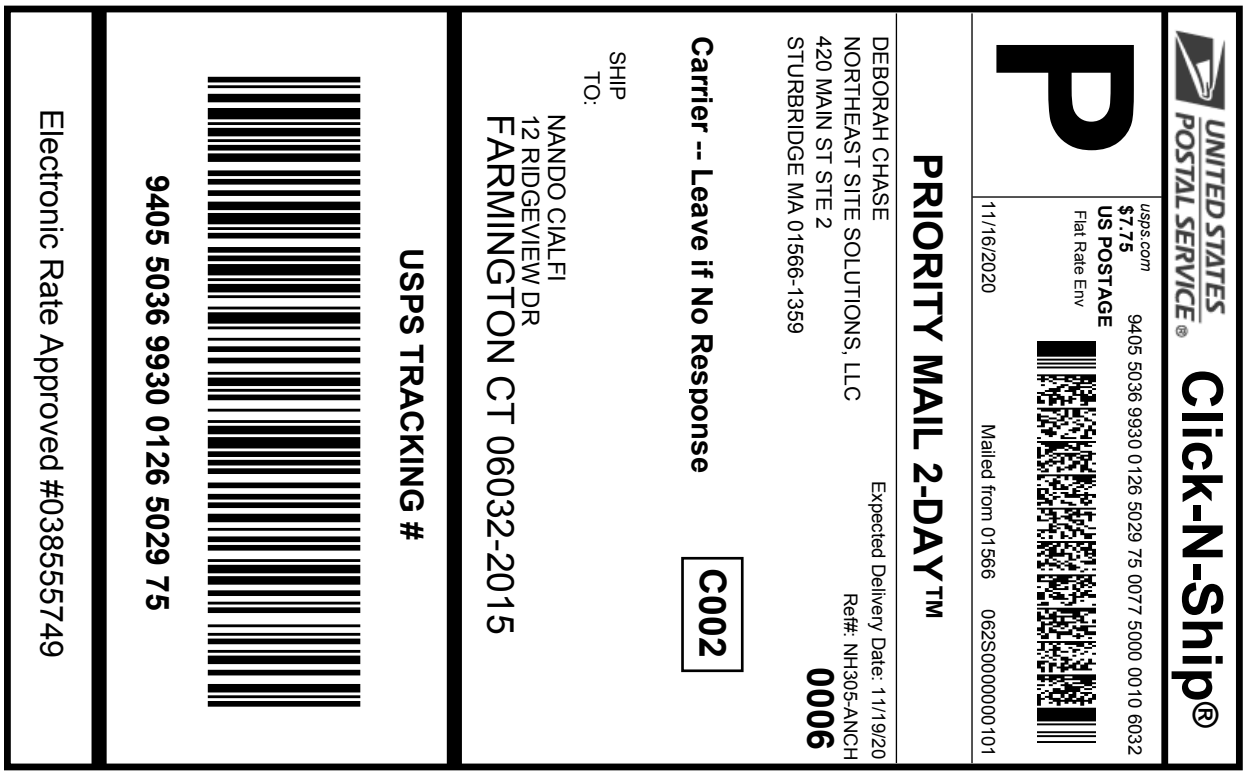

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USPS TRACKING # :
9405 5036 9930 0126 5029 75

Trans. #:	513839014
Print Date:	11/13/2020
Ship Date:	11/16/2020
Expected Delivery Date:	11/19/2020

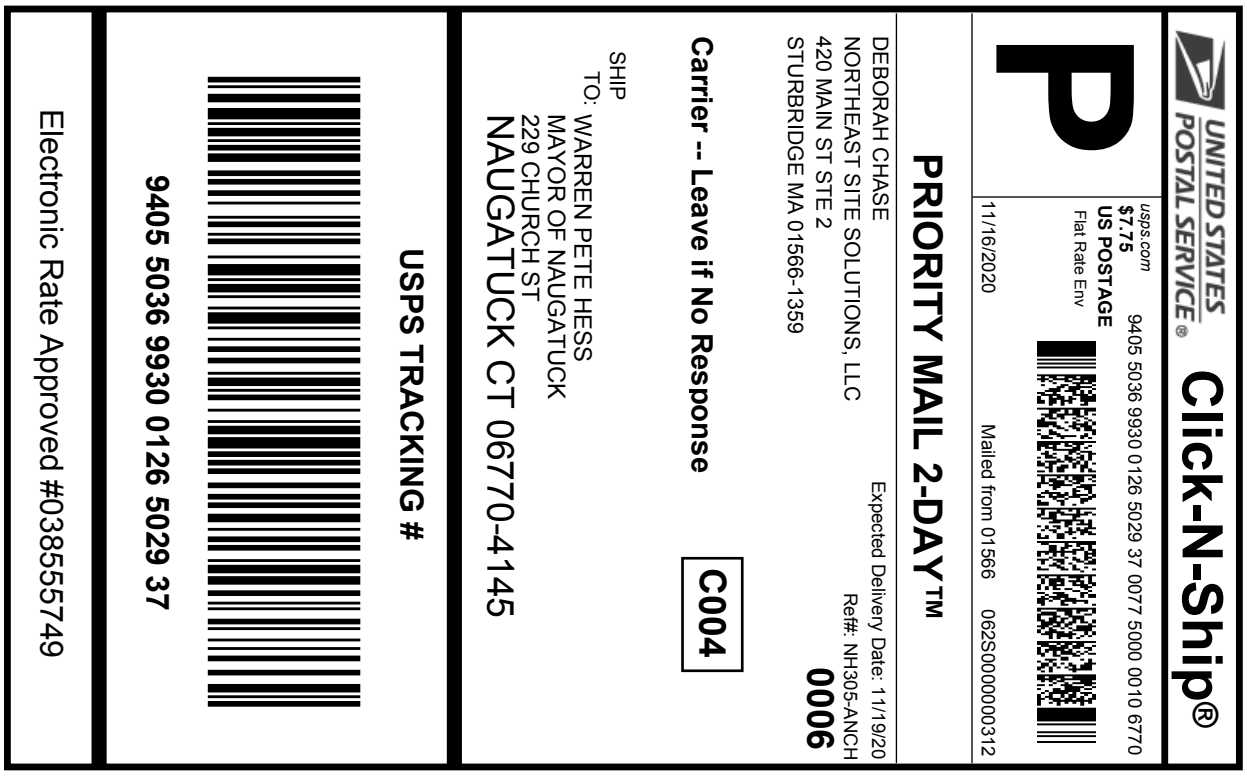
Priority Mail® Postage:	**$7.75**
Total:	**$7.75**

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

To: NANDO CIALFI
12 RIDGEVIEW DR
FARMINGTON CT 06032-2015

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

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



Cut on dotted line.

Instructions

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

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0126 5029 37

Trans. #:	513839014
Print Date:	11/13/2020
Ship Date:	11/16/2020
Expected Delivery Date:	11/19/2020

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

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

To: WARREN PETE HESS
MAYOR OF NAUGATUCK
229 CHURCH ST
NAUGATUCK CT 06770-4145

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Exhibit H

Deborah Chase

From: Deborah Chase
Sent: Friday, November 13, 2020 5:52 PM
To: 'NWhess@naugatuck-ct.gov'; 'LRotella@naugatuck-ct.gov'
Cc: 'dmaluski@fox61.com'; 'Cialfi, Nando'
Subject: 103 EAST SIDE BLVD AKA 0 CLARK HILL ROAD NAUGATUCK CT 067770 T-MOBILE EM APPLICATION (CTNH305B_ANCHOR)
Attachments: 103 EAST SIDE BLVD AKA 0 CLARK HILL ROAD NAUGATUCK CT 06770 T-MOBILE EM APPLICATION (CTNH305B-Anchor).pdf

Good afternoon
On behalf of our client, (T-Mobile), I am forwarding copies of T-Mobiles Exempt Modification Request to collocate on a wireless telecommunications facility located at 103 East Side Boulevard aka Clark Hill Road in Naugatuck CT.
Hard copies will be sent as well for your records.
Please do not hesitate to contact me with any questions regarding T-Mobile's Exempt Modification Request.
Thank you very much

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

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