

10 INDUSTRIAL AVE,  
SUITE 3  
MAHWAH NJ 07430

PHONE: 201.684.0055  
FAX: 201.684.0066



October 12, 2022

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

RE: Notice of Exempt Modification  
1338 Highland Ave., Cheshire, CT, 06410  
Latitude: 41.536944  
Longitude: -72.893333  
T-Mobile Site#: CTNH504A - L600

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 57-foot level of the existing 78-foot Silo at the existing facility at 1338 Highland Ave, in Cheshire, CT. The property is owned by MUDDDM, LLC. The tower is owned by American Tower. T-Mobile now intends to add three (3) new 600/700 MHz antennas. The new antennas support 5G services and will be installed at the same 57-foot level of the silo.

**Planned Modifications:**

**Tower:**

Install New:

- (3) APXVAALL24 Antennas
- (3) Radio 4449
- (3) 7/8" Fiber Cables

Existing to Remain:

- (3) AIR21 B2A B4P Antennas
- (3) AIR21 B2P B4A Antennas
- (3) 1 5/8" Coax Cables

**Ground:**

Install New:

- (1) BB6648
- (1) Enclosure 6160 Cabinet

(1) B160 Battery Cabinet

To Be Removed:

(1) RBS 6201 Cabinet

This tower facility was approved by the Town of Cheshire on December 3, 1999. The Connecticut Siting Council assumed jurisdiction over this facility on January 8th, 2016 in Petition No. 1212. The proposed modification complies with the approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Council Chairman Tim Slocum, Elected Official, and Michael Glidden, Town Planner, as well as the property owner and 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,

**Eric Breun**

Transcend Wireless

Cell: 201-658-7728

Email: [ebreun@transcendwireless.com](mailto:ebreun@transcendwireless.com)

Attachments

cc: Tim Slocum - Council Chairman of Cheshire

Michael Glidden - Town Planner

American Tower - Tower Owner

MUDDDM LLC - Property Owner

ERIC BREUN  
2016587728  
1 INTERNATIONAL BLVD.  
MAHWAH NJ 07495

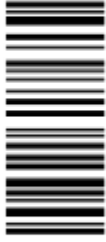
1 LBS

1 OF 1

**SHIP TO:**  
CHAIRMAN  
TIM SLOCUM  
84 SOUTH MAIN STREET  
CHESHIRE VILLAGE CT 06410

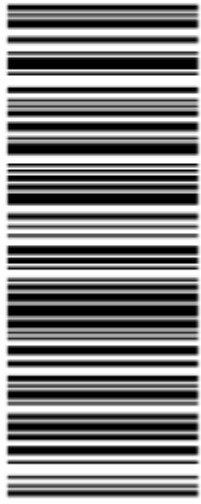


**CT 067 9-04**



**UPS GROUND**

TRACKING #: 1Z V25 742 03 9193 1763



BILLING: P/P

Reference #1: CTNH504A

XOL 22.09.02 NV/15 40.0A 09/2022\*



TM

ERIC BREUN  
2016587728  
1 INTERNATIONAL BLVD.  
MAHWAH NJ 07495

1 LBS

1 OF 1

**SHIP TO:**  
AMERICAN TOWER CORPORATION  
10 PRESIDENTIAL WAY  
WOBURN MA 01801

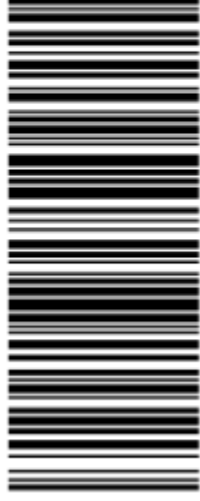


**MA 018 9-04**



**UPS GROUND**

TRACKING #: 1Z V25 742 03 9162 5755



BILLING: P/P

Reference #1: CTNH504A

XOL 22.09.02 NV/15 40.0A 09/2022\*



TM

ERIC BREUN  
2016587728  
1 INTERNATIONAL BLVD.  
MAHWAH NJ 07495

1 LBS

1 OF 1

**SHIP TO:**  
MUDDUM LLC  
1338 HIGHLAND AVENUE  
CHESHIRE CT 06410



**CT 067 9-04**



**UPS GROUND**

TRACKING #: 1Z V25 742 03 9135 5789



BILLING: P/P

Reference #1: CTNH504A

XOL 22.09.02 NV-15 40.0A 09/2022\*



ERIC BREUN  
2016587728  
1 INTERNATIONAL BLVD.  
MAHWAH NJ 07495

1 LBS

1 OF 1

**SHIP TO:**  
TOWN PLANNER  
MICHAEL GLIDDEN  
84 SOUTH MAIN STREET  
CHESHIRE VILLAGE CT 06410



**CT 067 9-04**



**UPS GROUND**

TRACKING #: 1Z V25 742 03 9464 1777



BILLING: P/P

Reference #1: CTNH504A

XOL 22.09.02 NV-15 40.0A 09/2022\*



**Hello, your package has been delivered.**

**Delivery Date:** Wednesday, 09/28/2022

**Delivery Time:** 11:27 AM

**Signed by:** SHEPARD

## TRANSCEND WIRELESS

**Tracking Number:** [1ZV257420391931763](#)

**Ship To:** TIM SLOCUM  
84 SOUTH MAIN STREET  
CHESHIRE VILLAGE, CT 06410  
US

**Number of Packages:** 1

**UPS Service:** UPS Ground

**Package Weight:** 1.0 LBS

**Reference Number:** [CTNH504A](#)

**Hello, your package has been delivered.**

**Delivery Date:** Wednesday, 09/28/2022

**Delivery Time:** 11:28 AM

**Signed by:** DONNA

## TRANSCEND WIRELESS

**Tracking Number:** [1ZV257420394641777](#)

**Ship To:** MICHAEL GLIDDEN  
84 SOUTH MAIN STREET  
CHESHIRE VILLAGE, CT 06410  
US

**Number of Packages:** 1

**UPS Service:** UPS Ground

**Package Weight:** 1.0 LBS

**Reference Number:** [CTNH504A](#)

**Hello, your package has been delivered.**

**Delivery Date:** Wednesday, 09/28/2022

**Delivery Time:** 10:43 AM

**Signed by:** FRONT DESK

**TRANSCEND WIRELESS**

**Tracking Number:** [1ZV257420391355789](#)

**Ship To:** MUDDUM LLC  
1338 HIGHLAND AVENUE  
CHESHIRE, CT 06410  
US

**Number of Packages:** 1

**UPS Service:** UPS Ground

**Package Weight:** 1.0 LBS

**Reference Number:** CTNH504A

**Hello, your package has been delivered.**

**Delivery Date:** Wednesday, 09/28/2022

**Delivery Time:** 10:19 AM

**Left At:** INSIDE DELIV

**Signed by:** ANCRI

**TRANSCEND WIRELESS**

**Tracking Number:** [1ZV257420391625755](#)

**Ship To:** AMERICAN TOWER CORPORATION  
10 PRESIDENTIAL WAY  
WOBURN, MA 01801  
US

**Number of Packages:** 1

**UPS Service:** UPS Ground

**Package Weight:** 1.0 LBS

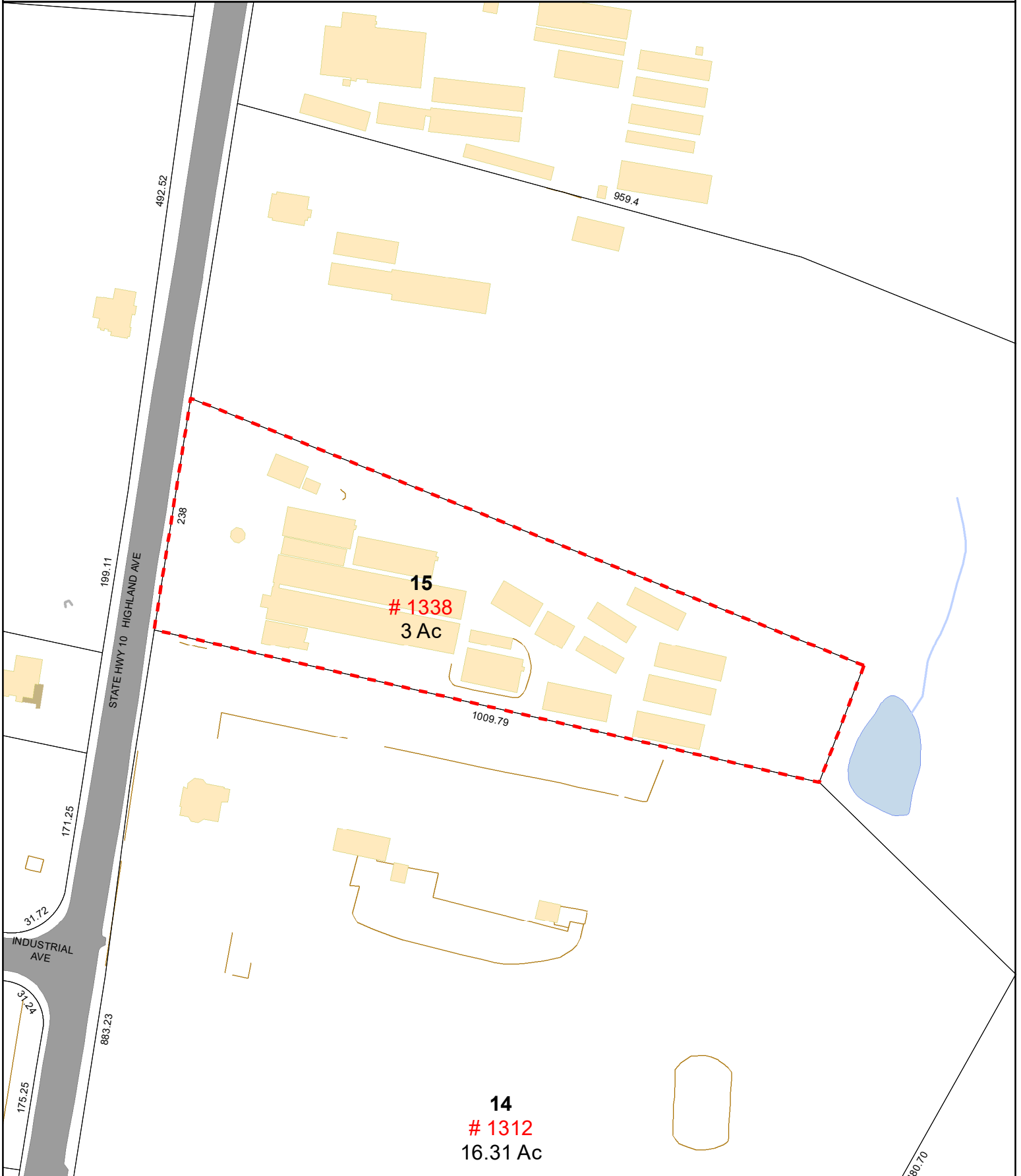
**Reference Number:** CTNH504A

# Town of Cheshire, Connecticut - Assessment Parcel Map

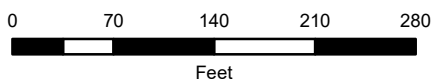


Parcel: 00158400

Location: 1338 HIGHLAND AVE



Approximate Scale: 1 inch = 133 feet



Map Produced: June 2022

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



# Town of Cheshire, CT

## Property Listing Report

Map Block Lot **28 15**

Building # **1** Unique Identifier **00158400**

### Property Information

Property Location	<b>1338 HIGHLAND AVE</b>
Mailing Address	<b>1338 HIGHLAND AVE CHESHIRE CT 06410</b>
Land Use	<b>Warehouse</b>
Zoning Code	<b>I-2</b>
Neighborhood	<b>I-4D</b>

Owner	<b>MUDDDM LLC</b>
Co-Owner	
Book / Page	<b>1672/0243</b>
Land Class	<b>Commercial</b>
Census Tract	<b>3431</b>
Acreage	<b>3</b>

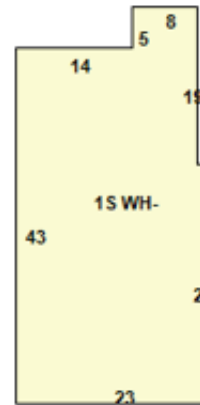
### Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	<b>240474</b>	<b>168330</b>
Outbuildings	<b>66355</b>	<b>46450</b>
Land	<b>445500</b>	<b>2920</b>
<b>Total</b>	<b>752329</b>	<b>217700</b>

### Utility Information

Electric	<b>No</b>
Gas	<b>No</b>
Sewer	<b>No</b>
Public Water	<b>No</b>
Well	<b>No</b>



### Primary Construction Details

Year Built	<b>1952</b>
Building Desc.	<b>Commercial</b>
Building Style	
Stories	<b>1.00</b>
Exterior Walls	<b>Concrete Block</b>
Exterior Walls 2	
Interior Walls	
Interior Walls 2	
Interior Floors 1	<b>Concrete</b>
Interior Floors 2	

Heating Fuel	<b>Oil</b>
Heating Type	<b>FHA</b>
AC Type	
Bedrooms	<b>0</b>
Full Bathrooms	<b>0</b>
Half Bathrooms	<b>0</b>
Extra Fixtures	<b>0</b>
Total Rooms	<b>0</b>
Bath Style	<b>NA</b>
Kitchen Style	
Occupancy	<b>0</b>

Building Use	<b>Warehouse</b>
Building Condition	<b>Average/Fair</b>
Frame Type	<b>Low Cost</b>
Fireplaces	<b>0</b>
Bsmt Gar	<b>0</b>
Fin Bsmt Area	
Fin Bsmt Quality	
Building Grade	<b>20</b>
Roof Style	<b>Flat</b>
Roof Cover	<b>Composite Built Up</b>

Report Created On

**9/27/2022**











# STATE OF CONNECTICUT

## CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: [siting.council@ct.gov](mailto:siting.council@ct.gov)

[www.ct.gov/csc](http://www.ct.gov/csc)

### CERTIFIED MAIL

### RETURN RECEIPT REQUESTED

January 8, 2016

Burton B. Cohen, Esq.  
Murtha Cullina LLP  
265 Church Street, P.O. Box 704  
New Haven, CT 06503

**RE: PETITION NO. 1212** - Town of Cheshire petition for a declaratory ruling for the Connecticut Siting Council to assume jurisdiction over an un-certificated telecommunications facility located at 1338 Highland Avenue, Cheshire, Connecticut.

Dear Attorney Cohen:

At a public meeting held on January 7, 2016, the Connecticut Siting Council (Council) considered the Town of Cheshire's request for the Council to assume jurisdiction over the telecommunications facility located at 1338 Highland Avenue in Cheshire.

The Council ruled as follows:

1. The request be treated as a petition for a declaratory ruling from the Town of Cheshire submitted under Connecticut General Statutes §4-176 for the Council to assume jurisdiction over the existing silo facility pursuant to Connecticut General Statutes §16-50i (a)(6) and Regulations of Connecticut State Agencies §16-50j-2a (23);
2. Waiver of the petition filing fee for the Town of Cheshire's petition for a declaratory ruling pursuant to Regulations of Connecticut State Agencies §16-50j-3; and
3. Issuance of a declaratory ruling that the Council assumes jurisdiction over this existing telecommunications facility based on the fact that the silo structure is no longer used principally for garden center purposes pursuant to the Council's declaratory ruling in Petition No. 581 and the regulatory definition of "tower" under Regulations of Connecticut State Agencies §16-50j-2a (23).

This decision is under the exclusive jurisdiction of the Council and is not applicable to any other telecommunications facility.

Enclosed for your information is a copy of the staff report for this matter.

Very truly yours,

Robert Stein  
Chairman

RS/MAB/cm

Enclosure: Staff Report dated January 7, 2016

c: Michael A. Milone, Town Manager, Town of Cheshire  
William S. Voelker, Town Planner, Town of Cheshire



**Request from the Town of Cheshire for the Connecticut Siting Council to assume jurisdiction over  
an uncertificated telecommunications facility located at 1338 Highland Avenue, Cheshire,  
Connecticut  
Staff Report  
January 7, 2016**

On October 5, 2015, the Connecticut Siting Council (Council) received correspondence from the Town of Cheshire (Town) respectfully requesting the Council initiate a proceeding to assume jurisdiction over an existing, uncertificated telecommunications facility located at 1338 Highland Avenue in Cheshire.

The existing facility is a 64 foot silo structure located approximately 80 feet east of Highland Avenue (State Route 10) on property owned by Tower Farms Nursery. The site property is located in a Cheshire I-2 Industrial District Zone. Telecommunications antennas were initially attached to the existing silo structure pursuant to a site plan application submitted by Springwich Cellular Limited Partnership and SNET Mobility, Inc. to install cellular antennas and an equipment cabinet that was approved by the Cheshire Planning & Zoning Commission on November 22, 1999 with the condition that the applicant comply with comments in a memo from the Cheshire Police Department dated November 4, 1999.

On July 22, 2002, the Cheshire Planning & Zoning Commission approved a site plan application from AT&T Wireless PCS, LLC (AT&T) to collocate antennas on the facility with the conditions that the antenna collocation should blend color and material with the existing tower and the equipment cabinet shall be of such character as to harmonize with the other cabinet and/or buildings in the immediate area.

On November 16, 2005, the Cheshire Planning & Zoning Commission approved a special permit application from Nextel Communications of Mid-Atlantic, Inc. (Nextel) to collocate antennas on the facility with the conditions that any proposed lighting on the tower or equipment cabinet shall comply with Section 33.9 of the Cheshire Zoning Regulations, Nextel must submit to the Town's emergency key box system and provide key access for emergency use and proposed plantings must be evergreens such as arborvitae or white pine and shall have a minimum height of 5-6 feet.

At the time these site plan and special permit applications were submitted to the Town, the existing silo structure was used for garden center purposes. At this time, however, the existing silo structure is no longer used for garden center purposes.

Specifically, the reasons for the Town's request for the Council to assume jurisdiction are as follows:

1. Certain safety-related issues have recently arisen with the facility;
2. The Town lacks the technical resources and institutional knowledge to ensure that the facility is in compliance with applicable state and federal requirements concerning construction, installation, operation and modification; and
3. The facility meets the definition of a "telecommunications facility" under Connecticut General Statutes §16-50i (a)(6) and the definition of a "tower" under Section 16-50j-2a(23) of the Regulations of Connecticut State Agencies.

On October 6, 2015, the Council provided notice of the Town's correspondence to the Telecommunications Service List and requested submission of comments, including, but not limited to, whether a public hearing

should be held, regarding the Town's request for the Council to assume jurisdiction over the silo telecommunications facility on or before October 30, 2015. The Council received correspondence from Sprint, the successor in interest to Nextel, dated October 13, 2015 indicating that although Nextel received Town of Cheshire Planning & Zoning Commission approval to install equipment on the facility on October 12, 2005, Nextel decommissioned their cell site at 1338 Highland Avenue in Cheshire on or about October 9, 2013 and removed all of the Nextel equipment from the site.

On October 30, 2015, AT&T submitted comments on the Town's request indicating that antennas affixed to existing silos, water tanks and buildings are considered "wireless attachments" that are subject to municipal jurisdiction rather than antennas affixed to "towers" that are subject to Council jurisdiction. However, AT&T also notes that the Council has issued declaratory rulings related to silos and wireless facilities in the past based on unique facts presented in certain cases, but AT&T takes no position on the treatment of the Town's filing.

On December 8, 2015, the Town provided additional correspondence reporting that ownership of the silo was conveyed from the property owner to GTP Towers I, LLC (GTP) in 2007 and according to the agreement, GTP is obligated to maintain the structural integrity, upkeep and maintenance of the silo. In 2013, the parent company of GTP, Global Tower Partners, was acquired by American Tower Corporation (ATC); however, the Town was never notified by ATC of its interest in the facility. In the same correspondence, the Town reiterated its request for the Council to undertake procedural steps to assume jurisdiction over the silo facility located at 1338 Highland Avenue in Cheshire, but the Town also indicated that it takes no position on procedural issues relating to this request.

Under Connecticut General Statutes §16-50i (a)(6), the Council has jurisdiction over "such telecommunication towers, including associated telecommunications equipment, owned or operated by the state, a public service company or a certified telecommunications provider or used in a cellular system, as defined in the Code of Federal Regulations Title 47, Part 22, as amended, which may have a substantial adverse environmental effect..."

Under Regulations of Connecticut State Agencies §16-50j-2a (23), "tower means a structure, whether free standing or attached to a building or another structure, that has a height greater than its diameter and that is high relative to its surroundings, or that is used to support antennas for sending or receiving radio frequency signals, or for sending or receiving signals to or from satellites, or any of these, which is or is to be:

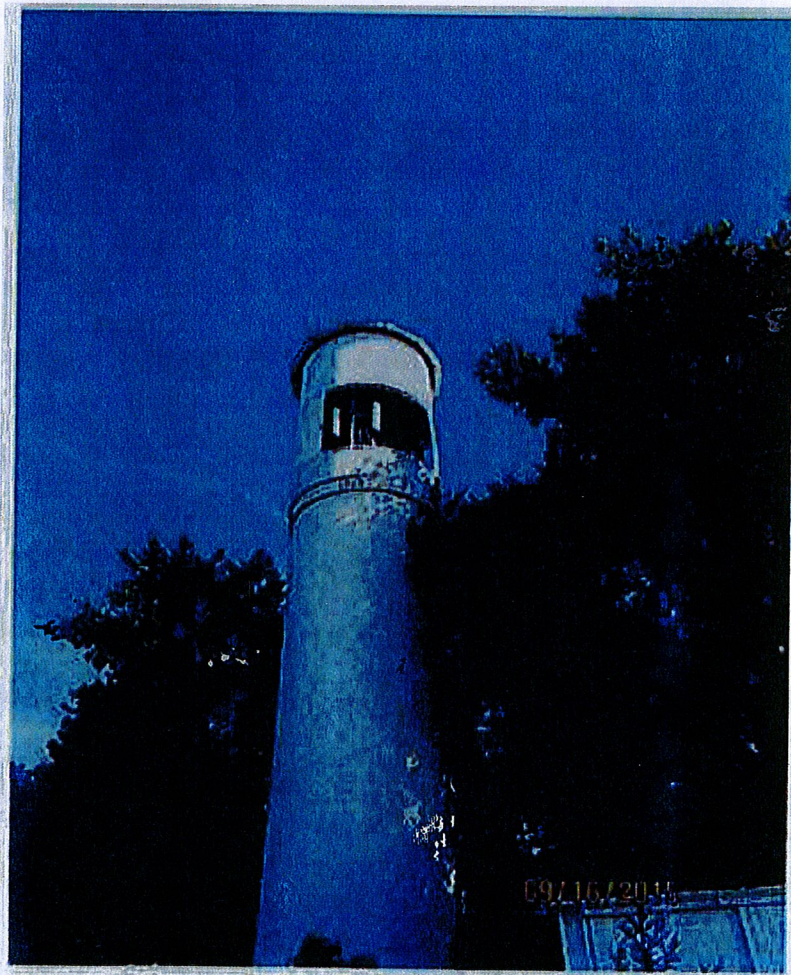
- (A) Used principally to support one or more antennas for receiving or sending radio frequency signals, or for sending or receiving signals to or from satellites, or any of these, and
- (B) Owned or operated by the state, a public service company as defined in Section 16-1 of the Connecticut General Statutes, or a certified telecommunications provider, or used in a cellular system as defined in Section 16-50i(a) of the Connecticut General Statutes."

In its October 30, 2015 correspondence, AT&T cited to the Council's decision in Petition 581 that involved an abandoned silo structure located at a garden center that was no longer used for agricultural purposes and would not be used for any other purpose than as an "antenna support structure." The Council issued a declaratory ruling based on the unique facts presented in the petition for a declaratory ruling and affirmatively stated in its decision that the Council assumed jurisdiction in order to establish a clear precedent for circumstances where unused or abandoned structures are used principally as antenna support structures by

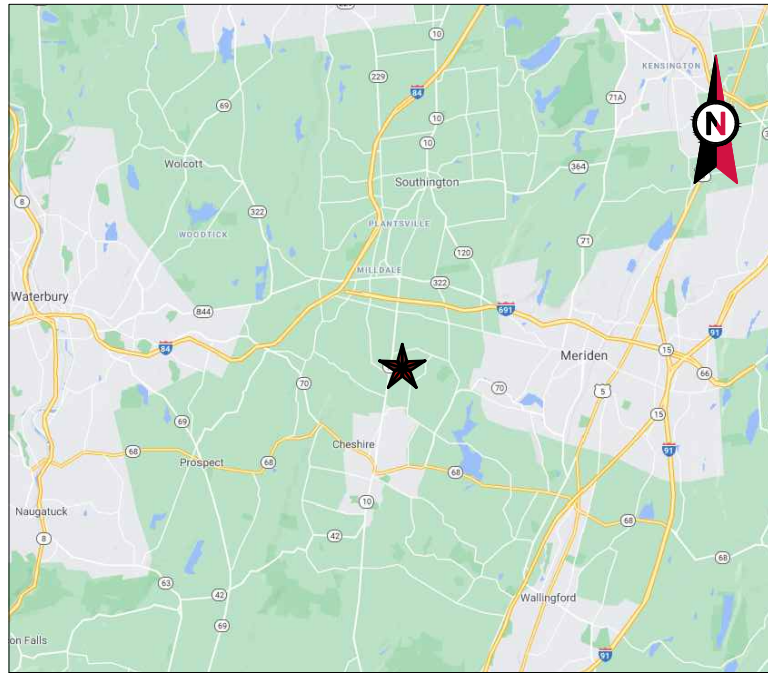
telecommunications carriers. Antenna installations on unused or abandoned structures, such as the subject silo, fall under the regulatory definition of "tower" and thus, the Council has jurisdiction over these installations. A copy of the decision letter and staff report for Petition 581 is attached.

Staff recommends the following:

1. The Council treat this request as a petition for a declaratory ruling from the Town of Cheshire submitted under Connecticut General Statutes §4-176 for the Council to assume jurisdiction over the existing silo facility pursuant to Connecticut General Statutes §16-50i (a)(6) and Regulations of Connecticut State Agencies §16-50j-2a (23);
2. The Council waive the petition filing fee for the Town of Cheshire's petition for a declaratory ruling pursuant to Regulations of Connecticut State Agencies §16-50j-3; and
3. The Council issue a declaratory ruling that the Council assumes jurisdiction over this existing telecommunications facility based on the fact that the silo structure is no longer used principally for garden center purposes pursuant to the Council's declaratory ruling in Petition No. 581 and the regulatory definition of "tower" under Regulations of Connecticut State Agencies §16-50j-2a (23).



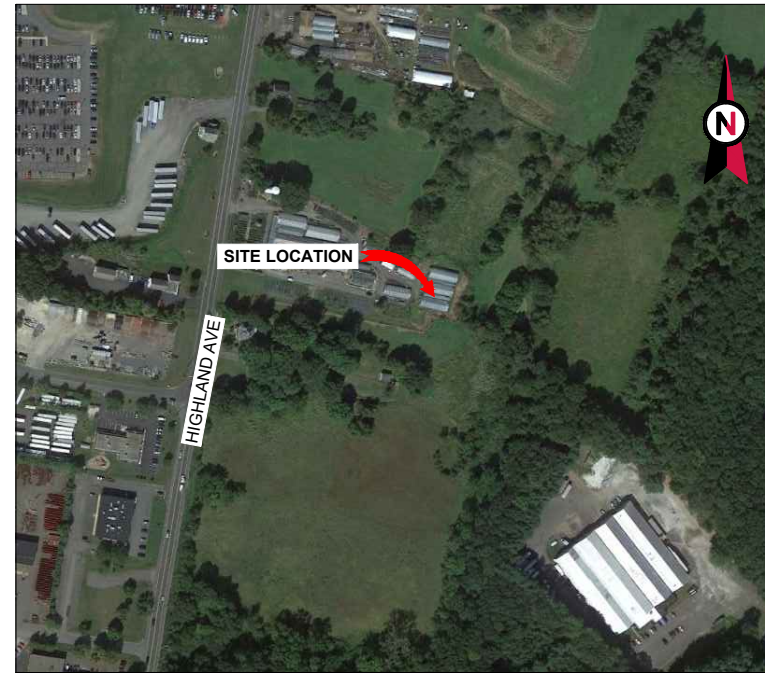
Existing 64-foot silo structure at 1338 Highland Avenue in Cheshire.



VICINITY MAP



**AMERICAN TOWER®**  
 ATC SITE NAME: MANKES SILO  
 ATC SITE NUMBER: 370624  
 T-MOBILE SITE NAME: CTNH504A  
 T-MOBILE SITE NUMBER: CTNH504A  
 SITE ADDRESS: 1338 HIGHLAND AVE  
 CHESHIRE, CT 06410



LOCATION MAP

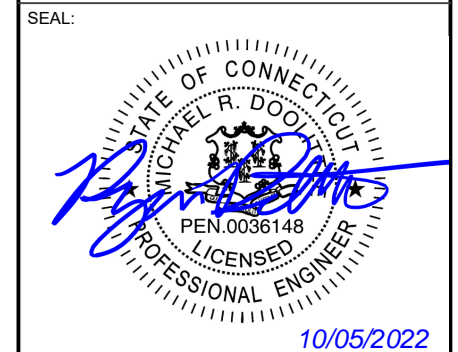


**Kimley»Horn**

COA: PEC.0000738  
 421 FAYETTEVILLE ST, SUITE 600  
 RALEIGH, NC 27601

REV.	DESCRIPTION	BY	DATE
A	PRELIM	SM	04/12/21
0	ISSUED FOR CONSTRUCTION	KC	05/24/21
1	REVISED	WS	06/09/21
2	REVISED	GV	08/30/22
3	REVISED	GV	10/05/22

ATC SITE NUMBER:  
**370624**  
 ATC SITE NAME:  
**MANKES SILO**  
 T-MOBILE SITE NAME:  
**CTNH504A**  
 SITE ADDRESS:  
 1338 HIGHLAND AVE  
 CHESHIRE, CONNECTICUT 06410



DATE DRAWN:	10/05/22
ATC JOB NO:	13617819
CUSTOMER ID:	CTNH504A
CUSTOMER #:	CTNH504A

TITLE SHEET

SHEET NUMBER:  
**G-001**  
 REVISION:  
**3**

**T-MOBILE L600 ANTENNA AMENDMENT PLAN  
 67D05A CONFIGURATION**

COMPLIANCE CODE	PROJECT SUMMARY	PROJECT DESCRIPTION	SHEET INDEX				
ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNMENT AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.  1. 2015 INTERNATIONAL BUILDING CODE (IBC) 2. 2017 NATIONAL ELECTRIC CODE (NEC) 3. LOCAL BUILDING CODE 4. CITY/COUNTY ORDINANCES	<u>SITE ADDRESS:</u> 1338 HIGHLAND AVE CHESHIRE, CONNECTICUT 06410  COUNTY: NEW HAVEN  <u>GEOGRAPHIC COORDINATES:</u> LATITUDE: 41.53694444 LONGITUDE: -72.89333333 GROUND ELEVATION: 197' AMSL	THE PROPOSED PROJECT INCLUDES MODIFYING GROUND BASED AND TOWER MOUNTED EQUIPMENT AS INDICATED PER BELOW: <u>TOWER WORK:</u> REMOVE (1) 1 1/4" HYBRIFLEX CABLE(s), (2) 1" HYBRID CABLE(s), AND (6) 1 5/8" COAX CABLE(s)  INSTALL MOUNT MODIFICATION(s), (6) RADIO 4449 B71+B85A RRH(s), (3) APXVAALL24 43-U-NA20 ANTENNA(s), AND (3) 7/8" FIBER CABLE(s)  EXISTING (3) AIR21, 1.3M, B2A B4P ANTENNA(s), (3) AIR21, 1.3M, B4A B2P ANTENNA(s), AND (3) 1-5/8" HYBRID CABLE(s) TO REMAIN  <u>GROUND WORK:</u> REMOVE (1) RBS 6201 CABINET(s)  INSTALL (1) BB 6648, (1) ENCLOSURE 6160 CABINET(s), (1) B160 BATTERY CABINET(s)  EXISTING (1) EMERSON CABINET, (1) DUW30, AND (1) BB 6630 TO REMAIN  THE PROPOSED PROJECT DOES NOT INCLUDE ELECTRICAL SCOPE	SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
	<u>PROJECT TEAM</u>  <u>TOWER OWNER:</u> AMERICAN TOWER 10 PRESIDENTIAL WAY WOBURN, MA 01801  <u>ENGINEER:</u> KIMLEY-HORN & ASSOCIATES, INC. 421 FAYETTEVILLE ST, STE 600 RALEIGHT, NC 27601 COA: PEC.0000738  <u>PROPERTY OWNER:</u> MUDDDM LLC 1338 HIGHLAND AVE CHESHIRE, CT 06410	<u>PROJECT NOTES</u>  1. THE FACILITY IS UNMANNED. 2. A TECHNICIAN WILL VISIT THE SITE APPROXIMATELY ONCE A MONTH FOR ROUTINE INSPECTION AND MAINTENANCE. 3. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT LAND DISTURBANCE OR EFFECT OF STORM WATER DRAINAGE. 4. NO SANITARY SEWER, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED. 5. HANDICAP ACCESS IS NOT REQUIRED.	G-001	TITLE SHEET	3	10/05/22	GV
	<u>UTILITY COMPANIES</u>  POWER COMPANY: NORTHEAST UTILITIES PHONE: (800) 286-2000 TELEPHONE COMPANY: TBD PHONE: N/A	<u>PROJECT LOCATION DIRECTIONS</u>  FROM CITY:  PROCEED FROM CHESHIRE HEAD NORTHEAST ON CT-10 / S MAIN ST TOWARD CHURCH DR 197 FT KEEP STRAIGHT TO GET ONTO CT-68 / CT-70 / CT-10 / S MAIN ST 0.2 MI KEEP STRAIGHT TO GET ONTO CT-10 / HIGHLAND AVE PASS CVS PHARMACY ON THE LEFT IN 0.9 MI 2.5 MI ARRIVE AT CT-10 / HIGHLAND AVE	G-002	GENERAL NOTES	3	10/05/22	GV
			C-101	DETAILED SITE PLAN	3	10/05/22	GV
			C-102	DETAILED GROUND PLAN	3	10/05/22	GV
			C-201	TOWER ELEVATION	3	10/05/22	GV
			C-401	ANTENNA INFORMATION & SCHEDULE	3	10/05/22	GV
			C-501	CONSTRUCTION DETAILS	3	10/05/22	GV
			E-501	GROUNDING DETAILS	3	10/05/22	GV
			R-601	SUPPLEMENTAL			
			R-602	SUPPLEMENTAL			
			R-603	SUPPLEMENTAL			
			R-604	SUPPLEMENTAL			
			R-605	SUPPLEMENTAL			
			R-606	SUPPLEMENTAL			

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**GENERAL CONSTRUCTION NOTES:**

1. OWNER FURNISHED MATERIALS, T-MOBILE "THE COMPANY" WILL PROVIDE AND THE CONTRACTOR WILL INSTALL
  - A. BTS EQUIPMENT FRAME (PLATFORM) AND ICEBRIDGE SHELTER (GROUND BUILD/CO-LOCATE ONLY)
  - B. AC/TELCO INTERFACE BOX (PPC)
  - C. ICE BRIDGE (CABLE TRAY WITH COVER) (GROUND BUILD/CO-LOCATE ONLY, GC TO FURNISH AND INSTALL FOR ROOFTOP INSTALLATION)
  - D. TOWERS, MONOPOLES
  - E. TOWER LIGHTING
  - F. GENERATORS & LIQUID PROPANE TANK
  - G. ANTENNA STANDARD BRACKETS, FRAMES AND PIPES FOR MOUNTING
  - H. ANTENNAS (INSTALLED BY OTHERS)
  - I. TRANSMISSION LINE
  - J. TRANSMISSION LINE JUMPERS
  - K. TRANSMISSION LINE CONNECTORS WITH WEATHERPROOFING KITS
  - L. TRANSMISSION LINE GROUND KITS
  - M. HANGERS
  - N. HOISTING GRIPS
  - O. BTS EQUIPMENT
2. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL OTHER MATERIALS FOR THE COMPLETE INSTALLATION OF THE SITE INCLUDING, BUT NOT LIMITED TO, SUCH MATERIALS AS FENCING, STRUCTURAL STEEL SUPPORTING SUB-FRAME FOR PLATFORM, ROOFING LABOR AND MATERIALS, GROUNDING RINGS, GROUNDING WIRES, COPPER-CLAD OR XIT CHEMICAL GROUND ROD(S), BUSS BARS, TRANSFORMERS AND DISCONNECT SWITCHES WHERE APPLICABLE, TEMPORARY ELECTRICAL POWER, CONDUIT, LANDSCAPING COMPOUND STONE, CRANES, CORE DRILLING, SLEEPERS AND RUBBER MATTING, REBAR, CONCRETE CAISSONS, PADS AND/OR AUGER MOUNTS, MISCELLANEOUS FASTENERS, CABLE TRAYS, NON-STANDARD ANTENNA FRAMES AND ALL OTHER MATERIAL AND LABOR REQUIRED TO COMPLETE THE JOB ACCORDING TO THE DRAWINGS AND SPECIFICATIONS. IT IS THE POSITION OF T-MOBILE TO APPLY FOR PERMITTING AND CONTRACTOR RESPONSIBLE FOR PICKUP AND PAYMENT OF REQUIRED PERMITS.
3. ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING ANSI/EIA/TIA-222, AND COMPLY WITH ATC CONSTRUCTION SPECIFICATIONS.
4. CONTRACTOR SHALL CONTACT LOCAL 811 FOR IDENTIFICATION OF UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED INSPECTIONS.
6. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER.
7. DO NOT CHANGE SIZE OR SPACING OF STRUCTURAL ELEMENTS.
8. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
9. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
10. CONTRACTOR SHALL BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
11. CONTRACTOR SHALL DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
12. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE T-MOBILE REP PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE T-MOBILE REP PRIOR TO PROCEEDING.
13. EACH CONTRACTOR SHALL COOPERATE WITH THE T-MOBILE REP, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
14. CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OF THIS PROJECT TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE T-MOBILE CONSTRUCTION MANAGER.
15. ALL CABLE/CONDUIT ENTRY/EXIT PORTS SHALL BE WEATHERPROOFED DURING INSTALLATION USING A SILICONE SEALANT.
16. WHERE EXISTING CONDITIONS DO NOT MATCH THOSE SHOWN IN THIS PLAN SET, CONTRACTOR SHALL NOTIFY THE T-MOBILE REP AND ENGINEER OF RECORD IMMEDIATELY.
17. CONTRACTOR SHALL ENSURE ALL SUBCONTRACTORS ARE PROVIDED WITH A COMPLETE AND CURRENT SET OF DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
18. CONTRACTOR SHALL REMOVE ALL RUBBISH AND DEBRIS FROM THE SITE AT THE END OF EACH DAY.
19. CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH AMERICAN TOWER CORPORATION (ATC) AND TAKE PRECAUTIONS TO MINIMIZE IMPACT AND DISRUPTION OF OTHER OCCUPANTS OF THE FACILITY.
20. CONTRACTOR SHALL FURNISH T-MOBILE AND AMERICAN TOWER CORPORATION (ATC) WITH A PDF MARKED UP AS-BUILT SET OF DRAWINGS UPON COMPLETION OF WORK.
21. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE REP TO DETERMINE WHAT, IF ANY, ITEMS WILL BE PROVIDED. ALL ITEMS NOT PROVIDED SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. CONTRACTOR WILL INSTALL ALL ITEMS PROVIDED.

22. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE REP TO DETERMINE IF ANY PERMITS WILL BE OBTAINED BY CONTRACTOR. ALL REQUIRED PERMITS NOT OBTAINED BY T-MOBILE MUST BE OBTAINED, AND PAID FOR, BY THE CONTRACTOR.
23. CONTRACTOR SHALL INSTALL ALL SITE SIGNAGE IN ACCORDANCE WITH T-MOBILE SPECIFICATIONS AND REQUIREMENTS.
24. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO T-MOBILE FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
25. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND LOCATED ACCORDING TO T-MOBILE SPECIFICATIONS, AND AS SHOWN IN THESE PLANS.
26. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
27. CONTRACTOR SHALL NOTIFY T-MOBILE REP A MINIMUM OF 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING ANY UNDERGROUND UTILITIES, FOUNDATIONS OR SEALING ANY WALL, FLOOR OR ROOF PENETRATIONS FOR ENGINEERING REVIEW AND APPROVAL.
28. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND PPM AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.
29. THE CONTRACTOR SHALL PROTECT AT HIS OWN EXPENSE, ALL EXISTING FACILITIES AND SUCH OF HIS NEW WORK LIABLE TO INJURY DURING THE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED BY NEGLIGENCE ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLIGENCE ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, EITHER TO THE EXISTING WORK, OR TO HIS WORK OR THE WORK OF ANY OTHER CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE TO THE OWNER'S SATISFACTION.
30. ALL WORK SHALL BE INSTALLED IN A FIRST CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS SKILLED IN THE TRADE INVOLVED. THE QUALITY OF WORKMANSHIP SHALL BE SUBJECT TO THE APPROVAL OF THE T-MOBILE REP. ANY WORK FOUND BY THE T-MOBILE REP TO BE OF INFERIOR QUALITY AND/OR WORKMANSHIP SHALL BE REPLACED AND/OR REWORKED AT CONTRACTOR EXPENSE UNTIL APPROVAL IS OBTAINED.
31. IN ORDER TO ESTABLISH STANDARDS OF QUALITY AND PERFORMANCE, ALL TYPES OF MATERIALS LISTED HEREINAFTER BY MANUFACTURER'S NAMES AND/OR MANUFACTURER'S CATALOG NUMBER SHALL BE PROVIDED BY THESE MANUFACTURERS AS SPECIFIED.
32. T-MOBILE FURNISHED EQUIPMENT SHALL BE PICKED-UP AT THE T-MOBILE WAREHOUSE, NO LATER THAN 48HR AFTER BEING NOTIFIED INSURED, STORED, UNCRATE, PROTECTED AND INSTALLED BY THE CONTRACTOR WITH ALL APPURTENANCES REQUIRED TO PLACE THE EQUIPMENT IN OPERATION, READY FOR USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EQUIPMENT AFTER PICKING IT UP.
33. T-MOBILE OR HIS ARCHITECT/ENGINEER RESERVES THE RIGHT TO REJECT ANY EQUIPMENT OR MATERIALS WHICH, IN HIS OWN OPINION ARE NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS, EITHER BEFORE OR AFTER INSTALLATION AND THE EQUIPMENT SHALL BE REPLACED WITH EQUIPMENT CONFORMING TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS BY THE CONTRACTOR AT NO COST TO T-MOBILE OR THEIR ARCHITECT/ENGINEER.

**SPECIAL CONSTRUCTION**

**ANTENNA INSTALLATION NOTES:**

1. WORK INCLUDED:
  - A. ANTENNA AND COAXIAL CABLES ARE FURNISHED BY T-MOBILE UNDER A SEPARATE CONTRACT. THE CONTRACTOR SHALL ASSIST ANTENNA INSTALLATION CONTRACTOR IN TERMS OF COORDINATION AND SITE ACCESS. ERECTION SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF PERSONNEL.
  - B. INSTALL ANTENNA AS INDICATED ON DRAWINGS AND T-MOBILE SPECIFICATIONS.
  - C. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.
  - D. INSTALL FURNISHED GALVANIZED STEEL OR ALUMINUM WAVEGUIDE.
  - E. CONTRACTOR SHALL PROVIDE FOUR (4) SETS OF SWEEP TESTS USING ANRITZU-PACKARD 8713B RF SCALAR NETWORK ANALYZER. SUBMIT FREQUENCY DOMAIN REFLECTOMETER(FDR) TESTS RESULTS TO THE PROJECT MANAGER. SWEEP TESTS SHALL BE AS PER ATTACHED RFS "MINIMUM FIELD TESTING RECOMMENDED FOR ANTENNA AND HELIAX COAXIAL CABLE SYSTEMS" DATED 10/5/93. TESTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING SERVICE AND BE BOUND AND SUBMITTED WITHIN ONE WEEK OF WORK COMPLETION.
  - F. INSTALL COAXIAL CABLES AND TERMINATING BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTIONS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. TERMINATE ALL COAXIAL CABLE THREE (3) FEET IN EXCESS OF ENTRY PORT LOCATION UNLESS OTHERWISE STATED.
  - G. ANTENNA AND COAXIAL CABLE GROUNDING:
    - i. ALL EXTERIOR #6 GREEN GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED WITH RFS CONNECTORS/SPLICE WEATHERPROOFING KIT #221213 OR EQUAL.
    - ii. ALL COAXIAL CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL CABLE (NOT WITHIN BENDS).

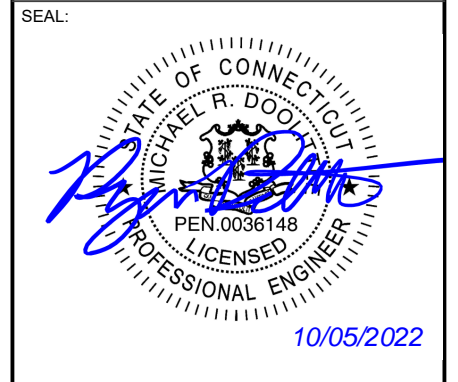
ALL DISCREPANCIES FROM WHAT IS SHOWN ON THESE CONSTRUCTION DRAWINGS SHALL BE COMMUNICATED TO ATC ENGINEERING IMMEDIATELY FOR CORRECTION OR RE-DESIGN. FAILURE TO COMMUNICATE DIRECTLY WITH ATC ENGINEERING OR ANY CHANGES FROM THE DESIGN CONDUCTED WITHOUT PRIOR APPROVAL FROM ATC ENGINEERING SHALL BE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR.



**COA: PEC.0000738**  
**421 FAYETTEVILLE ST, SUITE 600**  
**RALEIGH, NC 27601**

REV.	DESCRIPTION	BY	DATE
A	PRELIM	SM	04/12/21
0	ISSUED FOR CONSTRUCTION	KC	05/24/21
1	REVISED	WS	06/09/21
2	REVISED	GV	08/30/22
3	REVISED	GV	10/05/22

ATC SITE NUMBER:  
**370624**  
 ATC SITE NAME:  
**MANKES SILO**  
 T-MOBILE SITE NAME:  
**CTNH504A**  
 SITE ADDRESS:  
 1338 HIGHLAND AVE  
 CHESHIRE, CONNECTICUT 06410



DATE DRAWN:	10/05/22
ATC JOB NO:	13617819
CUSTOMER ID:	CTNH504A
CUSTOMER #:	CTNH504A

**GENERAL NOTES**

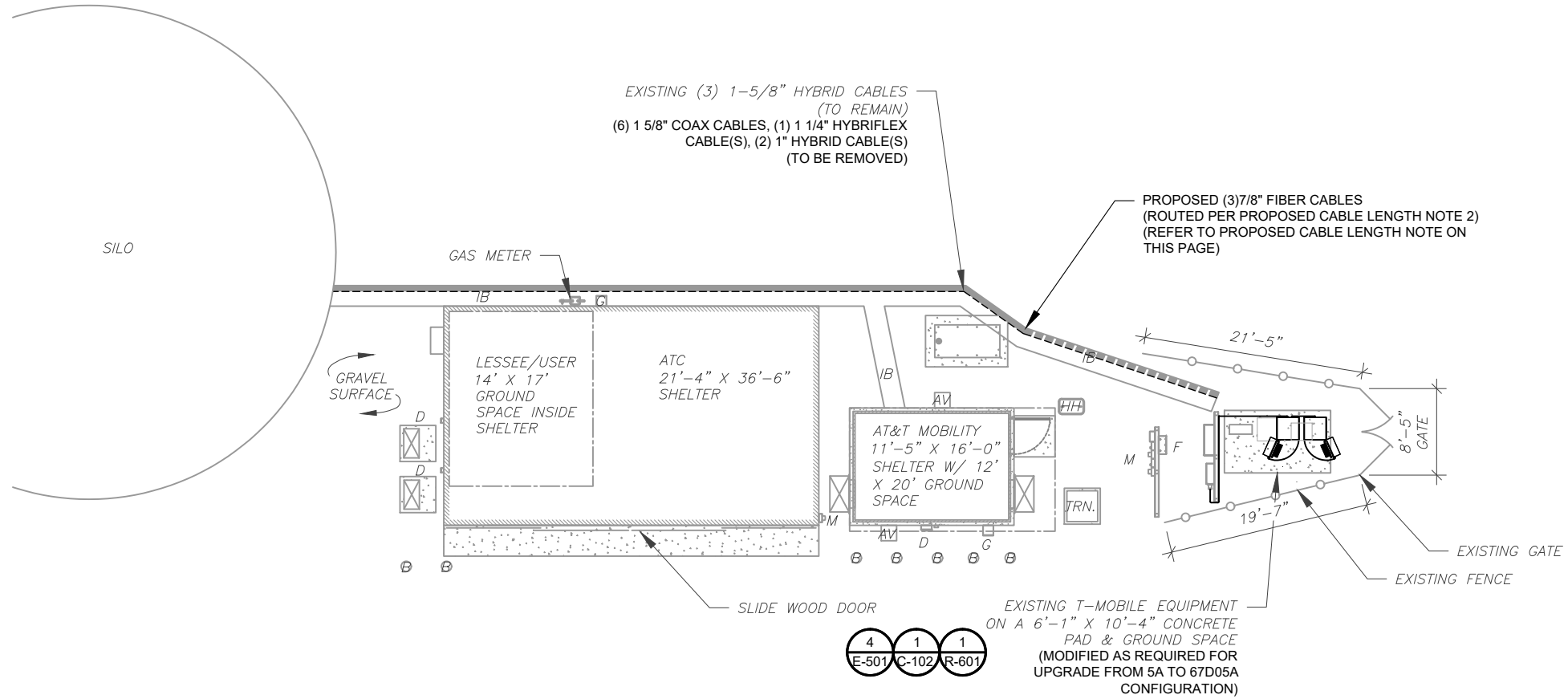
SHEET NUMBER: <b>G-002</b>	REVISION: <b>3</b>
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**SITE PLAN NOTES:**

1. THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.
2. ICE BRIDGE, CABLE LADDER, COAX PORT, AND COAX CABLE ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL PROPOSED AND EXISTING EQUIPMENT AND STRUCTURES DEPICTED ON THIS PLAN. BEFORE UTILIZING EXISTING CABLE SUPPORTS, COAX PORTS, INSTALLING NEW PORTS OR ANY OTHER EQUIPMENT, CONTRACTOR SHALL VERIFY ALL ASPECTS OF THE COMPONENTS MEET THE ATC SPECIFICATIONS.
3. NO ELECTRICAL SCOPE IS INCLUDED IN THIS PROJECT.

LEGEND	
⊗	GROUNDING TEST WELL
ATS	AUTOMATIC TRANSFER SWITCH
B	BOLLARD
CSC	CELL SITE CABINET
D	DISCONNECT
E	ELECTRICAL
F	FIBER
GEN	GENERATOR
G	GENERATOR RECEPTACAL
HH, V	HAND HOLE, VAULT
IB	ICE BRIDGE
K	KENTROX BOX
LC	LIGHTING CONTROL
M	METER
PB	PULL BOX
PP	POWER POLE
T	TELCO
TRN	TRANSFORMER
— x —	CHAINLINK FENCE



**PROPOSED CABLE LENGTH:**

1. ESTIMATED LENGTH OF PROPOSED CABLE IS **167'**. ESTIMATED LENGTH OF CABLE WAS PROVIDED BY CUSTOMER OR CALCULATED BY ADDING THE RAD CENTER AND THE DISTANCE FROM THE SHELTER ENTRY PLATE TO THE TOWER (ALONG THE ICE BRIDGE) AND A SAFETY FACTOR MEASUREMENT OF 15% (OF THE TWO PREVIOUS VALUES). CDS DEFER TO GREATEST CABLE LENGTH.
2. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. WHERE POSSIBLE UTILIZE EXISTING CABLE SUPPORT STRUCTURES AS PROVIDED FOR CARRIER TO ADEQUATELY SECURE CABLES, USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER. OTHERWISE, ATTACH CABLES TO HORIZONTAL OR DIAGONAL TOWER MEMBERS USING PROPOSED STAINLESS STEEL ADAPTERS (DO NOT ATTACH TO TOWER LEG).

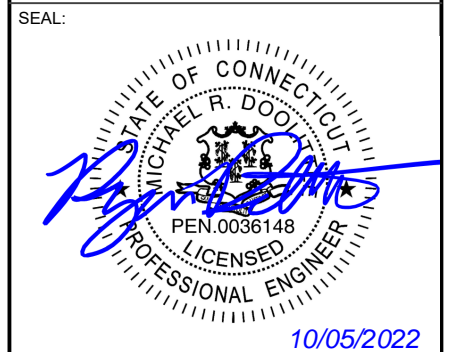


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RALEIGH, NC 27601

REV.	DESCRIPTION	BY	DATE
A	PRELIM	SM	04/12/21
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3	REVISED	GV	10/05/22

ATC SITE NUMBER:  
**370624**  
ATC SITE NAME:  
**MANKES SILO**  
T-MOBILE SITE NAME:  
**CTNH504A**  
SITE ADDRESS:  
1338 HIGHLAND AVE  
CHESHIRE, CONNECTICUT 06410



DATE DRAWN:	10/05/22
ATC JOB NO:	13617819
CUSTOMER ID:	CTNH504A
CUSTOMER #:	CTNH504A

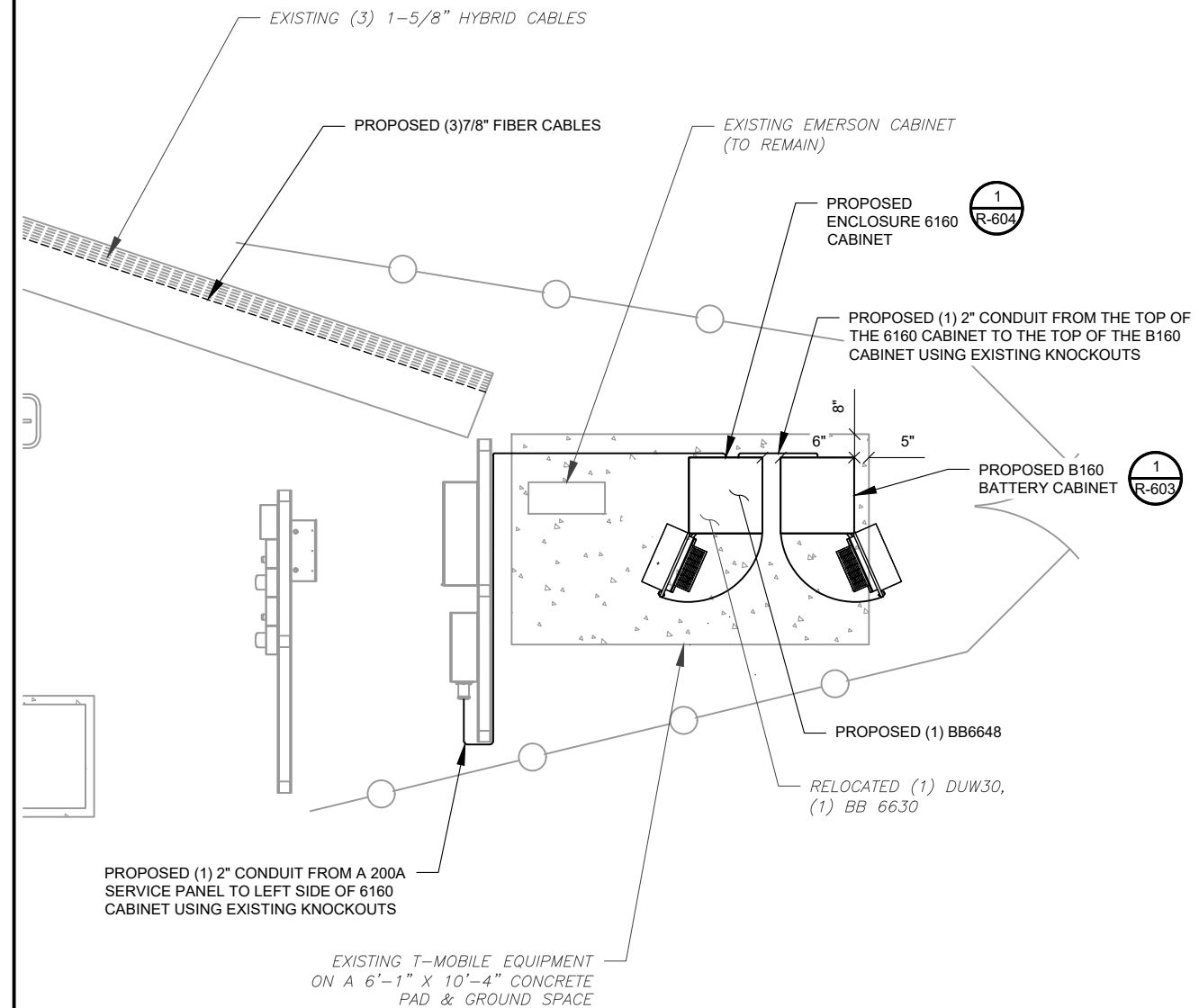
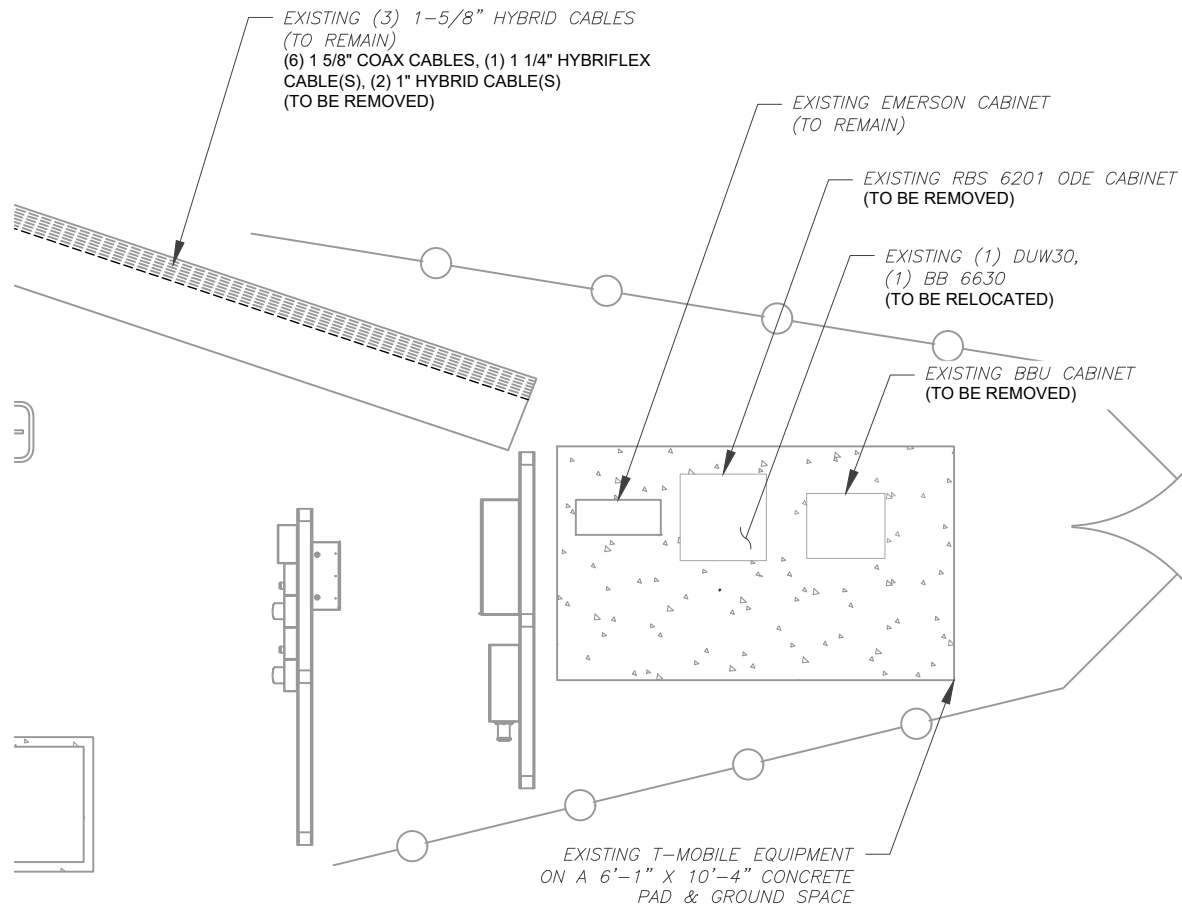
**DETAILED SITE PLAN**

SHEET NUMBER: <b>C-101</b>	REVISION: <b>3</b>
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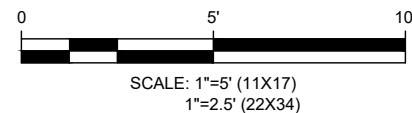
**SITE PLAN NOTES:**

1. CONTRACTOR TO VERIFY THERE IS NO LIVE AAV FIBER RUNNING THROUGH EXISTING DEAD EQUIPMENT. IF SO, THIS WILL NEED TO BE RERUN THROUGH CONDUIT PRIOR TO REMOVING DEAD 2G (6201 CABS) EQUIPMENT.
2. REMOVE EXISTING 2G CABINETS, AND POWER / TELCO WHIPS ASSOCIATED WITH THE DEAD EQUIPMENT IF APPLICABLE.
3. ALL OPEN PORTS NEED TO BE SEALED / WEATHERPROOFED PROPERLY
4. ALL UNNEEDED / EXCESS EQUIPMENT AND GARBAGE TO BE REMOVED FROM EQUIPMENT AREA. DISPOSE OF MATERIALS PROPERLY OFF SITE.

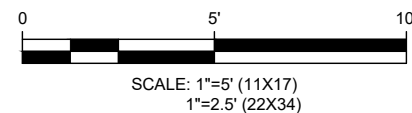
T-MOBILE CM APPROVAL REQUIRED BEFORE INSTALLING CABINETS



1 EXISTING GROUND EQUIPMENT LAYOUT



2 PROPOSED GROUND EQUIPMENT LAYOUT



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REV.	DESCRIPTION	BY	DATE
A	PRELIM	SM	04/12/21
0	ISSUED FOR CONSTRUCTION	KC	05/24/21
1	REVISED	WS	06/09/21
2	REVISED	GV	08/30/22
3	REVISED	GV	10/05/22

ATC SITE NUMBER:

**370624**

ATC SITE NAME:

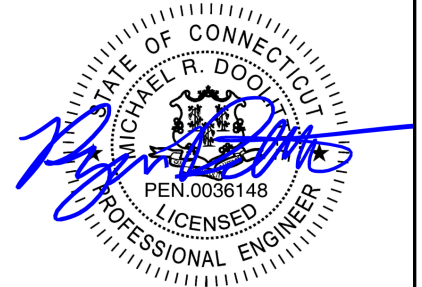
**MANKES SILO**

T-MOBILE SITE NAME:

**CTNH504A**

SITE ADDRESS:  
1338 HIGHLAND AVE  
CHESHIRE, CONNECTICUT 06410

SEAL:

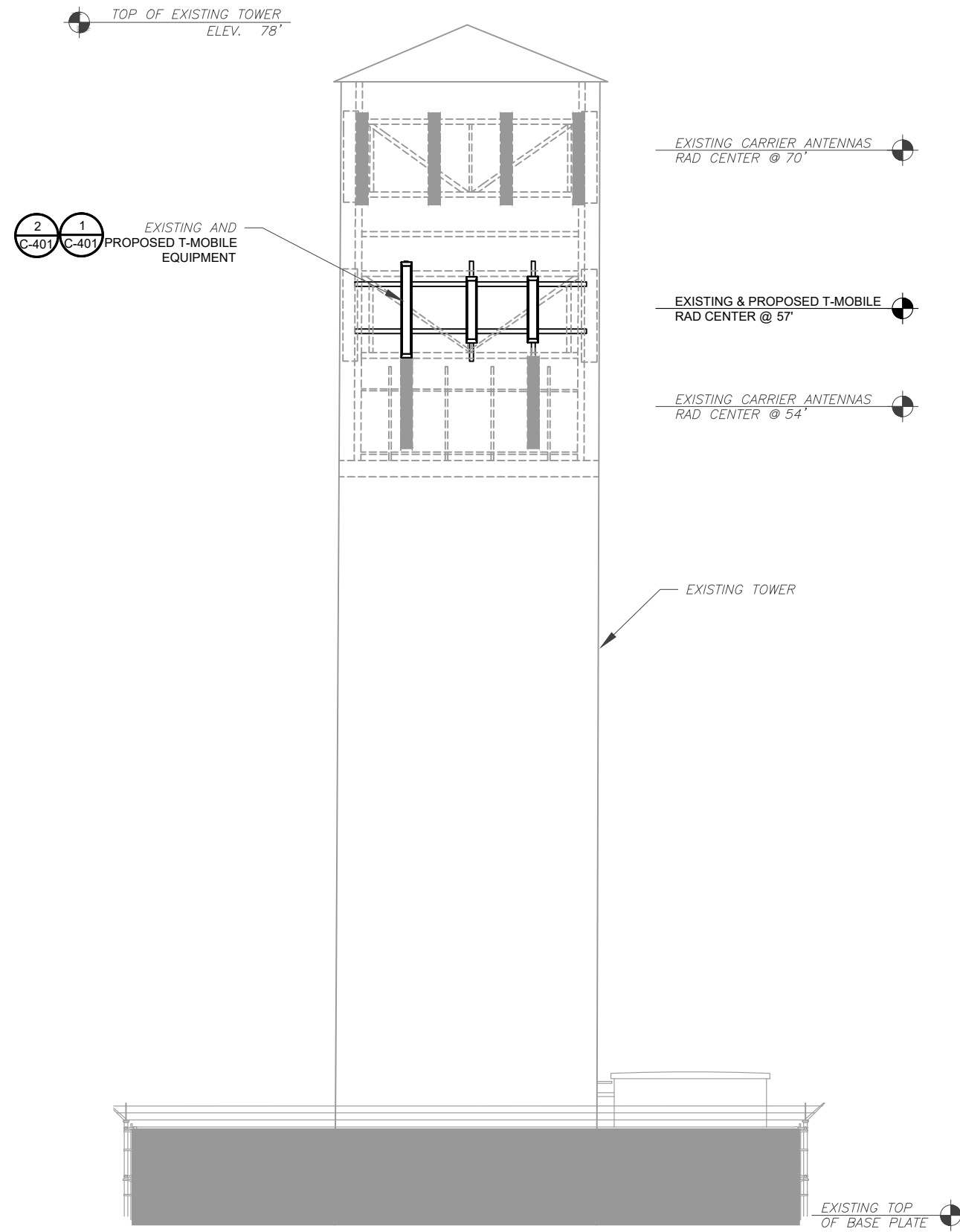


**T-Mobile**

DATE DRAWN:	10/05/22
ATC JOB NO:	13617819
CUSTOMER ID:	CTNH504A
CUSTOMER #:	CTNH504A

**DETAILED GROUND PLAN**

SHEET NUMBER:	REVISION:
<b>C-102</b>	<b>3</b>



PER POST-MODIFICATION MOUNT ANALYSIS COMPLETED BY AMERICAN TOWER, DATED 09/27/22, THE EXISTING MOUNT HAS SUFFICIENT CAPACITY TO SUPPORT THE PROPOSED LOADING ONCE THE MOUNT MODIFICATIONS REFERENCED IN THE POST-MODIFICATION MOUNT ANALYSIS ARE INSTALLED.

1 TOWER ELEVATION  
SCALE: N.T.S.

- TOWER NOTE:**
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE PROJECT MANAGER THAT THEY HAVE THE MOST RECENT VERSION OF THE STRUCTURAL ANALYSIS BEFORE COMMENCING WORK. EXISTING AND PROPOSED TOWER APPURTENANCES, MOUNTS, AND ANTENNAS ARE SHOWN BASED ON THE STRUCTURAL ANALYSIS.
  - WHERE APPLICABLE, ALL NEW ANTENNAS, EQUIPMENT, MOUNTS, CABLING, ETC. SHALL BE PAINTED/SOCKED TO MATCH EXISTING EQUIPMENT IN ACCORDANCE WITH FAA, JURISDICTION, AND/OR OTHER LOCAL REQUIREMENTS.
  - ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. WHERE POSSIBLE UTILIZE EXISTING CABLE SUPPORT STRUCTURES AS PROVIDED FOR CARRIER TO ADEQUATELY SECURE CABLES, USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER. OTHERWISE, ATTACH CABLES TO HORIZONTAL OR DIAGONAL TOWER MEMBERS USING PROPOSED STAINLESS STEEL ADAPTERS (DO NOT ATTACH TO TOWER LEG).
  - TOWER ELEVATIONS ARE MEASURED FROM TOP OF BASE PLATE TO MATCH STRUCTURAL ANALYSIS. ELEVATIONS DO NOT REFLECT TRUE ABOVE GROUND LEVEL (A.G.L.)



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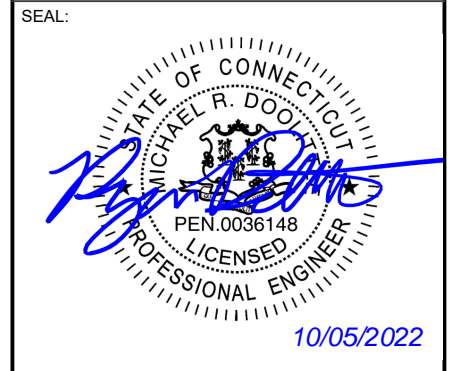
REV.	DESCRIPTION	BY	DATE
A	PRELIM	GV	04/12/21
0	ISSUED FOR CONSTRUCTION	KC	05/24/21
1	REVISED	WS	06/09/21
2	REVISED	GV	08/30/22
3	REVISED	GV	10/05/22

ATC SITE NUMBER:  
**370624**

ATC SITE NAME:  
**MANKES SILO**

T-MOBILE SITE NAME:  
**CTNH504A**

SITE ADDRESS:  
1338 HIGHLAND AVE  
CHESHIRE, CONNECTICUT 06410



DATE DRAWN:	10/05/22
ATC JOB NO:	13617819
CUSTOMER ID:	CTNH504A
CUSTOMER #:	CTNH504A

**TOWER ELEVATION**

SHEET NUMBER: <b>C-201</b>	REVISION: <b>3</b>
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REV.	DESCRIPTION	BY	DATE
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ATC SITE NUMBER:  
**370624**  
ATC SITE NAME:  
**MANKES SILO**  
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**CTNH504A**  
SITE ADDRESS:  
1338 HIGHLAND AVE  
CHESHIRE, CONNECTICUT 06410

SEAL:

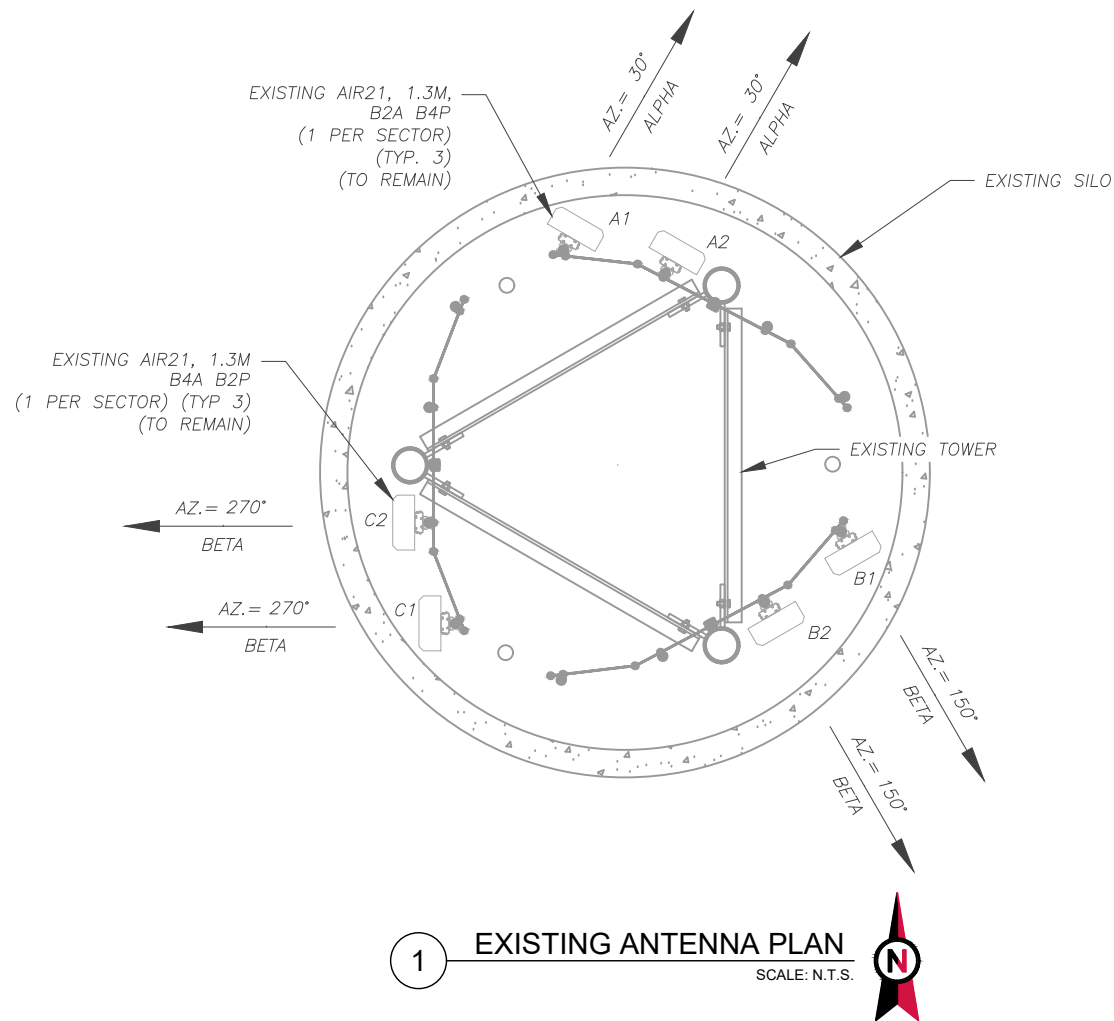


DATE DRAWN:	10/05/22
ATC JOB NO:	13617819
CUSTOMER ID:	CTNH504A
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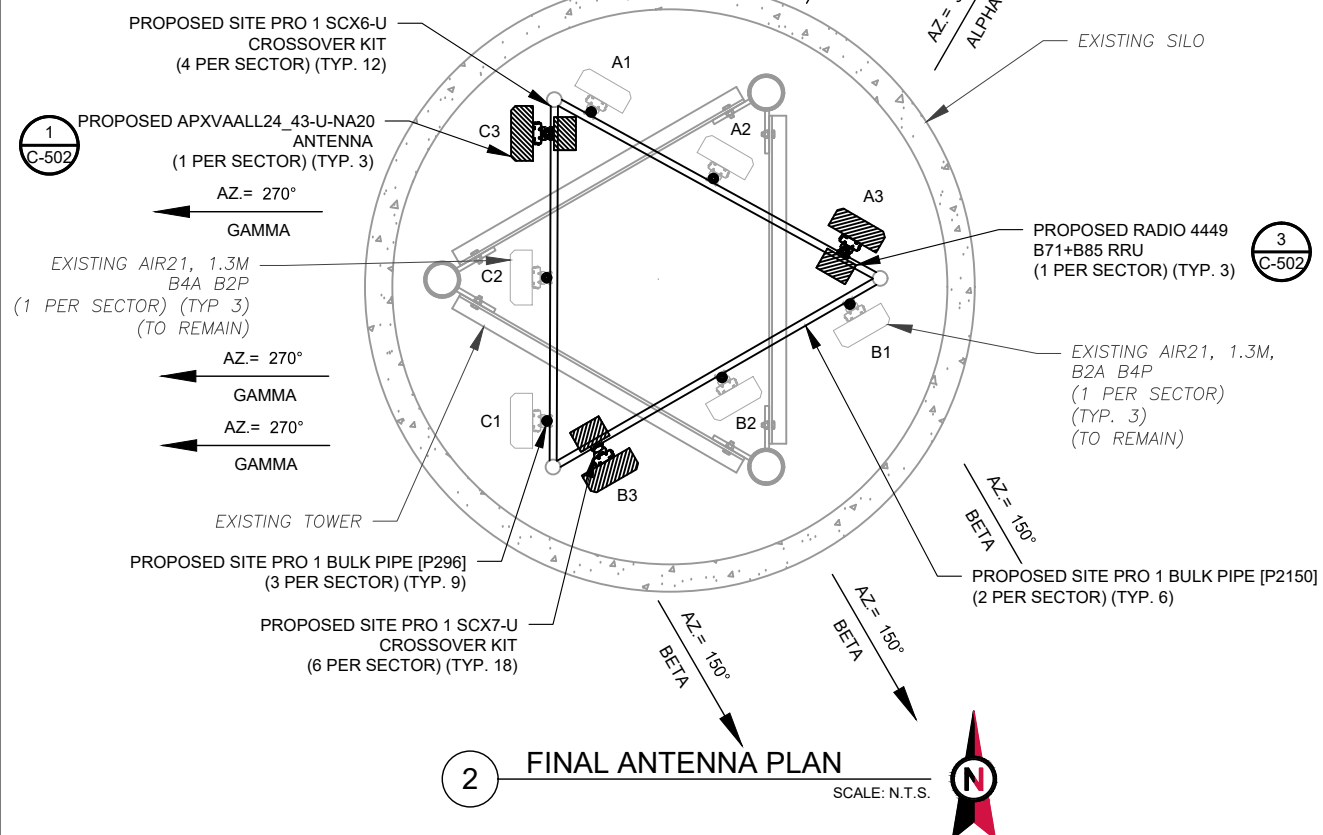
**ANTENNA INFORMATION & SCHEDULE**

SHEET NUMBER:	REVISION:
<b>C-401</b>	<b>3</b>

PER POST-MODIFICATION MOUNT ANALYSIS COMPLETED BY AMERICAN TOWER, DATED 09/27/22, THE EXISTING MOUNT HAS SUFFICIENT CAPACITY TO SUPPORT THE PROPOSED LOADING ONCE THE MOUNT MODIFICATIONS REFERENCED IN THE POST-MODIFICATION MOUNT ANALYSIS ARE INSTALLED.



**1 EXISTING ANTENNA PLAN**  
SCALE: N.T.S.



**2 FINAL ANTENNA PLAN**  
SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE									
LOCATION		ANTENNA SUMMARY					NON ANTENNA SUMMARY		
SECTOR	RAD	AZ	POS	ANTENNA	BAND	MECH/ELEC D-TILT	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA	57'	30°	A1	AIR21, 1.3M, B2A B4P	U1900	0/2°	RMN	-	-
			A2	AIR21, 1.3M, B2P B4A	L2100	0/2°	RMN	-	-
BETA	57'	150°	B1	AIR21, 1.3M, B2A B4P	U1900	0/2°	RMN	-	-
			B2	AIR21, 1.3M, B2P B4A	L2100	0/2°	RMN	-	-
GAMMA	57'	270°	C1	AIR21, 1.3M, B2A B4P	U1900	0/2°	RMN	-	-
			C2	AIR21, 1.3M, B2P B4A	L2100	0/2°	RMN	-	-

**NOTES**

- CONFIRM WITH T-MOBILE REP FOR APPLICABLE UPDATES/REVISIONS AND MOST RECENT RFDS FOR NSN CONFIGURATION (CONFIG). GC TO CAP ALL UNUSED PORTS.
- CONFIRM SPACING OF PROPOSED EQUIP DOES NOT CAUSE TOWER CONFLICTS NOR IMPEDE TOWER CLIMBING PEGS.

**STATUS ABBREVIATIONS**

RMV: TO BE REMOVED  
RMN: TO REMAIN  
REL: TO BE RELOCATED  
ADD: TO BE ADDED

**CABLE LENGTHS FOR JUMPERS**

JUNCTION BOX TO RRU: 15'  
RRU TO ANTENNA: 10'

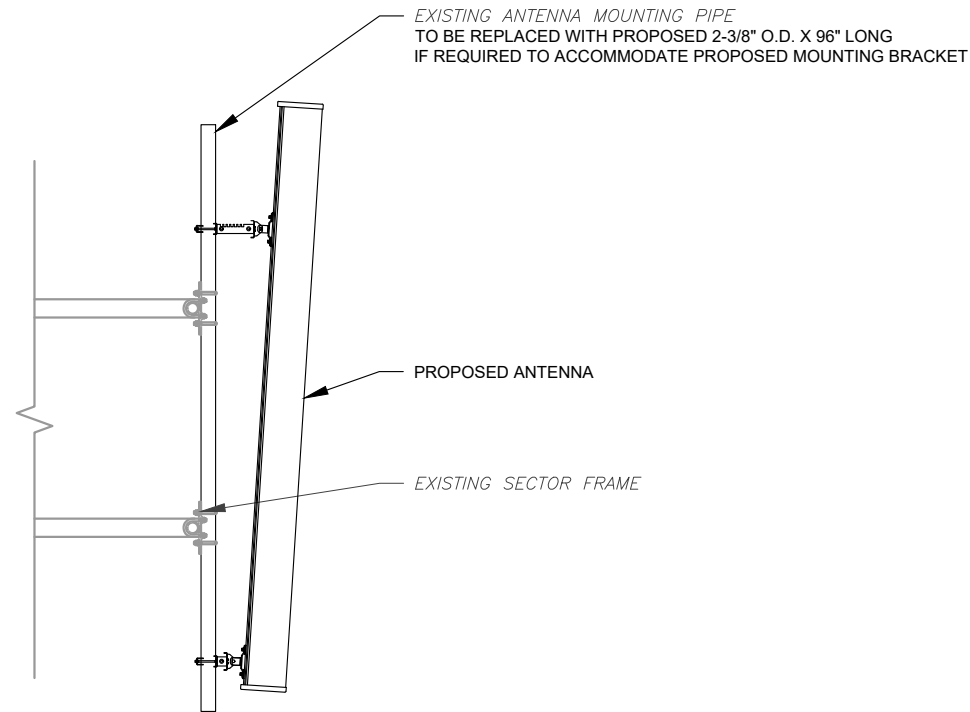
FINAL ANTENNA SCHEDULE									
LOCATION		ANTENNA SUMMARY					NON ANTENNA SUMMARY		
SECTOR	RAD	AZ	POS	ANTENNA	BAND	MECH/ELEC D-TILT	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA	57'	30°	A1	AIR21, 1.3M, B2A B4P	U1900	0/2°	RMN	-	-
			A2	AIR21, 1.3M, B2P B4A	L2100	0/2°	RMN	-	-
			A3	APXVAALL24_43-U-NA20	N600, L700, L600	0/2°	ADD	RADIO 4449 B71+B85	ADD
BETA	57'	150°	B1	AIR21, 1.3M, B2A B4P	U1900	0/2°	RMN	-	-
			B2	AIR21, 1.3M, B2P B4A	L2100	0/2°	RMN	-	-
			B3	APXVAALL24_43-U-NA20	N600, L700, L600	0/2°	ADD	RADIO 4449 B71+B85	ADD
GAMMA	57'	270°	C1	AIR21, 1.3M, B2A B4P	U1900	0/2°	RMN	-	-
			C2	AIR21, 1.3M, B2P B4A	L2100	0/2°	RMN	-	-
			C3	APXVAALL24_43-U-NA20	N600, L700, L600	0/2°	ADD	RADIO 4449 B71+B85	ADD

EXISTING FIBER DISTRIBUTION/OVP BOX		EXISTING CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
-	-	(6) 1 5/8"	(1) 1 1/4" HYBRIFLEX	RMV
-	-	-	(2) 1" HYBRID	RMV
-	-	-	(3) 1 5/8"	RMN

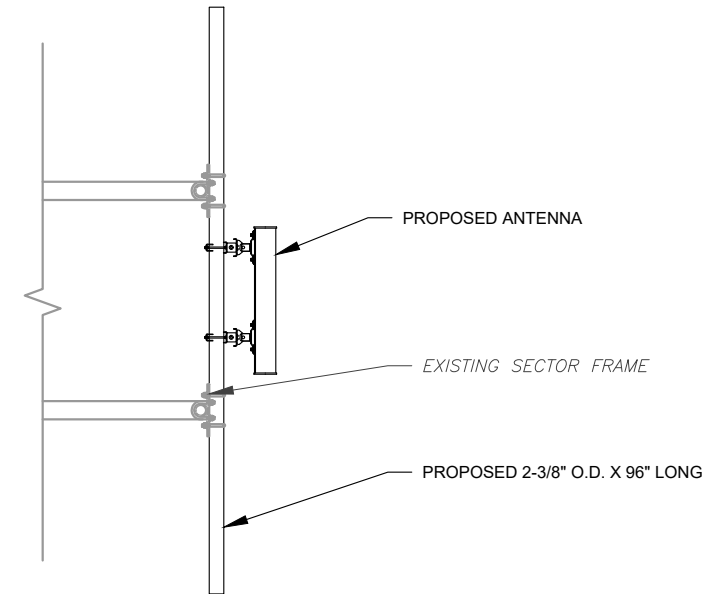
**3 EQUIPMENT SCHEDULES**

FINAL FIBER DISTRIBUTION / OVP BOX		FINAL CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
-	-	-	(3) 1 5/8"	RMN
-	-	-	(3) 7/8" FIBER	ADD

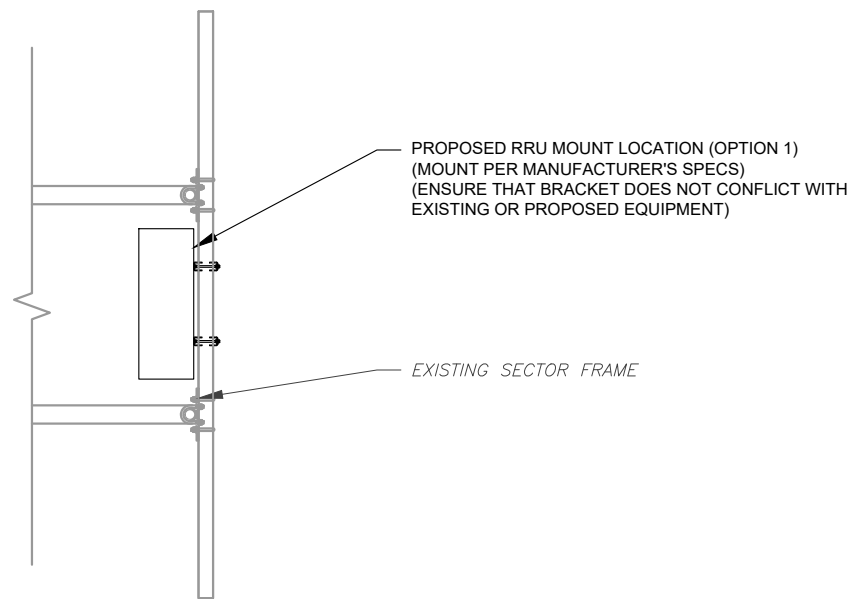
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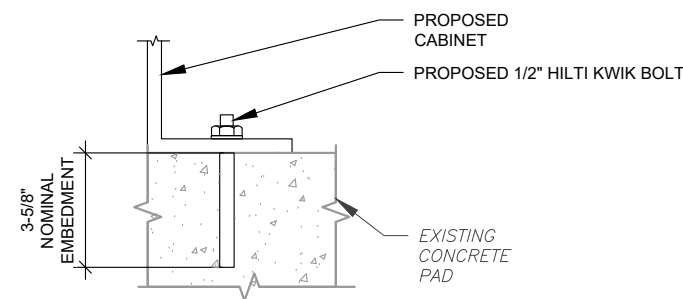
1 PROPOSED ANTENNA MOUNTING DETAIL - TYPICAL  
SCALE: N.T.S.



2 PROPOSED 5G ANTENNA MOUNTING DETAIL - TYPICAL  
SCALE: N.T.S.



3 PROPOSED RRU MOUNTING DETAIL - TYPICAL  
SCALE: N.T.S.



NOTE:  
INSTALL HILTI KWIK BOLT ANCHORS STRICTLY PER  
INSTALLATION INSTRUCTIONS INCLUDED WITH PRODUCT OR  
FOUND ONLINE AT WWW.US.HILTI.COM. PROPER  
INSTALLATION IS CRITICAL FOR FULL PERFORMANCE.

4 CABINET ATTACHMENT DETAIL  
SCALE: NOT TO SCALE



Kimley»Horn

COA: PEC.0000738  
421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601

REV.	DESCRIPTION	BY	DATE
A	PRELIM	SM	04/12/21
0	ISSUED FOR CONSTRUCTION	KC	05/24/21
1	REVISED	WS	06/09/21
2	REVISED	GV	08/30/22
3	REVISED	GV	10/05/22

ATC SITE NUMBER:

370624

ATC SITE NAME:

MANKES SILO

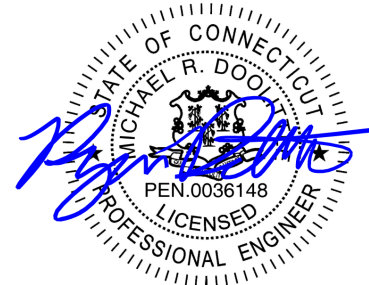
T-MOBILE SITE NAME:

CTNH504A

SITE ADDRESS:

1338 HIGHLAND AVE  
CHESHIRE, CONNECTICUT 06410

SEAL:



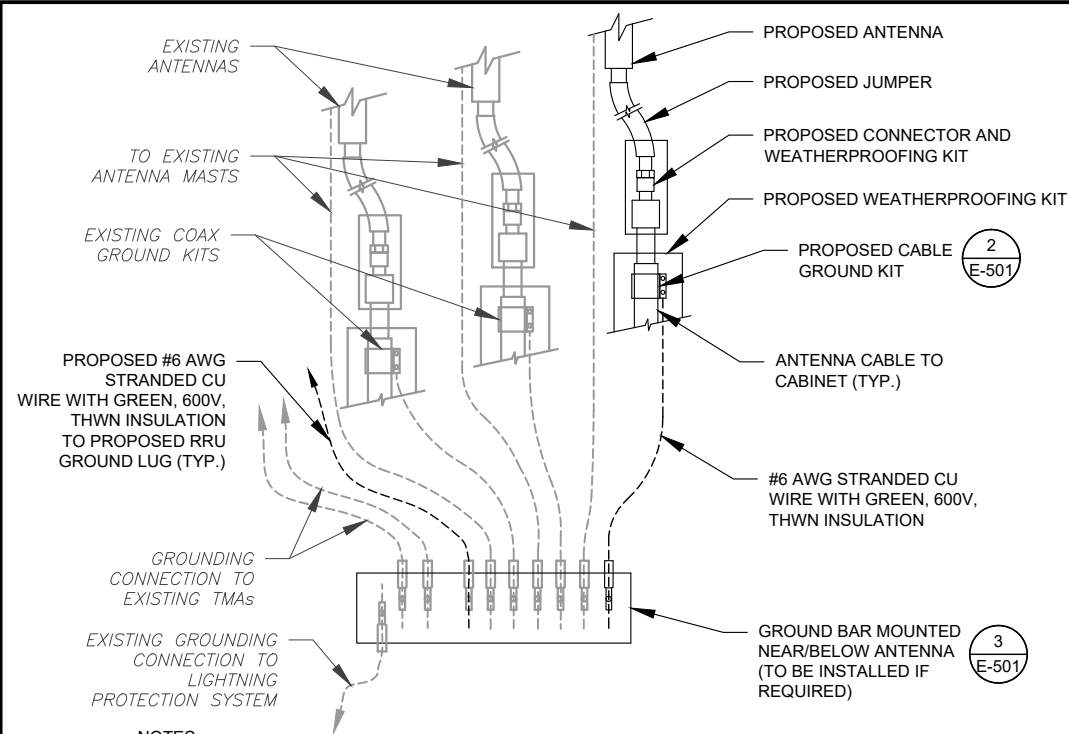
T-Mobile

DATE DRAWN:	10/05/22
ATC JOB NO:	13617819
CUSTOMER ID:	CTNH504A
CUSTOMER #:	CTNH504A

CONSTRUCTION  
DETAILS

SHEET NUMBER:  
**C-501**

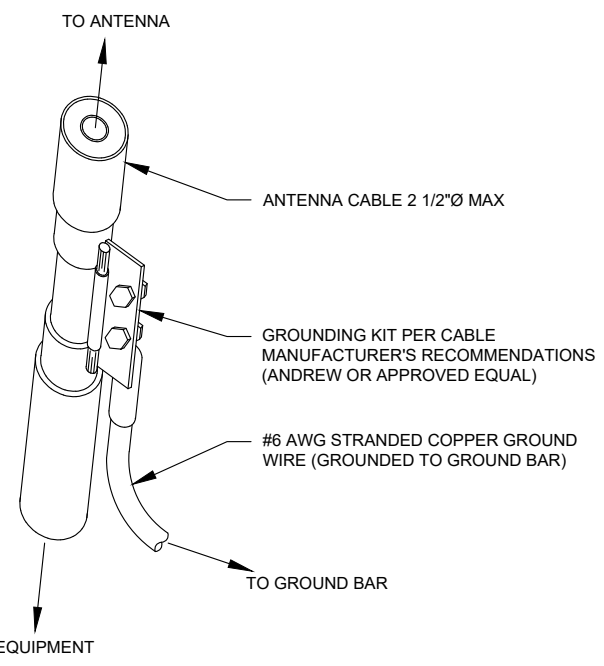
REVISION:  
**3**



**NOTES:**

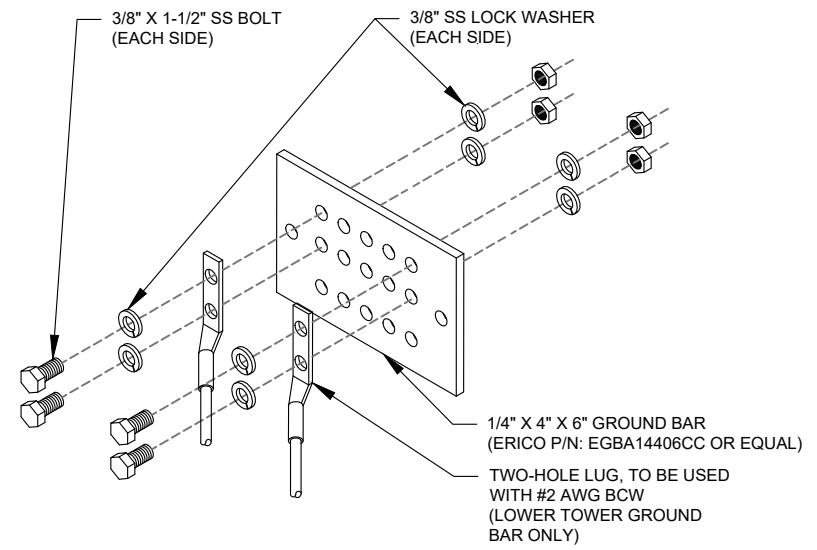
1. THIS DETAIL IS INTENDED TO SHOW THE GENERAL GROUNDING REQUIREMENTS. SLIGHT ADJUSTMENTS MAY BE REQUIRED BASED ON EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NEEDED AND INFORM THE CONSTRUCTION MANAGER OF ANY CONFLICTS.
2. SITE GROUNDING SHALL COMPLY WITH T-MOBILE GROUNDING STANDARDS, LATEST EDITION, AND COMPLY WITH T-MOBILE GROUNDING CHECKLIST, LATEST VERSION. WHEN NATIONAL AND LOCAL GROUNDING CODES ARE MORE STRINGENT THEY SHALL GOVERN.

**1 TYPICAL ANTENNA GROUNDING DIAGRAM**  
SCALE: N.T.S.



- GROUND KIT NOTES:**
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
  2. CONTRACTOR SHALL PROVIDE WEATHERPROOFING KIT (ANDREW PART NUMBER 221213) AND INSTALL/TAPE PER MANUFACTURER'S SPECIFICATIONS.

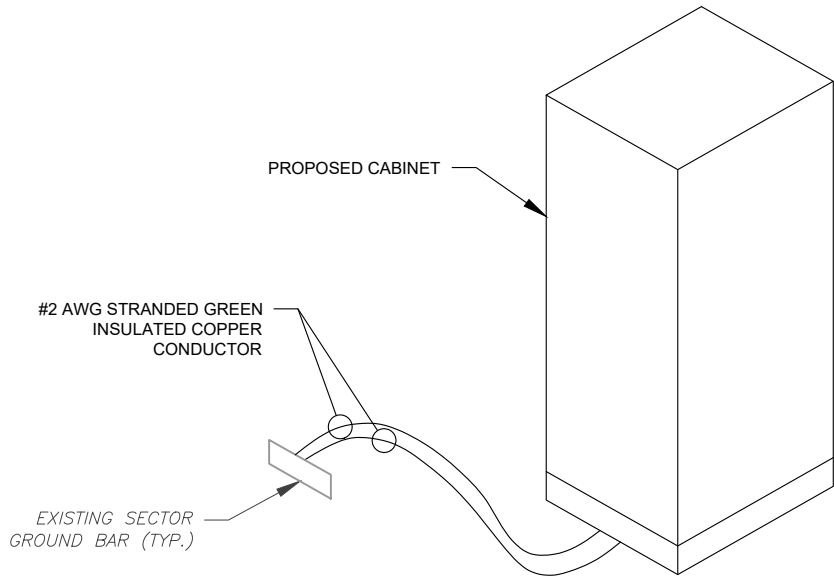
**2 CABLE GROUND KIT CONNECTION DETAIL**  
SCALE: N.T.S.



**GROUND BAR NOTES:**

1. GROUND BAR KITS COME WITH ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. EXCEPT THE STRUCTURAL MOUNTING MEMBER(S).
2. GROUND BAR TO BE BONDED DIRECTLY TO TOWER.

**3 TOWER GROUND BAR DETAIL**  
SCALE: N.T.S.



**4 CABINET GROUNDING DETAIL**  
SCALE: N.T.S.

**ELECTRICAL NOTES:**

1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE T-MOBILE REPRESENTATIVE AND LOCAL UTILITY COMPANY FOR THE INSTALLATION OF CONDUITS, CONDUCTORS, BREAKERS, DISCONNECTS, OR ANY OTHER EQUIPMENT REQUIRED FOR ELECTRICAL SERVICE. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LATEST EDITION OF THE STATE AND NATIONAL CODES, ORDINANCES AND REGULATIONS APPLICABLE TO THIS PROJECT.
2. ATC HAS NOT VERIFIED ANY EXISTING T-MOBILE GROUND EQUIPMENT OR ELECTRICAL LOADING. PROPOSED WORK BASED ON INSTALLATION CONFIGURATION PROVIDED BY T-MOBILE. CONTRACTOR TO VERIFY EXISTING T-MOBILE PANEL HAS SUFFICIENT SPACE FOR PROPOSED BREAKER. PROPOSED CABLE AND CONDUIT SHALL BE MINIMUM SIZE PER BELOW IN CHART.
3. FOR SPECIFIC CABINET / ANCILLARY EQUIPMENT WIRING REQUIREMENTS, THE T-MOBILE CONTRACTOR SHOULD REFERENCE DESIGN DOCUMENTS PROVIDED BY T-MOBILE FOR THIS CURRENT PROJECT CONFIGURATION, IN ACCORDANCE WITH LOCAL JURISDICTION REQUIREMENTS & NEC STANDARDS & PRACTICES.

OCPD SIZE	WIRE SIZE	GROUND SIZE	CONDUIT SIZE
80A/2P	2#3 AWG	#8 AWG	1-1/4"
100/2P	2#2 AWG	#8 AWG	1-1/4"
125A/2P	2#1 AWG	#8 AWG	1-1/2"
150A/2P	2#1/0 AWG	#8 AWG	1-1/2"



**Kimley»Horn**

COA: PEC.0000738  
421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601

REV.	DESCRIPTION	BY	DATE
A	PRELIM	SM	04/12/21
0	ISSUED FOR CONSTRUCTION	KC	05/24/21
1	REVISED	WS	06/09/21
2	REVISED	GV	08/30/22
3	REVISED	GV	10/05/22

ATC SITE NUMBER:

**370624**

ATC SITE NAME:

**MANKES SILO**

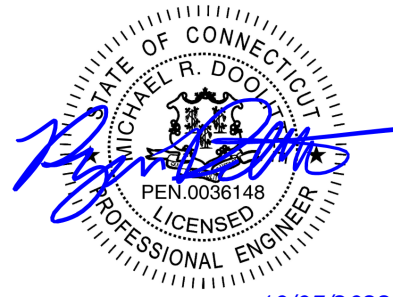
T-MOBILE SITE NAME:

**CTNH504A**

SITE ADDRESS:

1338 HIGHLAND AVE  
CHESHIRE, CONNECTICUT 06410

SEAL:



DATE DRAWN:	10/05/22
ATC JOB NO:	13617819
CUSTOMER ID:	CTNH504A
CUSTOMER #:	CTNH504A

**GROUNDING DETAILS**

SHEET NUMBER:

**E-501**

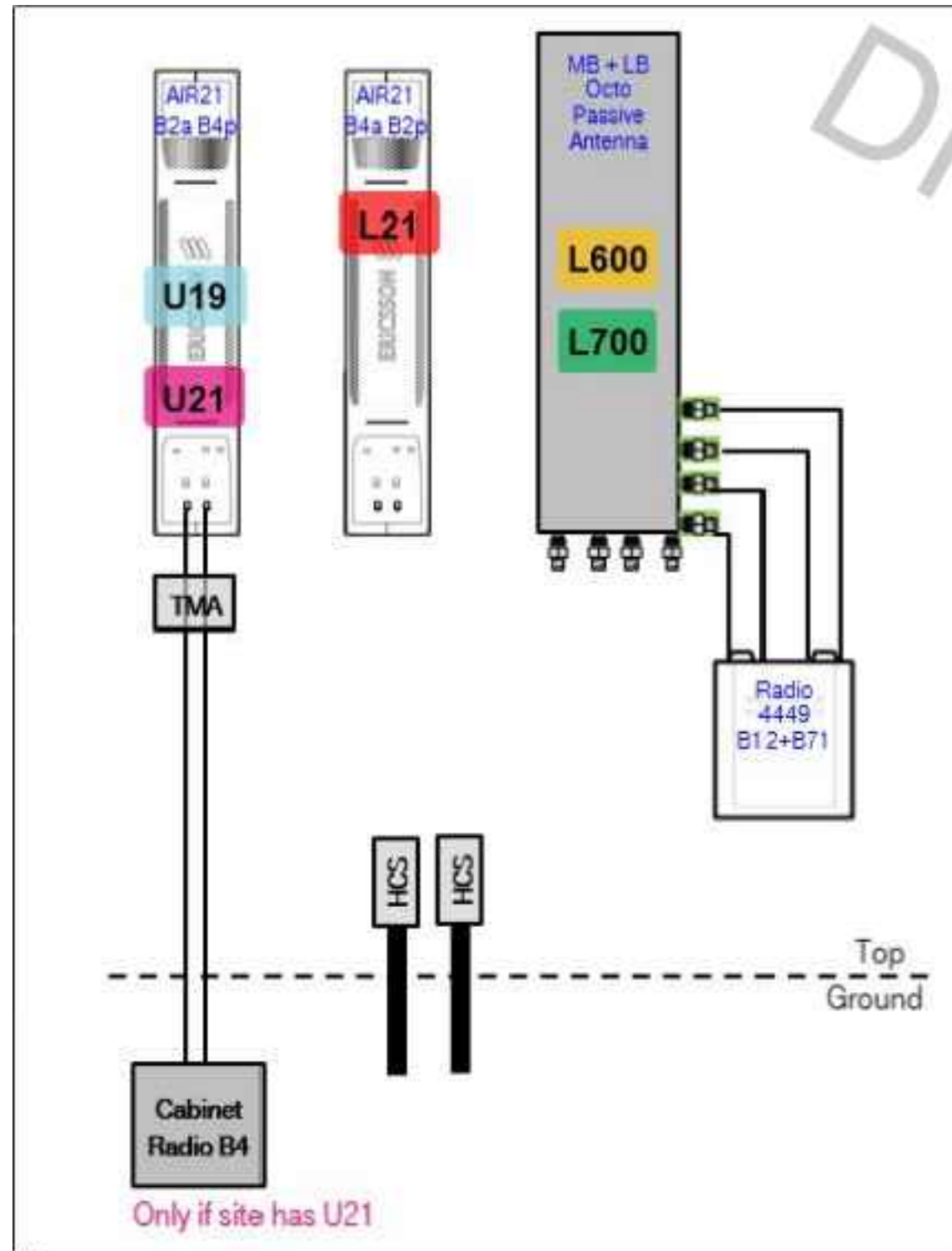
REVISION:

**3**

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Section 5 - RAN Equipment	
<b>Existing RAN Equipment</b>	
Template: 5A	
Enclosure	1
Enclosure Type	RBS 6201 ODE
Baseband	DUW30 BB 6630 L2100
Hybrid Cable System	Ericsson 3x6 HCS "Select Length" (x 3)
<b>Proposed RAN Equipment</b>	
Template: 67D05A	
Enclosure	1 2
Enclosure Type	Enclosure 6160 B160
Baseband	DUW30 BB 6630 BB 6648 U1900 L2100 N800 L700 L600
Hybrid Cable System	Ericsson 3x6 HCS "Select Length" (x 3) Ericsson Hybrid Trunk 624 4AWG 100m (x 3)
<b>RAN Scope of Work:</b>	
Replace existing cabinet with (1) RBS6102 MU AC. Replace (1) DUS31 with (1) BB6630 for L2100, L700, and L600. Install (1) BB6630 for future 5G N800. Add (3) 6X12 HCS. Existing: (6) Coaxial Lines; (3) 3X6 HCS. Coaxial Lines can be removed if they dead-end on the bridge (if they do not go up the silo). Remove BBU.	

1 CABINET CONFIGURATION  
SCALE: NOT TO SCALE



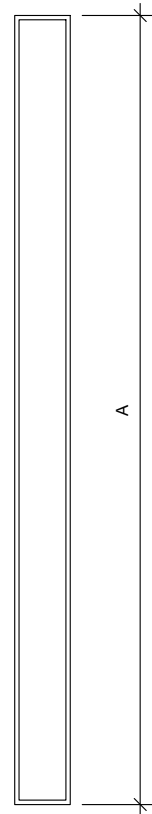
2 ANTENNA CONFIGURATION  
SCALE: NOT TO SCALE

NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.

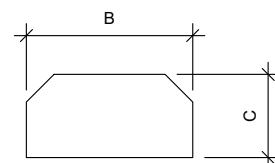
SUPPLEMENTAL

SHEET NUMBER: <b>R-601</b>	REVISION: <b>3</b>
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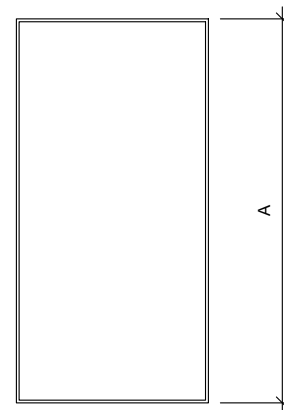
FRONT VIEW



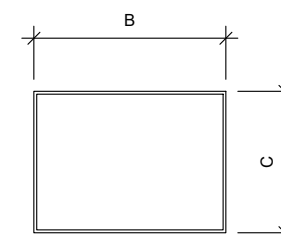
TOP VIEW

**1 ANTENNA SPECIFICATIONS**  
FOR ILLUSTRATIVE PURPOSES ONLY - NOT TO SCALE

ANTENNA SPECIFICATIONS				
ANTENNA MODEL	A	B	C	WEIGHT (LBS)
APXVAALL24_43-U-NA20	95.9	24.0"	8.5"	122.8



FRONT VIEW



TOP VIEW

**2 RRU SPECIFICATIONS**  
FOR ILLUSTRATIVE PURPOSES ONLY - NOT TO SCALE

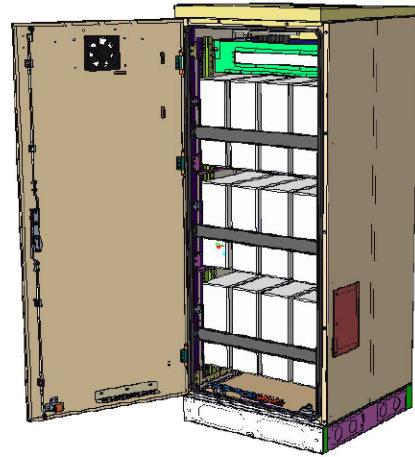
RRU SPECIFICATIONS				
RRU MODEL	A	B	C	WEIGHT (LBS)
RADIO 4449 B71 B85A	15.0"	13.2"	10.5"	75

SUPPLEMENTAL

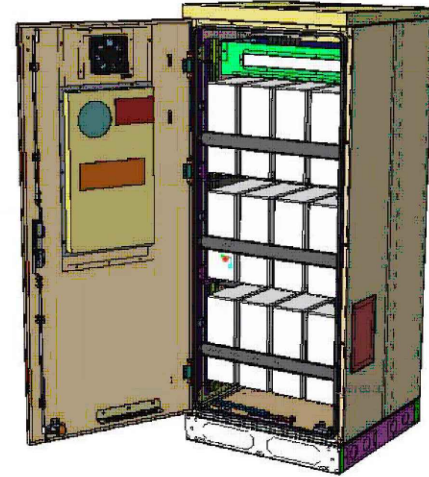
SHEET NUMBER:  
**R-602**

REVISION:  
**3**

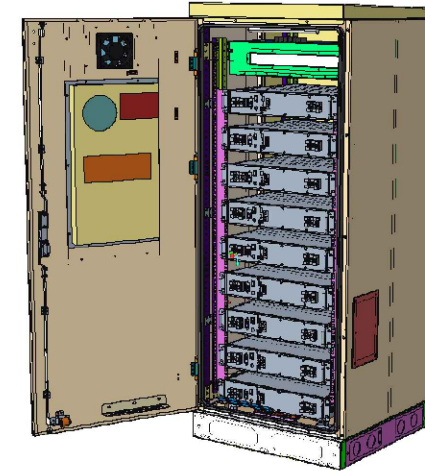
# Enclosure B160



Enclosure B160  
AirCon + VRLA



Enclosure B160  
AirCon + Li-Ion



Enclosure B160  
Convection Cooling  
+ VRLA

PA1 | 2019-02-03 | Ericsson Confidential | Page 1

# Enclosure B160

## Capacity

- VRLA 12V: 100Ah / 150Ah / 170Ah / 190Ah / 210Ah
- Li-Ion: 24U 19" / 23"
- Sodium-Nickel: 3x FIAMM

## Electrical specification

- DC Output: -48VDC/200A
- Battery breakers: 2x 125/2p
- Alarms: Door open, Climate failure, MCB Connection

## Mechanical specification

- Weight: 134kg
- Dimensions: 63 x 26 x 26 in. (incl. Base frame)
- Base frame height: 6 in.
- Material: Galvanized steel (180g/m<sup>2</sup>)
- Color: Powder paint NCS 2002-B
- Door: Front access
- Locking type: Pad lock / cylinder

## Environmental specification

- Ingress protection:

VRLA/Sodium IP44  
Li-Ion IP55

- Relative humidity:

15-100%

## Climate system

- Air Conditioner
  - Fan type:
  - Cooling capacity:
- Convection cooling
  - Emergency fan

DC  
500W @L35/L35

PA1 | 2019-02-03 | Ericsson Confidential | Page 2

SUPPLEMENTAL

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT.

SHEET NUMBER:  
**R-603**

REVISION:  
**3**



# Enclosure 6160 AC

The Enclosure 6160 is a multi-purpose site cabinet designed to support a multitude of equipment such as ERS Baseband, Transport, Li-Ion battery and 3PP vendor equipment. It also provides a highly capable power system and battery back-up - all in a streamlined design and minimized footprint to support cost efficient expansion of mobile broadband.

Being an all-in-one enclosure, the Enclosure 6160 is a very fitting choice for all types of sites where the capacity need is large or room for future expansion is needed. It is ideally used for modernizing existing sites or in greenfield scenarios to match both current and future needs.

With a robust design, IP65 compliance and a sealed Heat Exchanger (HEX) climate system the Enclosure 6160 ensures optimal environmental protection of the active equipment - enabling them for a long-lasting service. The complete system is also integrated and verified for the entire Ericsson Radio System and ensures best-in-class service.

The power system offers 31,5kW of power in total and provides 24kW of -48V DC power for both internal and external consumers.

The equipment space allows 19U of rack space ensuring well enough capacity for existing need and future expansion.

One of the main advantages of the Enclosure 6160 is its default integration with ENM - allowing for advanced remote monitoring and control such as a fault management (alarms), inventory management and performance measurements. The cabinet also provides an open O&M interface for integration to 3PP O&M systems.



## Preliminary technical specification for Enclosure 6160 AC

### CAPACITY

Rack space user equipment	19U (19" rack)
Hardware capabilities	Power and CPRI support for multi-standard remote radios (RRU or AIR) ERS Baseband and Transport units Li-Ion batteries 3PP equipment Additional power feed available as option

### MECHANICAL SPECIFICATION

Weight	145 kg (excluding active equipment) 320 lbs (excluding active equipment)
Dimension (H x W x D)	1600 x 650 x 650 mm (incl. Base frame) 63 x 26 x 26 in. (incl. Base frame)
Base frame height	150 mm 6 in.
Mounting position	Ground
Enclosure material	Aluminum
Color	Power paint NCS 2002-B
Door	Front access
Rack type	19" (IEC 60297-3-100)
Locking type	Pad lock or Cylinder

### POWER SYSTEM

Input voltage	3P+N+PE: 346/200-415/240 VAC 2P+N+PE: 208/120-220/127 VAC 1P+N+PE: 200-250 VAC
Input power	<33kW
Output load (-48VDC)	24kW
Total capacity (-48VDC)	31.5kW
AC SPD	Class 2/Type 2
DC SPD	Class 2/Type 2
PSU Slots	9x
Service outlet	Optional
Priority load	8x Circuit Breaker
LLVD 1	6x Circuit Breaker
LLVD 2	6x Circuit Breaker
CB ratings	3A / 5A / 10A / 15A / 20A / 25A / 30A / 40A / 50A / 60A / 80A / 100A
Battery Interface	2x Circuit Breaker
Battery Circuit Breaker rating	125A 2pol (200A)
PSU capacity	3500W

SUPPLEMENTAL

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT.

SHEET NUMBER:  
**R-604**

REVISION:  
**3**

**AMERICAN TOWER CORPORATION**

### Post Modification Mount Analysis Report

ATC Site Name : Mankes Silo, CT  
 ATC Site Number : 370624  
 Engineering Number : 13617819\_C9\_04  
 Mount Elevation : 57 ft  
 Carrier : T-Mobile  
 Carrier Site Name : CTNH504A  
 Carrier Site Number : CTNH504A  
 Site Location : 1338 Highland Ave  
 Cheshire, CT 06410-0000  
 41.53694444, -72.89333333  
 County : New Haven  
 Date : July 7, 2022  
 Max Usage : 39%  
 Result : Contingent Pass

Prepared By: Michael Ellis  
 Structural Engineer I

Reviewed By: [Signature]

COA: PEC.0001553

A.T. Engineering Service, PLLC - 3500 Regency Parkway, Suite 300 - Cary, NC 27513 - 919.468.0112 (Office) - 919.468.4414 (Fax) - www.american-tower.com

**AMERICAN TOWER CORPORATION** Eng. Number 13617819\_C9\_04 July 7, 2022

**Table of Contents**

Introduction ..... 1  
 Supporting Documents ..... 1  
 Analysis ..... 1  
 Conclusion ..... 1  
 Application Loading ..... 2  
 Structure Usages ..... 2  
 Mount Layout ..... 3  
 Equipment Layout ..... 4  
 Standard Conditions ..... 7  
 Calculations ..... Attached

A.T. Engineering Service, PLLC - 3500 Regency Parkway, Suite 300 - Cary, NC 27513 - 919.468.0112 (Office) - 919.468.4414 (Fax) - www.american-tower.com

**AMERICAN TOWER CORPORATION** Eng. Number 13617819\_C9\_04 July 7, 2022 Page 1

**Introduction**  
 The purpose of this report is to summarize results of the mount analysis performed for T-Mobile at 57 ft.

**Supporting Documents**

Radio Frequency Data Sheet	RFDS ID: CTNH504A, dated February 16, 2021
Reference Photos	Site photos from 2022

**Analysis**  
 This mount was analyzed using American Tower Corporation's Mount Analysis Program and RISA-3D

Basic Wind Speed:	0 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	No Ice Considered
Codes:	ANSI/TIA-222-H
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.199, S1 = 0.099
Site Class:	D - 50ft Silo - Default
Live Loads:	Lm = 500 lbs, Lv = 250 lbs

**Conclusion**  
 Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above provided the modifications listed below are completed:

- Install modification per ATC Drawing #13617819\_C9\_04

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

A.T. Engineering Service, PLLC - 3500 Regency Parkway, Suite 300 - Cary, NC 27513 - 919.468.0112 (Office) - 919.468.4414 (Fax) - www.american-tower.com

**AMERICAN TOWER CORPORATION** Eng. Number 13617819\_C9\_04 July 7, 2022 Page 2

**Application Loading**

Mount Centeline (ft)	Equipment Centeline (ft)	Qty	Equipment Manufacturer & Model
57.0	57.0	6	Ericsson ARR 25, 1.3 M, 82A B4P
		3	RFS AP9WMA126-43-Q-RA20
		3	Ericsson Radio 4849 B7L B55A

**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Horizontals	39%	Pass
Mount Pipes	33%	Pass

A.T. Engineering Service, PLLC - 3500 Regency Parkway, Suite 300 - Cary, NC 27513 - 919.468.0112 (Office) - 919.468.4414 (Fax) - www.american-tower.com

**AMERICAN TOWER CORPORATION**  
**A.T. ENGINEERING SERVICE, PLLC**  
 3500 REGENCY PARKWAY  
 SUITE 300  
 CARY, NC 27518  
 PHONE: (919) 468-0112  
 COA: PEC.0001553

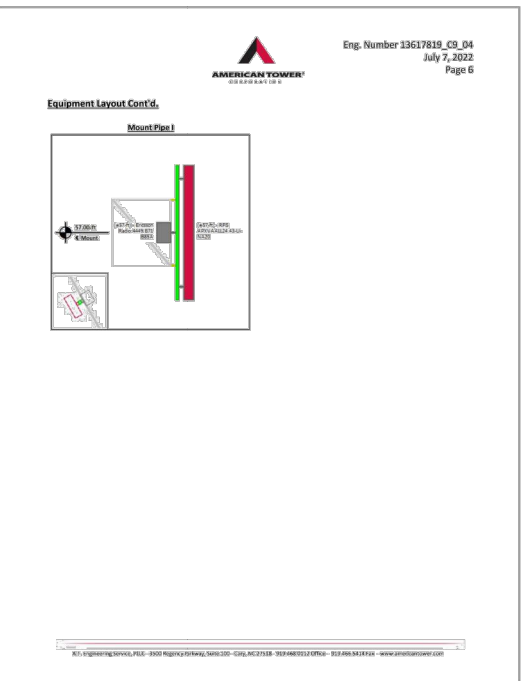
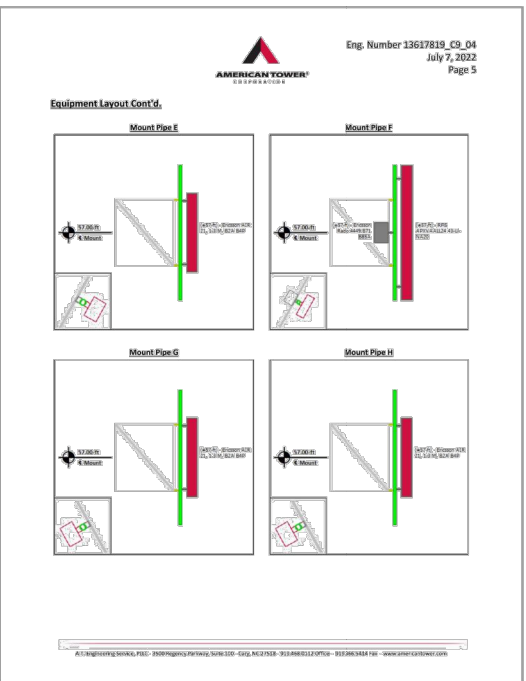
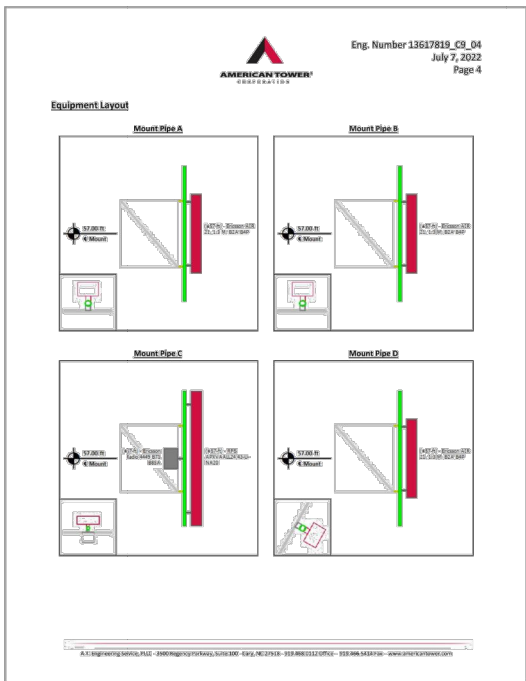
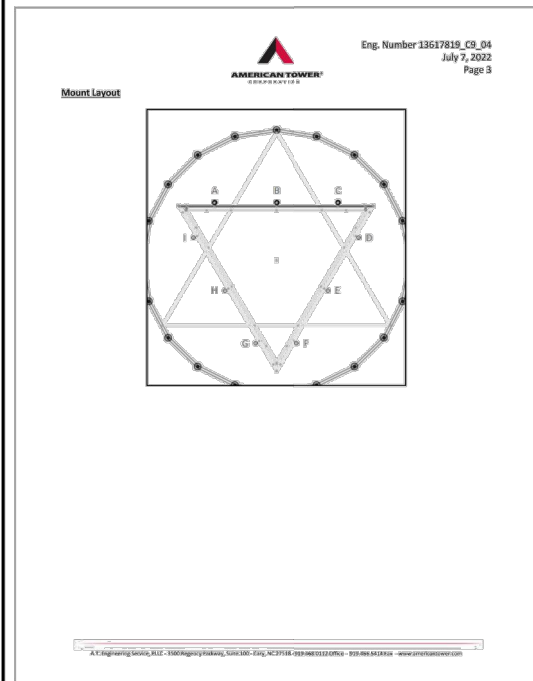
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REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	KPJ	07/08/22

ATC SITE NUMBER:  
370624

ATC SITE NAME:  
MANKES SILO  
CONNECTICUT

SITE ADDRESS:  
1338 HIGHLAND AVE  
CHESHIRE, CT 06410



**STATE OF CONNECTICUT**  
**LESLIA KAUSHAL MODI**  
 32593  
**PROFESSIONAL ENGINEER**

Authorized by "EOR"  
 08 Jul 2022 09:59:01 **cosign**

DRAWN BY:	KPJ
APPROVED BY:	MFE
DATE DRAWN:	07/08/22
ATC JOB NO:	13617819_C9_04

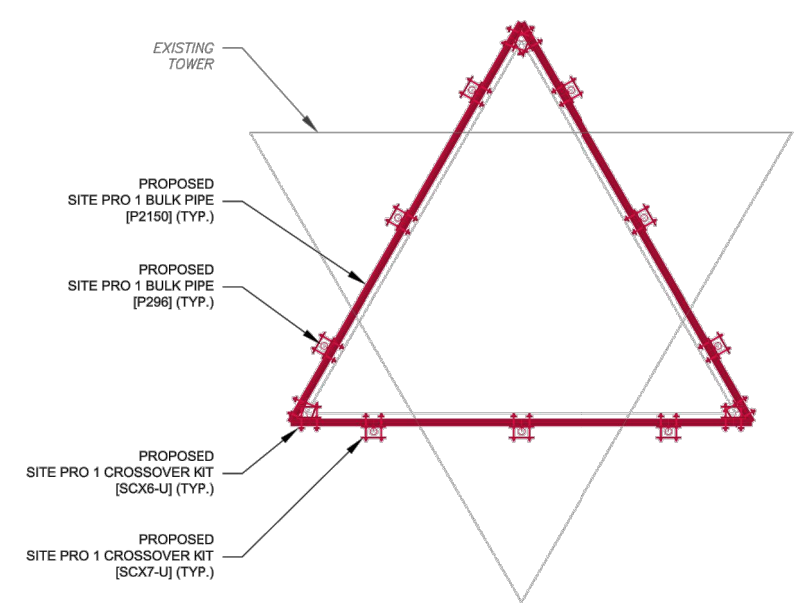
**SUPPLEMENTAL**

SHEET NUMBER:	R-902	REVISION:	0
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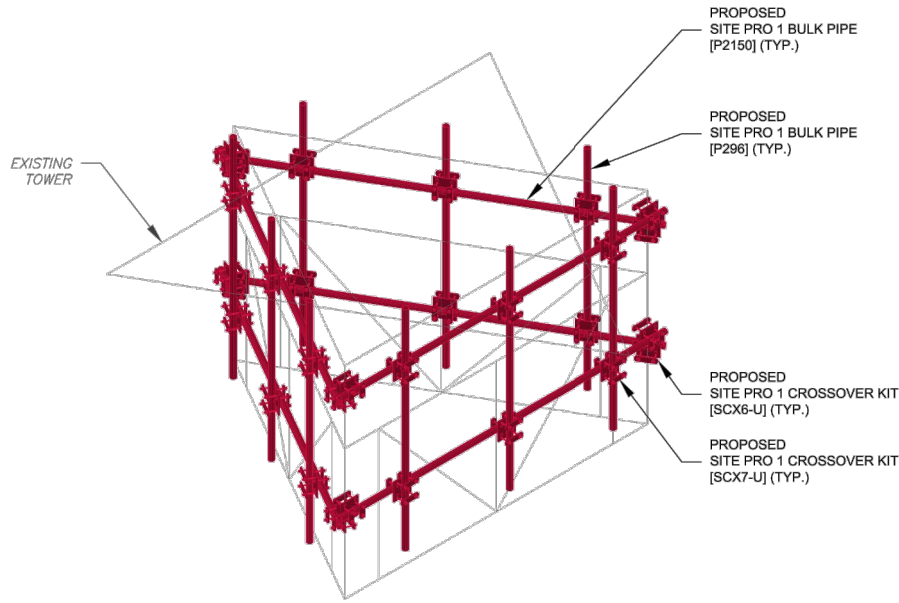
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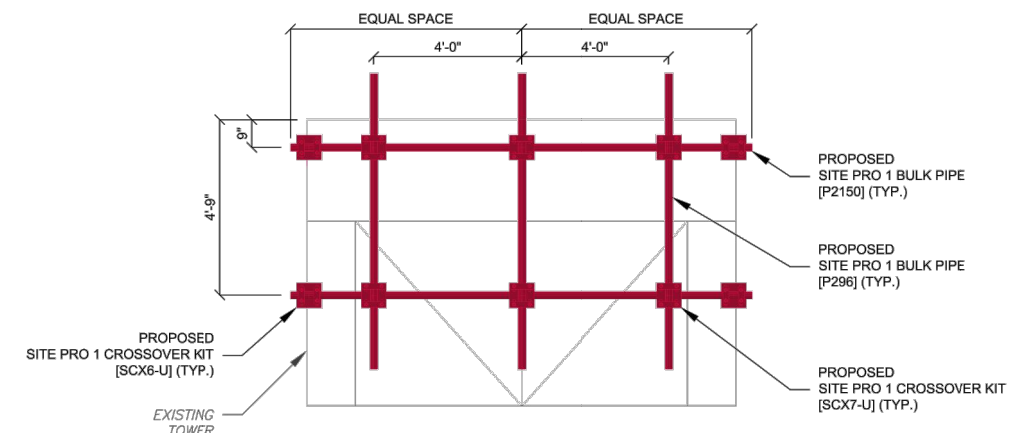
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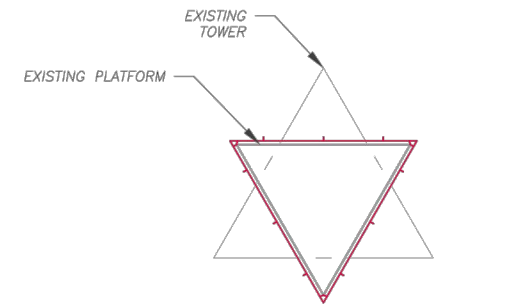
MOUNT MODIFICATION TOP VIEW



MOUNT MODIFICATION ISOMETRIC VIEW



MOUNT MODIFICATION FRONT VIEW



SAFETY CLIMB LOCATION

- NOTES:
- CONTRACTOR TO INSTALL MOUNT MODIFICATIONS PER THE MANUFACTURERS SPECIFICATION. MODIFICATIONS SHALL NOT OBSTRUCT, INTERFERE, OR BLOCK EXISTING SAFETY CLIMB SYSTEM. IF ANY OF THESE OCCURS DURING INSTALLATION CONTACT THE AMERICAN TOWER PMI INBOX [PMI@AMERICANTOWER.COM](mailto:PMI@AMERICANTOWER.COM)
  - IN THE EVENT A PROPOSED MODIFICATION PART LISTED IN THE DRAWINGS IS NOT AVAILABLE, AN APPROVED EQUIVALENT CAN BE SUBSTITUTED. FOR APPROVAL OF EQUIVALENT PART OR QUESTIONS PLEASE CONTACT AMERICAN TOWER PMI INBOX AT [PMI@AMERICANTOWER.COM](mailto:PMI@AMERICANTOWER.COM).

REINFORCEMENT MATERIALS LIST (ALL SECTORS)

QUANTITY REQUIRED	MANUFACTURER	PART NUMBER	DESCRIPTION	LENGTH	PART WEIGHT (lb)	WEIGHT (lb)	NOTES
9	-SITE PRO 1	P296	PIPE 2-3/8"OD X 96", ASTM A53 GRADE B, SCHEDULE 40	8'-0"	30	270	GALVANIZED
6	-SITE PRO 1	P2150	PIPE 2-3/8"OD X 150", ASTM A53 GRADE B, SCHEDULE 40	12'-6"	46	276	GALVANIZED
12	-SITE PRO 1	SCX6-U	UNIVERSAL CROSSOVER PLATE KIT 1-1/2" O.D. TO 6" O.D.	---	20.45	245	
18	-SITE PRO 1	SCX7-U	CROSSOVER PLATE (V-CLAMP STYLE)	---	16.98	306	
<b>TOTAL WEIGHT (lb)</b>						<b>1,087</b>	

**AMERICAN TOWER®**  
**A.T. ENGINEERING SERVICE, PLLC**  
 3500 REGENCY PARKWAY  
 SUITE 100  
 CARY, NC 27518  
 PHONE: (919) 468-0112  
 COA: PEC.0001553

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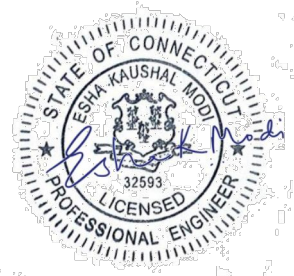
REV.	DESCRIPTION	BY	DATE
△	FIRST ISSUE	KPJ	07/08/22
△			
△			
△			

ATC SITE NUMBER:  
370624

ATC SITE NAME:  
MANKES SILO

CONNECTICUT

SITE ADDRESS:  
1338 HIGHLAND AVE  
CHESHIRE, CT 06410



Authorized by "EOR"  
08 Jul 2022 09:59:00

DRAWN BY:	KPJ
APPROVED BY:	MFE
DATE DRAWN:	07/08/22
ATC JOB NO:	13617819_C9_04

MODIFICATION PROFILE & SAFETY CLIMB LAYOUT

SHEET NUMBER:	REVISION:
<b>S-101</b>	<b>0</b>

1 MOUNT MODIFICATION

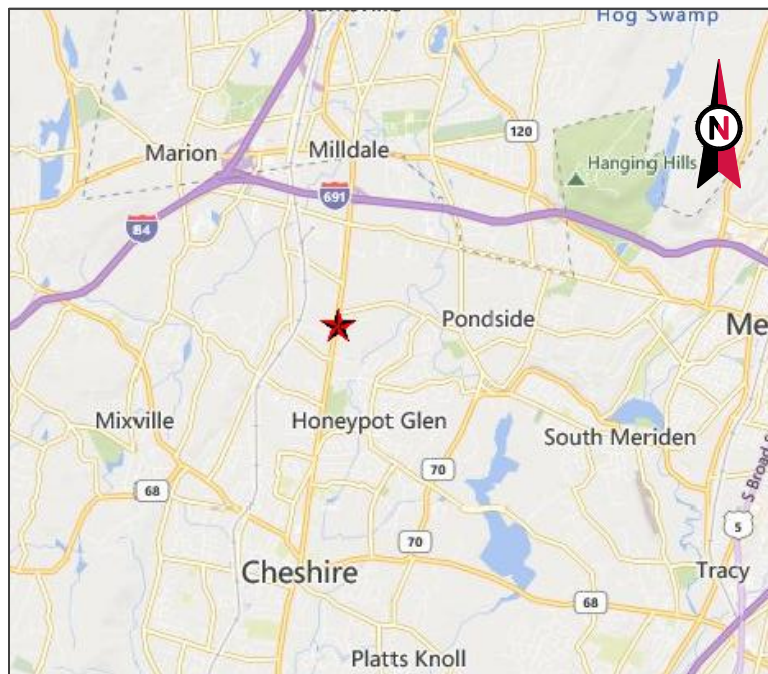
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SUPPLEMENTAL

SHEET NUMBER:	REVISION:
<b>R-606</b>	<b>3</b>

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VICINITY MAP



**AMERICAN TOWER®**

SITE NAME: MANKES SILO  
 SITE NUMBER: 370624  
 ATC PROJECT NUMBER: 13617819\_C9\_04  
 SITE ADDRESS: 1338 HIGHLAND AVE  
 CHESHIRE, CT 06410



LOCATION MAP

**MOUNT REINFORCEMENT DRAWINGS  
 PREPARED FOR T-MOBILE**

**AMERICAN TOWER®**  
**A.T. ENGINEERING SERVICE, PLLC**  
 3500 REGENCY PARKWAY  
 SUITE 100  
 CARY, NC 27518  
 PHONE: (919) 468-0112  
 COA: PEC.0001553

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 ATC SITE NAME:  
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 CONNECTICUT  
 SITE ADDRESS:  
 1338 HIGHLAND AVE  
 CHESHIRE, CT 06410



Authorized by "EOR"  
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DATE DRAWN:	07/08/22
ATC JOB NO:	13617819_C9_04

COVER	
SHEET NUMBER: <b>G-001</b>	REVISION: <b>0</b>

PROJECT TEAM	PROJECT DESCRIPTION	SHEET	SHEET TITLE	REV.
<p><b>TOWER OWNER</b>            AMERICAN TOWER            10 PRESIDENTAL WAY            WOBURN, MA 01801</p> <p><b>ENGINEERED BY</b>            ATC TOWER SERVICES            3500 REGENCY PARKWAY, SUITE 100            CARY, NC 27518</p> <p><b>CARRIER INFORMATION</b>            CARRIER: T-MOBILE            CARRIER SITE NAME: CTNH504A            CARRIER SITE NUMBER: CTNH504A</p>	<p>THE PROJECT DEPICTED IN THESE PLANS ARE BASED ON THE RECOMMENDATIONS OUTLINED IN THE STRUCTURAL ANALYSIS COMPLETED UNDER ENGINEERING PROJECT NUMBER N/A DATED N/A. SATISFACTORY COMPLETION OF THE WORK INDICATED IN THESE PLANS WILL RESULT IN THE STRUCTURE MEETING THE REQUIREMENTS OF THE SPECIFICATIONS UNDER WHICH THE STRUCTURAL WAS COMPLETED.</p> <p><b>PROJECT NOTE</b></p> <p>THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. § 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR § 1.6100 (B)(7).</p> <p><b>COMPLIANCE CODE</b></p> <p>ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNMENT AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.</p> <p>1. ANSITIA/EIA: STRUCTURAL STANDARDS (222-H EDITION)            2. INTERNATIONAL BUILDING CODE (2015 IBC)            3. CONNECTICUT STATE BUILDING CODE (2018)</p> <p><b>PROJECT LOCATION</b></p> <p><b>GEOGRAPHIC COORDINATES</b></p> <p>LATITUDE: 41.53694444            LONGITUDE: -72.89333333</p>	G-002	IBC GENERAL NOTES & MOUNT MODIFICATION INSPECTION	0
		S-101	MODIFICATION PROFILE & SAFETY CLIMB LAYOUT	0
		R-901	SUPPLEMENTAL	0
		R-902	SUPPLEMENTAL	0
		R-903	SUPPLEMENTAL	0
		R-904	SUPPLEMENTAL	0



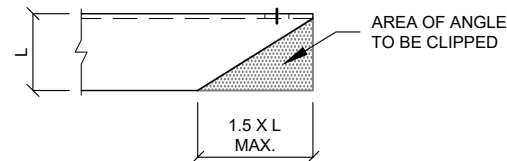
**GENERAL**

- ALL WORK TO BE COMPLETED PER APPLICABLE LOCAL, STATE, FEDERAL CODES AND ORDINANCES AND COMPLY WITH ATC CONSTRUCTION SPECIFICATIONS FOR WIRELESS TOWER SITES. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND ABIDING BY ALL REQUIRED PERMITS.
- ALL WORK INDICATED ON THESE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TOWER AND FOUNDATION CONSTRUCTION.
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IMMEDIATELY OF ANY INSTALLATION INTERFERENCES. ALL NEW WORK SHALL ACCOMMODATE EXISTING CONDITIONS. DETAILS NOT SPECIFICALLY SHOWN ON THE DRAWINGS SHALL FOLLOW SIMILAR DETAILS FOR THIS JOB.
- ANY SUBSTITUTIONS SHALL CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS, AND SHOULD BE SIMILAR TO THOSE SHOWN. ALL SUBSTITUTIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
- ANY MANUFACTURED DESIGN ELEMENTS SHALL CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS AND SHOULD BE SIMILAR TO THOSE SHOWN. THESE DESIGN ELEMENTS MUST BE STAMPED BY AN ENGINEER PROFESSIONALLY REGISTERED IN THE STATE OF THE PROJECT, AND SUBMITTED TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO FABRICATION.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH LOCAL CODES AND OSHA SAFETY REGULATIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, ETC. NECESSARY, PER ANSI/TIA-322 AND ANSI/ASSE A10.48, TO PROVIDE A COMPLETE AND STABLE STRUCTURE AS SHOWN ON THESE DRAWINGS.
- CONTRACTOR'S PROPOSED INSTALLATION SHALL NOT INTERFERE, NOR DENY ACCESS TO, ANY EXISTING OPERATIONAL AND SAFETY EQUIPMENT.

**STRUCTURAL STEEL**

- ALL DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC SPECIFICATIONS, LATEST EDITION.
- ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B695.
- ALL U-BOLTS SHALL BE ASTM A36 OR EQUIVALENT, WITH LOCKING DEVICE, UNLESS NOTED OTHERWISE.
- FIELD CUT EDGES, EXCEPT DRILLED HOLES, SHALL BE GROUND SMOOTH.
- ALL FIELD CUT SURFACES, FIELD DRILLED HOLES & GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.
- ALL STRUCTURAL STEEL EMBEDDED IN THE CONCRETE SHALL BE APPLIED WITH (2) BRUSHED COATS OF POLYGUARD CA-14 MASTIC OR EQUIVALENT. REFER TO THE MANUFACTURER SPECIFICATIONS FOR SURFACE PREPARATION AND APPLICATION. APPLICATION OF POLYGUARD 400 WRAP IS NOT ESSENTIAL.
- CONTRACTOR SHALL PERFORM WORK ON ONLY ONE (1) TOWER FACE AND REPLACE/REINFORCE ONE (1) BOLT/MEMBER AT A TIME.
- ALL FIELD DRILLED HOLES TO BE USED FOR FIELD BOLTING INSTALLATION SHALL BE STANDARD HOLES, AS DEFINED BY AISC, UNLESS NOTED OTHERWISE.

**MAXIMUM ALLOWABLE ANGLE CLIP**



**PAINT**

- AS REQUIRED, CLEAN AND PAINT PROPOSED STEEL ACCORDING TO FAA ADVISORY CIRCULAR AC 70/7460-1L.

**WELDING**

- ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.
- ALL WELDS SHALL BE INSPECTED VISUALLY. IF DIRECTED BY ENGINEER OF RECORD, 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE (100% IF REJECTABLE DEFECTS ARE FOUND) TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.
- INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
- ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER AND/OR BASE METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.
- IN CASES WHERE BASE METAL GRADE IS UNKNOWN, ALL WELDING ON LATTICE TOWERS SHALL BE DONE WITH E70XX ELECTRODES; ALL WELDING ON POLE STRUCTURES SHALL BE DONE WITH E80XX ELECTRODES, UNLESS NOTED OTHERWISE.
- PRIOR TO FIELD WELDING GALVANIZED MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING 1/2" BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.

**BOLT TIGHTENING PROCEDURE**

- STRUCTURAL CONNECTIONS TO BE ASSEMBLED AND INSPECTED IN ACCORDANCE WITH RCSC SPECIFICATIONS.
- FLANGE BOLTS SHALL BE INSTALLED AND TIGHTENED USING DIRECT TENSION INDICATING (DTI) SQUIRTER WASHERS. DTI SQUIRTER WASHERS ARE TO BE INSTALLED AND ORIENTED / TIGHTENED PER MANUFACTURER SPECIFICATIONS TO ACHIEVE DESIRED LEVEL OF BOLT PRE-TENSION.
- IN LIEU OF USING DTI SQUIRTER WASHERS, FLANGE BOLTS MAY BE TIGHTENED USING AISC / RCSC "TURN-OF-THE-NUT" METHOD, PENDING APPROVAL BY THE ENGINEER OF RECORD (EOR). TIGHTEN FLANGE BOLTS USING THE CHART BELOW:

**BOLT LENGTHS UP TO AND INCLUDING FOUR DIAMETERS**

1/2"	BOLTS UP TO AND INCLUDING 2.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
5/8"	BOLTS UP TO AND INCLUDING 2.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
3/4"	BOLTS UP TO AND INCLUDING 3.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
7/8"	BOLTS UP TO AND INCLUDING 3.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1"	BOLTS UP TO AND INCLUDING 4.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/8"	BOLTS UP TO AND INCLUDING 4.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/4"	BOLTS UP TO AND INCLUDING 5.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-3/8"	BOLTS UP TO AND INCLUDING 5.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/2"	BOLTS UP TO AND INCLUDING 6.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT

**BOLT LENGTHS OVER FOUR DIAMETERS BUT NOT EXCEEDING EIGHT DIAMETERS**

1/2"	BOLTS 2.25 TO 4.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
5/8"	BOLTS 2.75 TO 5.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
3/4"	BOLTS 3.25 TO 6.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
7/8"	BOLTS 3.75 TO 7.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1"	BOLTS 4.25 TO 8.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/8"	BOLTS 4.75 TO 9.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/4"	BOLTS 5.25 TO 10.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-3/8"	BOLTS 5.75 TO 11.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/2"	BOLTS 6.25 TO 12.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT

**MODIFICATION INSPECTION NOTES**

THE MOUNT MODIFICATION INSPECTION (MMI) PROCEDURE IS INTENDED TO CONFIRM THAT CONSTRUCTION AND INSTALLATION MEETS ENGINEERING DESIGN, ATC PROCEDURES AND ATC STANDARD SPECIFICATIONS FOR WIRELESS TOWER SITES.

TO ENSURE THAT THE REQUIREMENTS OF THE MMI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR SUBMIT ALL REQUIRED PHOTOGRAPHS AND DRAWINGS TO AMERICAN TOWER CORPORATION (ATC).

MOUNT MODIFICATION INSPECTION CHECKLIST			
INSPECTION DOCUMENT	DESCRIPTION	INSPECTION TESTING REQUIRED	RESPONSIBILITY
ON-SITE COLD GALVANIZING VERIFICATION	PHOTOGRAPHIC EVIDENCE OF COLD GALVANIZATION TYPE AND APPLICATION IN ALL APPLICABLE LOCATIONS TO BE INCLUDED WITHIN THE MMI REPORT	✓	GC
GC AS-BUILT DRAWINGS WITH CONSTRUCTION RED-LINES	"AS-BUILT" DRAWINGS INDICATING ANY APPROVED CHANGES TO ENGINEERED PLANS TO MMI FOR APPROVAL/REVIEW AND INCLUSION IN MMI REPORT	✓	GC
PHOTOGRAPHS	PHOTOGRAPHIC EVIDENCE OF MOUNT MODIFICATION INSPECTION, ON SITE REMEDIATION, AND ITEMS FAILING INSPECTION & REQUIRING FOLLOW UP TO BE INCLUDED WITHIN THE MMI REPORT. COMPLETE PHOTO LOG IS TO BE SUBMITTED WITHIN MMI REPORT.	✓	GC

TABLE KEY:  
MMI - MOUNT MODIFICATION INSPECTION  
GC - GENERAL CONTRACTOR  
ATC - AMERICAN TOWER CORPORATION

**BOLT TIGHTENING PROCEDURE (CONTINUED)**

- SPLICE BOLTS SUBJECT TO DIRECT TENSION SHALL BE INSTALLED AND TIGHTENED AS PER SECTION 8.2.1 OF THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS", LOCATED IN THE AISC MANUAL OF STEEL CONSTRUCTION. THE INSTALLATION PROCEDURE IS PARAPHRASED AS FOLLOWS:

FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES AND TIGHTENED BY ONE OF THE METHODS DESCRIBED IN SUBSECTION 8.2.1 THROUGH 8.2.4.

**8.2.1 TURN-OF-NUT PRETENSIONING**

BOLTS SHALL BE INSTALLED IN ALL HOLES OF THE CONNECTION AND BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1, UNTIL ALL THE BOLTS ARE SIMULTANEOUSLY SNUG TIGHT AND THE CONNECTION IS FULLY COMPACTED.

FOLLOWING THIS INITIAL OPERATION ALL BOLTS IN THE CONNECTION SHALL BE TIGHTENED FURTHER BY THE APPLICABLE AMOUNT OF ROTATION SPECIFIED ABOVE. DURING THE TIGHTENING OPERATION THERE SHALL BE NO ROTATION OF THE PART NOT TURNED BY THE WRENCH. TIGHTENING SHALL PROGRESS SYSTEMATICALLY.

- ALL OTHER BOLTED CONNECTIONS SHALL BE BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1 OF THE SPECIFICATION.

ALL BOLT HOLES SHALL BE ALIGNED TO PERMIT INSERTION OF THE BOLTS WITHOUT UNDUE DAMAGE TO THE THREADS. BOLTS SHALL BE PLACED IN ALL HOLES WITH WASHERS POSITIONED AS REQUIRED AND NUTS THREADED TO COMPLETE THE ASSEMBLY. COMPACTING THE JOINT TO THE SNUG-TIGHT CONDITION SHALL PROGRESS SYSTEMATICALLY FROM THE MOST RIGID PART OF THE JOINT. THE SNUG-TIGHTENED CONDITION IS THE TIGHTNESS THAT IS ATTAINED WITH A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER USING AN ORDINARY SPUD WRENCH TO BRING THE CONNECTED PLIES INTO FIRM CONTACT.

**GENERAL CONTRACTOR**

THE GENERAL CONTRACTOR IS REQUIRED TO:

- REVIEW THE REQUIREMENTS OF THE MMI CHECKLIST.
- UNDERSTAND ALL INSPECTION REQUIREMENTS.

THE GENERAL CONTRACTOR SHALL PERFORM AND RECORD THE INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MMI CHECKLIST.



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MANKES SILO  
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IBC GENERAL NOTES &  
MOUNT MODIFICATION  
INSPECTION

SHEET NUMBER:

G-002

REVISION:

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**A.T. ENGINEERING SERVICE, PLLC**  
 3500 REGENCY PARKWAY  
 SUITE 100  
 CARY, NC 27518  
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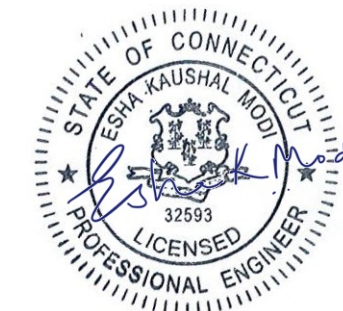
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SITE ADDRESS:

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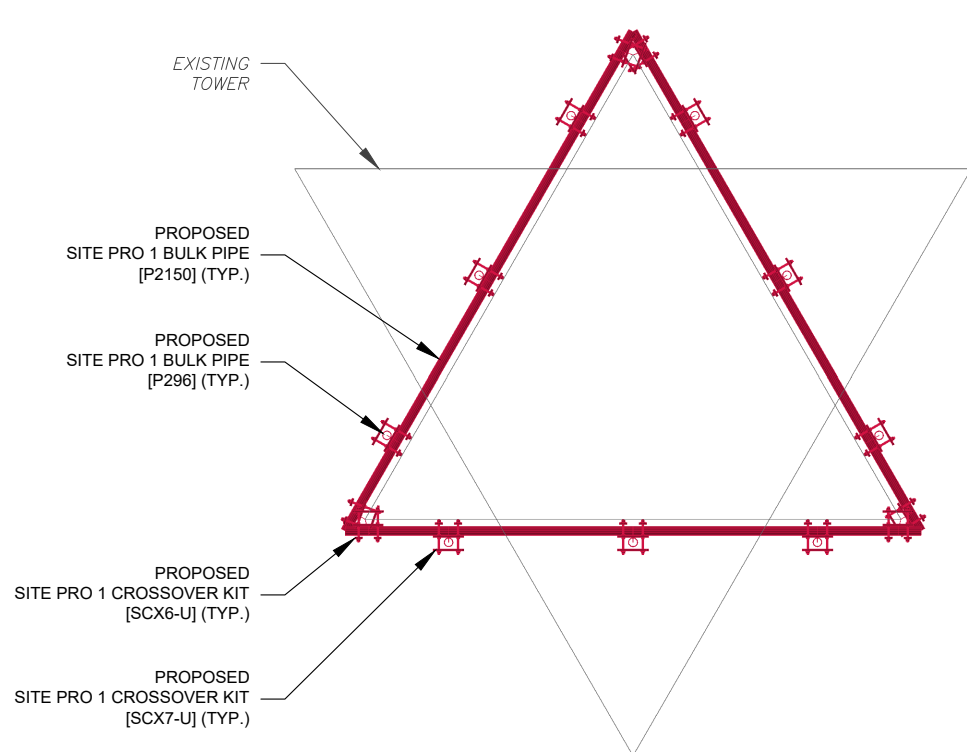
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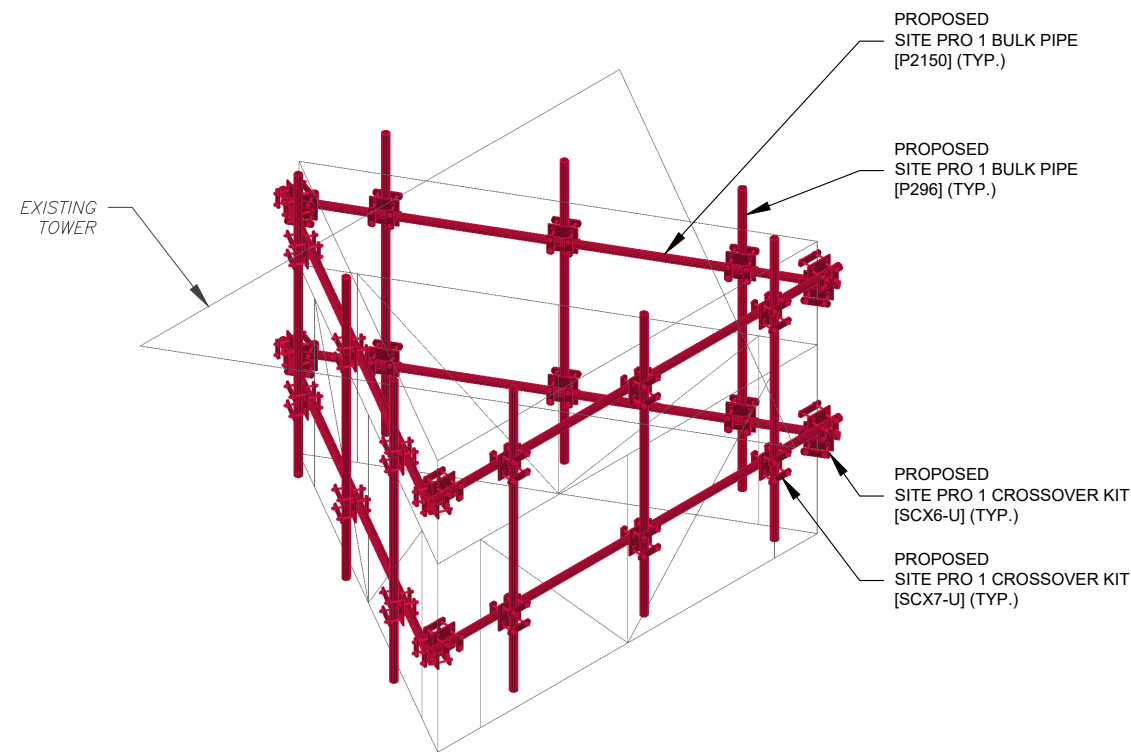
**S-101**

REVISION:

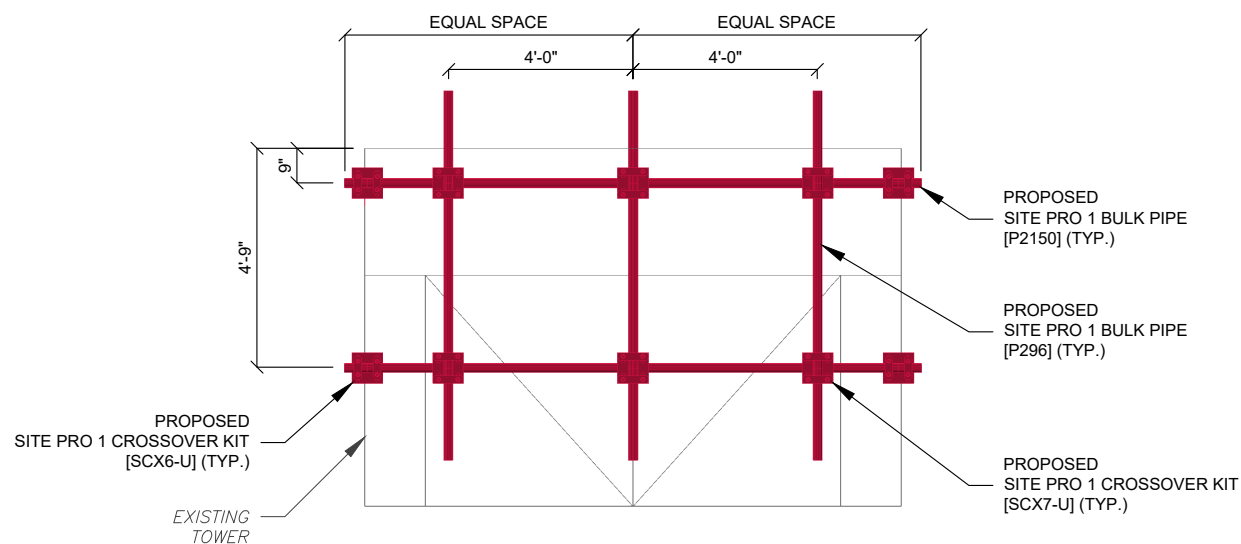
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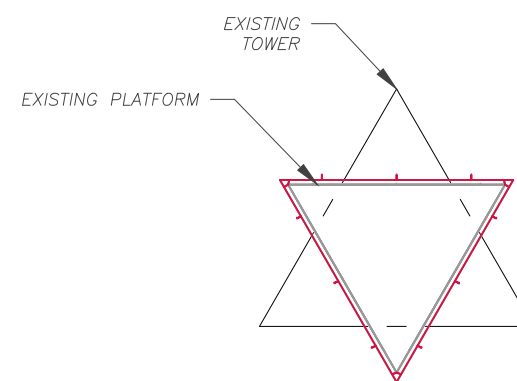
**MOUNT MODIFICATION  
TOP VIEW**



**MOUNT MODIFICATION  
ISOMETRIC VIEW**



**MOUNT MODIFICATION  
FRONT VIEW**



**SAFETY CLIMB LOCATION**



**REINFORCEMENT MATERIALS LIST (ALL SECTORS)**

QUANTITY REQUIRED	MANUFACTURER	PART NUMBER	DESCRIPTION	LENGTH	PART WEIGHT (lb)	WEIGHT (lb)	NOTES
9	SITE PRO 1	P296	PIPE 2-3/8"OD X 96", ASTM A53 GRADE B, SCHEDULE 40	8'-0"	30	270	GALVANIZED
6	SITE PRO 1	P2150	PIPE 2-3/8"OD X 150", ASTM A53 GRADE B, SCHEDULE 40	12'-6"	46	276	GALVANIZED
12	SITE PRO 1	SCX6-U	UNIVERSAL CROSSOVER PLATE KIT 1-1/2" O.D. TO 6" O.D.	--	20.45	245	
18	SITE PRO 1	SCX7-U	CROSSOVER PLATE (V-CLAMP STYLE)	--	16.98	306	
<b>TOTAL WEIGHT (lb)</b>					<b>1,097</b>		

**NOTES:**

- CONTRACTOR TO INSTALL MOUNT MODIFICATIONS PER THE MANUFACTURERS SPECIFICATION. MODIFICATIONS SHALL NOT OBSTRUCT, INTERFERE, OR BLOCK EXISTING SAFETY CLIMB SYSTEM. IF ANY OF THESE OCCURS DURING INSTALLATION CONTACT THE AMERICAN TOWER PMI INBOX [PMI@AMERICANTOWER.COM](mailto:PMI@AMERICANTOWER.COM)
- IN THE EVENT A PROPOSED MODIFICATION PART LISTED IN THE DRAWINGS IS NOT AVAILABLE, AN APPROVED EQUIVALENT CAN BE SUBSTITUTED. FOR APPROVAL OF EQUIVALENT PART OR QUESTIONS PLEASE CONTACT AMERICAN TOWER PMI INBOX AT [PMI@AMERICANTOWER.COM](mailto:PMI@AMERICANTOWER.COM).



1:58 PM 7/7/2022

**Option 1 - Modify: Estimate for T-Mobile @ 370624 (Mankes Silo) -- 13617819\_C9\_04**

Site Data and Design Parameters		Dates and Designers	
Asset OTM #	370624	Mount Analysis Date / By	NA / NA
Asset Name	Mankes Silo	Design Date / By	7/7/2022 / MFE
State	CT	Checked Date / By	/ /
County	New Haven	Detailer (Prev/Current/Level)	/ /
City	Cheshire	Software	RISA
Failing Analysis Eng. #	NA	Tower Type	Self-Support 3-sided
Mod. Drawing Eng. #	13617819_C9_04	Mount Type	Platform w/ Handrails
Building Codes		Carriers	
TIA/IBC:	ANSI/TIA-222-H / 2015 IBC	# of RADs	1
Local:	2018 Connecticut State Building Code	Carrier	T-Mobile
Failing Analysis % / Code	NA / TIA-H		
Post Mod % / Controlling Member	39% / Horizontals		
Usage Limit % / Reason	105% / N/A		

Any modification design comments or assumptions? No (including notes to the Estimator)

Modification Summary	
Item #	Scope Item
1	Install Site Pro 1 P296 MP w/ Site Pro 1 SCX7-U crossovers on All (3) sector(s) at position 1.*
2	Install Site Pro 1 P296 MP w/ Site Pro 1 SCX7-U crossovers on All (3) sector(s) at position 2.*
3	Install Site Pro 1 P296 MP w/ Site Pro 1 SCX7-U crossovers on All (3) sector(s) at position 3.*
4	Install Site Pro 1 P2150 Pipe w/ Site Pro 1 SCX6-U crossovers on All (3) sector(s)
5	Install Site Pro 1 P2150 Pipe w/ Site Pro 1 SCX6-U crossovers on All (3) sector(s)

**Estimated Modification Cost** \$22,000

\\americantower\cary\structural\_reports\j-m\mankes silo, ct (370624)\13617819 T-MOBILE\13617819\_04\_MOUNT\_DRW\Mount Modification SOW v1.4.9a

**Option 2 - Replace: Estimate for T-Mobile @ 370624 (Mankes Silo) -- 13617819\_C9\_04**

Tower Info	
Tower Number	370624
Tower Name	Mankes Silo
State	CT

Jurisdictional Codes	
Design TIA Code	Unknown
Current TIA Code	ANSI/TIA-222-H
IBC	2015 IBC
Other	2018 Connecticut State Building Code

Project Information	
Carrier	T-Mobile
Structure Type	Self-Support

Recommended Mount Replacement	NA
-------------------------------	----

Project Requirements	
New Mount Face Width	150 in
Number of Sectors	3

Estimated Replacement Cost	\$ NA
----------------------------	-------

Authorized by "EOR"  
08 Jul 2022 09:59:00



SUPPLEMENTAL

SHEET NUMBER:  
**R-901**

REVISION:  
**0**



### Post Modification Mount Analysis Report

ATC Site Name : Mankes Silo, CT  
 ATC Site Number : 370624  
 Engineering Number : 13617819\_C9\_04  
 Mount Elevation : 57 ft  
 Carrier : T-Mobile  
 Carrier Site Name : CTNH504A  
 Carrier Site Number : CTNH504A  
 Site Location : 1338 Highland Ave  
 Cheshire, CT 06410-0000  
 41.53694444, -72.89333333  
 County : New Haven  
 Date : July 7, 2022  
 Max Usage : 39%  
 Result : Contingent Pass



Prepared By: Michael Ellis  
 Structural Engineer I  
 Reviewed By:

COA: PEC.0001553



Eng. Number 13617819\_C9\_04  
July 7, 2022

### Table of Contents

Introduction ..... 1  
 Supporting Documents ..... 1  
 Analysis ..... 1  
 Conclusion ..... 1  
 Application Loading ..... 2  
 Structure Usages ..... 2  
 Mount Layout ..... 3  
 Equipment Layout ..... 4  
 Standard Conditions ..... 7  
 Calculations ..... Attached



Eng. Number 13617819\_C9\_04  
July 7, 2022  
Page 1

### Introduction

The purpose of this report is to summarize results of the mount analysis performed for T-Mobile at 57 ft.

### Supporting Documents

Radio Frequency Data Sheet	RFDS ID #CTNH504A, dated February 16, 2021
Reference Photos	Site photos from 2022

### Analysis

This mount was analyzed using American Tower Corporation's Mount Analysis Program and RISA-3D

Basic Wind Speed:	0 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	No Ice Considered
Codes:	ANSI/TIA-222-H
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.199, S1 = 0.055
Site Class:	D - Stiff Soil - Default
Live Loads:	Lm = 500 lbs, Lv = 250 lbs

### Conclusion

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above provided the modifications listed below are completed:

- Install modification per ATC Drawing #13617819\_C9\_04

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



Eng. Number 13617819\_C9\_04  
July 7, 2022  
Page 2

### Application Loading

Mount Centerline (ft)	Equipment Centerline (ft)	Qty	Equipment Manufacturer & Model
57.0	57.0	6	Ericsson AIR 21, 1.3 M, B2A B4P
		3	RFS APKVAALL24 43-U-NA20
		3	Ericsson Radio 4449 B71 B85A

### Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Horizontals	39%	Pass
Mount Pipes	23%	Pass

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REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	KPJ	07/08/22

ATC SITE NUMBER:  
 370624  
 ATC SITE NAME:  
 MANKES SILO  
 CONNECTICUT  
 SITE ADDRESS:  
 1338 HIGHLAND AVE  
 CHESHIRE, CT 06410



Authorized by "EOR"  
 08 Jul 2022 09:59:01

DRAWN BY:	KPJ
APPROVED BY:	MFE
DATE DRAWN:	07/08/22
ATC JOB NO:	13617819_C9_04

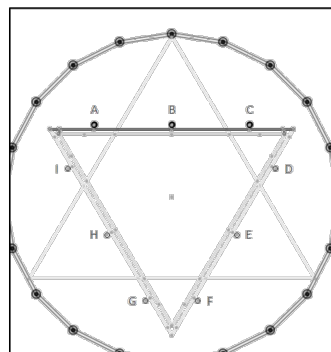
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SHEET NUMBER: **R-902**  
 REVISION: **0**



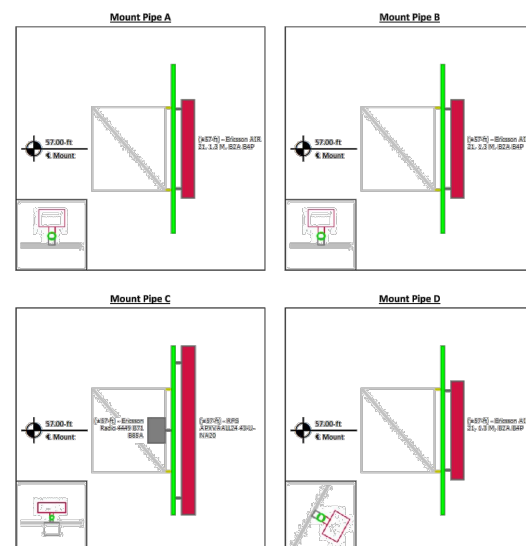
Eng. Number 13617819\_C9\_04  
July 7, 2022  
Page 3

### Mount Layout



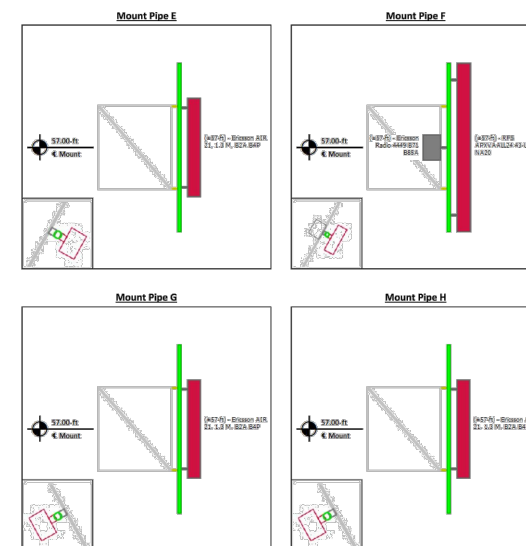
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July 7, 2022  
Page 4

### Equipment Layout



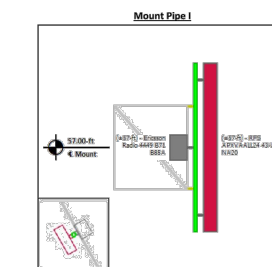
Eng. Number 13617819\_C9\_04  
July 7, 2022  
Page 5

### Equipment Layout Cont'd.



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July 7, 2022  
Page 6

### Equipment Layout Cont'd.



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July 7, 2022  
Page 7

**Standard Conditions**

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding equipment, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

All connections are to be verified for condition and tightness by the installation contractor preceding any changes to the appearance mounting system and/or equipment attached to it.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.



Site Number: 370624  
Project Number: 13617819\_C9\_04  
Carrier: T-Mobile  
Mount Elevation: 57 ft  
Date: 7/7/2022

**Mount Analysis Force Calculations**

Wind & Ice Load Calculations				Seismic Load Calculations			
Velocity Pressure Coefficient	$K_z$	0.84	Short Period DSRAP	$S_{ps}$	0.159		
Topographic Factor	$K_{zt}$	1.00	1 Second DSRAP	$S_{ps}$	0.088		
Rooftop Wind Speed-up Factor	$K_{rs}$	1.00	Importance Factor	$I$	1.0		
Shielding Factor	$K_s$	0.90	Response Modification Coefficient	$R$	2.0		
Ground Elevation Factor	$K_e$	0.99	Seismic Response Coefficient	$C_s$	0.080		
Wind Direction Probability Factor	$K_d$	0.95	Amplification Factor	$A$	1.0		
Basic Wind Speed	$V$	0 mph	Total Weight	$W$	1650.8 lbs		
Velocity Pressure	$q_z$	0 psf	Total Shear Force	$V_u$	131.4 lbs		
Height Escalation Factor	$K_h$	1.06	Horizontal Seismic Load	$F_h$	131.4 lbs		
Thickness of Radial Glaze Ice	$T_{ri}$	0.00 in	Vertical Seismic Load	$F_v$	52.6 lbs		

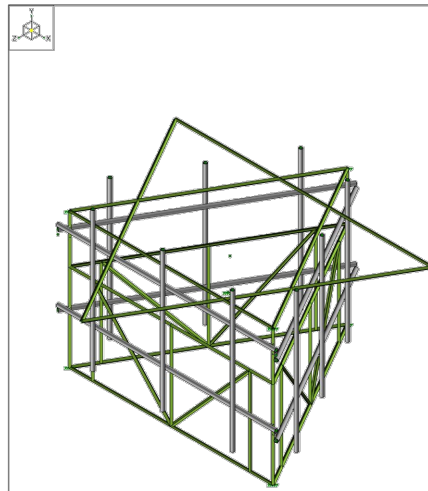
Antenna Calculations (Elevations per Application/RFDs)*									
Equipment Model #	Height in	Width in	Depth in	Weight lbs	$EPA_{wt}$ sqft	$EPA_{h}$ sqft	$EPA_{w}$ sqft	$EPA_{d}$ sqft	
Ericsson AIR 21, 1.3 M, B2A B4P	56.0	12.0	8.0	83.0	6.05	2.49	6.05	2.49	
RFS APXVAALL24 43-U-NA20	95.9	24.0	8.5	122.8	20.24	5.07	20.24	5.07	
Ericsson Radio 4449 B71 8B5A	15.0	13.2	10.5	75.0	1.65	1.31	1.65	1.31	

\* Equipment with EPA values N/A were not considered in the mount analysis



Company : American Tower Corp.  
Designer : Michael Ellis  
Job Number : 13617819\_C9\_04  
Model Name : 370624, Mankes Silo

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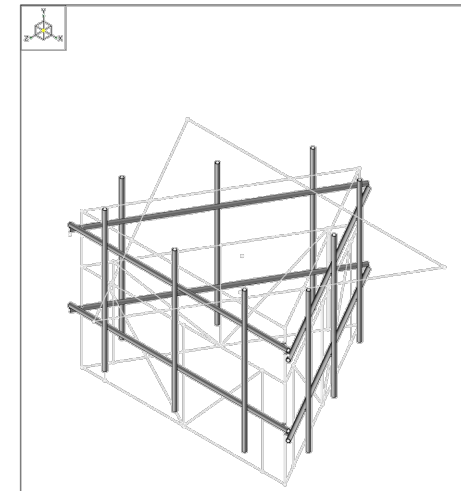


American Tower Corp. 370624, Mankes Silo SK-1  
Michael.Ellis Jul 07, 2022  
13617819\_C9\_04 R3D, T-MOBILE @ 370624, Mank...  
3D Rendering (Final Configuration)



Company : American Tower Corp.  
Designer : Michael Ellis  
Job Number : 13617819\_C9\_04  
Model Name : 370624, Mankes Silo

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American Tower Corp. 370624, Mankes Silo SK-2  
Michael.Ellis Jul 07, 2022  
13617819\_C9\_04 R3D, T-MOBILE @ 370624, Mank...  
3D Rendering (Proposed Configuration)

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REV.	DESCRIPTION	BY	DATE
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ATC SITE NUMBER:  
**370624**  
ATC SITE NAME:  
**MANKES SILO**  
**CONNECTICUT**  
SITE ADDRESS:  
1338 HIGHLAND AVE  
CHESHIRE, CT 06410



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APPROVED BY:	MFE
DATE DRAWN:	07/08/22
ATC JOB NO:	13617819_C9_04

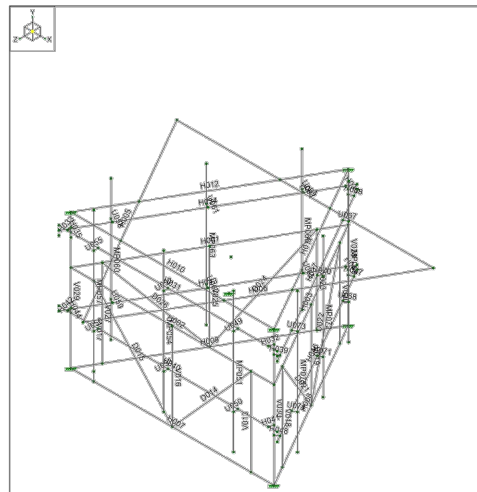
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Company : American Tower Corp.  
Designer : Michael Ellis  
Job Number : 13617819\_C9\_04  
Model Name : 370624, Mankes Silo

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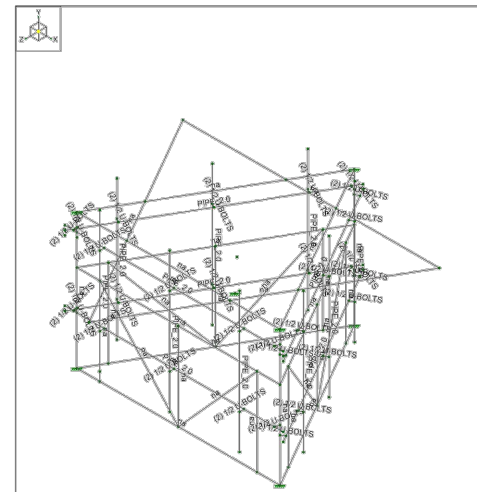


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Michael.Ellis Jul 07, 2022  
13617819\_C9\_04 R3D, T-MOBILE @ 370624, Mank...



Company : American Tower Corp.  
Designer : Michael Ellis  
Job Number : 13617819\_C9\_04  
Model Name : 370624, Mankes Silo

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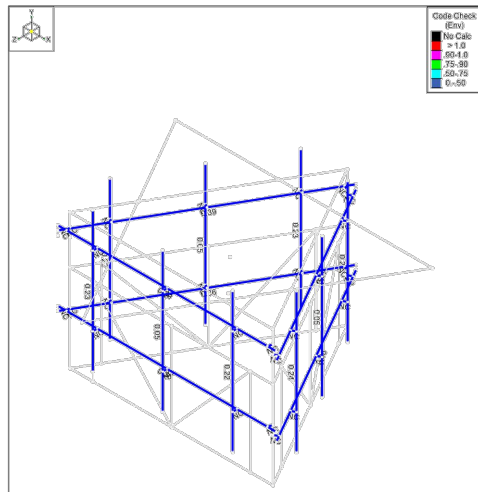


American Tower Corp. 370624, Mankes Silo SK-4  
Michael.Ellis Jul 07, 2022  
13617819\_C9\_04 R3D, T-MOBILE @ 370624, Mank...



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Designer : Michael Ellis  
Job Number : 13617819\_C9\_04  
Model Name : 370624, Mankes Silo

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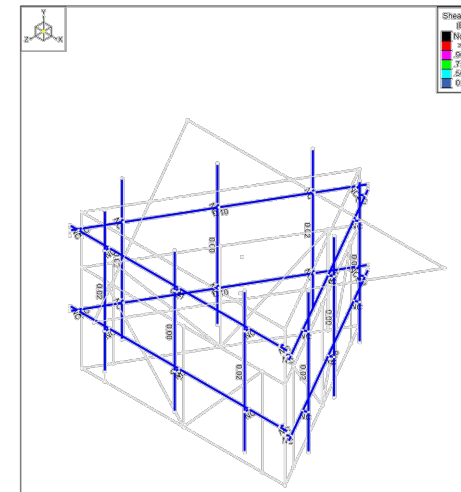


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Designer : Michael Ellis  
Job Number : 13617819\_C9\_04  
Model Name : 370624, Mankes Silo

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Basic Load Cases						
BLC Description	Category	Y Gravity	Nodal	Point	Distributed	
1	D	-1		21		
2	W			21	54	
3	W			21	45	
4	W			42	99	
5	W			42	99	
6	W			21	45	
7	W			42	99	
8	W			42	99	
9	W			21	45	
10	W			42	99	
11	W			42	99	
12	W			21	45	
13	W			42	99	
14	W			42	99	
15	W			21	45	
16	W			42	99	
17	W			42	99	
18	W			21	45	
19	W			42	99	
20	W			42	99	
21	W			21	45	
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36	W			21	45	
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46	W			42	99	
47	W			42	99	
48	W			21	45	
49	W			42	99	
50	W			42	99	
51	W			21	45	
52	W			42	99	
53	W			42	99	
54	W			21	45	
55	W			42	99	

Basic Load Cases (Continued)										
BLC Description	Category	Y Gravity	Nodal	Point	Distributed					
56	Lm			1						

Load Combinations (Continued)										
Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.2D	1.0E+1	0.0E+0	1.0	1.2	1.0	1.2	1.0	1.2	1.0
2	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
3	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
4	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
5	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
6	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
7	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
8	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
9	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
10	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
11	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
12	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
13	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
14	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0
15	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0
16	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0
17	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0
18	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0
19	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0
20	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0
21	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0
22	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0
23	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0
24	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0
25	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0
26	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
27	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
28	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
29	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
30	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
31	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
32	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
33	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
34	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
35	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
36	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
37	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
38	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
39	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
40	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
41	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
42	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
43	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
44	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
45	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
46	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
47	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
48	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
49	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0
50	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0
51	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0

Load Combinations (Continued)														
Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
52	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0
53	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0
54	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0
55	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0
56	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0
57	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0
58	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0
59	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0
60	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0
61	0.9D	1.0E+1	1.0E+1	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0
62	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0
63	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0
64	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0
65	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0
66	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0
67	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0
68	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0
69	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0
70	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0
71	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0
72	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0
73	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0
74	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0
75	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0
76	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0
77	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0
78	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0
79	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0
80	1.2D	1.0E+1	1.0E+1	1.0	1.2	1.0	1.2	1.0	1.2	1.0	1.2	1.0		



**AMERICAN TOWER®**  
CORPORATION

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## Post Modification Mount Analysis Report

**ATC Site Name** : Mankes Silo, CT  
**ATC Site Number** : 370624  
**Engineering Number** : 13617819\_C9\_04  
**Mount Elevation** : 57 ft  
**Carrier** : T-Mobile  
**Carrier Site Name** : CTNH504A  
**Carrier Site Number** : CTNH504A  
**Site Location** : 1338 Highland Ave  
Cheshire, CT 06410-0000  
41.53694444 , -72.89333333  
**County** : New Haven  
**Date** : September 27, 2022  
**Max Usage** : 39%  
**Result** : Contingent Pass

Prepared By:  
Michael Ellis  
Structural Engineer I

Reviewed By:



Diana Gee **COA: PEC.0001553**  
Oct 4 2022 11:51 AM





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## Introduction

The purpose of this report is to summarize results of the mount analysis performed for T-Mobile at 57 ft.

## Supporting Documents

<b>Radio Frequency Data Sheet</b>	RFDS ID #CTNH504A, dated February 16, 2021
<b>Reference Photos</b>	Site photos from 2022

## Analysis

This mount was analyzed using American Tower Corporation's Mount Analysis Program and RISA-3D

<b>Codes:</b>	ANSI/TIA-222-H
<b>Exposure Category:</b>	B
<b>Risk Category:</b>	II
<b>Topographic Factor Procedure:</b>	Method 2
<b>Feature:</b>	Flat
<b>Crest Height (H):</b>	0 ft
<b>Crest Length (L):</b>	0 ft
<b>Spectral Response:</b>	Ss = 0.199, S1 = 0.055
<b>Site Class:</b>	D - Stiff Soil - Default
<b>Live Loads:</b>	Lm = 500 lbs, Lv = 250 lbs

## Conclusion

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above provided the modifications listed below are completed:

- Install modification per ATC Drawing #13617819\_C9\_04

If you have any questions or require additional information, please contact American Tower via email at [Engineering@americantower.com](mailto:Engineering@americantower.com). Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



**Application Loading**

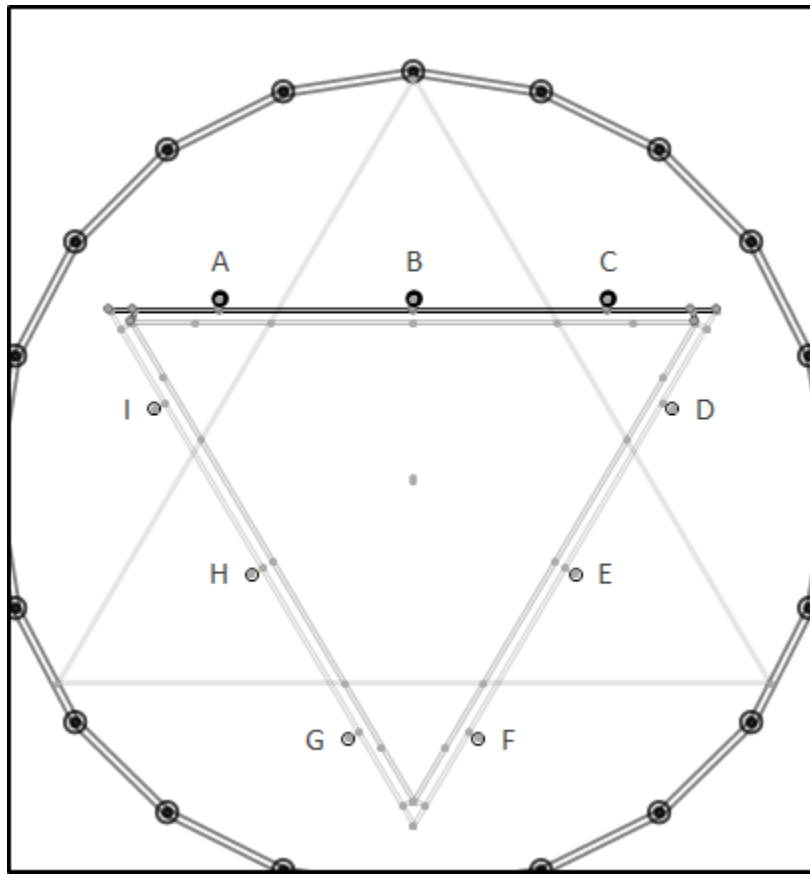
Mount Centerline (ft)	Equipment Centerline (ft)	Qty	Equipment Manufacturer & Model
57.0	57.0	6	Ericsson AIR 21, 1.3 M, B2A B4P
		3	RFS APXVAALL24 43-U-NA20
		3	Ericsson Radio 4449 B71 B85A

**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Horizontals	39%	Pass
Mount Pipes	23%	Pass

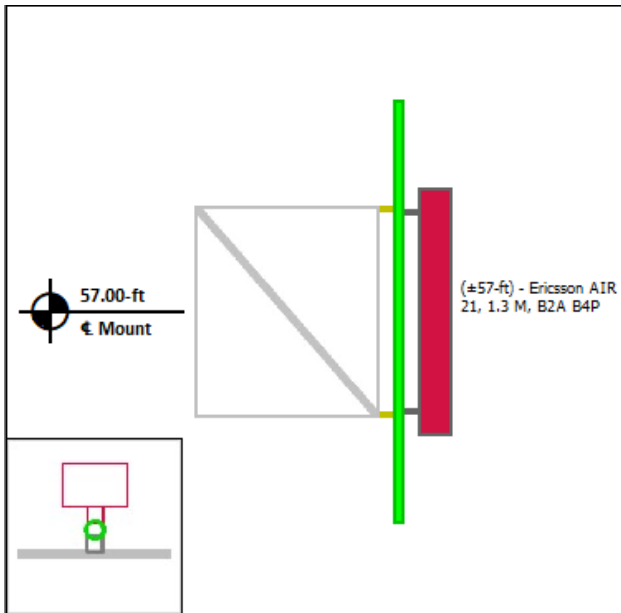


**Mount Layout**

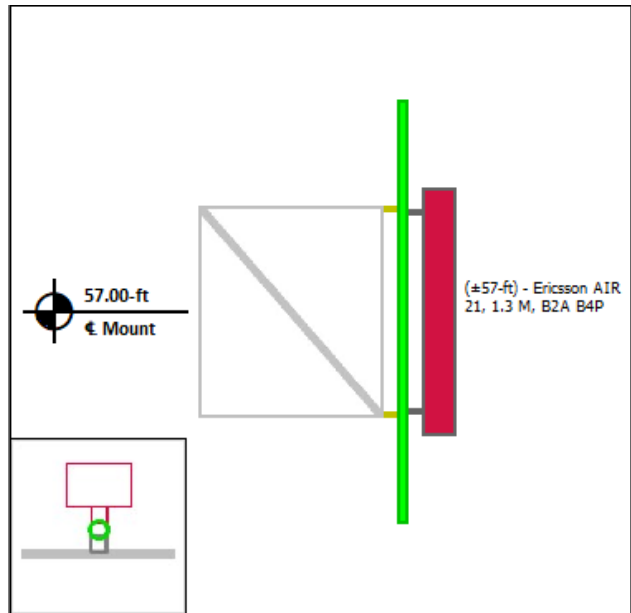


**Equipment Layout**

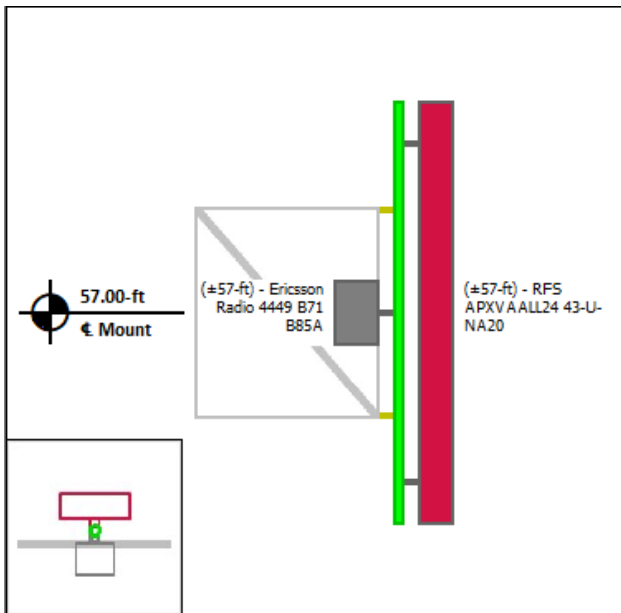
**Mount Pipe A**



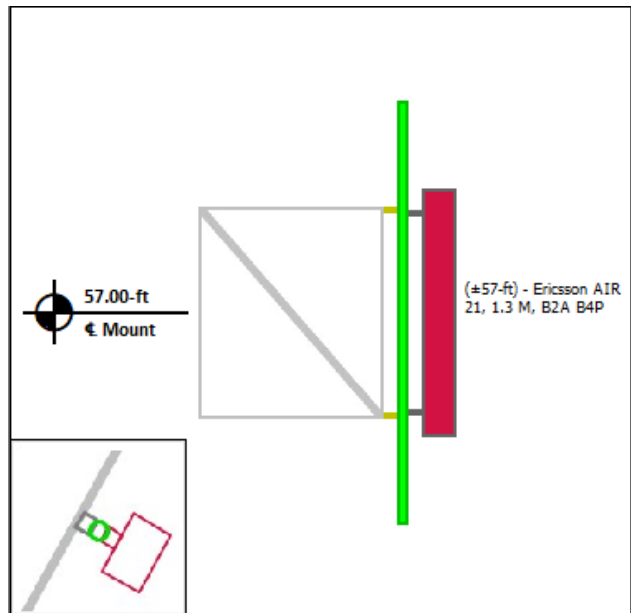
**Mount Pipe B**



**Mount Pipe C**

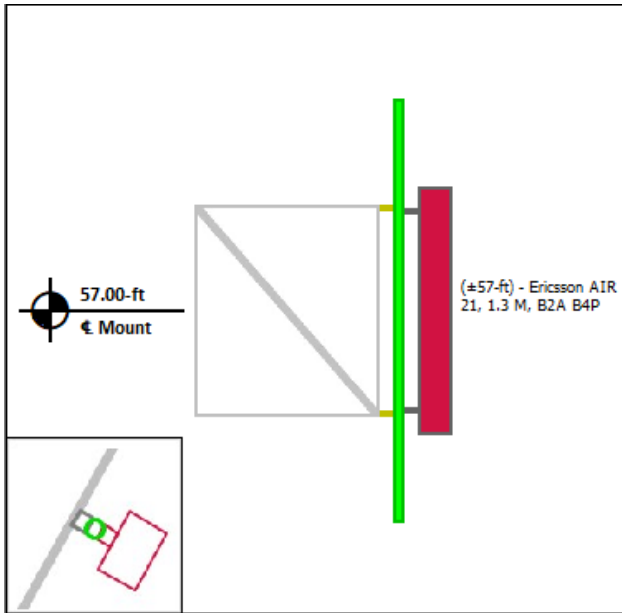


**Mount Pipe D**

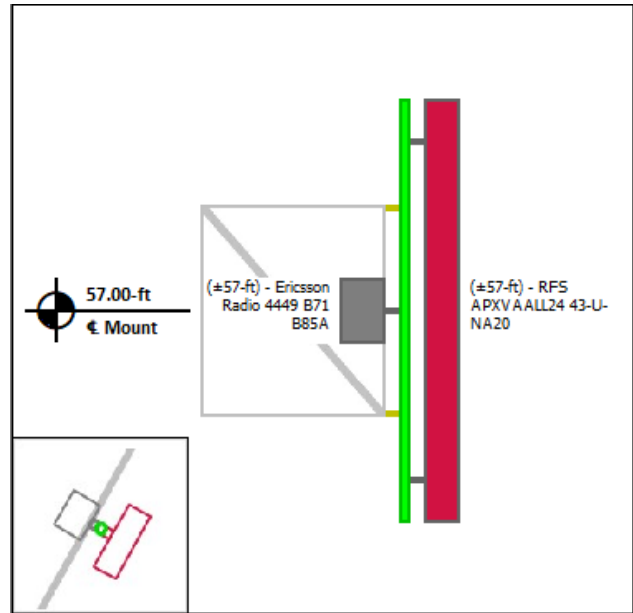


**Equipment Layout Cont'd.**

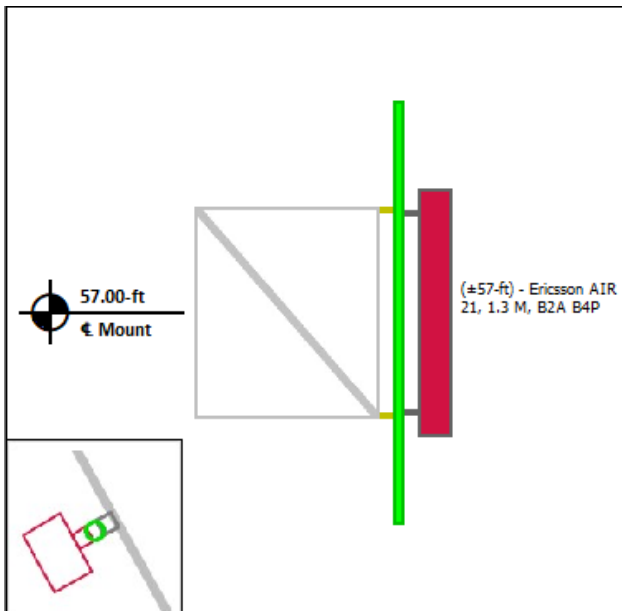
**Mount Pipe E**



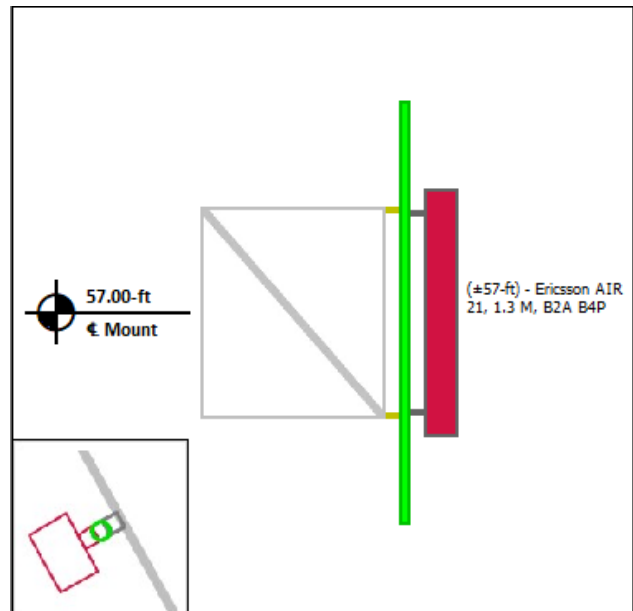
**Mount Pipe F**



**Mount Pipe G**

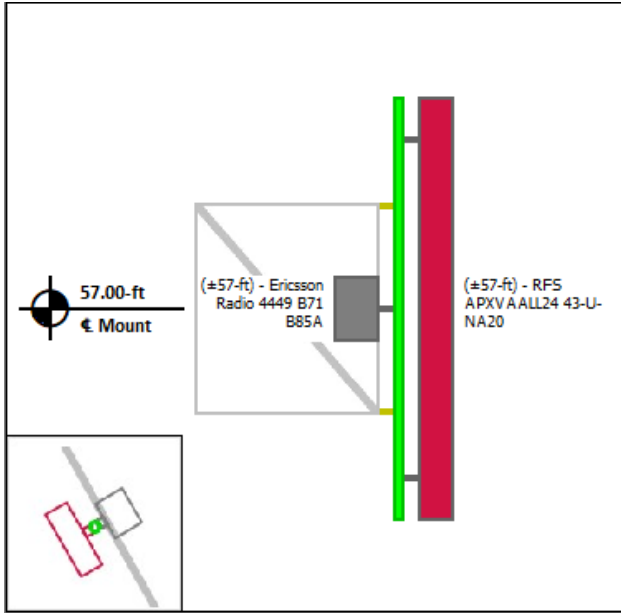


**Mount Pipe H**



**Equipment Layout Cont'd.**

**Mount Pipe I**





### **Standard Conditions**

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding equipment, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

All connections are to be verified for condition and tightness by the installation contractor preceding any changes to the appurtenance mounting system and/or equipment attached to it.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.



Site Number: 370624  
 Project Number: 13617819\_C9\_04  
 Carrier: T-Mobile  
 Mount Elevation: 57 ft  
 Date: 9/27/2022

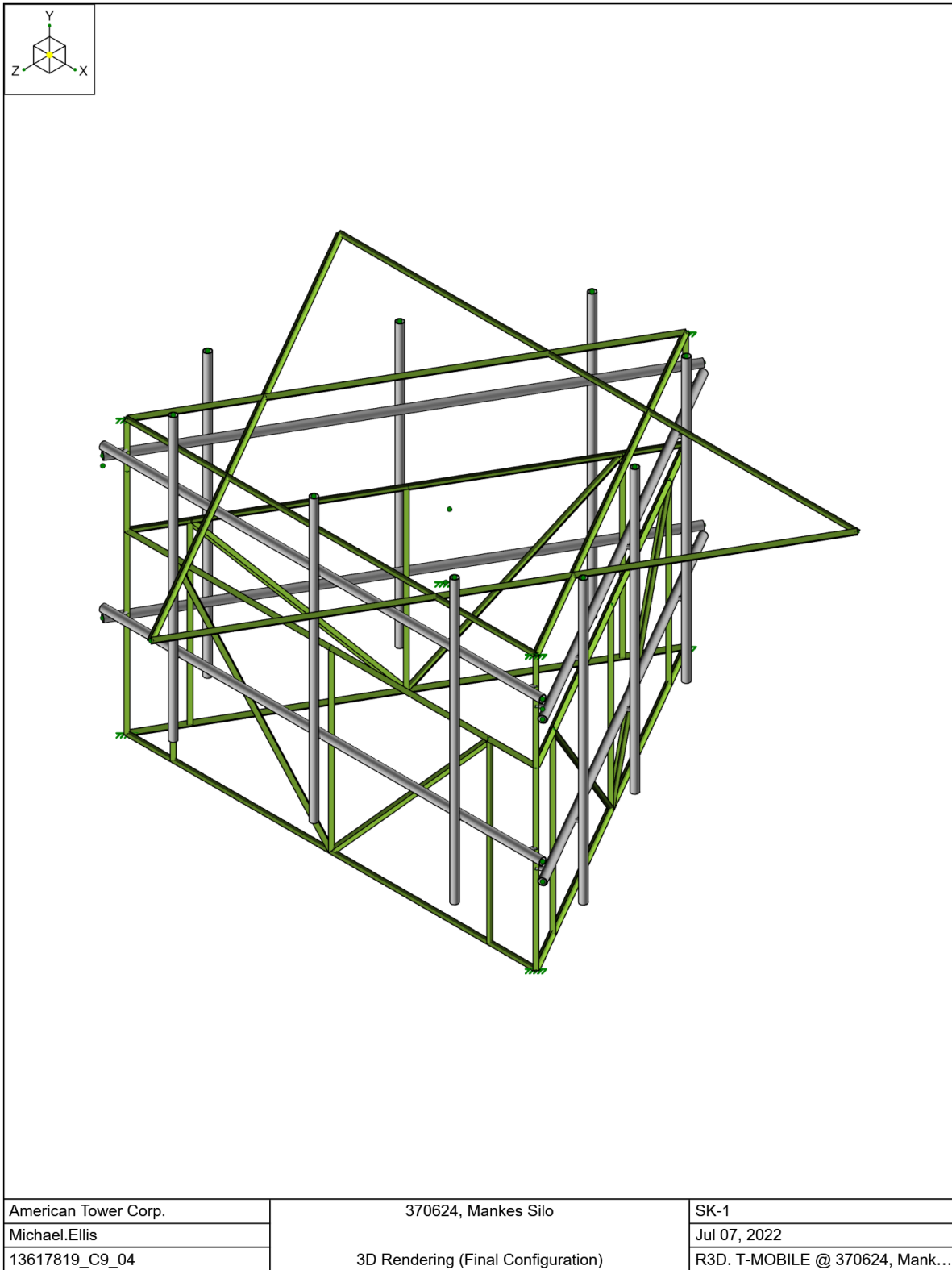
## Mount Analysis Force Calculations

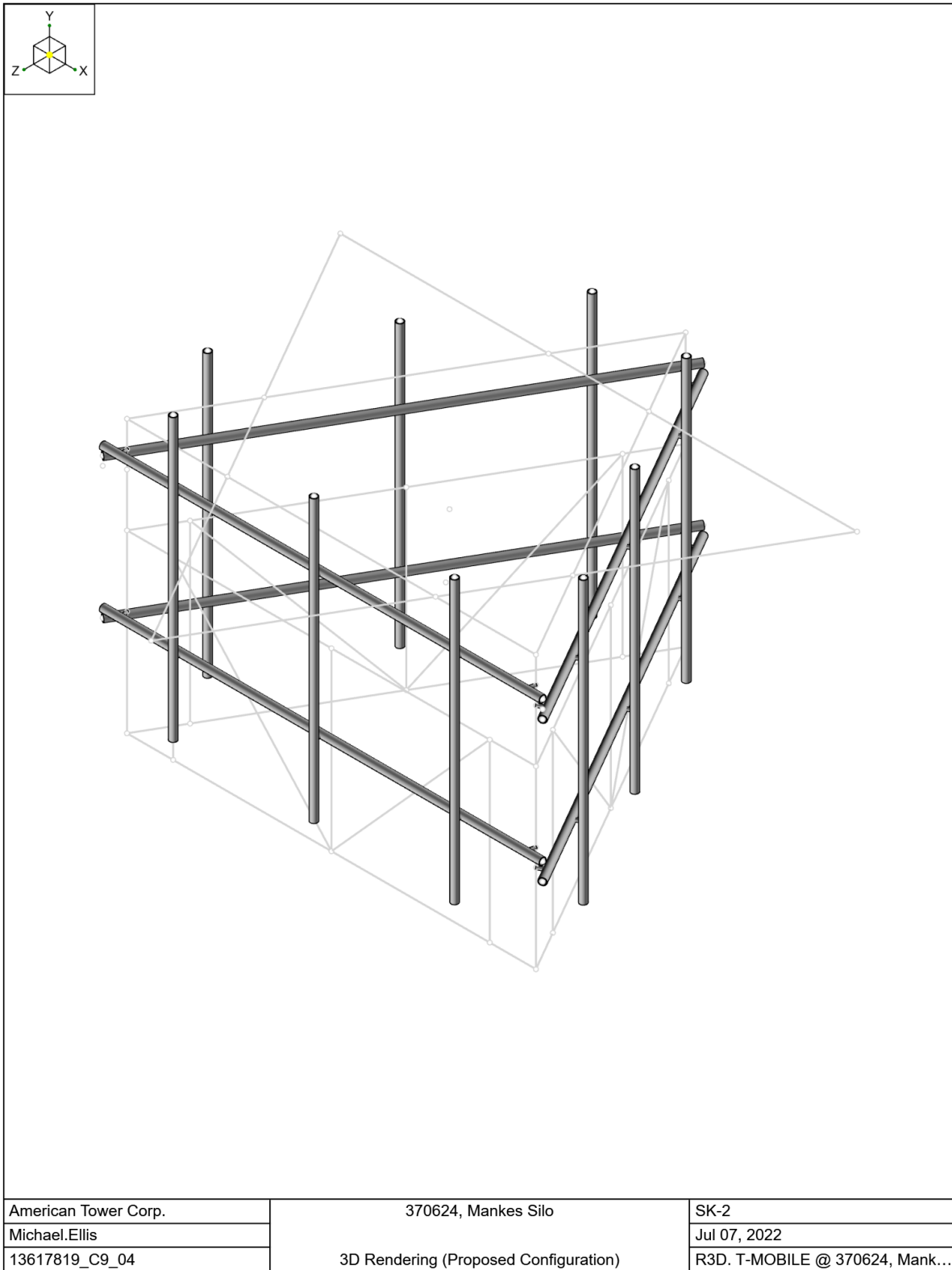
Wind & Ice Load Calculations			
Velocity Pressure Coefficient	$K_z$	0.84	
Topographic Factor	$K_{zt}$	1.00	
Rooftop Wind Speed-up Factor	$K_s$	1.00	
Shielding Factor	$K_a$	0.90	
Ground Elevation Factor	$K_e$	0.99	
Wind Direction Probability Factor	$K_d$	0.95	
Basic Wind Speed	$V$	0	mph
Velocity Pressure	$q_z$	0.0	psf
Height Escalation Factor	$K_{iz}$	1.06	
Thickness of Radial Glaze Ice	$T_{iz}$	0.00	in

Seismic Load Calculations			
Short Period DSRAP	$S_{Ds}$	0.159	
1 Second DSRAP	$S_{D1}$	0.088	
Importance Factor	$I$	1.0	
Response Modification Coefficient	$R$	2.0	
Seismic Response Coefficient	$C_s$	0.080	
Amplification Factor	$A$	1.0	
Total Weight	$W$	1650.8	lbs
Total Shear Force	$V_s$	131.4	lbs
Horizontal Seismic Load	$E_h$	131.4	lbs
Vertical Seismic Load	$E_v$	52.6	lbs

Antenna Calculations (Elevations per Application/RFDS)*									
Equipment	Height	Width	Depth	Weight	$EPA_N$	$EPA_T$	$EPA_{Ni}$	$EPA_{Ti}$	
Model #	in	in	in	lbs	sqft	sqft	sqft	sqft	
Ericsson AIR 21, 1.3 M, B2A B4P	56.0	12.0	8.0	83.0	6.05	2.49	6.05	2.49	
RFS APXVAALL24 43-U-NA20	95.9	24.0	8.5	122.8	20.24	5.07	20.24	5.07	
Ericsson Radio 4449 B71 B85A	15.0	13.2	10.5	75.0	1.65	1.31	1.65	1.31	

\* Equipment with EPA values N/A were not considered in the mount analysis

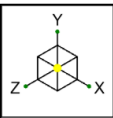




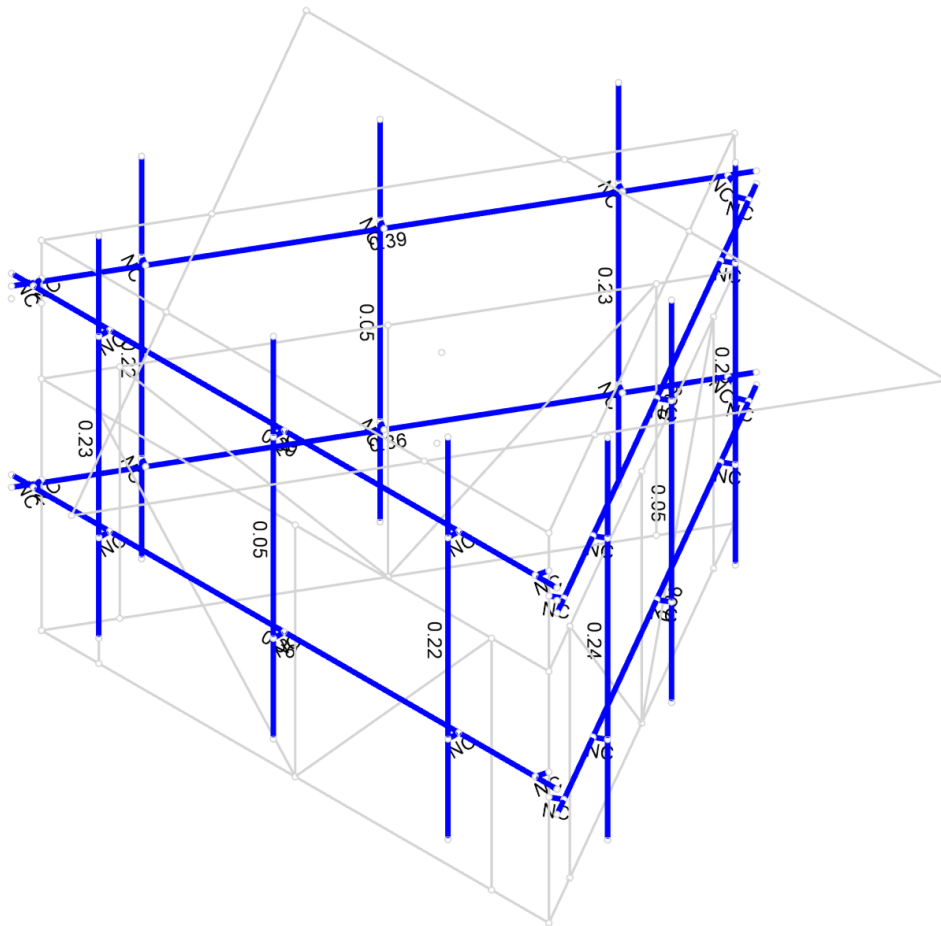






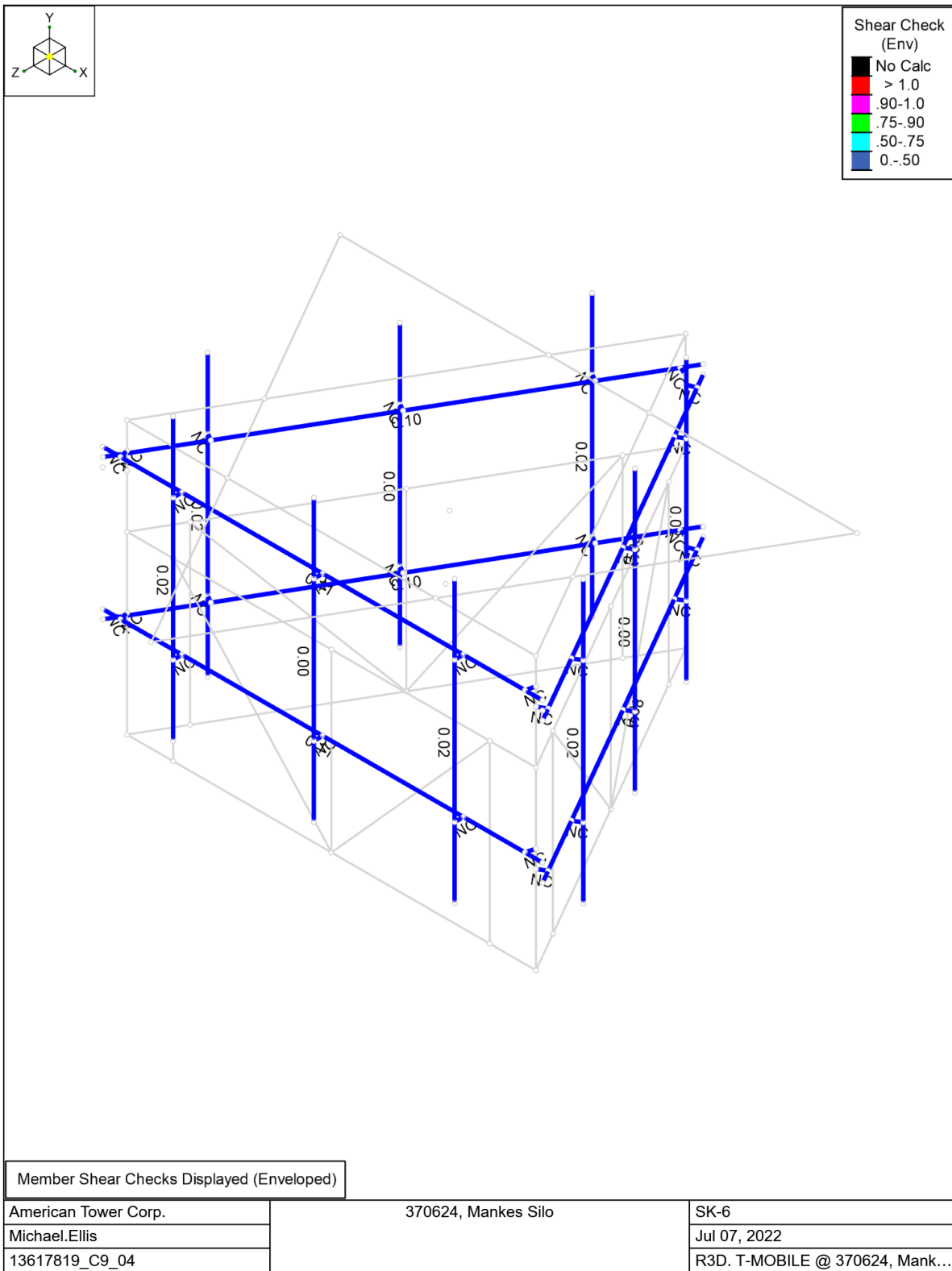


Code Check (Env)	
Black	No Calc
Red	> 1.0
Magenta	.90-1.0
Green	.75- .90
Cyan	.50-.75
Blue	0.-.50



Member Code Checks Displayed (Enveloped)

American Tower Corp.	370624, Mankes Silo	SK-5
Michael.Ellis		Jul 07, 2022
13617819_C9_04		R3D. T-MOBILE @ 370624, Mank...





Company : American Tower Corp.  
 Designer : Michael.Ellis  
 Job Number : 13617819\_C9\_04  
 Model Name : 370624, Mankes Silo

9/27/2022  
 1:40:37 PM  
 Checked By : -

**Basic Load Cases**

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed
1	D	DL	-1		21	
2	Di	IL				
3	W 0	WL			21	54
4	W 30	WL			42	99
5	W 60	WL			42	99
6	W 90	WL			21	45
7	W 120	WL			42	99
8	W 150	WL			42	99
9	W 180	WL			21	54
10	W 210	WL			42	99
11	W 240	WL			42	99
12	W 270	WL			21	45
13	W 300	WL			42	99
14	W 330	WL			42	99
15	Wi 0	WL				
16	Wi 30	WL				
17	Wi 60	WL				
18	Wi 90	WL				
19	Wi 120	WL				
20	Wi 150	WL				
21	Wi 180	WL				
22	Wi 210	WL				
23	Wi 240	WL				
24	Wi 270	WL				
25	Wi 300	WL				
26	Wi 330	WL				
27	Ws 0	WL			21	54
28	Ws 30	WL			42	99
29	Ws 60	WL			42	99
30	Ws 90	WL			21	45
31	Ws 120	WL			42	99
32	Ws 150	WL			42	99
33	Ws 180	WL			21	54
34	Ws 210	WL			42	99
35	Ws 240	WL			42	99
36	Ws 270	WL			21	45
37	Ws 300	WL			42	99
38	Ws 330	WL			42	99
39	Ev -Y	ELY				15
40	Eh -Z	ELZ				15
41	Eh -X	ELX				15
42	Lv (1)	LL			1	
43	Lv (2)	LL			1	
44	Lv (3)	LL			1	
45	Lv (4)	LL			1	
46	Lv (5)	LL			1	
47	Lv (6)	LL			1	
48	Lm (1)	LL		1		
49	Lm (2)	LL		1		
50	Lm (3)	LL		1		
51	Lm (4)	LL		1		
52	Lm (5)	LL		1		
53	Lm (6)	LL		1		
54	Lm (7)	LL		1		
55	Lm (8)	LL		1		



Company : American Tower Corp.  
 Designer : Michael.Ellis  
 Job Number : 13617819\_C9\_04  
 Model Name : 370624, Mankes Silo

9/27/2022  
 1:40:37 PM  
 Checked By : -

**Basic Load Cases (Continued)**

BLC Description	Category	Y Gravity	Nodal	Point	Distributed
56 Lm (9)	LL		1		

**Load Combinations**

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4D	Yes	Y	DL	1.4						
2	1.2D + 1.0W [0°]	Yes	Y	DL	1.2	3	1				
3	1.2D + 1.0W [30°]	Yes	Y	DL	1.2	4	1				
4	1.2D + 1.0W [60°]	Yes	Y	DL	1.2	5	1				
5	1.2D + 1.0W [90°]	Yes	Y	DL	1.2	6	1				
6	1.2D + 1.0W [120°]	Yes	Y	DL	1.2	7	1				
7	1.2D + 1.0W [150°]	Yes	Y	DL	1.2	8	1				
8	1.2D + 1.0W [180°]	Yes	Y	DL	1.2	9	1				
9	1.2D + 1.0W [210°]	Yes	Y	DL	1.2	10	1				
10	1.2D + 1.0W [240°]	Yes	Y	DL	1.2	11	1				
11	1.2D + 1.0W [270°]	Yes	Y	DL	1.2	12	1				
12	1.2D + 1.0W [300°]	Yes	Y	DL	1.2	13	1				
13	1.2D + 1.0W [330°]	Yes	Y	DL	1.2	14	1				
14	0.9D + 1.0W [0°]	Yes	Y	DL	0.9	3	1				
15	0.9D + 1.0W [30°]	Yes	Y	DL	0.9	4	1				
16	0.9D + 1.0W [60°]	Yes	Y	DL	0.9	5	1				
17	0.9D + 1.0W [90°]	Yes	Y	DL	0.9	6	1				
18	0.9D + 1.0W [120°]	Yes	Y	DL	0.9	7	1				
19	0.9D + 1.0W [150°]	Yes	Y	DL	0.9	8	1				
20	0.9D + 1.0W [180°]	Yes	Y	DL	0.9	9	1				
21	0.9D + 1.0W [210°]	Yes	Y	DL	0.9	10	1				
22	0.9D + 1.0W [240°]	Yes	Y	DL	0.9	11	1				
23	0.9D + 1.0W [270°]	Yes	Y	DL	0.9	12	1				
24	0.9D + 1.0W [300°]	Yes	Y	DL	0.9	13	1				
25	0.9D + 1.0W [330°]	Yes	Y	DL	0.9	14	1				
26	1.2D + 1.0Di + 1.0Wi [0°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	15	1		
27	1.2D + 1.0Di + 1.0Wi [30°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	16	1		
28	1.2D + 1.0Di + 1.0Wi [60°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	17	1		
29	1.2D + 1.0Di + 1.0Wi [90°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	18	1		
30	1.2D + 1.0Di + 1.0Wi [120°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	19	1		
31	1.2D + 1.0Di + 1.0Wi [150°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	20	1		
32	1.2D + 1.0Di + 1.0Wi [180°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	21	1		
33	1.2D + 1.0Di + 1.0Wi [210°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	22	1		
34	1.2D + 1.0Di + 1.0Wi [240°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	23	1		
35	1.2D + 1.0Di + 1.0Wi [270°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	24	1		
36	1.2D + 1.0Di + 1.0Wi [300°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	25	1		
37	1.2D + 1.0Di + 1.0Wi [330°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	26	1		
38	1.2D + 1.0Ev + 1.0Eh [0°]	Yes	Y	DL	1.2	ELY	1	ELZ	1	ELX	0.001
39	1.2D + 1.0Ev + 1.0Eh [30°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.866	ELX	0.5
40	1.2D + 1.0Ev + 1.0Eh [60°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.5	ELX	0.866
41	1.2D + 1.0Ev + 1.0Eh [90°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.001	ELX	1
42	1.2D + 1.0Ev + 1.0Eh [120°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.5	ELX	0.866
43	1.2D + 1.0Ev + 1.0Eh [150°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.866	ELX	0.5
44	1.2D + 1.0Ev + 1.0Eh [180°]	Yes	Y	DL	1.2	ELY	1	ELZ	-1	ELX	0.001
45	1.2D + 1.0Ev + 1.0Eh [210°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.866	ELX	-0.5
46	1.2D + 1.0Ev + 1.0Eh [240°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.5	ELX	-0.866
47	1.2D + 1.0Ev + 1.0Eh [270°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.001	ELX	-1
48	1.2D + 1.0Ev + 1.0Eh [300°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.5	ELX	-0.866
49	1.2D + 1.0Ev + 1.0Eh [330°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.866	ELX	-0.5
50	0.9D + 1.0Ev + 1.0Eh [0°]	Yes	Y	DL	0.9	ELY	1	ELZ	1	ELX	0.001
51	0.9D + 1.0Ev + 1.0Eh [30°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.866	ELX	0.5



**Load Combinations (Continued)**

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
52	0.9D + 1.0Ev + 1.0Eh [60°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.5	ELX	0.866
53	0.9D + 1.0Ev + 1.0Eh [90°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.001	ELX	1
54	0.9D + 1.0Ev + 1.0Eh [120°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.5	ELX	0.866
55	0.9D + 1.0Ev + 1.0Eh [150°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.866	ELX	0.5
56	0.9D + 1.0Ev + 1.0Eh [180°]	Yes	Y	DL	0.9	ELY	1	ELZ	-1	ELX	0.001
57	0.9D + 1.0Ev + 1.0Eh [210°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.866	ELX	-0.5
58	0.9D + 1.0Ev + 1.0Eh [240°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.5	ELX	-0.866
59	0.9D + 1.0Ev + 1.0Eh [270°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.001	ELX	-1
60	0.9D + 1.0Ev + 1.0Eh [300°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.5	ELX	-0.866
61	0.9D + 1.0Ev + 1.0Eh [330°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.866	ELX	-0.5
62	1.2D + 1.5Lv(1)	Yes	Y	DL	1.2	42	1.5				
63	1.2D + 1.5Lv(2)	Yes	Y	DL	1.2	43	1.5				
64	1.2D + 1.5Lv(3)	Yes	Y	DL	1.2	44	1.5				
65	1.2D + 1.5Lv(4)	Yes	Y	DL	1.2	45	1.5				
66	1.2D + 1.5Lv(5)	Yes	Y	DL	1.2	46	1.5				
67	1.2D + 1.5Lv(6)	Yes	Y	DL	1.2	47	1.5				
68	1.2D + 1.5Lm(1) + 1.0Wm [0°]	Yes	Y	DL	1.2	48	1.5	27	1		
69	1.2D + 1.5Lm(1) + 1.0Wm [30°]	Yes	Y	DL	1.2	48	1.5	28	1		
70	1.2D + 1.5Lm(1) + 1.0Wm [60°]	Yes	Y	DL	1.2	48	1.5	29	1		
71	1.2D + 1.5Lm(1) + 1.0Wm [90°]	Yes	Y	DL	1.2	48	1.5	30	1		
72	1.2D + 1.5Lm(1) + 1.0Wm [120°]	Yes	Y	DL	1.2	48	1.5	31	1		
73	1.2D + 1.5Lm(1) + 1.0Wm [150°]	Yes	Y	DL	1.2	48	1.5	32	1		
74	1.2D + 1.5Lm(1) + 1.0Wm [180°]	Yes	Y	DL	1.2	48	1.5	33	1		
75	1.2D + 1.5Lm(1) + 1.0Wm [210°]	Yes	Y	DL	1.2	48	1.5	34	1		
76	1.2D + 1.5Lm(1) + 1.0Wm [240°]	Yes	Y	DL	1.2	48	1.5	35	1		
77	1.2D + 1.5Lm(1) + 1.0Wm [270°]	Yes	Y	DL	1.2	48	1.5	36	1		
78	1.2D + 1.5Lm(1) + 1.0Wm [300°]	Yes	Y	DL	1.2	48	1.5	37	1		
79	1.2D + 1.5Lm(1) + 1.0Wm [330°]	Yes	Y	DL	1.2	48	1.5	38	1		
80	1.2D + 1.5Lm(2) + 1.0Wm [0°]	Yes	Y	DL	1.2	49	1.5	27	1		
81	1.2D + 1.5Lm(2) + 1.0Wm [30°]	Yes	Y	DL	1.2	49	1.5	28	1		
82	1.2D + 1.5Lm(2) + 1.0Wm [60°]	Yes	Y	DL	1.2	49	1.5	29	1		
83	1.2D + 1.5Lm(2) + 1.0Wm [90°]	Yes	Y	DL	1.2	49	1.5	30	1		
84	1.2D + 1.5Lm(2) + 1.0Wm [120°]	Yes	Y	DL	1.2	49	1.5	31	1		
85	1.2D + 1.5Lm(2) + 1.0Wm [150°]	Yes	Y	DL	1.2	49	1.5	32	1		
86	1.2D + 1.5Lm(2) + 1.0Wm [180°]	Yes	Y	DL	1.2	49	1.5	33	1		
87	1.2D + 1.5Lm(2) + 1.0Wm [210°]	Yes	Y	DL	1.2	49	1.5	34	1		
88	1.2D + 1.5Lm(2) + 1.0Wm [240°]	Yes	Y	DL	1.2	49	1.5	35	1		
89	1.2D + 1.5Lm(2) + 1.0Wm [270°]	Yes	Y	DL	1.2	49	1.5	36	1		
90	1.2D + 1.5Lm(2) + 1.0Wm [300°]	Yes	Y	DL	1.2	49	1.5	37	1		
91	1.2D + 1.5Lm(2) + 1.0Wm [330°]	Yes	Y	DL	1.2	49	1.5	38	1		
92	1.2D + 1.5Lm(3) + 1.0Wm [0°]	Yes	Y	DL	1.2	50	1.5	27	1		
93	1.2D + 1.5Lm(3) + 1.0Wm [30°]	Yes	Y	DL	1.2	50	1.5	28	1		
94	1.2D + 1.5Lm(3) + 1.0Wm [60°]	Yes	Y	DL	1.2	50	1.5	29	1		
95	1.2D + 1.5Lm(3) + 1.0Wm [90°]	Yes	Y	DL	1.2	50	1.5	30	1		
96	1.2D + 1.5Lm(3) + 1.0Wm [120°]	Yes	Y	DL	1.2	50	1.5	31	1		
97	1.2D + 1.5Lm(3) + 1.0Wm [150°]	Yes	Y	DL	1.2	50	1.5	32	1		
98	1.2D + 1.5Lm(3) + 1.0Wm [180°]	Yes	Y	DL	1.2	50	1.5	33	1		
99	1.2D + 1.5Lm(3) + 1.0Wm [210°]	Yes	Y	DL	1.2	50	1.5	34	1		
100	1.2D + 1.5Lm(3) + 1.0Wm [240°]	Yes	Y	DL	1.2	50	1.5	35	1		
101	1.2D + 1.5Lm(3) + 1.0Wm [270°]	Yes	Y	DL	1.2	50	1.5	36	1		
102	1.2D + 1.5Lm(3) + 1.0Wm [300°]	Yes	Y	DL	1.2	50	1.5	37	1		
103	1.2D + 1.5Lm(3) + 1.0Wm [330°]	Yes	Y	DL	1.2	50	1.5	38	1		
104	1.2D + 1.5Lm(4) + 1.0Wm [0°]	Yes	Y	DL	1.2	51	1.5	27	1		
105	1.2D + 1.5Lm(4) + 1.0Wm [30°]	Yes	Y	DL	1.2	51	1.5	28	1		
106	1.2D + 1.5Lm(4) + 1.0Wm [60°]	Yes	Y	DL	1.2	51	1.5	29	1		



**Load Combinations (Continued)**

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
107	1.2D + 1.5Lm(4) + 1.0Wm [90°]	Yes	Y	DL	1.2	51	1.5	30	1		
108	1.2D + 1.5Lm(4) + 1.0Wm [120°]	Yes	Y	DL	1.2	51	1.5	31	1		
109	1.2D + 1.5Lm(4) + 1.0Wm [150°]	Yes	Y	DL	1.2	51	1.5	32	1		
110	1.2D + 1.5Lm(4) + 1.0Wm [180°]	Yes	Y	DL	1.2	51	1.5	33	1		
111	1.2D + 1.5Lm(4) + 1.0Wm [210°]	Yes	Y	DL	1.2	51	1.5	34	1		
112	1.2D + 1.5Lm(4) + 1.0Wm [240°]	Yes	Y	DL	1.2	51	1.5	35	1		
113	1.2D + 1.5Lm(4) + 1.0Wm [270°]	Yes	Y	DL	1.2	51	1.5	36	1		
114	1.2D + 1.5Lm(4) + 1.0Wm [300°]	Yes	Y	DL	1.2	51	1.5	37	1		
115	1.2D + 1.5Lm(4) + 1.0Wm [330°]	Yes	Y	DL	1.2	51	1.5	38	1		
116	1.2D + 1.5Lm(5) + 1.0Wm [0°]	Yes	Y	DL	1.2	52	1.5	27	1		
117	1.2D + 1.5Lm(5) + 1.0Wm [30°]	Yes	Y	DL	1.2	52	1.5	28	1		
118	1.2D + 1.5Lm(5) + 1.0Wm [60°]	Yes	Y	DL	1.2	52	1.5	29	1		
119	1.2D + 1.5Lm(5) + 1.0Wm [90°]	Yes	Y	DL	1.2	52	1.5	30	1		
120	1.2D + 1.5Lm(5) + 1.0Wm [120°]	Yes	Y	DL	1.2	52	1.5	31	1		
121	1.2D + 1.5Lm(5) + 1.0Wm [150°]	Yes	Y	DL	1.2	52	1.5	32	1		
122	1.2D + 1.5Lm(5) + 1.0Wm [180°]	Yes	Y	DL	1.2	52	1.5	33	1		
123	1.2D + 1.5Lm(5) + 1.0Wm [210°]	Yes	Y	DL	1.2	52	1.5	34	1		
124	1.2D + 1.5Lm(5) + 1.0Wm [240°]	Yes	Y	DL	1.2	52	1.5	35	1		
125	1.2D + 1.5Lm(5) + 1.0Wm [270°]	Yes	Y	DL	1.2	52	1.5	36	1		
126	1.2D + 1.5Lm(5) + 1.0Wm [300°]	Yes	Y	DL	1.2	52	1.5	37	1		
127	1.2D + 1.5Lm(5) + 1.0Wm [330°]	Yes	Y	DL	1.2	52	1.5	38	1		
128	1.2D + 1.5Lm(6) + 1.0Wm [0°]	Yes	Y	DL	1.2	53	1.5	27	1		
129	1.2D + 1.5Lm(6) + 1.0Wm [30°]	Yes	Y	DL	1.2	53	1.5	28	1		
130	1.2D + 1.5Lm(6) + 1.0Wm [60°]	Yes	Y	DL	1.2	53	1.5	29	1		
131	1.2D + 1.5Lm(6) + 1.0Wm [90°]	Yes	Y	DL	1.2	53	1.5	30	1		
132	1.2D + 1.5Lm(6) + 1.0Wm [120°]	Yes	Y	DL	1.2	53	1.5	31	1		
133	1.2D + 1.5Lm(6) + 1.0Wm [150°]	Yes	Y	DL	1.2	53	1.5	32	1		
134	1.2D + 1.5Lm(6) + 1.0Wm [180°]	Yes	Y	DL	1.2	53	1.5	33	1		
135	1.2D + 1.5Lm(6) + 1.0Wm [210°]	Yes	Y	DL	1.2	53	1.5	34	1		
136	1.2D + 1.5Lm(6) + 1.0Wm [240°]	Yes	Y	DL	1.2	53	1.5	35	1		
137	1.2D + 1.5Lm(6) + 1.0Wm [270°]	Yes	Y	DL	1.2	53	1.5	36	1		
138	1.2D + 1.5Lm(6) + 1.0Wm [300°]	Yes	Y	DL	1.2	53	1.5	37	1		
139	1.2D + 1.5Lm(6) + 1.0Wm [330°]	Yes	Y	DL	1.2	53	1.5	38	1		
140	1.2D + 1.5Lm(7) + 1.0Wm [0°]	Yes	Y	DL	1.2	54	1.5	27	1		
141	1.2D + 1.5Lm(7) + 1.0Wm [30°]	Yes	Y	DL	1.2	54	1.5	28	1		
142	1.2D + 1.5Lm(7) + 1.0Wm [60°]	Yes	Y	DL	1.2	54	1.5	29	1		
143	1.2D + 1.5Lm(7) + 1.0Wm [90°]	Yes	Y	DL	1.2	54	1.5	30	1		
144	1.2D + 1.5Lm(7) + 1.0Wm [120°]	Yes	Y	DL	1.2	54	1.5	31	1		
145	1.2D + 1.5Lm(7) + 1.0Wm [150°]	Yes	Y	DL	1.2	54	1.5	32	1		
146	1.2D + 1.5Lm(7) + 1.0Wm [180°]	Yes	Y	DL	1.2	54	1.5	33	1		
147	1.2D + 1.5Lm(7) + 1.0Wm [210°]	Yes	Y	DL	1.2	54	1.5	34	1		
148	1.2D + 1.5Lm(7) + 1.0Wm [240°]	Yes	Y	DL	1.2	54	1.5	35	1		
149	1.2D + 1.5Lm(7) + 1.0Wm [270°]	Yes	Y	DL	1.2	54	1.5	36	1		
150	1.2D + 1.5Lm(7) + 1.0Wm [300°]	Yes	Y	DL	1.2	54	1.5	37	1		
151	1.2D + 1.5Lm(7) + 1.0Wm [330°]	Yes	Y	DL	1.2	54	1.5	38	1		
152	1.2D + 1.5Lm(8) + 1.0Wm [0°]	Yes	Y	DL	1.2	55	1.5	27	1		
153	1.2D + 1.5Lm(8) + 1.0Wm [30°]	Yes	Y	DL	1.2	55	1.5	28	1		
154	1.2D + 1.5Lm(8) + 1.0Wm [60°]	Yes	Y	DL	1.2	55	1.5	29	1		
155	1.2D + 1.5Lm(8) + 1.0Wm [90°]	Yes	Y	DL	1.2	55	1.5	30	1		
156	1.2D + 1.5Lm(8) + 1.0Wm [120°]	Yes	Y	DL	1.2	55	1.5	31	1		
157	1.2D + 1.5Lm(8) + 1.0Wm [150°]	Yes	Y	DL	1.2	55	1.5	32	1		
158	1.2D + 1.5Lm(8) + 1.0Wm [180°]	Yes	Y	DL	1.2	55	1.5	33	1		
159	1.2D + 1.5Lm(8) + 1.0Wm [210°]	Yes	Y	DL	1.2	55	1.5	34	1		
160	1.2D + 1.5Lm(8) + 1.0Wm [240°]	Yes	Y	DL	1.2	55	1.5	35	1		
161	1.2D + 1.5Lm(8) + 1.0Wm [270°]	Yes	Y	DL	1.2	55	1.5	36	1		





Company : American Tower Corp.  
 Designer : Michael.Ellis  
 Job Number : 13617819\_C9\_04  
 Model Name : 370624, Mankes Silo

9/27/2022  
 1:40:37 PM  
 Checked By : -

**Load Combinations (Continued)**

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
162	1.2D + 1.5Lm(8) + 1.0Wm [300°]	Yes	Y	DL	1.2	55	1.5	37	1		
163	1.2D + 1.5Lm(8) + 1.0Wm [330°]	Yes	Y	DL	1.2	55	1.5	38	1		
164	1.2D + 1.5Lm(9) + 1.0Wm [0°]	Yes	Y	DL	1.2	56	1.5	27	1		
165	1.2D + 1.5Lm(9) + 1.0Wm [30°]	Yes	Y	DL	1.2	56	1.5	28	1		
166	1.2D + 1.5Lm(9) + 1.0Wm [60°]	Yes	Y	DL	1.2	56	1.5	29	1		
167	1.2D + 1.5Lm(9) + 1.0Wm [90°]	Yes	Y	DL	1.2	56	1.5	30	1		
168	1.2D + 1.5Lm(9) + 1.0Wm [120°]	Yes	Y	DL	1.2	56	1.5	31	1		
169	1.2D + 1.5Lm(9) + 1.0Wm [150°]	Yes	Y	DL	1.2	56	1.5	32	1		
170	1.2D + 1.5Lm(9) + 1.0Wm [180°]	Yes	Y	DL	1.2	56	1.5	33	1		
171	1.2D + 1.5Lm(9) + 1.0Wm [210°]	Yes	Y	DL	1.2	56	1.5	34	1		
172	1.2D + 1.5Lm(9) + 1.0Wm [240°]	Yes	Y	DL	1.2	56	1.5	35	1		
173	1.2D + 1.5Lm(9) + 1.0Wm [270°]	Yes	Y	DL	1.2	56	1.5	36	1		
174	1.2D + 1.5Lm(9) + 1.0Wm [300°]	Yes	Y	DL	1.2	56	1.5	37	1		
175	1.2D + 1.5Lm(9) + 1.0Wm [330°]	Yes	Y	DL	1.2	56	1.5	38	1		

**Member Primary Data**

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	H001	N002	N003	RIGID	None	None	RIGID	Typical
2	H002	N003	N004	RIGID	None	None	RIGID	Typical
3	H003	N004	N002	RIGID	None	None	RIGID	Typical
4	H004	N015	N016	RIGID	None	None	RIGID	Typical
5	H005	N016	N014	RIGID	None	None	RIGID	Typical
6	H006	N014	N015	RIGID	None	None	RIGID	Typical
7	H007	N019	N018	RIGID	None	None	RIGID	Typical
8	H008	N017	N019	RIGID	None	None	RIGID	Typical
9	H009	N018	N017	RIGID	None	None	RIGID	Typical
10	H010	N031	N030	RIGID	None	None	RIGID	Typical
11	H011	N029	N031	RIGID	None	None	RIGID	Typical
12	H012	N030	N029	RIGID	None	None	RIGID	Typical
13	V013	N026	N008	RIGID	None	None	RIGID	Typical
14	D014	N008	N023	RIGID	None	None	RIGID	Typical
15	D015	N011	N023	RIGID	None	None	RIGID	Typical
16	V016	N005	N023	RIGID	None	None	RIGID	Typical
17	V017	N011	N020	RIGID	None	None	RIGID	Typical
18	V018	N012	N021	RIGID	None	None	RIGID	Typical
19	V019	N006	N024	RIGID	None	None	RIGID	Typical
20	V020	N009	N027	RIGID	None	None	RIGID	Typical
21	D021	N012	N024	RIGID	None	None	RIGID	Typical
22	D022	N009	N024	RIGID	None	None	RIGID	Typical
23	V023	N013	N022	RIGID	None	None	RIGID	Typical
24	D024	N013	N025	RIGID	None	None	RIGID	Typical
25	V025	N007	N025	RIGID	None	None	RIGID	Typical
26	D026	N010	N025	RIGID	None	None	RIGID	Typical
27	V027	N010	N028	RIGID	None	None	RIGID	Typical
28	V028	N029	N017	RIGID	None	None	RIGID	Typical
29	V029	N030	N018	RIGID	None	None	RIGID	Typical
30	V030	N031	N019	RIGID	None	None	RIGID	Typical
31	H031	N043	N044	PIPE 2.0	Beam	None	A53 Gr. B	Typical
32	H032	N040	N046	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
33	H033	N039	N045	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
34	H034	N051	N050	PIPE 2.0	Beam	None	A53 Gr. B	Typical
35	H035	N052	N054	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
36	H036	N048	N055	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
37	H037	N056	N057	PIPE 2.0	Beam	None	A53 Gr. B	Typical
38	H038	N038	N059	(2) 1/2 U-BOLTS	Beam	None	A36	Typical



Company : American Tower Corp.  
 Designer : Michael.Ellis  
 Job Number : 13617819\_C9\_04  
 Model Name : 370624, Mankes Silo

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**Member Primary Data (Continued)**

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
39	H039	N042	N060	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
40	H040	N065	N066	PIPE 2.0	Beam	None	A53 Gr. B	Typical
41	H041	N063	N068	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
42	H042	N062	N067	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
43	H043	N071	N070	PIPE 2.0	Beam	None	A53 Gr. B	Typical
44	H044	N072	N073	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
45	H045	N069	N074	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
46	H046	N075	N076	PIPE 2.0	Beam	None	A53 Gr. B	Typical
47	H047	N061	N077	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
48	H048	N064	N078	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
49	U049	N079	N088	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
50	U050	N089	N090	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
51	MP051	N091	N092	PIPE 2.0	Column	None	A53 Gr. B	Typical
52	U052	N080	N093	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
53	U053	N094	N095	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
54	MP054	N096	N097	PIPE 2.0	Column	None	A53 Gr. B	Typical
55	U055	N081	N098	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
56	U056	N099	N100	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
57	MP057	N101	N102	PIPE 2.0	Column	None	A53 Gr. B	Typical
58	U058	N084	N103	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
59	U059	N104	N105	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
60	MP060	N106	N107	PIPE 2.0	Column	None	A53 Gr. B	Typical
61	U061	N083	N108	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
62	U062	N109	N110	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
63	MP063	N111	N112	PIPE 2.0	Column	None	A53 Gr. B	Typical
64	U064	N085	N113	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
65	U065	N114	N115	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
66	MP066	N116	N117	PIPE 2.0	Column	None	A53 Gr. B	Typical
67	U067	N086	N118	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
68	U068	N119	N120	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
69	MP069	N121	N122	PIPE 2.0	Column	None	A53 Gr. B	Typical
70	U070	N082	N123	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
71	U071	N124	N125	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
72	MP072	N126	N127	PIPE 2.0	Column	None	A53 Gr. B	Typical
73	U073	N087	N128	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
74	U074	N129	N130	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
75	MP075	N131	N132	PIPE 2.0	Column	None	A53 Gr. B	Typical

**Hot Rolled Steel Design Parameters**

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	K y-y	K z-z	Function
1	H031	PIPE 2.0	150			Lbyy		2.1	2.1	Lateral
2	H032	(2) 1/2 U-BOLTS	3.093			Lbyy		2.1	2.1	Lateral
3	H033	(2) 1/2 U-BOLTS	3.093			Lbyy		2.1	2.1	Lateral
4	H034	PIPE 2.0	149.974			Lbyy		2.1	2.1	Lateral
5	H035	(2) 1/2 U-BOLTS	3.002			Lbyy		2.1	2.1	Lateral
6	H036	(2) 1/2 U-BOLTS	3.09			Lbyy		2.1	2.1	Lateral
7	H037	PIPE 2.0	149.974			Lbyy		2.1	2.1	Lateral
8	H038	(2) 1/2 U-BOLTS	3.048			Lbyy		2.1	2.1	Lateral
9	H039	(2) 1/2 U-BOLTS	3.043			Lbyy		2.1	2.1	Lateral
10	H040	PIPE 2.0	150			Lbyy		2.1	2.1	Lateral
11	H041	(2) 1/2 U-BOLTS	3.093			Lbyy		2.1	2.1	Lateral
12	H042	(2) 1/2 U-BOLTS	3.093			Lbyy		2.1	2.1	Lateral
13	H043	PIPE 2.0	149.974			Lbyy		2.1	2.1	Lateral
14	H044	(2) 1/2 U-BOLTS	3.002			Lbyy		2.1	2.1	Lateral
15	H045	(2) 1/2 U-BOLTS	3.09			Lbyy		2.1	2.1	Lateral



Company : American Tower Corp.  
 Designer : Michael.Ellis  
 Job Number : 13617819\_C9\_04  
 Model Name : 370624, Mankes Silo

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**Hot Rolled Steel Design Parameters (Continued)**

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	K y-y	K z-z	Function
16	H046	PIPE 2.0	149.974			Lbyy		2.1	2.1	Lateral
17	H047	(2) 1/2 U-BOLTS	3.048			Lbyy		2.1	2.1	Lateral
18	H048	(2) 1/2 U-BOLTS	3.043			Lbyy		2.1	2.1	Lateral
19	U049	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
20	U050	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
21	MP051	PIPE 2.0	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
22	U052	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
23	U053	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
24	MP054	PIPE 2.0	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
25	U055	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
26	U056	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
27	MP057	PIPE 2.0	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
28	U058	(2) 1/2 U-BOLTS	2.992			Lbyy		0.5	0.5	Lateral
29	U059	(2) 1/2 U-BOLTS	2.992			Lbyy		0.5	0.5	Lateral
30	MP060	PIPE 2.0	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
31	U061	(2) 1/2 U-BOLTS	2.978			Lbyy		0.5	0.5	Lateral
32	U062	(2) 1/2 U-BOLTS	2.978			Lbyy		0.5	0.5	Lateral
33	MP063	PIPE 2.0	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
34	U064	(2) 1/2 U-BOLTS	2.963			Lbyy		0.5	0.5	Lateral
35	U065	(2) 1/2 U-BOLTS	2.963			Lbyy		0.5	0.5	Lateral
36	MP066	PIPE 2.0	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
37	U067	(2) 1/2 U-BOLTS	2.992			Lbyy		0.5	0.5	Lateral
38	U068	(2) 1/2 U-BOLTS	2.992			Lbyy		0.5	0.5	Lateral
39	MP069	PIPE 2.0	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
40	U070	(2) 1/2 U-BOLTS	2.978			Lbyy		0.5	0.5	Lateral
41	U071	(2) 1/2 U-BOLTS	2.978			Lbyy		0.5	0.5	Lateral
42	MP072	PIPE 2.0	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
43	U073	(2) 1/2 U-BOLTS	2.963			Lbyy		0.5	0.5	Lateral
44	U074	(2) 1/2 U-BOLTS	2.963			Lbyy		0.5	0.5	Lateral
45	MP075	PIPE 2.0	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral

**Node Boundary Conditions**

	Node Label	X [lb/in]	Y [lb/in]	Z [lb/in]	X Rot [k-in/rad]	Y Rot [k-in/rad]	Z Rot [k-in/rad]
1	N017	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N030	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N018	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N019	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N031	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
6	N029	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
7	N001	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

**Member Advanced Data**

	Label	Physical	Deflection Ratio Options	Activation	Seismic DR
1	H001	Yes	** NA **		None
2	H002	Yes	** NA **		None
3	H003	Yes	** NA **		None
4	H004	Yes	** NA **		None
5	H005	Yes	** NA **		None
6	H006	Yes	** NA **		None
7	H007	Yes	** NA **		None
8	H008	Yes	** NA **		None
9	H009	Yes	** NA **		None
10	H010	Yes	** NA **		None



Company : American Tower Corp.  
 Designer : Michael.Ellis  
 Job Number : 13617819\_C9\_04  
 Model Name : 370624, Mankes Silo

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**Member Advanced Data (Continued)**

	Label	Physical	Deflection Ratio Options	Activation	Seismic DR
11	H011	Yes	** NA **		None
12	H012	Yes	** NA **		None
13	V013	Yes	** NA **		None
14	D014	Yes	** NA **		None
15	D015	Yes	** NA **		None
16	V016	Yes	** NA **		None
17	V017	Yes	** NA **		None
18	V018	Yes	** NA **		None
19	V019	Yes	** NA **		None
20	V020	Yes	** NA **		None
21	D021	Yes	** NA **		None
22	D022	Yes	** NA **		None
23	V023	Yes	** NA **		None
24	D024	Yes	** NA **		None
25	V025	Yes	** NA **		None
26	D026	Yes	** NA **		None
27	V027	Yes	** NA **		None
28	V028	Yes	** NA **		None
29	V029	Yes	** NA **		None
30	V030	Yes	** NA **		None
31	H031	Yes	N/A		None
32	H032	Yes	N/A	Exclude	None
33	H033	Yes	N/A	Exclude	None
34	H034	Yes	N/A		None
35	H035	Yes	N/A	Exclude	None
36	H036	Yes	N/A	Exclude	None
37	H037	Yes	N/A		None
38	H038	Yes	N/A	Exclude	None
39	H039	Yes	N/A	Exclude	None
40	H040	Yes	N/A		None
41	H041	Yes	N/A	Exclude	None
42	H042	Yes	N/A	Exclude	None
43	H043	Yes	N/A		None
44	H044	Yes	N/A	Exclude	None
45	H045	Yes	N/A	Exclude	None
46	H046	Yes	N/A		None
47	H047	Yes	N/A	Exclude	None
48	H048	Yes	N/A	Exclude	None
49	U049	Yes	N/A	Exclude	None
50	U050	Yes	N/A	Exclude	None
51	MP051	Yes	** NA **		None
52	U052	Yes	N/A	Exclude	None
53	U053	Yes	N/A	Exclude	None
54	MP054	Yes	** NA **		None
55	U055	Yes	N/A	Exclude	None
56	U056	Yes	N/A	Exclude	None
57	MP057	Yes	** NA **		None
58	U058	Yes	N/A	Exclude	None
59	U059	Yes	N/A	Exclude	None
60	MP060	Yes	** NA **		None
61	U061	Yes	N/A	Exclude	None
62	U062	Yes	N/A	Exclude	None
63	MP063	Yes	** NA **		None
64	U064	Yes	N/A	Exclude	None
65	U065	Yes	N/A	Exclude	None



**Member Advanced Data (Continued)**

	Label	Physical	Deflection Ratio Options	Activation	Seismic DR
66	MP066	Yes	** NA **		None
67	U067	Yes	N/A	Exclude	None
68	U068	Yes	N/A	Exclude	None
69	MP069	Yes	** NA **		None
70	U070	Yes	N/A	Exclude	None
71	U071	Yes	N/A	Exclude	None
72	MP072	Yes	** NA **		None
73	U073	Yes	N/A	Exclude	None
74	U074	Yes	N/A	Exclude	None
75	MP075	Yes	** NA **		None

**Hot Rolled Steel Properties**

	Label	E [psi]	G [psi]	Nu	Therm. Coeff. [1e <sup>5</sup> F <sup>-1</sup> ]	Density [lb/ft <sup>3</sup> ]	Yield [psi]	Ry	Fu [psi]	Rt
1	A36	2.9e+07	1.115e+07	0.3	0.65	490	36000	1.5	58000	1.2
2	A53 Gr. B	2.9e+07	1.115e+07	0.3	0.65	490	35000	1.6	60000	1.2

**Envelope Node Reactions**

Node Label	X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1 N017	max 131.683	143	551.469	140	221.37	152	223.975	121	35.329	119	138.632	137
2	min -156.836	137	181.578	56	61.152	56	82.493	14	-37.5	161	-102.701	155
3 N030	max -92.928	52	874.467	96	269.222	117	-9.764	147	31.989	99	76.929	94
4	min -324.254	87	314.358	14	-31.423	99	-76.039	117	-45.151	105	-4.891	124
5 N018	max 221.393	84	507.317	108	50.94	92	30.156	93	36.056	87	-75.307	56
6	min 50.699	138	165.416	60	-182.304	110	-195.874	123	-25.702	129	-250.597	80
7 N019	max -33.799	143	546.621	172	16.436	79	15.255	79	25.145	151	238.216	91
8	min -209.192	89	177.867	52	-219.431	169	-206.672	157	-40.636	85	64.049	56
9 N031	max 313.134	84	859.184	76	291.597	163	-29.36	133	46.232	91	32.928	156
10	min 80.774	60	302.718	14	5.056	73	-131.52	163	-25.605	73	-66.848	78
11 N029	max 181.55	131	837.782	128	-111.463	50	102.893	158	37.757	155	21.863	119
12	min -151.479	149	301.335	14	-307.209	122	26.533	50	-36.642	125	-82.947	161
13 N001	max 0	175	0	175	0	175	0	175	0	175	0	175
14	min 0	1	0	1	0	1	0	1	0	1	0	1
15 Totals:	max 166.746	155	2695.849	114	158.001	116						
16	min -166.746	101	1459.387	14	-158.001	86						

**Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks**

Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	H031	PIPE 2.0	0.393	75	80	0.106	143.75	98	1427.533	32130	1871.625	1871.625	1.8 H1-1b
2	H034	PIPE 2.0	0.391	74.987	123	0.099	143.725	130	1428.025	32130	1871.625	1871.625	1.811 H1-1b
3	H037	PIPE 2.0	0.393	74.987	155	0.086	143.725	150	1428.025	32130	1871.625	1871.625	1.813 H1-1b
4	H040	PIPE 2.0	0.358	75	91	0.105	143.75	92	1427.533	32130	1871.625	1871.625	1.798 H1-1b
5	H043	PIPE 2.0	0.359	74.987	123	0.098	143.725	136	1428.025	32130	1871.625	1871.625	1.809 H1-1b
6	H046	PIPE 2.0	0.362	74.987	155	0.085	143.725	144	1428.025	32130	1871.625	1871.625	1.81 H1-1b
7	MP051	PIPE 2.0	0.217	72	90	0.024	24	82	13787.847	32130	1871.625	1871.625	1.472 H1-1b
8	MP054	PIPE 2.0	0.052	72	80	0.004	24	96	13787.847	32130	1871.625	1871.625	1.479 H1-1b
9	MP057	PIPE 2.0	0.228	24	90	0.024	24	90	26005.018	32130	1871.625	1871.625	1.481 H1-1b
10	MP060	PIPE 2.0	0.223	72	122	0.023	24	116	13787.847	32130	1871.625	1871.625	2.273 H1-1b
11	MP063	PIPE 2.0	0.053	72	124	0.005	72	124	13787.847	32130	1871.625	1871.625	1.498 H1-1b
12	MP066	PIPE 2.0	0.234	24	120	0.023	47	122	26005.018	32130	1871.625	1871.625	3 H1-1b
13	MP069	PIPE 2.0	0.222	72	154	0.022	72	154	13787.847	32130	1871.625	1871.625	2.275 H1-1b
14	MP072	PIPE 2.0	0.054	72	156	0.005	24	161	13787.847	32130	1871.625	1871.625	2.295 H1-1b
15	MP075	PIPE 2.0	0.235	24	154	0.024	47	152	26005.018	32130	1871.625	1871.625	3 H1-1b



**AMERICAN TOWER®**  
CORPORATION

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## Structural Analysis Report

**Structure** : 78 ft Concealed Silo Tower  
**ATC Site Name** : Mankes Silo, CT  
**ATC Asset Number** : 370624  
**Engineering Number** : 13617819\_C3\_01  
**Proposed Carrier** : T-Mobile  
**Carrier Site Name** : CTNH504A  
**Carrier Site Number** : CTNH504A  
**Site Location** : 1338 Highland Ave  
Cheshire, CT 06410-0000  
41.536900,-72.893300  
**County** : New Haven  
**Date** : May 6, 2021  
**Max Usage** : 45%  
**Result** : Pass

Prepared By:  
Robert D. Barrett, E.I.  
Structural Engineer II

*Robert D. Barrett*

Reviewed By:



Authorized by "EOR"  
06 May 2021 11:17:49

**cosign**

**COA: PEC.0001553**



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## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 78 ft concealed silo tower to reflect the change in loading by T-Mobile.

## Supporting Documents

<b>Tower Drawings</b>	Mapping by Structural Components Job #140862, dated October 17, 2014
<b>Foundation Drawing</b>	Mapping by Structural Components Job #140862, dated October 17, 2014

## Analysis

The tower was analyzed using RISA-3D analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

<b>Basic Wind Speed:</b>	118 mph (3-Second Gust)
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-Second Gust) w/ 1" radial ice concurrent
<b>Code:</b>	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
<b>Exposure Category:</b>	B
<b>Risk Category:</b>	II
<b>Topographic Factor Procedure:</b>	Method 1
<b>Topographic Category:</b>	1

## Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at [Engineering@americantower.com](mailto:Engineering@americantower.com). Please include the American Tower site name, site number, and engineering number in the subject line for any questions.





**Existing and Reserved Equipment**

Elev. <sup>1</sup> (ft)	Qty	Equipment	Mount Type	Lines	Carrier
70.0	3	Samsung B5/B13 RRH-BR04C	Sector Frames	(2) 1 1/4" Hybriflex Cable (1) 1 5/8" Hybriflex	Verizon Wireless
	3	Samsung B2/B66A RRH-BR049			
	12	Commscope SBNHH-1D65B (40.6 lbs)			
	1	RFS DB-T1-6Z-8AB-0Z			
57.0	-	-	Sector Frames	(3) 1 5/8" Hybriflex	T-Mobile
54.0	6	Powerwave Allgon LGP21901	Sector Frames	(2) 0.39" Fiber Trunk (4) 0.78" 8 AWG 6 (12) 1 5/8" Coax (6) 1/2" Coax (1) 3" Conduit (1) 3/8" RET Control Cable	AT&T Mobility
	3	CCI DTMAP7819VG12A			
	6	Powerwave Allgon LGP21401			
	2	Raycap DC6-48-60-18-8F ("Squid")			
	3	Ericsson Radio 4415 B30			
	3	Ericsson RRUS 4449 B5, B12			
	3	Ericsson RRUS 12 w/ RRUS A2			
	6	Kathrein Scala 860 10025			
	3	KMW AM-X-CD-16-65-00T-RET			
	1	Kathrein Scala 80010965			
	1	CCI HPA-65R-BUU-H8			
	2	CCI HPA-65R-BUU-H6			
	2	Kathrein Scala 80010966			

**Equipment to be Removed**

Elev. <sup>1</sup> (ft)	Qty	Equipment	Mount Type	Lines	Carrier
57.0	3	Ericsson AIR 21, 1.3M, B4A B2P (90.4 lbs)	-	(4) 1 5/8" Hybriflex	T-Mobile
	3	Ericsson AIR 21, 1.3M, B2A B4P (91.5 lbs)			

**Proposed Equipment**

Elev. <sup>1</sup> (ft)	Qty	Equipment	Mount Type	Lines	Carrier
57.0	3	Ericsson Radio 4449 B71 B85A	Sector Frames	(3) 7/8" Fiber	T-Mobile
	6	Ericsson AIR 21, 1.3 M, B2A B4P			
	3	RFS APXVAALL24 43-U-NA20			

<sup>1</sup> Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines inside the silo shaft.



### **Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Legs	4%	Pass
Diagonals	13%	Pass
Horizontals	19%	Pass
Concrete	18%	Pass

### **Foundations**

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	1,394.2	31%
Axial (Kips)	493.6	45%
Shear (Kips)	34.2	25%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.



## Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

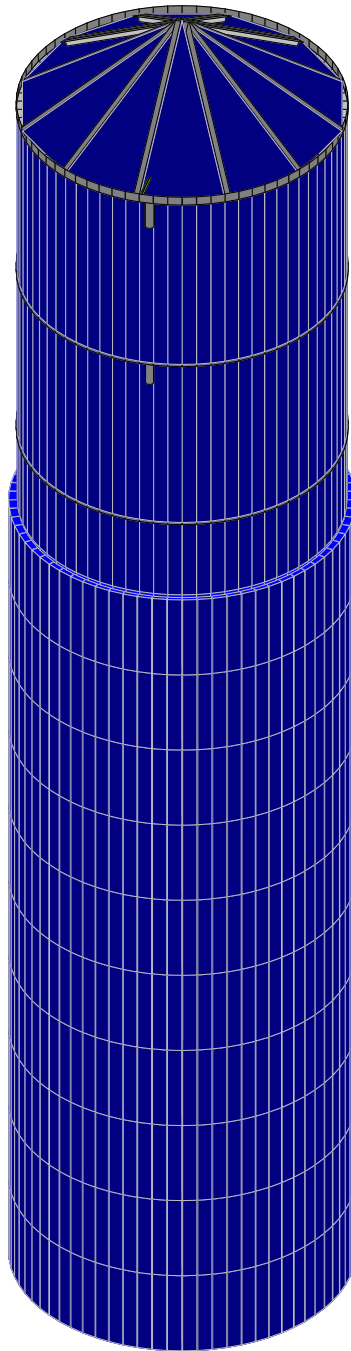
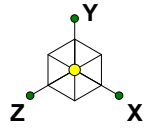
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.



ATC

RDB

13617819\_C3\_01

370624 - Mankes Silo, CT

SK - 1

May 6, 2021 at 11:09 PM

Mankes Silo, 370624-WT1 (13617...



Company : ATC  
 Designer : RDB  
 Job Number : 13617819\_C3\_01  
 Model Name : 370624 - Mankes Silo, CT

May 6, 2021  
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**(Global) Model Settings**

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	No
RISACONNECTION Code	AISC 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-16: LRFD
Wood Code	AWC NDS-18: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	TMS 402-16: Strength
Aluminum Code	AA ADM1-15: LRFD - Building
Stainless Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parame Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR SET ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8



**(Global) Model Settings, Continued**

Seismic Code	ASCE 7-16
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	.1
T Z (sec)	.1
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	.101
SDS	.198
S1	.063
TL (sec)	6
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1

**Hot Rolled Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design Rules	A [in <sup>2</sup> ]	I <sub>yy</sub> [in <sup>4</sup> ]	I <sub>zz</sub> [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	H1	W8X18	Beam	Wide Flange	A992	Typical	5.26	7.97	61.9	.172
2	H2	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	.031
3	H3	L4X3X4	Beam	Single Angle	A36 Gr.36	Typical	1.69	1.33	2.75	.039
4	H4	LL4x4x4x3	Beam	Double Angl...	A36 Gr.36	Typical	3.86	12.2	6	.088
5	H5	L4X4X4	Beam	Single Angle	A36 Gr.36	Typical	1.93	3	3	.044
6	H6	L6X6X5	Beam	Single Angle	A36 Gr.36	Typical	3.67	13	13	.129
7	Column1	HSS5x0.500	Beam	HSS Pipe	A36 Gr.36	Typical	6.62	17.2	17.2	34.4
8	Column2	HSS5.563X...	Beam	HSS Pipe	A36 Gr.36	Typical	5.72	19.5	19.5	39
9	V1	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	.031

**Basic Load Cases**

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(P...
1	Dead	DL		-1		16			
2	Wind Load Z	WLZ				8			
3	Wind Load X	WLX				8			
4	Partial Z Wind Load 1	WLZP1				8			
5	Partial Z Wind Load 2	WLZP2				8			
6	Partial X Wind Load 1	WLXP1				8			
7	Partial X Wind Load 2	WLXP2				8			
8	Earthquake Load Z	ELZ				8			
9	Earthquake Load X	ELX				8			
10	Earthquake Load Z Pl...	ELZ+X				8			
11	Earthquake Load Z M...	ELZ-X				8			
12	Earthquake Load X Pl...	ELX+Z				8			
13	Earthquake Load X M...	ELX-Z				8			
14	DA Weight	DL				9			
15	LA Weight	DL						4	



**Load Combinations**

	Description	So...	PDelta	S...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...
1	1.0D		Y		DL 1									
2	1.4D	Yes	Y		DL 1.4									
3	1.2D + 1.0W AZI 0...	Yes	Y		DL 1.2 W...	1								
4	1.2D + 1.0W AZI 0...	Yes	Y		DL 1.2 WLZ	1								
5	IBC 16-5 (a)	Yes	Y		DL 1.2 Sd...	.2	R...	1	LL .5	LLS 1				
6	IBC 16-5 (b)	Yes	Y		DL 1.2 Sd...	.2	R...	1	LL .5	LLS 1				
7	IBC 16-5 (c)	Yes	Y		DL 1.2 Sd...	.2	R...	1	LL .5	LLS 1				
8	IBC 16-5 (d)	Yes	Y		DL 1.2 Sd...	.2	R...	1	LL .5	LLS 1				
9	IBC 16-5 (e)	Yes	Y		DL 1.2 Sd...	.2	R...	1	LL .5	LLS 1				
10	IBC 16-5 (f)	Yes	Y		DL 1.2 Sd...	.2	R...	1	LL .5	LLS 1				
11	IBC 16-7 (a)	Yes	Y		DL .9 Sd...	-.2	R...	1						
12	IBC 16-7 (b)	Yes	Y		DL .9 Sd...	-.2	R...	1						
13	IBC 16-7 (c)	Yes	Y		DL .9 Sd...	-.2	R...	1						
14	IBC 16-7 (d)	Yes	Y		DL .9 Sd...	-.2	R...	1						
15	IBC 16-7 (e)	Yes	Y		DL .9 Sd...	-.2	R...	1						
16	IBC 16-7 (f)	Yes	Y		DL .9 Sd...	-.2	R...	1						
17	DEFL		Y		DL 1.2 W...	.352								

**Joint Loads and Enforced Displacements (BLC 1 : Dead)**

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
1	N1485	L	Y	-233
2	N1486	L	Y	-233
3	N1487	L	Y	-233
4	N1488	L	Y	-233
5	N1489	L	Y	-233
6	N1490	L	Y	-233
7	N1491	L	Y	-233
8	N1492	L	Y	-233
9	N1493	L	Y	-233
10	N1656	L	Y	-168
11	N1658	L	Y	-168
12	N1659	L	Y	-168
13	N1661	L	Y	-168
14	N1662	L	Y	-168
15	N1664	L	Y	-168
16	N1642	L	Y	-2.117

**Joint Loads and Enforced Displacements (BLC 2 : Wind Load Z)**

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
1	N1665	L	Z	2.91
2	N1775	L	Z	5.607
3	N1740	L	Z	3.924
4	N1261	L	Z	3.732
5	N1741	L	Z	4.854
6	N1742	L	Z	4.636
7	N1743	L	Z	4.356
8	N1744	L	Z	4.206

**Joint Loads and Enforced Displacements (BLC 3 : Wind Load X)**

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
1	N1665	L	X	2.91
2	N1775	L	X	5.607
3	N1740	L	X	3.924



**Joint Loads and Enforced Displacements (BLC 3 : Wind Load X) (Continued)**

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
4	N1261	L	X	3.732
5	N1741	L	X	4.854
6	N1742	L	X	4.636
7	N1743	L	X	4.356
8	N1744	L	X	4.206

**Joint Loads and Enforced Displacements (BLC 4 : Partial Z Wind Load 1)**

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
1	N1776	L	Z	2.183
2	N1777A	L	Z	4.205
3	N1778A	L	Z	2.943
4	N1779A	L	Z	2.799
5	N1780A	L	Z	3.641
6	N1781A	L	Z	3.477
7	N1782A	L	Z	3.267
8	N1783A	L	Z	3.154

**Joint Loads and Enforced Displacements (BLC 5 : Partial Z Wind Load 2)**

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
1	N1784A	L	Z	2.183
2	N1785A	L	Z	4.205
3	N1786A	L	Z	2.943
4	N1787A	L	Z	2.799
5	N1788A	L	Z	3.641
6	N1789A	L	Z	3.477
7	N1790A	L	Z	3.267
8	N1791A	L	Z	3.154

**Joint Loads and Enforced Displacements (BLC 6 : Partial X Wind Load 1)**

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
1	N1792A	L	X	2.183
2	N1793A	L	X	4.205
3	N1794A	L	X	2.943
4	N1795A	L	X	2.799
5	N1796A	L	X	3.641
6	N1797A	L	X	3.477
7	N1798A	L	X	3.267
8	N1799A	L	X	3.154

**Joint Loads and Enforced Displacements (BLC 7 : Partial X Wind Load 2)**

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
1	N1800A	L	X	2.183
2	N1801A	L	X	4.205
3	N1802A	L	X	2.943
4	N1803A	L	X	2.799
5	N1804A	L	X	3.641
6	N1805A	L	X	3.477
7	N1806A	L	X	3.267
8	N1807A	L	X	3.154

**Joint Loads and Enforced Displacements (BLC 8 : Earthquake Load Z)**

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
1	N1778	L	Z	1.846
2	N1779	L	Z	1.147





**Joint Loads and Enforced Displacements (BLC 8 : Earthquake Load Z) (Continued)**

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
3	N1740	L	Z	.631
4	N1261	L	Z	6.085
5	N1741	L	Z	6.87
6	N1742	L	Z	5.153
7	N1743	L	Z	3.435
8	N1744	L	Z	1.718

**Joint Loads and Enforced Displacements (BLC 9 : Earthquake Load X)**

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
1	N1778	L	X	1.846
2	N1779	L	X	1.147
3	N1740	L	X	.631
4	N1261	L	X	6.085
5	N1741	L	X	6.87
6	N1742	L	X	5.153
7	N1743	L	X	3.435
8	N1744	L	X	1.718

**Joint Loads and Enforced Displacements (BLC 10 : Earthquake Load Z Plus X Eccentr)**

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
1	N1780	L	Z	1.846
2	N1781	L	Z	1.147
3	N1782	L	Z	.631
4	N1090	L	Z	6.085
5	N1783	L	Z	6.87
6	N1784	L	Z	5.153
7	N1785	L	Z	3.435
8	N1786	L	Z	1.718

**Joint Loads and Enforced Displacements (BLC 11 : Earthquake Load Z Minus X Eccent)**

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
1	N1787	L	Z	1.846
2	N1788	L	Z	1.147
3	N1789	L	Z	.631
4	N1432	L	Z	6.085
5	N1790	L	Z	6.87
6	N1791	L	Z	5.153
7	N1792	L	Z	3.435
8	N1793	L	Z	1.718

**Joint Loads and Enforced Displacements (BLC 12 : Earthquake Load X Plus Z Eccentr)**

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
1	N1794	L	X	1.846
2	N1795	L	X	1.147
3	N1796	L	X	.631
4	N1270	L	X	6.085
5	N1797	L	X	6.87
6	N1798	L	X	5.153
7	N1799	L	X	3.435
8	N1800	L	X	1.718

**Joint Loads and Enforced Displacements (BLC 13 : Earthquake Load X Minus Z Eccent)**

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
1	N1801	L	X	1.846



Company : ATC  
 Designer : RDB  
 Job Number : 13617819\_C3\_01  
 Model Name : 370624 - Mankes Silo, CT

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**Joint Loads and Enforced Displacements (BLC 13 : Earthquake Load X Minus Z Eccent) (Continued)**

	Joint Label	L,D,M	Direction	Magnitude[(k.k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
2	N1802	L	X	1.147
3	N1803	L	X	.631
4	N1252	L	X	6.085
5	N1804	L	X	6.87
6	N1805	L	X	5.153
7	N1806	L	X	3.435
8	N1807	L	X	1.718

**Joint Loads and Enforced Displacements (BLC 14 : DA Weight)**

	Joint Label	L,D,M	Direction	Magnitude[(k.k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
1	N1641	L	Y	-.332
2	N1642	L	Y	-.332
3	N1643	L	Y	-.332
4	N1469	L	Y	-.364
5	N1470	L	Y	-.364
6	N1471	L	Y	-.364
7	N1466	L	Y	-.482
8	N1467	L	Y	-.482
9	N1468	L	Y	-.482

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

Member	Shape	Code C...	Loc[ft]	LC Shear ...	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z...	Cb	Eqn		
1	M7	W8X18	.023	5.464	2	.009	0	y	2	103.24	236.7	17.475	63.75	2...	H1-1b
2	M8	W8X18	.022	0	2	.009	5.464	y	2	103.24	236.7	17.475	63.75	2...	H1-1b
3	M9	W8X18	.031	5.464	2	.012	0	y	2	103.24	236.7	17.475	63.75	2...	H1-1b
4	M10	W8X18	.031	0	2	.012	5.464	y	2	103.24	236.7	17.475	63.75	2...	H1-1b
5	M11	W8X18	.024	5.464	4	.009	0	y	4	103.24	236.7	17.475	63.75	2...	H1-1b
6	M12	W8X18	.024	0	4	.009	5.464	y	4	103.24	236.7	17.475	63.75	2...	H1-1b
7	M13	HSS5x0.500	.002	.802	2	.001	0		2	214.086	214.488	25.92	25.92	1...	H1-1b
8	M14	HSS5x0.500	.008	0	4	.001	0		4	214.447	214.488	25.92	25.92	1...	H1-1b
9	M15	HSS5x0.500	.002	.802	2	.001	0		2	214.086	214.488	25.92	25.92	1...	H1-1b
10	M16	HSS5x0.500	.007	0	3	.000	0		2	214.447	214.488	25.92	25.92	1...	H1-1b
11	M17	HSS5x0.500	.002	.802	4	.001	0		4	214.086	214.488	25.92	25.92	1...	H1-1b
12	M18	HSS5x0.500	.008	0	3	.001	.191		3	214.447	214.488	25.92	25.92	1...	H1-1b
13	M19	HSS5x0.500	.009	3.792	4	.001	0		4	205.677	214.488	25.92	25.92	1...	H1-1b
14	M20	HSS5x0.500	.007	0	3	.001	0		3	205.677	214.488	25.92	25.92	2...	H1-1b
15	M21	HSS5x0.500	.008	2.313	4	.002	0		4	211.167	214.488	25.92	25.92	2...	H1-1b
16	M22	HSS5x0.500	.012	5	2	.001	0		4	199.4	214.488	25.92	25.92	2...	H1-1b
17	M23	HSS5x0.500	.032	2.719	2	.005	0		2	209.912	214.488	25.92	25.92	1...	H1-1b
18	M24	HSS5x0.500	.013	3.792	2	.002	0		2	205.677	214.488	25.92	25.92	1...	H1-1b
19	M25	HSS5x0.500	.006	0	3	.000	0		2	205.677	214.488	25.92	25.92	1...	H1-1b
20	M26	HSS5x0.500	.007	2.313	3	.001	0		3	211.167	214.488	25.92	25.92	2...	H1-1b
21	M27	HSS5x0.500	.009	5	2	.001	0		3	199.4	214.488	25.92	25.92	2...	H1-1b
22	M28	HSS5x0.500	.039	2.719	2	.006	0		2	209.912	214.488	25.92	25.92	2...	H1-1b
23	M29	HSS5x0.500	.008	0	4	.001	0		4	205.677	214.488	25.92	25.92	1...	H1-1b
24	M30	HSS5x0.500	.005	2.313	2	.001	0		2	211.167	214.488	25.92	25.92	1...	H1-1b
25	M31	HSS5x0.500	.010	5	2	.001	0		2	199.4	214.488	25.92	25.92	2...	H1-1b
26	M32	HSS5x0.500	.032	2.719	2	.005	0		2	209.912	214.488	25.92	25.92	1...	H1-1b
27	M33	HSS5x0.500	.008	3.792	2	.001	0		2	205.677	214.488	25.92	25.92	1...	H1-1b
28	M34	L3X3X4	.128	6.835	2	.003	13.67	y	2	4.137	46.656	1.688	2.354	1...	H2-1
29	M35	L3X3X4	.124	6.835	2	.003	0	y	2	9.792	46.656	1.688	2.354	1...	H2-1
30	M36	L3X3X4	.124	6.835	2	.003	0	y	2	9.792	46.656	1.688	2.354	1...	H2-1
31	M37	L3X3X4	.115	6.835	2	.003	13.67	y	2	4.137	46.656	1.688	2.354	1...	H2-1
32	M38	L3X3X4	.115	6.835	2	.003	0	y	2	5.108	46.656	1.688	2.354	1...	H2-1
33	M39	L3X3X4	.115	6.835	2	.003	0	y	2	4.137	46.656	1.688	2.354	1...	H2-1



Company : ATC  
 Designer : RDB  
 Job Number : 13617819\_C3\_01  
 Model Name : 370624 - Mankes Silo, CT

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

Member	Shape	Code C...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z...	Cb	Eqn	
34	M40	L4X3X4	.070	5.639	2	.002	0	y	2	10.508	54.756	1.795	3.141	1...	H2-1
35	M41	L4X3X4	.070	5.639	2	.002	0	y	2	8.511	54.756	1.795	3.141	1...	H2-1
36	M42	L4X3X4	.070	5.639	2	.002	0	y	2	8.511	54.756	1.795	3.141	1...	H2-1
37	M43	L4X3X4	.070	5.639	2	.002	11.278	y	2	8.511	54.756	1.795	3.141	1...	H2-1
38	M44	L4X3X4	.070	5.639	2	.002	0	y	2	8.511	54.756	1.795	3.141	1...	H2-1
39	M45	L4X3X4	.070	5.639	2	.002	0	y	2	8.511	54.756	1.795	3.141	1...	H2-1
40	M46	L4X3X4	.178	1	2	.021	0	y	2	49.986	54.756	1.795	4.805	1...	H2-1
41	M47	L4X3X4	.182	1	2	.021	0	y	2	49.986	54.756	1.795	4.805	1...	H2-1
42	M48	L4X3X4	.175	1	2	.020	0	y	2	49.986	54.756	1.795	4.805	1...	H2-1
43	M49	L4X3X4	.188	1	2	.022	0	y	2	49.986	54.756	1.795	4.805	1...	H2-1
44	M50	L4X3X4	.194	1	2	.022	0	y	2	49.986	54.756	1.795	4.805	1...	H2-1
45	M51	L4X3X4	.186	1	2	.021	0	y	2	49.986	54.756	1.795	4.805	1...	H2-1
46	M52	L4X3X4	.181	0	2	.008	4.5	y	2	37.163	54.756	1.795	4.682	2...	H2-1
47	M53	L4X3X4	.158	4.5	2	.007	0	y	2	37.163	54.756	1.795	4.683	2...	H2-1
48	M54	L4X3X4	.157	0	2	.015	1.278	y	2	49.506	54.756	1.795	4.805	1...	H2-1
49	M55	L4X3X4	.185	0	2	.008	4.5	y	2	37.163	54.756	1.795	4.682	2...	H2-1
50	M56	L4X3X4	.154	4.5	2	.007	0	y	2	37.163	54.756	1.795	4.683	2...	H2-1
51	M57	L4X3X4	.153	0	2	.014	1.278	y	2	49.506	54.756	1.795	4.805	1...	H2-1
52	M58	L4X3X4	.178	0	2	.008	4.5	y	2	37.163	54.756	1.795	4.682	2...	H2-1
53	M59	L4X3X4	.162	4.5	2	.008	0	y	2	37.163	54.756	1.795	4.683	2...	H2-1
54	M60	L4X3X4	.160	0	2	.015	1.278	y	2	49.506	54.756	1.795	4.805	1...	H2-1
55	M61	L4X3X4	.193	0	2	.008	4.5	y	2	37.163	54.756	1.795	4.683	2...	H2-1
56	M62	L4X3X4	.169	4.5	2	.007	0	y	2	37.163	54.756	1.795	4.683	2...	H2-1
57	M63	L4X3X4	.160	0	2	.015	1.278	y	2	49.506	54.756	1.795	4.805	1...	H2-1
58	M64	L4X3X4	.194	0	2	.008	4.5	y	2	37.163	54.756	1.795	4.682	2...	H2-1
59	M65	L4X3X4	.162	4.5	2	.007	0	y	2	37.163	54.756	1.795	4.683	2...	H2-1
60	M66	L4X3X4	.157	0	2	.014	1.278	y	2	49.506	54.756	1.795	4.805	1...	H2-1
61	M67	L4X3X4	.187	0	2	.008	4.5	y	2	37.163	54.756	1.795	4.683	2...	H2-1
62	M68	L4X3X4	.171	4.5	2	.007	0	y	2	37.163	54.756	1.795	4.683	2...	H2-1
63	M69	L4X3X4	.166	0	2	.015	1.278	y	2	49.506	54.756	1.795	4.805	1...	H2-1
64	M70	L3X3X4	.018	0	2	.000	0	y	2	26.816	46.656	1.688	3.226	1	H2-1
65	M71	L3X3X4	.024	0	2	.000	0	y	2	26.816	46.656	1.688	3.226	1	H2-1
66	M72	L3X3X4	.014	0	2	.000	0	y	2	26.816	46.656	1.688	3.226	1	H2-1
67	M73	L3X3X4	.019	0	2	.000	0	y	2	26.816	46.656	1.688	3.226	1	H2-1
68	M74	L3X3X4	.024	0	2	.000	0	y	2	26.816	46.656	1.688	3.226	1	H2-1
69	M75	L3X3X4	.013	0	2	.000	0	y	9	26.816	46.656	1.688	3.226	1	H2-1
70	M76	L3X3X4	.018	0	2	.000	0	y	2	26.816	46.656	1.688	3.226	1	H2-1
71	M77	L3X3X4	.024	0	2	.000	0	y	2	26.816	46.656	1.688	3.226	1	H2-1
72	M78	L3X3X4	.014	0	2	.000	0	y	7	26.816	46.656	1.688	3.226	1	H2-1
73	M79	L3X3X4	.035	3.293	2	.002	6.727	y	2	17.086	46.656	1.688	3.086	1...	H2-1
74	M80	L3X3X4	.027	3.433	2	.002	0	y	2	17.086	46.656	1.688	3.086	1...	H2-1
75	M81	L3X3X4	.035	3.293	2	.002	0	y	2	17.086	46.656	1.688	3.086	1...	H2-1
76	M82	L3X3X4	.026	3.433	2	.002	0	y	2	17.086	46.656	1.688	3.086	1...	H2-1
77	M83	L3X3X4	.034	3.293	2	.002	0	y	2	17.086	46.656	1.688	3.086	1...	H2-1
78	M84	L3X3X4	.028	3.433	2	.002	0	y	2	17.086	46.656	1.688	3.086	1...	H2-1
79	M85	L4X4X4	.059	0	2	.004	0	y	2	8.564	62.532	3.138	5.559	2...	H2-1
80	M86	L4X4X4	.058	0	2	.003	0	y	2	8.564	62.532	3.138	5.471	2...	H2-1
81	M87	L4X4X4	.059	14.722	2	.004	14.722	y	2	8.564	62.532	3.138	5.559	2...	H2-1
82	M88	L6X6X5	.004	.742	4	.001	.742	z	4	25.726	118.908	9.302	16.791	1	H2-1
83	M89	L6X6X5	.004	.742	4	.000	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
84	M90	L6X6X5	.004	0	4	.000	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
85	M91	L6X6X5	.004	0	4	.000	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
86	M92	L6X6X5	.004	0	4	.001	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
87	M93	L6X6X5	.006	.742	3	.002	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
88	M94	L6X6X5	.005	0	4	.002	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
89	M95	L6X6X5	.004	0	4	.001	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
90	M96	L6X6X5	.003	0	4	.000	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1



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 Designer : RDB  
 Job Number : 13617819\_C3\_01  
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**Envelope AISC 15th(360-16): LRFD Steel Code Checks (Continued)**

Member	Shape	Code C...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z...	Cb	Eqn	
91	M97	L6X6X5	.003	.742	3	.000	0	z	4	25.726	118.908	9.302	16.791	1	H2-1
92	M98	L6X6X5	.003	.742	3	.000	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
93	M99	L6X6X5	.003	0	3	.001	0	z	4	25.726	118.908	9.302	16.791	1	H2-1
94	M100	L6X6X5	.004	.742	3	.001	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
95	M101	L6X6X5	.004	.742	3	.000	0	z	4	25.726	118.908	9.302	16.791	1	H2-1
96	M102	L6X6X5	.004	.742	3	.000	0	z	4	25.726	118.908	9.302	16.791	1	H2-1
97	M103	L6X6X5	.004	.742	3	.001	0	z	4	25.726	118.908	9.302	16.791	1	H2-1
98	M104	L6X6X5	.004	.742	3	.001	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
99	M105	L6X6X5	.004	0	3	.002	0	z	3	25.726	118.908	9.302	16.791	1	H2-1
100	M106	L6X6X5	.004	.742	3	.002	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
101	M107	L6X6X5	.004	0	3	.001	0	z	4	25.726	118.908	9.302	16.791	1	H2-1
102	M108	L6X6X5	.004	0	3	.000	0	z	4	25.726	118.908	9.302	16.791	1	H2-1
103	M109	L6X6X5	.004	0	3	.000	0	z	4	25.726	118.908	9.302	16.791	1	H2-1
104	M110	L6X6X5	.004	0	3	.000	0	z	4	25.726	118.908	9.302	16.791	1	H2-1
105	M111	L6X6X5	.004	0	3	.002	0	z	3	25.726	118.908	9.302	16.791	1	H2-1
106	M112	L6X6X5	.003	.742	3	.002	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
107	M113	L6X6X5	.003	0	3	.001	0	z	3	25.726	118.908	9.302	16.791	1	H2-1
108	M114	L6X6X5	.003	0	3	.000	0	z	4	25.726	118.908	9.302	16.791	1	H2-1
109	M115	L6X6X5	.003	0	3	.000	0	z	3	25.726	118.908	9.302	16.791	1	H2-1
110	M116	L6X6X5	.003	.742	4	.001	0	z	4	25.726	118.908	9.302	11.548	1...	H2-1
111	M117	L6X6X5	.004	.541	4	.003	.742	z	2	25.726	118.908	9.302	11.234	1...	H2-1
112	M118	L6X6X5	.008	0	3	.004	0	z	4	25.726	118.908	9.302	16.791	1	H2-1
113	M119	L6X6X5	.003	.742	4	.001	0	z	4	25.726	118.908	9.302	11.434	1...	H2-1
114	M120	L6X6X5	.003	.502	4	.001	0	z	3	25.726	118.908	9.302	11.224	1...	H2-1
115	M121	L6X6X5	.003	.409	4	.000	0	z	3	25.726	118.908	9.302	11.199	1...	H2-1
116	M122	L6X6X5	.004	.479	4	.000	0	z	2	25.726	118.908	9.302	11.212	1...	H2-1
117	M123	L6X6X5	.004	.742	4	.002	0	z	3	25.726	118.908	9.302	11.589	1...	H2-1
118	M124	L6X6X5	.004	0	4	.002	.742	z	2	25.726	118.908	9.302	11.74	1...	H2-1
119	M125	L6X6X5	.003	.193	4	.000	0	z	3	25.726	118.908	9.302	11.249	1...	H2-1
120	M126	L6X6X5	.003	.378	4	.001	0	z	3	25.726	118.908	9.302	11.199	1...	H2-1
121	M127	L6X6X5	.003	.278	4	.001	0	z	3	25.726	118.908	9.302	11.214	1...	H2-1
122	M128	L6X6X5	.003	.317	4	.000	0	z	2	25.726	118.908	9.302	11.206	1...	H2-1
123	M129	L6X6X5	.005	.742	4	.002	0	z	2	25.726	118.908	9.302	11.897	1...	H2-1
124	M130	L6X6X5	.004	0	4	.002	.742	z	2	25.726	118.908	9.302	12.049	1...	H2-1
125	M131	L6X6X5	.002	.147	4	.001	0	z	3	25.726	118.908	9.302	11.316	1...	H2-1
126	M132	L6X6X5	.002	.139	4	.000	.742	z	4	25.726	118.908	9.302	11.339	1...	H2-1
127	M133	L6X6X5	.002	.556	3	.000	.742	z	4	25.726	118.908	9.302	11.294	1...	H2-1
128	M134	L6X6X5	.002	.695	3	.000	0	z	3	25.726	118.908	9.302	11.432	1...	H2-1
129	M135	L6X6X5	.003	.742	3	.001	0	z	2	25.726	118.908	9.302	11.705	1...	H2-1
130	M136	L6X6X5	.003	.124	3	.001	.742	z	2	25.726	118.908	9.302	11.292	1...	H2-1
131	M137	L6X6X5	.003	.44	3	.000	.742	z	4	25.726	118.908	9.302	11.207	1...	H2-1
132	M138	L6X6X5	.003	.494	3	.000	.742	z	4	25.726	118.908	9.302	11.223	1...	H2-1
133	M139	L6X6X5	.003	.448	3	.001	.742	z	4	25.726	118.908	9.302	11.206	1...	H2-1
134	M140	L6X6X5	.003	.502	3	.001	.742	z	4	25.726	118.908	9.302	11.223	1...	H2-1
135	M141	L6X6X5	.005	.742	4	.003	.742	z	4	25.726	118.908	9.302	16.791	1	H2-1
136	M142	L6X6X5	.005	0	4	.002	.742	z	4	25.726	118.908	9.302	13.743	1...	H2-1
137	M143	L6X6X5	.003	.263	3	.001	.742	z	4	25.726	118.908	9.302	11.214	1...	H2-1
138	M144	L6X6X5	.003	.301	3	.000	.742	z	4	25.726	118.908	9.302	11.204	1...	H2-1
139	M145	L6X6X5	.003	.239	3	.000	.742	z	4	25.726	118.908	9.302	11.225	1...	H2-1
140	M146	L6X6X5	.003	.309	3	.000	.742	z	4	25.726	118.908	9.302	11.205	1...	H2-1
141	M147	L6X6X5	.003	.232	3	.001	.742	z	3	25.726	118.908	9.302	11.231	1...	H2-1
142	M148	L6X6X5	.003	.046	3	.001	.742	z	4	25.726	118.908	9.302	11.392	1...	H2-1
143	M149	L6X6X5	.003	.742	4	.000	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
144	M150	L6X6X5	.003	.742	4	.000	.742	z	4	25.726	118.908	9.302	16.791	1	H2-1
145	M151	L6X6X5	.003	.742	4	.000	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
146	M152	L6X6X5	.004	.742	4	.001	.742	z	4	25.726	118.908	9.302	16.791	1	H2-1
147	M153	L6X6X5	.003	0	4	.001	0	z	4	25.726	118.908	9.302	16.791	1	H2-1



Company : ATC  
 Designer : RDB  
 Job Number : 13617819\_C3\_01  
 Model Name : 370624 - Mankes Silo, CT

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

Member	Shape	Code C...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z...	Cb	Eqn	
148	M154	L6X6X5	.004	.742	4	.002	.742	z	4	25.726	118.908	9.302	16.791	1	H2-1
149	M155	L6X6X5	.004	.742	4	.000	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
150	M156	L6X6X5	.004	.742	4	.000	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
151	M157	L6X6X5	.004	.742	4	.001	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
152	M158	L6X6X5	.004	0	4	.000	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
153	M159	L6X6X5	.004	0	4	.001	0	z	4	25.726	118.908	9.302	16.791	1	H2-1
154	M160	L3X3X4	.076	5.639	2	.003	0	y	2	6.078	46.656	1.688	2.579	1...	H2-1
155	M161	L3X3X4	.076	5.639	2	.003	0	y	2	6.078	46.656	1.688	2.579	1...	H2-1
156	M162	L3X3X4	.076	5.639	2	.003	0	y	2	6.078	46.656	1.688	2.579	1...	H2-1
157	M163	L4X4X4	.060	14.722	2	.004	14.722	y	2	8.564	62.532	3.138	5.581	2...	H2-1
158	M164	L4X4X4	.059	14.722	2	.003	14.722	y	2	8.564	62.532	3.138	5.608	2...	H2-1
159	M165	L4X4X4	.060	0	2	.004	0	y	2	8.564	62.532	3.138	5.581	2...	H2-1
160	M166	L6X6X5	.001	0	2	.001	0	z	4	25.726	118.908	9.302	16.791	1	H2-1
161	M167	L6X6X5	.002	.68	4	.000	0	z	4	25.726	118.908	9.302	11.47	1...	H2-1
162	M168	L6X6X5	.002	.425	4	.000	0	z	2	25.726	118.908	9.302	11.218	1...	H2-1
163	M169	L6X6X5	.003	.718	4	.000	0	z	2	25.726	118.908	9.302	11.448	1...	H2-1
164	M170	L6X6X5	.004	.742	4	.001	0	z	2	25.726	118.908	9.302	12.074	1...	H2-1
165	M171	L6X6X5	.022	.742	2	.008	0	z	2	25.726	118.908	9.302	13.179	1...	H2-1
166	M172	L6X6X5	.006	0	4	.004	0	z	2	25.726	118.908	9.302	16.791	1	H2-1
167	M173	L6X6X5	.002	0	2	.002	0	z	2	25.726	118.908	9.302	16.791	1	H2-1
168	M174	L6X6X5	.002	.386	3	.000	0	z	2	25.726	118.908	9.302	11.216	1...	H2-1
169	M175	L6X6X5	.002	.371	3	.000	0	z	4	25.726	118.908	9.302	11.215	1...	H2-1
170	M176	L6X6X5	.002	.1	3	.001	.742	z	3	25.726	118.908	9.302	11.437	1...	H2-1
171	M177	L6X6X5	.002	.742	2	.002	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
172	M178	L6X6X5	.002	0	2	.002	0	z	3	25.726	118.908	9.302	16.791	1	H2-1
173	M179	L6X6X5	.002	.687	3	.000	0	z	4	25.726	118.908	9.302	11.457	1...	H2-1
174	M180	L6X6X5	.002	.371	3	.000	.742	z	4	25.726	118.908	9.302	11.207	1...	H2-1
175	M181	L6X6X5	.002	.286	3	.000	.742	z	4	25.726	118.908	9.302	11.223	1...	H2-1
176	M182	L6X6X5	.002	.054	3	.001	.742	z	3	25.726	118.908	9.302	11.481	1...	H2-1
177	M183	L6X6X5	.002	.742	2	.002	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
178	M184	L6X6X5	.002	0	2	.002	0	z	3	25.726	118.908	9.302	16.791	1	H2-1
179	M185	L6X6X5	.002	.742	3	.001	0	z	3	25.726	118.908	9.302	11.601	1...	H2-1
180	M186	L6X6X5	.002	.487	3	.000	0	z	2	25.726	118.908	9.302	11.238	1...	H2-1
181	M187	L6X6X5	.002	.402	3	.000	0	z	4	25.726	118.908	9.302	11.21	1...	H2-1
182	M188	L6X6X5	.002	.124	3	.000	.742	z	3	25.726	118.908	9.302	11.361	1...	H2-1
183	M189	L6X6X5	.003	.742	2	.003	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
184	M190	L6X6X5	.003	0	2	.003	0	z	3	25.726	118.908	9.302	16.791	1	H2-1
185	M191	L6X6X5	.001	.742	3	.001	0	z	3	25.726	118.908	9.302	11.776	1...	H2-1
186	M192	L6X6X5	.002	.433	3	.000	0	z	4	25.726	118.908	9.302	11.235	1...	H2-1
187	M193	L6X6X5	.002	.742	3	.001	0	z	2	25.726	118.908	9.302	11.628	1...	H2-1
188	M194	L6X6X5	.002	.742	3	.001	0	z	4	25.726	118.908	9.302	11.681	1...	H2-1
189	M195	L6X6X5	.024	.742	3	.010	0	z	4	25.726	118.908	9.302	13.156	1...	H2-1
190	M196	L6X6X5	.007	0	2	.006	.742	z	2	25.726	118.908	9.302	12.847	1...	H2-1
191	M197	L6X6X5	.003	0	4	.002	0	z	2	25.726	118.908	9.302	16.791	1	H2-1
192	M198	L6X6X5	.001	.263	3	.001	.742	z	2	25.726	118.908	9.302	11.274	1...	H2-1
193	M199	L6X6X5	.001	.378	3	.000	0	z	3	25.726	118.908	9.302	11.255	1...	H2-1
194	M200	L6X6X5	.001	.742	4	.001	.742	z	2	25.726	118.908	9.302	16.791	1	H2-1
195	M201	L6X6X5	.003	.742	2	.003	.742	z	2	25.726	118.908	9.302	16.791	1	H2-1
196	M202	L6X6X5	.003	0	2	.003	0	z	2	25.726	118.908	9.302	16.791	1	H2-1
197	M203	L6X6X5	.001	.633	2	.000	0	z	2	25.726	118.908	9.302	11.622	1...	H2-1
198	M204	L6X6X5	.001	.332	2	.000	.742	z	3	25.726	118.908	9.302	11.248	1...	H2-1
199	M205	L6X6X5	.001	.278	2	.000	.742	z	2	25.726	118.908	9.302	11.283	1...	H2-1
200	M206	L6X6X5	.001	0	2	.001	.742	z	2	25.726	118.908	9.302	12.371	1...	H2-1
201	M207	L6X6X5	.002	.742	2	.002	.742	z	2	25.726	118.908	9.302	16.791	1	H2-1
202	M208	L6X6X5	.002	0	2	.002	0	z	2	25.726	118.908	9.302	16.791	1	H2-1
203	M209	L6X6X5	.001	.695	2	.000	0	z	2	25.726	118.908	9.302	11.991	1...	H2-1
204	M210	L6X6X5	.001	.425	2	.000	0	z	2	25.726	118.908	9.302	11.256	1...	H2-1



Company : ATC  
 Designer : RDB  
 Job Number : 13617819\_C3\_01  
 Model Name : 370624 - Mankes Silo, CT

May 6, 2021  
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**Envelope AISC 15th(360-16): LRFD Steel Code Checks (Continued)**

Member	Shape	Code C...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z...	Cb	Eqn	
205	M211	L6X6X5	.001	.378	2	.000	0	z	4	25.726	118.908	9.302	11.241	1...	H2-1
206	M212	L6X6X5	.001	.062	2	.000	.742	z	2	25.726	118.908	9.302	11.78	1...	H2-1
207	M213	L6X6X5	.002	.742	2	.002	.742	z	2	25.726	118.908	9.302	16.791	1	H2-1
208	M214	L6X6X5	.002	0	2	.002	0	z	2	25.726	118.908	9.302	16.791	1	H2-1
209	M215	L6X6X5	.001	.664	2	.000	0	z	2	25.726	118.908	9.302	11.814	1...	H2-1
210	M216	L6X6X5	.001	.378	2	.000	.742	z	4	25.726	118.908	9.302	11.254	1...	H2-1
211	M217	L6X6X5	.001	.541	2	.000	0	z	2	25.726	118.908	9.302	11.362	1...	H2-1
212	M218	L6X6X5	.001	.17	2	.001	.742	z	3	25.726	118.908	9.302	11.615	1...	H2-1
213	M219	L6X6X5	.010	.742	2	.005	0	z	3	25.726	118.908	9.302	13.051	1...	H2-1
214	M220	L6X6X5	.010	0	4	.004	.742	z	4	25.726	118.908	9.302	13.045	1...	H2-1
215	M221	L6X6X5	.001	0	3	.001	0	z	3	25.726	118.908	9.302	16.791	1	H2-1
216	M222	L6X6X5	.002	.185	4	.000	.742	z	2	25.726	118.908	9.302	11.344	1...	H2-1
217	M223	L6X6X5	.001	.348	4	.000	0	z	3	25.726	118.908	9.302	11.232	1...	H2-1
218	M224	L6X6X5	.001	.046	4	.000	.742	z	3	25.726	118.908	9.302	11.661	1...	H2-1
219	M225	L6X6X5	.001	.742	3	.001	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
220	M226	L6X6X5	.001	0	3	.001	0	z	4	25.726	118.908	9.302	16.791	1	H2-1
221	M227	L6X6X5	.002	.587	4	.000	0	z	3	25.726	118.908	9.302	11.349	1...	H2-1
222	M228	L6X6X5	.002	.324	4	.000	.742	z	2	25.726	118.908	9.302	11.218	1...	H2-1
223	M229	L6X6X5	.002	.324	4	.000	.742	z	3	25.726	118.908	9.302	11.216	1...	H2-1
224	M230	L6X6X5	.002	.07	4	.000	.742	z	2	25.726	118.908	9.302	11.473	1...	H2-1
225	M231	L6X6X5	.002	0	4	.001	.742	z	3	25.726	118.908	9.302	13.362	1...	H2-1
226	M232	L6X6X5	.002	.742	4	.001	0	z	4	25.726	118.908	9.302	13.308	1...	H2-1
227	M233	L6X6X5	.002	.672	4	.000	0	z	3	25.726	118.908	9.302	11.444	1...	H2-1
228	M234	L6X6X5	.002	.425	4	.000	0	z	4	25.726	118.908	9.302	11.213	1...	H2-1
229	M235	L6X6X5	.002	.417	4	.000	0	z	3	25.726	118.908	9.302	11.211	1...	H2-1
230	M236	L6X6X5	.002	.147	4	.000	.742	z	2	25.726	118.908	9.302	11.318	1...	H2-1
231	M237	L6X6X5	.002	0	4	.002	.742	z	4	25.726	118.908	9.302	15.177	1...	H2-1
232	M238	HSS5.563X0...	.030	0	2	.006	0		2	182.685	185.328	25.65	25.65	1...	H1-1b
233	M239	HSS5.563X0...	.012	0	2	.001	0		2	176.567	185.328	25.65	25.65	2...	H1-1b
234	M240	HSS5.563X0...	.012	0	2	.002	0		4	181.554	185.328	25.65	25.65	2...	H1-1b
235	M241	HSS5.563X0...	.037	0	2	.007	0		2	182.685	185.328	25.65	25.65	1...	H1-1b
236	M242	HSS5.563X0...	.006	4.667	2	.001	0		3	176.567	185.328	25.65	25.65	2...	H1-1b
237	M243	HSS5.563X0...	.024	3.042	2	.002	0		2	181.554	185.328	25.65	25.65	2...	H1-1b
238	M244	HSS5.563X0...	.029	0	2	.006	0		2	182.685	185.328	25.65	25.65	1...	H1-1b
239	M245	HSS5.563X0...	.010	0	2	.001	0		2	176.567	185.328	25.65	25.65	2...	H1-1b
240	M246	HSS5.563X0...	.010	0	2	.001	0		2	181.554	185.328	25.65	25.65	2...	H1-1b
241	M247	L4X3X4	.110	1	2	.013	0	y	2	49.986	54.756	1.795	4.805	1...	H2-1
242	M248	L4X3X4	.115	1	2	.013	0	y	2	49.986	54.756	1.795	4.805	1...	H2-1
243	M249	L4X3X4	.111	1	2	.012	0	y	2	49.986	54.756	1.795	4.805	1...	H2-1
244	M250	L4X3X4	.115	1	2	.014	0	y	2	49.986	54.756	1.795	4.805	1...	H2-1
245	M251	L4X3X4	.120	1	2	.014	0	y	2	49.986	54.756	1.795	4.805	1...	H2-1
246	M252	L4X3X4	.113	1	2	.013	0	y	2	49.986	54.756	1.795	4.805	1...	H2-1
247	M253	L4X3X4	.113	0	2	.005	4.5	y	2	37.163	54.756	1.795	4.666	2...	H2-1
248	M254	L4X3X4	.097	4.5	2	.005	0	y	2	37.163	54.756	1.795	4.664	2...	H2-1
249	M255	L4X3X4	.095	0	2	.009	1.278	y	2	49.506	54.756	1.795	4.805	1...	H2-1
250	M256	L4X3X4	.119	0	2	.005	4.5	y	2	37.163	54.756	1.795	4.666	2...	H2-1
251	M257	L4X3X4	.097	4.5	2	.005	0	y	2	37.163	54.756	1.795	4.664	2...	H2-1
252	M258	L4X3X4	.095	0	2	.009	1.278	y	2	49.506	54.756	1.795	4.805	1...	H2-1
253	M259	L4X3X4	.114	0	2	.005	4.5	y	2	37.163	54.756	1.795	4.666	2...	H2-1
254	M260	L4X3X4	.103	4.5	2	.005	0	y	2	37.163	54.756	1.795	4.665	2...	H2-1
255	M261	L4X3X4	.101	0	2	.009	1.278	y	2	49.506	54.756	1.795	4.805	1...	H2-1
256	M262	L4X3X4	.121	0	2	.005	4.5	y	2	37.163	54.756	1.795	4.669	2...	H2-1
257	M263	L4X3X4	.107	4.5	2	.005	0	y	2	37.163	54.756	1.795	4.667	2...	H2-1
258	M264	L4X3X4	.101	0	2	.009	1.278	y	2	49.506	54.756	1.795	4.805	1...	H2-1
259	M265	L4X3X4	.121	0	2	.005	4.5	y	2	37.163	54.756	1.795	4.669	2...	H2-1
260	M266	L4X3X4	.100	4.5	2	.005	0	y	2	37.163	54.756	1.795	4.667	2...	H2-1
261	M267	L4X3X4	.095	0	2	.009	1.278	y	2	49.506	54.756	1.795	4.805	1...	H2-1



Company : ATC  
 Designer : RDB  
 Job Number : 13617819\_C3\_01  
 Model Name : 370624 - Mankes Silo, CT

May 6, 2021  
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 Checked By: \_\_\_\_\_

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

Member	Shape	Code C...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z...	Cb	Eqn	
262	M268	L4X3X4	.115	0	2	.005	4.5	y	2	37.163	54.756	1.795	4.668	2....	H2-1
263	M269	L4X3X4	.107	4.5	2	.005	0	y	2	37.163	54.756	1.795	4.668	2....	H2-1
264	M270	L4X3X4	.103	0	2	.010	1.278	y	2	49.506	54.756	1.795	4.805	1....	H2-1
265	M271	L3X3X4	.010	0	2	.000	0	y	2	28.8	46.656	1.688	3.279	1	H2-1
266	M272	L3X3X4	.008	0	2	.000	0	y	2	28.8	46.656	1.688	3.279	1	H2-1
267	M273	L3X3X4	.007	0	2	.000	0	y	2	28.8	46.656	1.688	3.279	1	H2-1
268	M274	L3X3X4	.010	0	2	.000	0	y	2	28.8	46.656	1.688	3.279	1	H2-1
269	M275	L3X3X4	.008	0	2	.000	0	y	7	28.8	46.656	1.688	3.279	1	H2-1
270	M276	L3X3X4	.007	0	2	.000	0	y	4	28.8	46.656	1.688	3.279	1	H2-1
271	M277	L3X3X4	.010	0	2	.000	0	y	2	28.8	46.656	1.688	3.279	1	H2-1
272	M278	L3X3X4	.008	0	2	.000	0	y	2	28.8	46.656	1.688	3.279	1	H2-1
273	M279	L3X3X4	.008	0	2	.000	0	y	7	28.8	46.656	1.688	3.279	1	H2-1
274	M280	L3X3X4	.026	3.174	2	.002	0	y	2	18.39	46.656	1.688	3.118	1....	H2-1
275	M281	L3X3X4	.021	3.309	2	.002	6.483	y	2	18.39	46.656	1.688	3.118	1....	H2-1
276	M282	L3X3X4	.026	3.174	2	.002	0	y	2	18.39	46.656	1.688	3.118	1....	H2-1
277	M283	L3X3X4	.020	3.309	2	.001	6.483	y	2	18.39	46.656	1.688	3.118	1....	H2-1
278	M284	L3X3X4	.025	3.174	2	.002	0	y	2	18.39	46.656	1.688	3.118	1....	H2-1
279	M285	L3X3X4	.021	3.309	2	.002	0	y	2	18.39	46.656	1.688	3.118	1....	H2-1
280	M292	LL4x4x4x3	.012	0	4	.002	0	y	2	85.347	125.064	12.586	7.058	1	H1-1b
281	M293	LL4x4x4x3	.017	6.511	2	.002	6.511	y	2	85.347	125.064	12.586	7.058	1	H1-1b
282	M294	LL4x4x4x3	.011	0	2	.002	0	y	2	85.347	125.064	12.586	7.058	1	H1-1b
283	M295	L6X6X5	.016	0	2	.006	.742	z	4	25.726	118.908	9.302	13.846	1....	H2-1
284	M296	L6X6X5	.004	.742	4	.001	.742	z	2	25.726	118.908	9.302	16.791	1	H2-1
285	M297	L6X6X5	.004	.742	4	.000	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
286	M298	L6X6X5	.004	0	4	.000	0	z	4	25.726	118.908	9.302	16.791	1	H2-1
287	M299	L6X6X5	.004	0	4	.001	0	z	2	25.726	118.908	9.302	16.791	1	H2-1
288	M300	L6X6X5	.012	.742	2	.005	0	z	4	25.726	118.908	9.302	14.112	1....	H2-1
289	M301	L6X6X5	.015	0	2	.006	.742	z	2	25.726	118.908	9.302	13.819	1....	H2-1
290	M302	L6X6X5	.004	.742	4	.001	.742	z	2	25.726	118.908	9.302	16.791	1	H2-1
291	M303	L6X6X5	.004	.742	3	.001	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
292	M304	L6X6X5	.004	0	4	.000	0	z	4	25.726	118.908	9.302	16.791	1	H2-1
293	M305	L6X6X5	.004	0	3	.001	0	z	3	25.726	118.908	9.302	16.791	1	H2-1
294	M306	L6X6X5	.009	.742	2	.005	0	z	3	25.726	118.908	9.302	14.539	1....	H2-1
295	M307	L6X6X5	.010	0	2	.005	.742	z	4	25.726	118.908	9.302	14.512	1....	H2-1
296	M308	L6X6X5	.005	.742	3	.001	.742	z	4	25.726	118.908	9.302	16.791	1	H2-1
297	M309	L6X6X5	.005	.742	3	.000	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
298	M310	L6X6X5	.005	0	3	.000	0	z	4	25.726	118.908	9.302	16.791	1	H2-1
299	M311	L6X6X5	.005	0	3	.001	0	z	3	25.726	118.908	9.302	16.791	1	H2-1
300	M312	L6X6X5	.008	.742	2	.005	0	z	3	25.726	118.908	9.302	14.902	1....	H2-1
301	M313	L6X6X5	.013	0	2	.006	.742	z	3	25.726	118.908	9.302	14.213	1....	H2-1
302	M314	L6X6X5	.005	.742	3	.001	.742	z	2	25.726	118.908	9.302	16.791	1	H2-1
303	M315	L6X6X5	.005	.742	3	.001	.742	z	2	25.726	118.908	9.302	16.791	1	H2-1
304	M316	L6X6X5	.005	.742	3	.000	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
305	M317	L6X6X5	.005	0	3	.001	0	z	3	25.726	118.908	9.302	16.791	1	H2-1
306	M318	L6X6X5	.005	0	3	.004	0	z	3	25.726	118.908	9.302	16.791	1	H2-1
307	M319	L6X6X5	.024	0	2	.009	.742	z	2	25.726	118.908	9.302	13.775	1....	H2-1
308	M320	L6X6X5	.004	.742	3	.002	.742	z	2	25.726	118.908	9.302	16.791	1	H2-1
309	M321	L6X6X5	.005	.742	3	.001	.742	z	2	25.726	118.908	9.302	16.791	1	H2-1
310	M322	L6X6X5	.005	0	3	.001	0	z	3	25.726	118.908	9.302	16.791	1	H2-1
311	M323	L6X6X5	.005	0	3	.002	0	z	2	25.726	118.908	9.302	16.791	1	H2-1
312	M324	L6X6X5	.024	.742	2	.010	0	z	2	25.726	118.908	9.302	13.74	1....	H2-1
313	M325	L6X6X5	.022	0	2	.009	.742	z	2	25.726	118.908	9.302	13.74	1....	H2-1
314	M326	L6X6X5	.004	.742	2	.002	.742	z	2	25.726	118.908	9.302	16.791	1	H2-1
315	M327	L6X6X5	.004	.742	2	.001	.742	z	2	25.726	118.908	9.302	16.791	1	H2-1
316	M328	L6X6X5	.004	0	2	.001	0	z	3	25.726	118.908	9.302	16.791	1	H2-1
317	M329	L6X6X5	.004	0	2	.002	0	z	2	25.726	118.908	9.302	16.791	1	H2-1
318	M330	L6X6X5	.023	.742	2	.009	0	z	2	25.726	118.908	9.302	13.805	1....	H2-1



Company : ATC  
 Designer : RDB  
 Job Number : 13617819\_C3\_01  
 Model Name : 370624 - Mankes Silo, CT

May 6, 2021  
 11:10 PM  
 Checked By: \_\_\_\_\_

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

Member	Shape	Code C...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z...	Cb	Eqn	
319	M331	L6X6X5	.004	.742	2	.004	.742	z	2	25.726	118.908	9.302	16.791	1	H2-1
320	M332	L6X6X5	.004	.742	2	.001	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
321	M333	L6X6X5	.004	0	2	.000	0	z	2	25.726	118.908	9.302	16.791	1	H2-1
322	M334	L6X6X5	.004	0	2	.001	0	z	3	25.726	118.908	9.302	16.791	1	H2-1
323	M335	L6X6X5	.004	0	2	.001	0	z	2	25.726	118.908	9.302	16.791	1	H2-1
324	M336	L6X6X5	.013	.742	2	.006	0	z	2	25.726	118.908	9.302	14.223	1...	H2-1
325	M337	L6X6X5	.008	0	3	.005	.742	z	2	25.726	118.908	9.302	14.108	1...	H2-1
326	M338	L6X6X5	.004	.742	2	.001	.742	z	2	25.726	118.908	9.302	16.791	1	H2-1
327	M339	L6X6X5	.004	.742	2	.000	.742	z	2	25.726	118.908	9.302	16.791	1	H2-1
328	M340	L6X6X5	.004	0	2	.000	0	z	3	25.726	118.908	9.302	16.791	1	H2-1
329	M341	L6X6X5	.004	0	2	.001	0	z	2	25.726	118.908	9.302	16.791	1	H2-1
330	M342	L6X6X5	.009	.742	4	.004	0	z	2	25.726	118.908	9.302	13.994	1...	H2-1
331	M343	L6X6X5	.011	0	3	.005	.742	z	2	25.726	118.908	9.302	13.661	1...	H2-1
332	M344	L6X6X5	.003	.742	2	.001	.742	z	2	25.726	118.908	9.302	16.791	1	H2-1
333	M345	L6X6X5	.004	.742	2	.000	.742	z	4	25.726	118.908	9.302	16.791	1	H2-1
334	M346	L6X6X5	.003	0	2	.000	0	z	2	25.726	118.908	9.302	16.791	1	H2-1
335	M347	L6X6X5	.003	0	2	.001	0	z	2	25.726	118.908	9.302	16.791	1	H2-1
336	M348	L6X6X5	.017	.742	2	.006	0	z	2	25.726	118.908	9.302	13.818	1...	H2-1
337	M349	L6X6X5	.011	0	3	.004	.742	z	2	25.726	118.908	9.302	13.497	1...	H2-1
338	M350	L6X6X5	.003	.742	2	.001	.742	z	2	25.726	118.908	9.302	16.791	1	H2-1
339	M351	L6X6X5	.003	.742	2	.000	.742	z	4	25.726	118.908	9.302	16.791	1	H2-1
340	M352	L6X6X5	.003	0	2	.000	0	z	2	25.726	118.908	9.302	16.791	1	H2-1
341	M353	L6X6X5	.003	0	4	.001	0	z	4	25.726	118.908	9.302	16.791	1	H2-1
342	M354	L6X6X5	.015	.742	3	.005	0	z	3	25.726	118.908	9.302	13.48	1...	H2-1
343	M355	L6X6X5	.004	.742	4	.001	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
344	M356	L6X6X5	.004	.742	4	.001	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
345	M357	L6X6X5	.004	.742	4	.000	0	z	2	25.726	118.908	9.302	16.791	1	H2-1
346	M358	L6X6X5	.004	0	4	.000	0	z	2	25.726	118.908	9.302	16.791	1	H2-1
347	M359	L6X6X5	.004	0	4	.001	0	z	2	25.726	118.908	9.302	16.791	1	H2-1
348	M360	L6X6X5	.007	.742	3	.003	0	z	4	25.726	118.908	9.302	13.953	1...	H2-1
349	M361	L6X6X5	.007	0	2	.003	.742	z	4	25.726	118.908	9.302	14.763	1...	H2-1
350	M362	L6X6X5	.004	.742	4	.001	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
351	M363	L6X6X5	.004	.742	4	.000	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
352	M364	L6X6X5	.005	.742	4	.000	.742	z	3	25.726	118.908	9.302	16.791	1	H2-1
353	M365	L6X6X5	.005	0	4	.000	0	z	2	25.726	118.908	9.302	16.791	1	H2-1
354	M366	L6X6X5	.004	0	4	.002	0	z	4	25.726	118.908	9.302	16.791	1	H2-1
355	M370	HSS5x0.500	.007	5.455	4	.001	0		4	196.651	214.488	25.92	25.92	2...	H1-1b
356	M371	LL4x4x4x3	.025	10.1	2	.002	10.1	y	2	76.046	125.064	12.586	6.849	2...	H1-1b
357	M372	LL4x4x4x3	.024	10.1	2	.002	10.1	y	2	76.046	125.064	12.586	6.849	2...	H1-1b
358	M373	LL4x4x4x3	.025	10.1	2	.002	10.1	y	2	76.046	125.064	12.586	6.849	2...	H1-1b
359	M374	LL4x4x4x3	.024	10.1	2	.002	10.1	y	2	76.046	125.064	12.586	6.849	2...	H1-1b
360	M375	LL4x4x4x3	.022	10.1	2	.002	10.1	y	2	76.046	125.064	12.586	6.849	2...	H1-1b
361	M376	LL4x4x4x3	.018	10.1	2	.002	10.1	y	2	76.046	125.064	12.586	6.849	2...	H1-1b
362	M377	LL4x4x4x3	.021	0	2	.002	10.1	y	2	76.046	125.064	12.586	6.849	2...	H1-1b
363	M378	LL4x4x4x3	.023	10.1	2	.002	10.1	y	2	76.046	125.064	12.586	6.849	2...	H1-1b
364	M379	LL4x4x4x3	.024	10.1	2	.002	10.1	y	2	76.046	125.064	12.586	6.849	2...	H1-1b
365	M380	LL4x4x4x3	.023	10.1	2	.002	10.1	y	2	76.046	125.064	12.586	6.849	2...	H1-1b
366	M381	LL4x4x4x3	.024	10.1	2	.002	10.1	y	2	76.046	125.064	12.586	6.849	2...	H1-1b
367	M382	LL4x4x4x3	.024	10.1	2	.002	10.1	y	2	76.046	125.064	12.586	6.849	2...	H1-1b



**Site Name:** Mankes Silo, CT  
**Site Number:** 370624  
**Tower Type:** MP  
**Design Loads (Factored) - Analysis per TIA-222-H Standards**

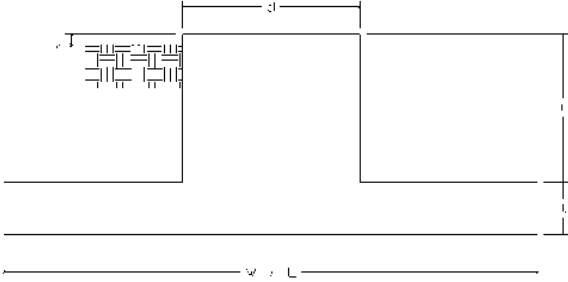
## Monolithic Mat & Pier Foundation Analysis

Foundation Analysis Parameters		
Design / Analysis / Mapping:	Mapping	-
Compression/Leg:	493.6	k
Uplift/Leg:	0.0	k
Total Shear:	34.2	k
Moment:	1,394.2	k-ft
Tower + Appurtenance Weight:	493.6	k
Depth to Base of Foundation (l + t - h):	3.75	ft
Diameter Base Plate (d):	0	ft
Length of Pier (l):	0	ft
Height of Pier above Ground (h):	0	ft
Width of Pad (W):	19	ft
Length of Pad (L):	19	ft
Thickness of Pad (t):	3.75	ft
Tower Leg Center to Center:	0	ft
Number of Tower Legs:	1	-
Tower Center from Mat Center:	0	ft
Depth Below Ground Surface to Water Table:	99	ft
Unit Weight of Concrete:	150	pcf
Unit Weight of Soil Above Water Table:	100	pcf
Unit Weight of Water:	62.4	pcf
Unit Weight of Soil Below Water Table:	37.6	pcf
Friction Angle of Uplift:	15	°
Coefficient of Shear Friction:	0.3	-
Ultimate Compressive Bearing Pressure:	10,000	psf
Ultimate Passive Pressure on Pad Face:	0	psf
$f_{\text{Soil and Concrete Weight}}$ :	0.9	-
$f_{\text{Soil}}$ :	0.75	-

Overturning Moment Usage		
Design OTM:	1522.6	k-ft
OTM Resistance:	4953.0	k-ft
Design OTM / OTM Resistance:	31%	Pass

Soil Bearing Pressure Usage		
Net Bearing Pressure:	3383	psf
Factored Nominal Bearing Pressure:	7500	psf
Factored Nominal (Net) Bearing Pressure:	45%	Pass
Load Direction Controlling Design Bearing Pressure:	<i>Diagonal to Pad Edge</i>	

Sliding Factor of Safety		
Ultimate Friction Resistance:	184.3	k
Ultimate Passive Pressure Resistance:	0.0	k
Total Factored Sliding Resistance:	138.2	k
Sliding Design / Sliding Resistance:	25%	Pass



<b>RAN Template:</b> 67D05A	<b>A&amp;L Template:</b> 67D05A_2xAIR+1OP
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### Section 1 - Site Information

**Site ID:** CTNH504A  
**Status:** Draft  
**Version:** 6  
**Project Type:** L600  
**Approved:** Not Approved  
**Approved By:** Not Approved  
**Last Modified:** 2/9/2021 9:27:18 AM  
**Last Modified By:** Michael.Lucey@T-Mobile.com

**Site Name:** Crown Cheshire Stealth Silo  
**Site Class:** Silo  
**Site Type:** Structure Non Building  
**Plan Year:**  
**Market:** CONNECTICUT CT  
**Vendor:** Ericsson  
**Landlord:** <undefined>

**Latitude:** 41.53630000  
**Longitude:** -72.89370000  
**Address:** 1346 Highland Ave  
**City, State:** Cheshire, CT  
**Region:** NORTHEAST

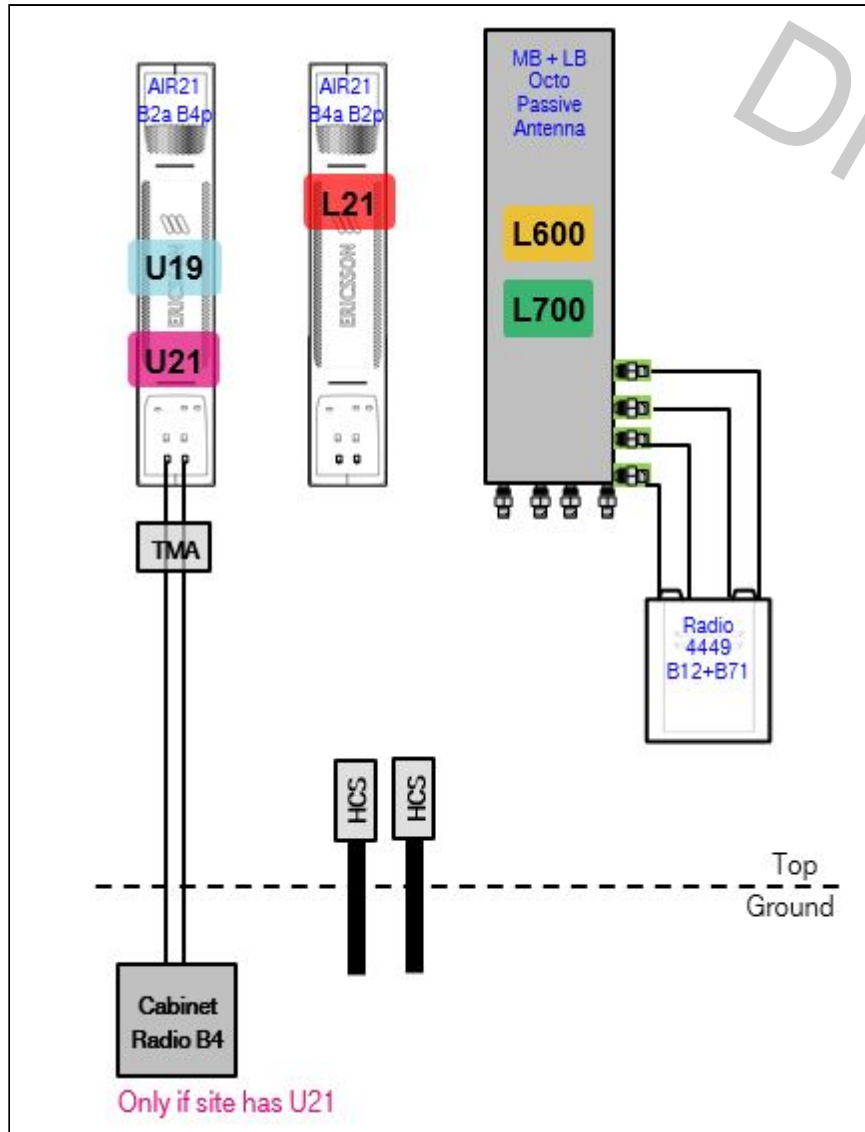
<b>RAN Template:</b> 67D05A		<b>AL Template:</b> 67D05A_2xAIR+1OP		
<b>Sector Count:</b> 3	<b>Antenna Count:</b> 9	<b>Coax Line Count:</b> 0	<b>TMA Count:</b> 0	<b>RRU Count:</b> 3

### Section 2 - Existing Template Images

----- This section is intentionally blank. -----

Section 3 - Proposed Template Images

67D05A\_2xAIR+1OP.JPG



Notes:

Section 4 - Siteplan Images

----- This section is intentionally blank. -----

DRAFT

<b>RAN Template:</b> 67D05A	<b>A&amp;L Template:</b> 67D05A_2xAIR+1OP
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Section 5 - RAN Equipment

Existing RAN Equipment	
Template: 5A	
<b>Enclosure</b>	1
<b>Enclosure Type</b>	RBS 6201 ODE
<b>Baseband</b>	DUW30 BB 6630 L2100
<b>Hybrid Cable System</b>	Ericsson 3x6 HCS *Select Length* (x 3)

Proposed RAN Equipment		
Template: 67D05A		
<b>Enclosure</b>	1	2
<b>Enclosure Type</b>	Enclosure 6160	B160
<b>Baseband</b>	DUW30 BB 6630 BB 6648 U1900 L2100 N600 L700 L600	
<b>Hybrid Cable System</b>	Ericsson 3x6 HCS *Select Length* (x 3)	Ericsson Hybrid Trunk 6/24 4AWG 100m (x 3)

**RAN Scope of Work:**

Replace existing cabinet with (1) RBS6102 MU AC.  
 Replace (1) DUS31 with (1) BB6630 for L2100, L700, and L600.  
 Install (1) BB6630 for future 5G N600.

Add (3) 6X12 HCS.  
 Existing: (6) Coaxial Lines; (3) 3X6 HCS. Coaxial Lines can be removed if they dead-end on the bridge (if they do not go up the silo).

Remove BBU.

<b>RAN Template:</b> 67D05A	<b>A&amp;L Template:</b> 67D05A_2xAIR+1OP
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**Section 6 - A&L Equipment**

Existing Template: 5A\_2xAIR  
Proposed Template: 67D05A\_2xAIR+1OP

Sector 1 (Existing) view from behind				
<b>Coverage Type</b>	A - Outdoor Macro			
<b>Antenna</b>	1		2	
<b>Antenna Model</b>	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)	
<b>Azimuth</b>	30		30	
<b>M. Tilt</b>	0		0	
<b>Height</b>	57		57	
<b>Ports</b>	P1	P2	P3	P4
<b>Active Tech.</b>	U1900		L2100	
<b>Dark Tech.</b>				
<b>Restricted Tech.</b>				
<b>Decomm. Tech.</b>				
<b>E. Tilt</b>	2		2	
<b>Cables</b>	Fiber Jumper - 15 ft.		Fiber Jumper - 15 ft.	
<b>TMA's</b>				
<b>Diplexers / Combiners</b>				
<b>Radio</b>				
<b>Sector Equipment</b>				
<b>Unconnected Equipment:</b>				
<b>Scope of Work:</b>				

<b>RAN Template:</b> 67D05A	<b>A&amp;L Template:</b> 67D05A_2xAIR+1OP
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**Sector 1 (Proposed) view from behind**

<b>Coverage Type</b>	A - Outdoor Macro							
<b>Antenna</b>	1		2		3			
<b>Antenna Model</b>	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)		RFS - APXVAALL24_43-U-NA20 (Octo)			
<b>Azimuth</b>	30		30		30			
<b>M. Tilt</b>	0		0		0			
<b>Height</b>	57		57		57			
<b>Ports</b>	P1	P2	P3	P4	P5	P6	P7	P8
<b>Active Tech.</b>	U1900		L2100		N600 L700 L600	N600 L700 L600		
<b>Dark Tech.</b>								
<b>Restricted Tech.</b>								
<b>Decomm. Tech.</b>								
<b>E. Tilt</b>	2		2		2	2		
<b>Cables</b>	Fiber Jumper - 15 ft.		Fiber Jumper - 15 ft.		Coax Jumper - 15 ft. (x2) Fiber Jumper - 15 ft.	Coax Jumper - 15 ft. (x2)		
<b>TMA's</b>								
<b>Diplexers / Combiners</b>								
<b>Radio</b>					Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)		
<b>Sector Equipment</b>								

**Unconnected Equipment:**

**Scope of Work:**

Add (1) LB/MB Octo to New Position 3.  
 Add (1) Radio 4449 B71+B12 to Position 3 for L600 and L700.

\*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

<b>RAN Template:</b> 67D05A	<b>A&amp;L Template:</b> 67D05A_2xAIR+1OP
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Sector 2 (Existing) view from behind				
<b>Coverage Type</b>	A - Outdoor Macro			
<b>Antenna</b>	1		2	
<b>Antenna Model</b>	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)	
<b>Azimuth</b>	150		150	
<b>M. Tilt</b>	0		0	
<b>Height</b>	57		57	
<b>Ports</b>	P1	P2	P3	P4
<b>Active Tech.</b>	U1900		L2100	
<b>Dark Tech.</b>				
<b>Restricted Tech.</b>				
<b>Decomm. Tech.</b>				
<b>E. Tilt</b>	2		2	
<b>Cables</b>	Fiber Jumper - 15 ft.		Fiber Jumper - 15 ft.	
<b>TMA's</b>				
<b>Diplexers / Combiners</b>				
<b>Radio</b>				
<b>Sector Equipment</b>				
<b>Unconnected Equipment:</b>				
<b>Scope of Work:</b>				



<b>RAN Template:</b> 67D05A	<b>A&amp;L Template:</b> 67D05A_2xAIR+1OP
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Sector 2 (Proposed) view from behind							
<b>Coverage Type</b>	A - Outdoor Macro						
<b>Antenna</b>	1		2		3		
<b>Antenna Model</b>	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)		RFS - APXVAALL24_43-U-NA20 (Octo)		
<b>Azimuth</b>	150		150		150		
<b>M. Tilt</b>	0		0		0		
<b>Height</b>	57		57		57		
<b>Ports</b>	P1	P2	P3	P4	P5	P6	P7 P8
<b>Active Tech.</b>	U1900		L2100		N600 L700 L600	N600 L700 L600	
<b>Dark Tech.</b>							
<b>Restricted Tech.</b>							
<b>Decomm. Tech.</b>							
<b>E. Tilt</b>	2		2		2	2	
<b>Cables</b>	Fiber Jumper - 15 ft.		Fiber Jumper - 15 ft.		Coax Jumper - 15 ft. (x2) Fiber Jumper - 15 ft.	Coax Jumper - 15 ft. (x2)	
<b>TMA's</b>							
<b>Diplexers / Combiners</b>							
<b>Radio</b>					Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	
<b>Sector Equipment</b>							
<b>Unconnected Equipment:</b>							
<b>Scope of Work:</b>							
Add (1) LB/MB Octo to New Position 3. Add (1) Radio 4449 B71+B12 to Position 3 for L600 and L700.							
*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.							

<b>RAN Template:</b> 67D05A	<b>A&amp;L Template:</b> 67D05A_2xAIR+1OP
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Sector 3 (Existing) view from behind				
<b>Coverage Type</b>	A - Outdoor Macro			
<b>Antenna</b>	1		2	
<b>Antenna Model</b>	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)	
<b>Azimuth</b>	270		270	
<b>M. Tilt</b>	0		0	
<b>Height</b>	57		57	
<b>Ports</b>	P1	P2	P3	P4
<b>Active Tech.</b>	U1900		L2100	
<b>Dark Tech.</b>				
<b>Restricted Tech.</b>				
<b>Decomm. Tech.</b>				
<b>E. Tilt</b>	2		2	
<b>Cables</b>	Fiber Jumper - 15 ft.		Fiber Jumper - 15 ft.	
<b>TMA's</b>				
<b>Diplexers / Combiners</b>				
<b>Radio</b>				
<b>Sector Equipment</b>				
<b>Unconnected Equipment:</b>				
<b>Scope of Work:</b>				

<b>RAN Template:</b> 67D05A	<b>A&amp;L Template:</b> 67D05A_2xAIR+1OP
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**Sector 3 (Proposed) view from behind**

<b>Coverage Type</b>	A - Outdoor Macro							
<b>Antenna</b>	1		2		3			
<b>Antenna Model</b>	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)		RFS - APXVAALL24_43-U-NA20 (Octo)			
<b>Azimuth</b>	270		270		270			
<b>M. Tilt</b>	0		0		0			
<b>Height</b>	57		57		57			
<b>Ports</b>	P1	P2	P3	P4	P5	P6	P7	P8
<b>Active Tech.</b>	U1900		L2100		N600 L700 L600	N600 L700 L600		
<b>Dark Tech.</b>								
<b>Restricted Tech.</b>								
<b>Decomm. Tech.</b>								
<b>E. Tilt</b>	2		2		2	2		
<b>Cables</b>	Fiber Jumper - 15 ft.		Fiber Jumper - 15 ft.		Coax Jumper - 15 ft. (x2) Fiber Jumper - 15 ft.	Coax Jumper - 15 ft. (x2)		
<b>TMA's</b>								
<b>Diplexers / Combiners</b>								
<b>Radio</b>					Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)		
<b>Sector Equipment</b>								

**Unconnected Equipment:**

**Scope of Work:**

Add (1) LB/MB Octo to New Position 3.  
 Add (1) Radio 4449 B71+B12 to Position 3 for L600 and L700.

\*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

<b>RAN Template:</b> 67D05A	<b>A&amp;L Template:</b> 67D05A_2xAIR+1OP
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**Section 7 - Power Systems Equipment**

**Existing Power Systems Equipment**

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**Proposed Power Systems Equipment**

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

T-Mobile Existing Facility

Site ID: CTNH504A

Crown Cheshire Stealth Silo  
1346 Highland Avenue  
Cheshire, Connecticut 06410

**October 10, 2022**

**EBI Project Number: 6221003446**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>63.43%</b>

October 10, 2022

T-Mobile

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

Emissions Analysis for Site: CTNH504A - Crown Cheshire Stealth Silo

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **1346 Highland Avenue** in **Cheshire, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits; therefore, it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately  $400 \mu\text{W}/\text{cm}^2$  and  $467 \mu\text{W}/\text{cm}^2$ , respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is  $1000 \mu\text{W}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

## **CALCULATIONS**

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 1346 Highland Avenue in Cheshire, Connecticut using the equipment information listed below. Modeling of the antennas and associated equipment was completed using RoofMaster™ software, which is a widely-used predictive modeling program that has been developed to predict RF power density values for rooftop and tower telecommunications sites produced by vertical collinear antennas that are typically used in the cellular, PCS, paging and other communications services. Using the computational methods set forth in Federal Communications (FCC) Office of Engineering & Technology (OET) Bulletin 65, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields” (OET-65), RoofMaster™ calculates predicted power density in a scalable grid based on the contributions of all RF sources characterized in the study scenario. At each grid location, the cumulative power density is expressed as a percentage of the FCC limits. Manufacturer antenna pattern data is utilized in these calculations. RoofMaster™ models consist of the Far Field model as specified in OET-65 and an implementation of the OET-65 Cylindrical Model (Sula9). The models utilize several operational specifications for different types of antennas to produce a plot of spatially-averaged power densities that can be expressed as a percentage of the applicable exposure limit.

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, telecommunications equipment was modeled using the following assumptions:

- 1) 1 LTE channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts.
- 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) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts per Channel.
- 4) 1 UMTS channel (PCS Band - 1900 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 10 Watts per Channel.
- 5) 1 LTE channel (AWS Band – 2100 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts per Channel.
- 6) 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.
- 7) 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.
- 8) The antennas used in this modeling are the ERICSSON KRC118023-I 02DT 1900 for the 1900 MHz channel(s), the ERICSSON KRC118023-I 02DT 2100 for the 2100 MHz channel(s), the RFS APXVAALL24\_43-U-NA20 02DT 600 for the 600 MHz / 600 MHz / 700 MHz channel(s) in Sector A, the ERICSSON KRC118023-I 02DT 1900 for the 1900 MHz channel(s), the ERICSSON KRC118023-I 02DT 2100 for the 2100 MHz channel(s), the RFS APXVAALL24\_43-U-NA20 02DT 600 for the 600 MHz / 600 MHz / 700 MHz channel(s) in Sector B, the ERICSSON KRC118023-I 02DT 1900 for the 1900 MHz channel(s), the ERICSSON KRC118023-I 02DT 2100 for the 2100 MHz channel(s), the RFS APXVAALL24\_43-U-NA20 02DT 600 for the 600 MHz / 600 MHz / 700 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna



selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations.

- 9) The antenna mounting height centerline of the proposed antennas is 57 feet above ground level (AGL).
- 10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database or documents available on the Connecticut Siting Council website (<https://portal.ct.gov/CSC>). Values in the database are provided by the individual carriers themselves.
- 11) All calculations were done with respect to uncontrolled / general population threshold limits.

## T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	ERICSSON KRCI18023-I 02DT 1900	Make / Model:	ERICSSON KRCI18023-I 02DT 1900	Make / Model:	ERICSSON KRCI18023-I 02DT 1900
Frequency Bands:	1900 MHz	Frequency Bands:	1900 MHz	Frequency Bands:	1900 MHz
Gain:	15.75 dBd	Gain:	15.75 dBd	Gain:	15.75 dBd
Height (AGL):	57 feet	Height (AGL):	57 feet	Height (AGL):	57 feet
Channel Count:	1	Channel Count:	1	Channel Count:	1
Total TX Power (W):	10.00 Watts	Total TX Power (W):	10.00 Watts	Total TX Power (W):	10.00 Watts
ERP (W):	375.84	ERP (W):	375.84	ERP (W):	375.84
Antenna A1 MPE %:	<b>0.52%</b>	Antenna B1 MPE %:	<b>0.52%</b>	Antenna C1 MPE %:	<b>0.52%</b>
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	ERICSSON KRCI18023-I 02DT 2100	Make / Model:	ERICSSON KRCI18023-I 02DT 2100	Make / Model:	ERICSSON KRCI18023-I 02DT 2100
Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz
Gain:	15.65 dBd	Gain:	15.65 dBd	Gain:	15.65 dBd
Height (AGL):	57 feet	Height (AGL):	57 feet	Height (AGL):	57 feet
Channel Count:	1	Channel Count:	1	Channel Count:	1
Total TX Power (W):	120.00 Watts	Total TX Power (W):	120.00 Watts	Total TX Power (W):	120.00 Watts
ERP (W):	4,407.39	ERP (W):	4,407.39	ERP (W):	4,407.39
Antenna A2 MPE %:	<b>6.09%</b>	Antenna B2 MPE %:	<b>6.09%</b>	Antenna C2 MPE %:	<b>6.09%</b>
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	RFS APXVAALL24_43-U- NA20 02DT 600	Make / Model:	RFS APXVAALL24_43-U- NA20 02DT 600	Make / Model:	RFS APXVAALL24_43-U- NA20 02DT 600
Frequency Bands:	600 MHz / 600 MHz / 700 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd
Height (AGL):	57 feet	Height (AGL):	57 feet	Height (AGL):	57 feet
Channel Count:	3	Channel Count:	3	Channel Count:	3
Total TX Power (W):	160.00 Watts	Total TX Power (W):	160.00 Watts	Total TX Power (W):	160.00 Watts
ERP (W):	2,878.76	ERP (W):	2,878.76	ERP (W):	2,878.76
Antenna A3 MPE %:	<b>9.55%</b>	Antenna B3 MPE %:	<b>9.55%</b>	Antenna C3 MPE %:	<b>9.55%</b>

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Combined Sectors):	1.96%
AT&T	9.9%
Verizon	51.57%
<b>Site Total MPE % :</b>	<b>63.43%</b>

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	0.66%
T-Mobile Sector B Total:	1.11%
T-Mobile Sector C Total:	1.96%
<b>T-Mobile Total MPE % :</b>	<b>1.96%</b>

T-Mobile Maximum MPE Power Values (Sector C)							
T-Mobile Frequency Band / Technology (Sector C)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
T-Mobile 1900 MHz UMTS	1	375.8374043	57	5.194888006	1900 MHz UMTS	1000.0	0.52
T-Mobile 2100 MHz LTE	1	4407.387606	57	60.91965502	2100 MHz LTE	1000.0	6.09
T-Mobile 600 MHz LTE	1	689.5408364	57	9.530949767	600 MHz LTE	400.0	2.38
T-Mobile 600 MHz NR	1	1379.081673	57	19.06189953	600 MHz NR	400.0	4.77
T-Mobile 700 MHz LTE	1	810.1398427	57	11.19788958	700 MHz LTE	467.0	2.4
						<b>T-Mobile Total:</b>	<b>1.96%</b>

- NOTE: Total T-Mobile MPE values reflect all T-Mobile antennas as reported by RoofMaster™ calculations.
- 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:	0.66%
Sector B:	1.11%
Sector C:	1.96%
T-Mobile Maximum MPE % (Sector C):	1.96%
T-Mobile Combined Sectors MPE %:	1.96%
Site Total:	63.43%
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **63.43%** 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 or documents available on the Connecticut Siting Council website.

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.